

Dear Friends and Partners,

As you have certainly noticed, this catalogue has a new, changed appearance. Just as our new representation, the Hager brand has developed considerably.

Since years, Hager has been successfully present on the Africa and Near-East markets. Highest quality, reliability, good customer relations and a high degree of innovation are key features of the Hager brand.

Our range of products has been vastly enlarged: With us you can obtain everything from one source, from energy distribution, cable management and building automation, to wiring accessories.

As a specialist, we provide you with a full-range supply of solutions for residential and commercial buildings.

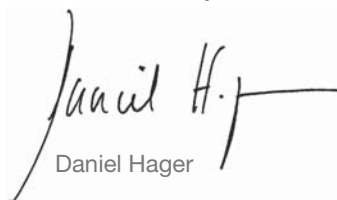
The brands of Hager and Tehalit were combined to form the new Hager brand. A complete range of products and services to guarantee electrical installations, easy to install while providing a high degree of safety.

Hager also stands for sustainability. We accept our responsibility and contribute actively in the protection of resources. These aspects are key features for all our innovations. This line of energy saving is applied in all production processes and applies to all our products in general, which contribute to save energy during their entire product life.

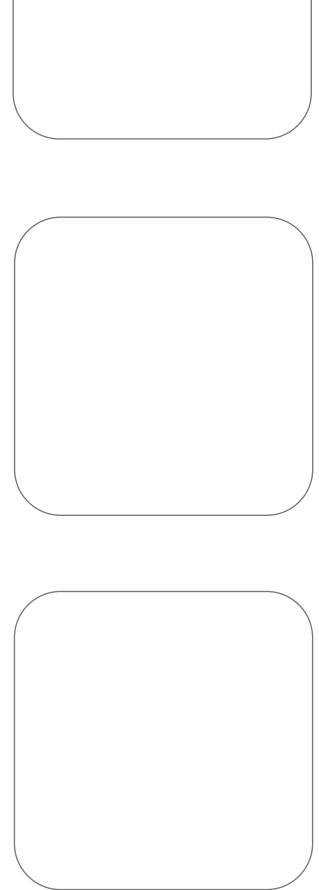
Responsibility, openness and a focus on the future, these features are reflected in our new brand representation. Clarity, simplicity, a close customer relation and innovation are the old and new values of the Hager brand.

In this spirit, we have created this catalogue as a practical tool for your own individual use. Please look and see for yourself.

Yours sincerely



Daniel Hager



Permanent innovation

Innovations and the systematic enhancement of the products and systems are key features of the Hager brand. It has always been our goal to use new designs and improvements to stay ahead of developments.

Customer Driven

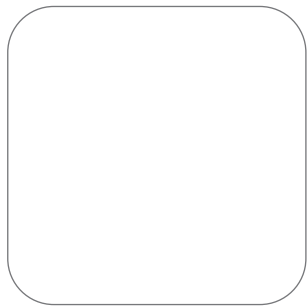
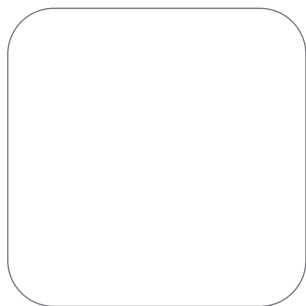
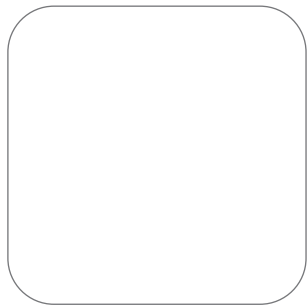
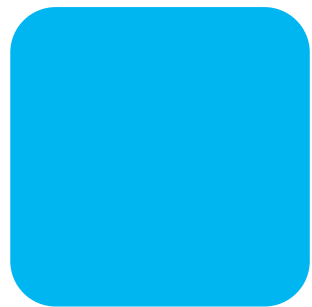
The use of innovations and new technologies at Hager is always customer-driven. Every year, Hager evaluates thousands of its customer contacts, resulting in detailed knowledge of its customers' needs in order to work efficiently and successfully.

Based on this knowledge, Hager develops the innovative solutions that are so characteristic for the Hager brand. Ease of installation, ease of use, intuitive user interfaces, modularity and durability are brand values that guarantee the highest quality throughout in Hager systems.

Research and Development

80 per cent of Hager products and systems are less than five years old. This high degree of innovation enables the users to meet various new challenges more effectively. The strong demand for innovations and enhancements is indicative of the customer-oriented policy of the Hager brand.

Today, Hager employs about 850 engineers in research and development (R&D) and invests about five per cent of its revenue for R&D, Hager permanently strives to offer innovative and value-adding systems. Every year, Hager applies for about 170 new patents.



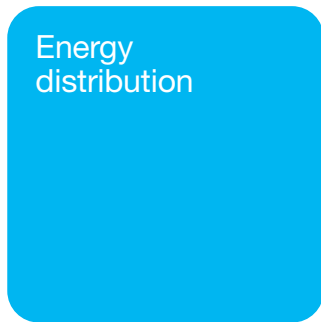
A flourishing group

The Hager Group is a leading supplier of solutions and services of electrical installation systems for residential and commercial properties as well as industrial applications.

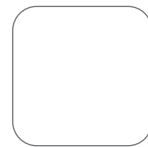
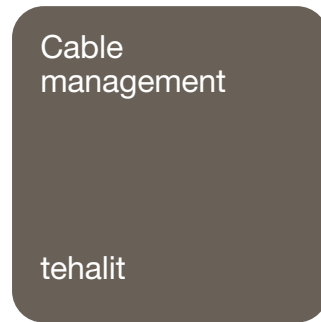
Across the world, the Hager Group has 26 production sites in 12 countries. The marketing presence in 55 countries is supported by more than 20,000 selling points of our wholesale partners. As a global player, the company has about 11,000 employees, and a turnover exceeding 1.3 billion Euro in 2009. Today, the Hager Group offers more than 74,000 references.



Safe distribution of energy,
concentration of
communication technology.



Provision of energy and
data where they are
required.



A clear structure

Hager's range of products

Hager has divided its extensive range of products into three areas of application, each marked with a different colour, to help you finding the right product and solution for your individual needs.

As the leading specialist in the field of electrical installations residential and commercial buildings, the Hager brand provides you with everything from one source: systems and solutions – highest quality, reliable and easy to install.

Switching with style -
Smart Building automation



Small enclosures

Main switchboards

Main incomers

Protection devices

Control and signaling

Power interface and programming

Connection

mini gamma | gamma13 and 18 | golf | vega | gala | volta | vector | FW | vega D | media hub nodeis

A.1



consumer unit | invicta VT | invicta DR | invicta TP&N | invicta panelboards | enclosed fuse combination | quadro | orion plus | control desk monobloc enclosures

B.1



MCCBs | load break switches | earth leakage relays and torroids | changeover switches

C.1



MCBs | Add-on blocks | magnetic MCBs | RCBOs | RCCBs | HRC fuse carriers | photovoltaic fuse carriers | motor starters | SPDs

D.1



indicator lights | pushbuttons | switch disconnectors | trip-free switches | modular changeover switches | selector switches | volt- & ammeters | multimeters | CTs | control relays | emergency lighting | bells and buzzers

E.1



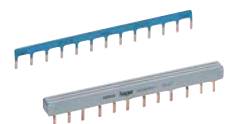
contactors | relays | interface relays | delay timers | latching relays | auxiliaries | roller shutter & motorized blind control | energymeters | current transformers

F.1



insulated busbars | distribution blocks | junction blocks | brass terminals | Quick Connect and cage terminals | anti-shear terminals

G.1



Small enclosures

Main switchboards

Main incomers

Protection devices

Control and signaling

Power interface and programming

Connection

Residential trunking

Line distribution

Installation trunking

Enclosure trunking

BS wiring accessories

European wiring accessories

Energy and lighting control

ateha skirting system | SL plinths system

H.1



lifea | LFH halogen free trunking | LFS steel trunking | LFG fiberglass reinforced polyester trunking | FWK fire resistant trunking

I.1



queraz PVC and aluminium installation trunking | BRP/BRAP/BRS trunking | c.60 trunking | modules and poles | distribution tower | floor distribution system

J.1



BA7 cable ducting | HA7 slotted trunking | HNG slotted trunking | VK-flex flexible slotted trunking

K.1



system 8000 | system 9000 | system 9088 | system 10088 | IP55 | IP66 | IP66 isolators

L.1



systo | essensya | kallysta

M.1



time lag switches | dimmers | twilight switches | astronomical time switches | light sensitive switches | analogue time switches | digital time switches | motion detectors | presence detectors | smoke detectors | remote control

N.1



Residential
trunking

Line
distribution

Installation
trunking

Enclosure
trunking

BS wiring
accessories

European wiring
accessories

Energy and
lighting control

cat. ref.	page	cat. ref.	page	cat. ref.	page	cat. ref.	page	cat. ref.	page
A		A		A		A		A	
A050	G.11	AD840J	D.21	AF120Z	D.22	ATA123009010	H.4	ATA163059010	H.4
A050	B.83	AD856J	D.21	AF125Z	D.22	ATA123018014	H.4	ATA163068014	H.5
A088	G.11	AD860J	D.21	AF132Z	D.22	ATA123019010	H.4	ATA163069010	H.5
A088	B.83	AD866J	D.21	AF140Z	D.22	ATA123038014	H.4	ATA163078014	H.5
A089	G.11	AD870J	D.21	AF145Z	D.22	ATA123039010	H.4	ATA163079010	H.5
A090	G.11	AD875J	D.21	AF150Z	D.22	ATA123048014	H.4	ATA163088014	H.5
A098	G.11	AD882J	D.21	AF956B	D.21	ATA123049010	H.4	ATA163089010	H.5
A098	B.83	AD890J	D.21	AF956J	D.21	ATA123058014	H.4	ATA205008014	H.6
A099	G.11	AD906B	D.21	AF960B	D.21	ATA123059010	H.4	ATA205009010	H.6
A099	B.83	AD906J	D.21	AF960J	D.21	ATA123068014	H.5	ATA205018014	H.6
A099B	B.83	AD910B	D.21	AF966B	D.21	ATA123069010	H.5	ATA205019010	H.6
A099C	B.83	AD910J	D.21	AF966J	D.21	ATA123078014	H.5	ATA205028014	H.6
A099D	B.83	AD916B	D.21	AF970B	D.21	ATA123079010	H.5	ATA205029010	H.6
A099E	B.83	AD916J	D.21	AF970J	D.21	ATA123088014	H.5	ATA205038014	H.6
ACB106	D.22	AD920B	D.21	AF975B	D.21	ATA123089010	H.5	ATA205039010	H.6
ACB116	D.22	AD920J	D.21	AF975J	D.21	ATA123198014	H.5	ATA205048014	H.6
ACB125	D.22	AD925B	D.21	AF982B	D.21	ATA123199010	H.5	ATA205049010	H.6
ACB132	D.22	AD925J	D.21	AF982J	D.21	ATA123298014	H.5	ATA205058014	H.6
ACC106	D.22	AD932B	D.21	AF990B	D.21	ATA123299010	H.5	ATA205059010	H.6
ACC116	D.22	AD932J	D.21	AF990J	D.21	ATA123398014	H.5	ATA205068014	H.7
ACC125	D.22	AD940B	D.21	AF990J	D.21	ATA123399010	H.5	ATA205069010	H.7
ACC132	D.22	AD940J	D.21	AF990J	D.21	ATA123499010	H.5	ATA205078014	H.7
AD104	D.22	AD956B	D.21	AF990J	D.21	ATA125008014	H.6	ATA205079010	H.7
AD105	D.22	AD956J	D.21	AF990J	D.21	ATA125009010	H.6	ATA205088014	H.7
AD107	D.22	AD960B	D.21	AF990J	D.21	ATA125018014	H.6	ATA205089010	H.7
AD108	D.22	AD960J	D.21	AF990J	D.21	ATA125019010	H.6	ATA20509010	H.7
AD109	D.22	AD966B	D.21	AF990J	D.21	ATA125028014	H.6	ATA20510010	H.7
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AD111	D.22	AD970B	D.21	AF990J	D.21	ATA125038014	H.6	ATA20512010	H.7
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AD113	D.22	AD975B	D.21	AF990J	D.21	ATA125048014	H.6	ATA20514010	H.7
AD119	D.22	AD975J	D.21	AF990J	D.21	ATA125049010	H.6	ATA20515010	H.7
AD120	D.22	AD982B	D.21	AF990J	D.21	ATA125058014	H.6	ATA20516010	H.7
AD122	D.22	AD982J	D.21	AF990J	D.21	ATA125059010	H.6	ATA20517010	H.7
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AD124	D.22	AD990J	D.21	AF990J	D.21	ATA125069010	H.7	ATA20519010	H.7
AD125	D.22	AE106Z	D.22	AF990J	D.21	ATA125078014	H.7	ATA20520010	H.7
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AD127	D.22	AE116Z	D.22	AF990J	D.21	ATA125088014	H.7	ATA20522010	H.7
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AD184	D.22	AE125Z	D.22	AF990J	D.21	ATA125298014	H.7	ATA20524010	H.7
AD185	D.22	AE132Z	D.22	AF990J	D.21	ATA125299010	H.7	ATA20525010	H.7
AD187	D.22	AE140Z	D.22	AF990J	D.21	ATA125399010	H.7	ATA20526010	H.7
AD188	D.22	AE150Z	D.22	AF990J	D.21	ATA125499010	H.7	ATA20527010	H.7
AD189	D.22	AE956B	D.21	AF990J	D.21	ATA163008014	H.4	ATA20528010	H.7
AD190	D.22	AE960B	D.21	AF990J	D.21	ATA163009010	H.4	ATA20529010	H.7
AD191	D.22	AE966B	D.21	AF990J	D.21	ATA163018014	H.4	ATA20530010	H.7
AD806J	D.21	AE970B	D.21	AF990J	D.21	ATA163019010	H.4	ATA20531010	H.7
AD810J	D.21	AE975B	D.21	AF990J	D.21	ATA163038014	H.4	ATA20532010	H.7
AD816J	D.21	AE982B	D.21	AF990J	D.21	ATA163039010	H.4	ATA20533010	H.7
AD820J	D.21	AE990B	D.21	AF990J	D.21	ATA163048014	H.4	ATA20534010	H.7
AD825J	D.21	AF110Z	D.22	AF990J	D.21	ATA163049010	H.4	ATA20535010	H.7
AD832J	D.21	AF116Z	D.22	AF990J	D.21	ATA163058014	H.4	ATA20536010	H.7
				ATA123008014	H.4	ATA163059010	H.4	ATA99030	H.12

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A		B		B		B		B	
ATA99050	H.12	BD264	D.13	BG264	D.13	BRS651004H9010	J.20	BTC280E	D.19
ATA99075	H.12	BD325	D.13	BG364	D.13	BRS6510059010	J.21	BTC380E	D.19
ATACOLLE	H.12	BD326	D.13	BG464	D.14	BRS6510069010	J.21	BTC480E	D.19
ATACOLLE	K.9	BD340	D.13	BN264	D.13	BRS6510079010	J.21	BTH280E	D.19
		BD341	D.13	BN464	D.14	BRS651009	J.21	BTH380E	D.19
B		BD363	D.13	BP264	D.13	BRS65100W9010	J.21	BTH480E	D.19
BA70252	K.4	BD364	D.13	BP364	D.13	BRS6513019010	J.20		
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BA70402	K.4	BD426	D.14	BPC863	D.14	BRS651303H9010	J.21	CB19010	J.39
BA70402K	K.4	BD440	D.14	BR264	D.13	BRS6513049010	J.20	CB29010	J.39
BA70602	K.4	BD441	D.14	BRAP0802ELN	J.18	BRS651304H9010	J.20	CC19010	J.39
BA70802	K.4	BD463	D.14	BRAP651001ELN	J.18	BRS6513059010	J.21	CC217J	D.23
BA7100060	K.4	BD464	D.14	BRAP651301ELN	J.18	BRS6513069010	J.21	CC2L9010	J.39
BA7100080	K.4	BDC280E	D.19	BRAP651701ELN	J.18	BRS6513079010	J.21	CC2R9010	J.39
BA7100100	K.4	BDC380E	D.19	BRAP802001ELN	J.18	BRS651309	J.21	CC39010	J.39
BA71002	K.4	BDC480E	D.19	BRP08029010	J.16	BRS65130W9010	J.21	CD225J	D.23
BA71202	K.4	BDC825	D.14	BRP6510019010	J.16	BRS6517019010	J.20	CD226J	D.23
BA725025	K.4	BDC840	D.14	BRP651003H9010	J.17	BRS6517039010	J.20	CD240J	D.23
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BA760040	K.4	BF241	D.13	BRP651305HLAN	J.19	BRS652103DH9010	J.21	CD485Z	D.23
BA760040BL	K.5	BF263	D.13	BRP6513069010	J.17	BRS652103H9010	J.21	CE19010	J.39
BA760060	K.4	BF264	D.13	BRP6517019010	J.16	BRS6521049010	J.20	CE226J	D.23
BA760060BL	K.5	BF325	D.13	BRP651703H9010	J.17	BRS652104D9010	J.20	CE241J	D.23
BA760080	K.4	BF326	D.13	BRP651703HLAN	J.19	BRS652104DH9010	J.20	CE264J	D.23
BA760100	K.4	BF340	D.13	BRP651704H9010	J.16	BRS652104H9010	J.20	CE281Z	D.23
BA760120	K.4	BF341	D.13	BRP651704HLAN	J.18	BRS6521059010	J.21	CE285Z	D.23
BA780025	K.4	BF363	D.13	BRP651705H9010	J.17	BRS652105D9010	J.21	CE29010	J.39
BA780025BL	K.5	BF364	D.13	BRP651705HLAN	J.19	BRS652105DH9010	J.21	CE39010	J.39
BA780040	K.4	BF425	D.14	BRP6517069010	J.17	BRS6521069010	J.21	CE426J	D.23
BA780060	K.4	BF426	D.14	BRP652103DH9010	J.17	BRS652106D9010	J.21	CE441J	D.23
BA780060BL	K.5	BF440	D.14	BRP652104DH9010	J.16	BRS6521079010	J.21	CE464J	D.23
BA780080	K.4	BF441	D.14	BRP652105DH9010	J.17	BRS652107D9010	J.21	CE481Z	D.23
BA780100	K.4	BF463	D.14	BRP652106D9010	J.17	BRS652109	J.21	CE485Z	D.23
BA780120	K.4	BF464	D.14	BRP65210D19010	J.16	BRS652109D	J.21	CF225J	D.23
BA7CLIP	K.6	BFC480E	D.19	BRP65xxx9	J.17	BRS65210W9010	J.21	CF226J	D.23
BA7CLIP	K.9	BFC825	D.14	BRS08029010	J.20	BRS65210WD9010	J.21	CF240J	D.23
BC226	D.13	BFC840	D.14	BRS0802A9010	J.23	BS263	D.13	CF241J	D.23
BD225	D.13	BFC863	D.14	BRS0802I9010	J.23	BS264	D.13	CF263J	D.23
BD226	D.13	BFH480E	D.19	BRS6510019010	J.20	BS363	D.13	CF264J	D.23
BD240	D.13	BFH825	D.14	BRS6510039010	J.20	BS364	D.13	CF281Z	D.23
BD241	D.13	BFH840	D.14	BRS651003H9010	J.21	BS464	D.14	CF285Z	D.23
BD263	D.13	BFH863	D.14	BRS6510049010	J.20	BSC863	D.14		

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C									
CF425J	D.23	CQ440J	D.23	DAS24527009010	J.43	EC050	F.20	EG005	N.28
CF426J	D.23	CQ463J	D.23	DAS2452700ELN	J.43	EC051	F.20	EG006	N.28
CF440J	D.23	CU6019010	J.38	DAS24530009010	J.43	EC100	F.20	EG007	N.28
CF441J	D.23	CU601L9010	J.38	DAS2453000ELN	J.43	EC150	F.20	EG010	N.27
CF463J	D.23	CU6029010	J.38	DAS24533009010	J.43	EC152	F.20	EG071	N.27
CF464J	D.23	CU602L9010	J.38	DAS2453300ELN	J.43	EC350	F.20	EG103B	N.27
CF481Z	D.23	CU6039010	J.38	DAS28025009010	J.43	EC352	F.20	EG103E	N.27
CF485Z	D.23	CU603L9010	J.38	DAS2802500ELN	J.43	EC360	F.20	EG103V	N.27
CH225J	D.23	CU60B	J.39	DAS28028009010	J.43	EC362	F.20	EG110	N.27
CH240J	D.23	CUF19010	J.39	DAS2802800ELN	J.43	EC370	F.20	EG170	N.27
CH263J	D.23	CUF2D9010	J.39	DAS28031009010	J.43	EC372	F.20	EG203B	N.27
CH425J	D.23	CUF2U9010	J.39	DAS2803100ELN	J.43	EE002	N.20	EG203E	N.27
CH440J	D.23	CUF39010	J.39	DAS28034009010	J.43	EE003	N.20	EG210	N.27
CH463J	D.23	CUFC	J.39	DAS2803400ELN	J.43	EE100	N.15	EG270	N.27
CI19010	J.39	CUL9010	J.38	DAS4527009010	J.43	EE101	N.15	EG293B	N.28
CI29010	J.39	CULC9010	J.38	DAS452700ELN	J.43	EE110	N.15	EG403E	N.28
CI39010	J.39	CULI9010	J.39	DAS4530009010	J.43	EE171	N.15	EG470	N.28
CJ19010	J.39	CULR9010	J.38	DAS453000ELN	J.43	EE180	N.15	EG493E	N.28
CJ29010	J.39	CUT19010	J.39	DAS4533009010	J.43	EE181	N.15	EH010	N.23
CJ39010	J.39	CUT2D9010	J.39	DAS453300ELN	J.43	EE200	N.20	EH011	N.23
CLM30035	I.14	CUT2U9010	J.39	DAS8025009010	J.43	EE201	N.20	EH071	N.23
CLM300353	I.14	CUT39010	J.39	DAS802500ELN	J.43	EE202	N.20	EH110A	N.23
CLM300354	I.14	CUTB	J.39	DAS8028009010	J.43	EE203	N.20	EH111A	N.23
CLM300355	I.14			DAS802800ELN	J.43	EE701	N.15	EH171A	N.23
CLM300356	I.15	D		DAS8031009010	J.43	EE702	N.15	EH191	N.23
CLM3003561	I.15	DAC2457021	J.43	DAS803100ELN	J.43	EE804	N.33	EH209	N.23
CLM300357	I.15	DAC2459010	J.43	DAS8034009010	J.43	EE805	N.33	EH210	N.23
CLM300358	I.15	DAC2807021	J.43	DAS803400ELN	J.43	EE807	N.37	EH211	N.23
CLM300359	I.15	DAC2809010	J.43	DEF2000F	J.51	EE808	N.37	EH271	N.23
CLM500653	I.14	DAC457021	J.43	DEFF	J.51	EE810	N.36	EH710	N.25
CLM500654	I.14	DAC459010	J.43	DEMF	J.51	EE811	N.36	EH710A	N.25
CLM500655	I.14	DAC807021	J.43	DES2700F	J.51	EE812	N.36	EH711	N.25
CLM500656	I.15	DAC809010	J.43	DES3000F	J.51	EE813	N.36	EH770	N.25
CLM5006561	I.15	DAF24520009010	J.44	DES3300F	J.51	EE815	N.37	EH771	N.25
CLM500657	I.15	DAF2452000ELN	J.44	DR12FT	B.6	EE816	N.37	EH900	N.25
CLM500658	I.15	DAF28020009010	J.44	DR12ST	B.6	EE820	N.33	EH901	N.23
CLM500659	I.15	DAF2802000ELN	J.44	DR16F	B.6	EE821	N.33	EH902	N.23
CLM65	I.15	DAF4520009010	J.44	DR16S	B.6	EE825	N.33	EK4004009010	H.8
CLM650903	I.14	DAF452000ELN	J.44	DR24FT	B.6	EE826	N.33	EL001	F.18
CLM650904	I.14	DAF8020009010	J.44	DR24ST	B.6	EE827	N.33	EL002	F.18
CLM650905	I.14	DAF802000ELN	J.44	DR32F	B.6	EE828	N.33	EL003	F.18
CLM650906	I.15	DAFF20007021	J.44	DR32S	B.6	EE830	N.33	EL004	F.18
CLM6509061	I.15	DAFF20007035	J.44	DR36FT	B.6	EE831	N.33	EM011	N.2
CLM650907	I.15	DAFF220007021	J.44	DR36ST	B.6	EE840	N.33	EMN001	N.2
CLM650908	I.15	DAFF220007035	J.44	DR48F	B.6	EE841	N.33	EMN005	N.2
CLM650909	I.15	DAP2457009010	J.45	DR48S	B.6	EE855	N.33	EN145	F.5
CLM90	I.15	DAP245700ELN	J.45	DR64F	B.6	EE856	N.33	EN146	F.5
CLMU50065	I.14	DAP2806509010	J.45	DR64S	B.6	EE905	E.23	EP071	F.3
CLMU65090	I.14	DAP280650ELN	J.45	DR80F	B.6	EE910	E.23	EP071	F.4
CP440J	D.23	DAP457009010	J.45	DR80S	B.6	EE960	E.23	EPN050	F.16
CP441J	D.23	DAP45700ELN	J.45	DR96F	B.6	EG003	N.28	EPN051	F.16
CP463J	D.23	DAP806509010	J.45	DR96S	B.6	EG003U	N.28	EPN052	F.16
CP464J	D.23	DAP80650ELN	J.45			EG004	N.28	EPN053	F.16

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EPN503	F.13	ES420	F.3	EV108	N.7	FC219	B.40	FD32T	A.53
EPN510	F.13	ES420A	F.3	EZN001	F.10	FC230	B.42	FD42A	A.51
EPN511	F.13	ES424	F.3	EZN002	F.10	FC310	B.41	FD42P	A.53
EPN513	F.13	ES424A	F.3	EZN003	F.10	FC311	B.41	FD42T	A.53
EPN515	F.13	ES426	F.3	EZN004	F.10	FC312	B.41	FD52A	A.51
EPN516	F.13	ES426	F.3	EZN005	F.10	FC313	B.41	FD52P	A.53
EPN518	F.13	ES430	F.3	EZN006	F.10	FC314	B.41	FD52T	A.53
EPN519	F.13	ES430A	F.3			FC315	B.41	FD62A	A.51
EPN520	F.13	ES432	F.3	F		FC316	B.41	FD62P	A.53
EPN521	F.13	ES436	F.3	FB6013007030	I.12	FC317	B.41	FD62T	A.53
EPN523	F.13	ES440	F.3	FB6013009010	I.12	FC318	B.41	FD72A	A.51
EPN524	F.13	ES442	F.3	FB6015007030	I.12	FC319	B.41	FD72P	A.53
EPN525	F.13	ES444	F.2	FB6015009010	I.12	FC330	B.41	FD72T	A.53
EPN526	F.13	ES444A	F.2	FB6019009010	I.12	FC331	B.41	FL000A	B.103
EPN528	F.13	ES446	F.3	FB6023007030	I.12	FC332	B.41	FL101A	B.94
EPN540	F.13	ES450	F.3	FB6023009010	I.12	FC333	B.41	FL102A	B.94
EPN541	F.13	ES450A	F.3	FB8013007030	I.12	FC334	B.41	FL103A	B.94
EPN546	F.13	ES462	F.3	FB8013009010	I.12	FC335	B.41	FL104A	B.94
EPN548	F.13	ES463	F.3	FB9923007030	I.12	FC336	B.41	FL105A	B.94
ER109	F.4	ES466	F.3	FB9923009010	I.12	FC337	B.41	FL106A	B.94
ER111	F.4	ES470	F.3	FC010	B.40	FC338	B.41	FL107A	B.94
ER120	F.4	ES480	F.3	FC011	B.40	FC339	B.41	FL108A	B.94
ER123	F.4	ES490	F.3	FC012	B.40	FC340	B.41	FL109A	B.94
ER124	F.4	ES492	F.3	FC013	B.40	FC341	B.41	FL110A	B.94
ER125	F.4	ES496	F.3	FC014	B.40	FC342	B.41	FL111A	B.94
ER135	F.4	ESN001B	F.3	FC015	B.40	FC343	B.41	FL112A	B.94
ER138	F.4	ESN002B	F.3	FC016	B.40	FC344	B.41	FL113A	B.94
ER139	F.4	ESN003B	F.3	FC110	B.40	FC345	B.41	FL114A	B.94
ES001	F.3	ESN071B	F.3	FC111	B.40	FC346	B.41	FL115A	B.94
ES002	F.3	ESN220B	F.2	FC112	B.40	FC347	B.41	FL116A	B.94
ES110	F.2	ESN240B	F.2	FC113	B.40	FC348	B.41	FL117A	B.94
ES110A	F.2	ESN263B	F.2	FC114	B.40	FC349	B.41	FL118A	B.94
ES210	F.2	ESN320B	F.2	FC115	B.40	FC350	B.41	FL119A	B.94
ES216	F.2	ESN340B	F.2	FC116	B.40	FC415	B.40	FL120A	B.94
ES220	F.2	ESN420B	F.3	FC118	B.40	FC416	B.40	FL121A	B.94
ES220A	F.2	ESN430B	F.3	FC119	B.40	FC419	B.42	FL122A	B.94
ES224	F.2	ESN440B	F.3	FC120	B.42	FC425	B.40	FL123A	B.94
ES224A	F.2	ESN444B	F.2	FC121	B.42	FC426	B.40	FL124A	B.94
ES226	F.2	ESN463B	F.3	FC122	B.42	FC429	B.42	FL125A	B.94
ES230	F.2	EU100	E.18	FC123	B.42	FC445	B.40	FL126A	B.94
ES230A	F.2	EU101	E.18	FC124	B.42	FC446	B.40	FL127A	B.94
ES236	F.2	EU102	E.19	FC125	B.42	FC455	B.40	FL128A	B.94
ES239	F.2	EU103	E.19	FC126	B.42	FC456	B.40	FL129A	B.94
ES240	F.2	EU300	E.18	FC192	B.42	FC620	B.53	FL130A	B.94
ES242	F.3	EU301	E.18	FC193	B.42	FC664	B.42	FL151A	B.94
ES252	F.2	EU302	E.19	FC210	B.40	FC664	B.82	FL152A	B.94
ES262	F.2	EV002	N.5	FC211	B.40	FC671	B.42	FL153A	B.94
ES263	F.2	EV004	N.5	FC212	B.40	FC671	B.63	FL154A	B.94
ES320	F.2	EV011	N.5	FC213	B.40	FD22A	A.51	FL155A	B.94
ES320A	F.2	EV012	N.5	FC214	B.40	FD22P	A.53	FL156A	B.94
ES340	F.2	EV100	N.6	FC215	B.40	FD22T	A.53	FL157A	B.94
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FL159A	B.94	FL271B	B.96	FL362A	B.103	FL414A	B.98	FL505B	B.97
FL160A	B.94	FL279B	B.96	FL362B	B.97	FL415A	B.98	FL506B	B.97
FL161A	B.94	FL300B	B.97	FL363A	B.103	FL416A	B.98	FL507B	B.97
FL162A	B.94	FL301B	B.97	FL364A	B.103	FL417A	B.98	FL510B	B.97
FL163A	B.94	FL302B	B.97	FL364B	B.97	FL418A	B.98	FL510E	B.98
FL164A	B.94	FL305B	B.97	FL365A	B.103	FL419A	B.98	FL510E	B.98
FL165A	B.94	FL306B	B.97	FL366A	B.103	FL422A	B.100	FL511B	B.97
FL166A	B.94	FL307B	B.97	FL366B	B.97	FL423A	B.100	FL511E	B.98
FL167A	B.94	FL310B	B.97	FL367A	B.103	FL424A	B.100	FL512B	B.97
FL168A	B.94	FL311A	B.104	FL368A	B.103	FL425A	B.100	FL512E	B.98
FL169A	B.94	FL311B	B.97	FL368B	B.97	FL426A	B.100	FL520B	B.97
FL170A	B.94	FL312A	B.104	FL369A	B.103	FL427A	B.100	FL520E	B.98
FL171A	B.94	FL312B	B.97	FL371A	B.103	FL428A	B.100	FL521B	B.97
FL172A	B.94	FL313A	B.104	FL372A	B.103	FL429A	B.100	FL521E	B.98
FL173A	B.94	FL314A	B.104	FL373A	B.103	FL430A	B.100	FL522B	B.97
FL174A	B.94	FL315A	B.104	FL374A	B.103	FL431A	B.100	FL522E	B.98
FL175A	B.94	FL316A	B.104	FL380AH	B.103	FL432A	B.100	FL525B	B.97
FL176A	B.94	FL317A	B.104	FL380B	B.97	FL433A	B.100	FL526B	B.97
FL177A	B.94	FL320B	B.97	FL381AH	B.103	FL450A	B.106	FL527B	B.97
FL178A	B.94	FL321B	B.97	FL381B	B.97	FL461A	B.102	FL530B	B.97
FL179A	B.94	FL322A	B.104	FL382B	B.97	FL462A	B.102	FL530E	B.98
FL180A	B.94	FL322B	B.97	FL385B	B.97	FL463A	B.102	FL531B	B.97
FL204B	B.96	FL323A	B.104	FL386B	B.97	FL465A	B.102	FL531E	B.98
FL209B	B.96	FL324A	B.104	FL387B	B.97	FL466A	B.102	FL532B	B.97
FL210Z	B.106	FL325A	B.104	FL390B	B.97	FL467A	B.102	FL532E	B.98
FL212Z	B.63	FL325B	B.97	FL391AH	B.103	FL468A	B.102	FL541A	B.101
FL212Z	B.106	FL326A	B.104	FL391B	B.97	FL472A	B.99	FL541E	B.100
FL213B	B.96	FL326B	B.97	FL392AH	B.103	FL473A	B.99	FL542A	B.101
FL214Z	B.63	FL327A	B.104	FL392B	B.97	FL474A	B.99	FL542E	B.100
FL214Z	B.106	FL327B	B.97	FL393AH	B.103	FL475A	B.99	FL543A	B.101
FL216B	B.96	FL330B	B.97	FL399AH	B.103	FL476A	B.99	FL544A	B.101
FL216Z	B.106	FL331B	B.97	FL400B	B.97	FL477A	B.99	FL545A	B.101
FL220Z	B.63	FL332B	B.97	FL401A	B.98	FL478A	B.99	FL546A	B.101
FL220Z	B.106	FL333A	B.104	FL401B	B.97	FL479A	B.99	FL547A	B.101
FL221B	B.96	FL335A	B.104	FL402A	B.98	FL480A	B.99	FL548A	B.101
FL224Z	B.63	FL336A	B.104	FL402B	B.97	FL481A	B.99	FL549A	B.101
FL224Z	B.106	FL337A	B.104	FL403A	B.98	FL482A	B.99	FL550A	B.101
FL226Z	B.106	FL340B	B.97	FL404A	B.98	FL483A	B.99	FL550E	B.100
FL229B	B.96	FL342B	B.97	FL405A	B.98	FL492A	B.105	FL551A	B.101
FL230Z	B.106	FL343A	B.104	FL405B	B.97	FL493A	B.105	FL551E	B.100
FL234Z	B.106	FL344B	B.97	FL406A	B.98	FL494A	B.105	FL552A	B.101
FL236Z	B.106	FL345A	B.104	FL406B	B.97	FL495A	B.105	FL552E	B.100
FL252Z	B.106	FL346A	B.104	FL407A	B.98	FL496A	B.105	FL553A	B.101
FL253Z	B.106	FL346B	B.97	FL407B	B.97	FL500A	B.105	FL554A	B.101
FL254B	B.96	FL347A	B.104	FL408A	B.98	FL500B	B.97	FL555A	B.101
FL254Z	B.106	FL348B	B.97	FL409A	B.98	FL500E	B.105	FL556A	B.101
FL255Z	B.106	FL350B	B.97	FL410A	B.98	FL501A	B.105	FL557A	B.101
FL256Z	B.106	FL352B	B.97	FL410B	B.97	FL501B	B.97	FL558A	B.101
FL258Z	B.106	FL354B	B.97	FL411A	B.98	FL501E	B.98	FL559A	B.101
FL259B	B.96	FL356B	B.97	FL411B	B.97	FL502A	B.105	FL560E	B.100
FL259Z	B.106	FL358B	B.97	FL412A	B.98	FL502B	B.97	FL561E	B.100
FL263B	B.96	FL360B	B.97	FL412B	B.97	FL502E	B.98	FL562E	B.100

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FL571E	B.100	FL82Z	B.95	FM206	B.50	FM545	B.52	FN121E	B.61
FL572E	B.100	FL85Z	B.95	FM207	B.50	FM546	B.52	FN206E	B.62
FL580E	B.101	FL863Z	B.97	FM208	B.50	FM547	B.52	FN207E	B.62
FL581E	B.101	FL871Z	B.106	FM209	B.50	FM548	B.52	FN216E	B.62
FL582E	B.101	FL874A	B.95	FM217	B.50	FM549	B.52	FN217E	B.62
FL590E	B.101	FL93Z	B.95	FM218	B.50	FM557	B.52	FN246E	B.62
FL591E	B.101	FL94Z	B.96	FM219	B.50	FM558	B.52	FN247E	B.62
FL592E	B.101	FL957A	B.94	FM307	B.50	FM559	B.52	FN266E	B.62
FL600E	B.101	FL958A	B.94	FM308	B.50	FM567	B.52	FN267E	B.62
FL601E	B.101	FL959A	B.94	FM309	B.50	FM568	B.52	FN276E	B.62
FL602E	B.101	FL95Z	B.95	FM317	B.50	FM569	B.52	FN277E	B.62
FL610E	B.104	FL960A	B.94	FM318	B.50	FM630	B.51	FN286E	B.60
FL620E	B.104	FL961A	B.94	FM319	B.50	FM635	B.51	FN287E	B.60
FL630E	B.104	FL962A	B.94	FM400	B.51	FM640	B.41	FN289E	B.64
FL640E	B.104	FL96Z	B.95	FM401	B.51	FM640	B.53	FN291E	B.64
FL643A	B.102	FL96Z	B.96	FM402	B.51	FM653	B.53	FN292E	B.64
FL644A	B.102	FL979A	B.102	FM403	B.51	FN013E	B.60	FN296E	B.62
FL645A	B.102	FL97Z	B.96	FM404	B.51	FN017E	B.60	FN297E	B.62
FL646A	B.102	FL980A	B.102	FM405	B.51	FN018E	B.60	FN356E	B.62
FL647A	B.102	FL981A	B.102	FM406	B.51	FN020E	B.60	FN357E	B.62
FL649A	B.102	FL982A	B.102	FM407	B.51	FN021E	B.60	FN366E	B.62
FL650CD	B.111	FL983A	B.102	FM408	B.51	FN022E	B.60	FN367E	B.62
FL652CD	B.111	FL98Z	B.97	FM409	B.51	FN023E	B.60	FN376E	B.62
FL654CD	B.111	FL990A	B.103	FM417	B.51	FN024E	B.60	FN377E	B.62
FL656CD	B.111	FL990B	B.103	FM418	B.51	FN029E	B.60	FN406E	B.64
FL670A	B.95	FL990C	B.103	FM419	B.51	FN031E	B.60	FN407E	B.64
FL672E	B.102	FL991A	B.103	FM427	B.51	FN032E	B.60	FN426E	B.64
FL672Z	B.106	FL991B	B.103	FM428	B.51	FN037E	B.60	FN427E	B.64
FL702E	B.105	FL992A	B.103	FM429	B.51	FN046E	B.60	FN430E	B.62
FL703E	B.105	FL992B	B.103	FM437	B.51	FN047E	B.60	FN433E	B.60
FL704E	B.105	FL993A	B.103	FM438	B.51	FN073E	B.61	FN437E	B.60
FL705E	B.105	FL993B	B.103	FM439	B.51	FN077E	B.61	FN438E	B.60
FL70Z	B.106	FL994A	B.103	FM450	B.50	FN078E	B.61	FN440E	B.60
FL710E	B.105	FL994B	B.103	FM484	B.51	FN080E	B.61	FN441E	B.60
FL711E	B.105	FL995A	B.103	FM486	B.51	FN081E	B.61	FN442E	B.60
FL712E	B.105	FL995B	B.103	FM517	B.52	FN082E	B.61	FN443E	B.60
FL713E	B.105	FL996A	B.103	FM518	B.52	FN083E	B.61	FN444E	B.60
FL714E	B.105	FL997A	B.103	FM519	B.52	FN084E	B.61	FN451E	B.60
FL715E	B.105	FL998A	B.103	FM530	B.52	FN089E	B.61	FN453E	B.60
FL71Z	B.106	FL999A	B.103	FM531	B.52	FN091E	B.61	FN454E	B.60
FL722E	B.105	FL99Z	B.96	FM532	B.52	FN092E	B.61	FN459E	B.60
FL723E	B.105	FM107	B.50	FM533	B.52	FN093E	B.61	FN506E	B.61
FL724E	B.105	FM108	B.50	FM534	B.52	FN097E	B.61	FN507E	B.61
FL725E	B.105	FM109	B.50	FM535	B.52	FN098E	B.61	FN510E	B.61
FL733E	B.105	FM117	B.50	FM536	B.52	FN100E	B.61	FN511E	B.61
FL734E	B.105	FM118	B.50	FM537	B.52	FN101E	B.61	FN516E	B.61
FL735E	B.105	FM119	B.50	FM538	B.52	FN102E	B.61	FN517E	B.61
FL74Z	B.97	FM200	B.50	FM539	B.52	FN103E	B.61	FN526E	B.61
FL75Z	B.97	FM201	B.50	FM540	B.52	FN104E	B.61	FN527E	B.61
FL76Z	B.97	FM202	B.50	FM541	B.52	FN109E	B.61	FN536E	B.61
FL77Z	B.97	FM203	B.50	FM542	B.52	FN111E	B.61	FN537E	B.61
FL80Z	B.95	FM204	B.50	FM543	B.52	FN112E	B.61	FN546E	B.61

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FN547E	B.61	FU22A	A.50	FWB34S	A.35	FZ006FT	A.37	FZ023NV	A.36
FN690E	B.63	FU32A	A.50	FWB41GS	A.35	FZ006N	A.42	FZ024B	A.42
FN691E	B.63	FU42A	A.50	FWB41S	A.35	FZ006NV	A.36	FZ024N	A.42
FN692E	B.63	FU52A	A.50	FWB42GS	A.35	FZ006NV	A.42	FZ102N	A.43
FN696E	B.60	FU62A	A.50	FWB42S	A.35	FZ007F	A.36	FZ104N	A.43
FN696EP	B.60	FU72A	A.50	FWB43GS	A.35	FZ007N	A.42	FZ105N	A.43
FN697E	B.60	FV22A	A.52	FWB43S	A.35	FZ007NV	A.36	FZ106N	A.43
FN697EP	B.60	FV32A	A.52	FWB44GS	A.35	FZ007NV	A.42	FZ107N	A.43
FN700E	B.64	FV42A	A.52	FWB44S	A.35	FZ008N	A.42	FZ108N	A.43
FN701E	B.64	FV52A	A.52	FWB51GS	A.35	FZ009F	A.36	FZ110N	A.43
FN706E	B.64	FV62A	A.52	FWB51S	A.35	FZ009N	A.42	FZ11B	A.42
FN711E	B.64	FV72A	A.52	FWB52GS	A.35	FZ009NV	A.36	FZ12B	A.42
FN726E	B.64	FW31UG2	A.34	FWB52S	A.35	FZ009NV	A.42	FZ131F	A.36
FN727E	B.64	FW31US2	A.34	FWB53GS	A.35	FZ010F	A.36	FZ132F	A.36
FN736E	B.64	FW32UG2	A.34	FWB53S	A.35	FZ010FT	A.37	FZ133F	A.36
FN737E	B.64	FW32US2	A.34	FWB54GS	A.35	FZ010N	A.42	FZ13B	A.42
FN746E	B.64	FW33UG2	A.34	FWB54S	A.35	FZ010NV	A.36	FZ141F	A.36
FN747E	B.64	FW33US2	A.34	FWB61GS	A.35	FZ010NV	A.42	FZ142F	A.36
FN862E	B.63	FW41UG2	A.34	FWB61S	A.35	FZ011B	A.42	FZ143F	A.36
FN863E	B.63	FW41US2	A.34	FWB62GS	A.35	FZ011F	A.36	FZ14B	A.42
FN864E	B.63	FW42UG2	A.34	FWB62S	A.35	FZ011N	A.42	FZ151F	A.36
FN865E	B.63	FW42US2	A.34	FWB63GS	A.35	FZ011NV	A.36	FZ152F	A.36
FN866E	B.63	FW43UG2	A.34	FWB63S	A.35	FZ011NV	A.42	FZ153F	A.36
FN867E	B.63	FW43US2	A.34	FWB64GS	A.35	FZ012B	A.42	FZ154F	A.36
FN873E	B.63	FW51UG2	A.34	FWB64S	A.35	FZ012F	A.36	FZ161F	A.36
FN875E	B.63	FW51US2	A.34	FWB71GS	A.35	FZ012N	A.42	FZ162F	A.36
FN877E	B.63	FW52UG2	A.34	FWB71S	A.35	FZ013B	A.42	FZ163F	A.36
FN879E	B.63	FW52US2	A.34	FWB72GS	A.35	FZ013F	A.36	FZ164F	A.36
FN882E	B.63	FW53UG2	A.34	FWB72S	A.35	FZ013N	A.42	FZ171F	A.36
FN883E	B.63	FW53US2	A.34	FWB73GS	A.35	FZ014B	A.42	FZ172F	A.36
FN884E	B.63	FW54UG2	A.34	FWB73S	A.35	FZ014F	A.36	FZ173F	A.36
FN885E	B.63	FW54US2	A.34	FWB74GS	A.35	FZ014FT	A.37	FZ21B	A.42
FN886E	B.63	FW61UG2	A.34	FWB74S	A.35	FZ014N	A.42	FZ226	A.41
FN887E	B.63	FW61US2	A.34	FWK3500600VERZ	I.30	FZ014NV	A.36	FZ22B	A.42
FN891E	B.60	FW62UG2	A.34	FWK3501100VERZ	I.30	FZ014NV	A.42	FZ23B	A.42
FN892E	B.60	FW62US2	A.34	FWK3502100VERZ	I.30	FZ015F	A.36	FZ24B	A.42
FN893E	B.60	FW63UG2	A.34	FWK3991600VERZ	I.30	FZ015N	A.42	FZ276	A.38
FN894E	B.60	FW63US2	A.34	FWK3992600VERZ	I.30	FZ016F	A.36	FZ277	A.38
FN895E	B.60	FW64UG2	A.34	FWK9500600VERZ	I.32	FZ016N	A.42	FZ279	A.38
FN896E	B.60	FW64US2	A.34	FWK9501100VERZ	I.32	FZ021B	A.42	FZ31B	A.42
FN896EP	B.60	FW71UG2	A.34	FWK9502100VERZ	I.32	FZ021F	A.36	FZ32B	A.42
FN897E	B.60	FW71US2	A.34	FWK9991600VERZ	I.32	FZ021N	A.42	FZ33B	A.42
FN897EP	B.60	FW72UG2	A.34	FWK9992600VERZ	I.32	FZ021NV	A.36	FZ34B	A.42
FN942E	B.62	FW72US2	A.34	FZ001F	A.36	FZ021NV	A.42	FZ401	A.43
FN942E	B.64	FW73UG2	A.34	FZ001N	A.42	FZ022B	A.42	FZ402	B.42
FN943E	B.64	FW73US2	A.34	FZ002F	A.36	FZ022F	A.36	FZ403	B.42
FN944E	B.64	FWB31GS	A.35	FZ002N	A.42	FZ022FT	A.37	FZ404	B.42
FN950	B.62	FWB31S	A.35	FZ003F	A.36	FZ022N	A.42	FZ425	A.43
FN951	B.62	FWB32GS	A.35	FZ003N	A.42	FZ022NV	A.36	FZ428	A.43
FN952	B.62	FWB32S	A.35	FZ004N	A.42	FZ022NV	A.42	FZ441	B.82
FN970E	B.64	FWB33GS	A.35	FZ005F	A.36	FZ023B	A.42	FZ442	B.82
FN971E	B.64	FWB33S	A.35	FZ005N	A.42	FZ023F	A.36	FZ443	B.82
FN972E	B.64	FWB34GS	A.35	FZ006F	A.36	FZ023N	A.42	FZ444	B.82

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FZ449	B.41	G2734	J.56	G4741	J.67	G71417035	J.74	GD213A	A.6
FZ449	B.52	G2745	J.25	G4743	J.26	G7150	J.63	GD218A	A.8
FZ450	B.41	G2745	J.56	G4743	J.54	G7150	J.67	GD313A	A.6
FZ450	B.52	G2850	J.25	G4743	J.63	G71517035	J.53	GD318A	A.8
FZ451	B.41	G2860	J.25	G4743	J.67	G71527035	J.53	GD413A	A.6
FZ451	B.52	G2870	J.25	G4751	J.63	G7310ELN	J.66	GD418A	A.8
FZ452	B.41	G2870	J.26	G4751	J.67	G7311ELN	J.66	GP102P	A.2
FZ452	B.52	G3155	J.26	G4753	J.26	G7312ELN	J.66	GP102T	A.2
FZ453	B.41	G3155	J.55	G4753	J.54	G7313ELN	J.66	GP104P	A.2
FZ453	B.52	G3160	J.77	G4753	J.63	G7314ELN	J.66	GP104T	A.2
FZ497	A.53	G32249010	J.26	G4753	J.67	G7315ELN	J.66	GP106P	A.2
FZ507	A.53	G32249010	J.55	G4761	J.63	G7316ELN	J.66	GP106T	A.2
FZ508	B.52	G3234LAN	J.26	G4761	J.67	G7343LAN	J.71	GP108P	A.2
FZ508	B.62	G3234LAN	J.55	G4773	J.63	G7345LAN	J.71	GP108T	A.2
FZ515	B.52	G33749010	J.25	G4773	J.67	G73707021	J.53	GP110P	A.2
FZ515	B.62	G3374LAN	J.25	G4796	J.26	G73707035	J.53	GP110T	A.2
FZ516	B.52	G33759010	J.56	G4796	J.54	G73717021	J.53	GP113P	A.6
FZ516	B.62	G3375LAN	J.56	G4796	J.63	G73717035	J.53	GP113T	A.6
FZ517	B.52	G35007035	J.54	G4796	J.67	G73727021	J.53	GP118P	A.8
FZ517	B.62	G35009010	J.26	G4797	J.26	G73727035	J.53	GP118T	A.8
FZ597	B.41	G35009010	J.54	G4797	J.54	G8360	J.77	GP213P	A.6
FZ597	B.52	G3501LAN	J.26	G4797	J.63	G84007021	J.77	GP213T	A.6
FZ597N	A.41	G3501LAN	J.54	G4797	J.67	G84007035	J.77	GP218P	A.8
FZ598N	A.38	G35517035	J.54	G4798	J.26	G84017021	J.77	GP218T	A.8
FZ598N	A.43	G35519010	J.26	G4798	J.54	G84017035	J.77	GP313P	A.6
FZ680	B.97	G35519010	J.54	G4798	J.63	G84037021	J.77	GP313T	A.6
FZ707	A.41	G35519010	J.55	G4798	J.67	G84037035	J.77	GP318P	A.8
FZ760E	B.62	G35609010	J.25	G7025ELN	J.66	G84047021	J.77	GP318T	A.8
FZ767	B.62	G3560LAN	J.25	G70279010	J.66	G84047035	J.77	GP413P	A.6
FZ792N	A.54	G3561LAN	J.26	G70407021	J.66	G84047035	J.77	GP413T	A.6
FZ794	A.41	G3561LAN	J.54	G7059	J.71	GBA4529010	J.6	GP418P	A.8
FZ794	A.54	G3561LAN	J.55	G7091	J.53	GBA452ALU	J.6	GP418T	A.8
FZ794	B.41	G39999010	J.26	G71107021	J.74	GBA5005019010	J.6	GP418T	A.8
FZ794	B.53	G39999010	J.54	G71107035	J.74	GBA500501ALU	J.6	GS113D	A.6
FZ795	B.41	G3999ROT	J.26	G71117021	J.74	GBA5008519010	J.6	GS118D	A.8
FZ795	B.63	G3999ROT	J.54	G71117035	J.74	GBA500851ALU	J.6	GS213D	A.6
FZ799N	A.40	G4703	J.26	G71117035	J.74	GBA5013119010	J.6	GS218D	A.8
FZ801	B.97	G4703	J.54	G71177021	J.74	GBA501311ALU	J.6	GS313D	A.6
FZ803B	A.40	G4703	J.63	G71177035	J.74	GBA5016119010	J.6	GS318D	A.8
FZ821N	A.41	G4703	J.67	G7118	J.74	GBA501611ALU	J.6	GS413D	A.6
FZ822N	A.41	G4713	J.26	G71227021	J.74	GBD5005009010	J.4	GS418D	A.8
FZ823N	A.41	G4713	J.54	G71227035	J.74	GBD5008509010	J.4	GT4519010	J.24
FZ824N	A.41	G4713	J.63	G71237021	J.74	GBD5010009010	J.4	GT4519010	J.57
FZ850	B.52	G4713	J.67	G71237035	J.74	GBD5013109010	J.4	GT4519011	J.24
FZ850	B.62	G4721	J.63	G71267021	J.74	GBD5016009010	J.4	GT4519011	J.57
FZ890N	A.40	G4721	J.67	G71267035	J.74	GBD5016109010	J.4	GT451ALU	J.24
		G4731	J.63	G71307021	J.75	GBD5019009010	J.4	GT451ALU	J.57
		G4731	J.67	G71307035	J.75	GD102E	A.2	GT4529010	J.24
G		G4731	J.67	G71357021	J.75	GD104E	A.2	GT4529010	J.57
G1612	J.23	G4733	J.26	G71357035	J.75	GD106E	A.2	GT4529011	J.24
G2401	J.23	G4733	J.54	G7138	J.75	GD108E	A.2	GT4529011	J.57
G2700	J.56	G4733	J.63	G71407021	J.75	GD110E	A.2	GT452ALU	J.24
G2705	J.56	G4733	J.67	G71407035	J.75	GD113A	A.6	GT452ALU	J.57
G2734	J.55	G4741	J.63	G71417021	J.74	GD118A	A.8	GT4539010	J.24

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G		H		H		H		H	
GT4539010	J.57	HA760120	K.6	HCE800U	C.66	HDA101Z	C.12	HHA032Z	C.12
GT4539011	J.24	HA780025	K.6	HCE801U	C.66	HDA123Z	C.12	HHA033Z	C.12
GT4539011	J.57	HA780040	K.6	HCE970U	C.66	HDA124Z	C.12	HHA038Z	C.12
GT453ALU	J.24	HA780060	K.6	HCE971U	C.66	HDA125U	C.12	HHA039Z	C.12
GT453ALU	J.57	HA780080	K.6	HCF980U	C.78	HDA125Z	C.12	HHA040U	C.12
GZ04E	A.2	HA780100	K.6	HCF981U	C.78	HDA126U	C.12	HHA040Z	C.12
GZ04N	A.2	HA780120	K.6	HCF990U	C.78	HDA126Z	C.12	HHA041U	C.12
GZ07E	A.2	HA964N	C.101	HCF991U	C.78	HDA159Z	C.12	HHA041Z	C.12
GZ07N	A.2	HA966N	C.101	HDA014Z	C.12	HDA160U	C.12	HHA048Z	C.12
GZ104S	A.2	HAB302	C.100	HDA015Z	C.12	HDA160Z	C.12	HHA049Z	C.12
GZ106S	A.2	HAB303	C.100	HDA016Z	C.12	HDA161U	C.12	HHA050Z	C.12
GZ108S	A.2	HAB304	C.100	HDA017Z	C.12	HDA161Z	C.12	HHA051Z	C.12
GZ110S	A.2	HAB306	C.100	HDA018Z	C.12	HEC040U	C.37	HHA061Z	C.12
GZ30A	G.12	HAB402	C.100	HDA019Z	C.12	HEC041U	C.37	HHA062Z	C.12
GZ35A	A.6	HAB403	C.100	HDA020Z	C.12	HEC125U	C.37	HHA063U	C.12
GZ35A	A.8	HAB404	C.100	HDA021Z	C.12	HEC126U	C.37	HHA063Z	C.12
		HAB406	C.100	HDA023Z	C.12	HEC250U	C.37	HHA064U	C.12
H		HAC306	C.100	HDA024Z	C.12	HEC251U	C.37	HHA064Z	C.12
HA308	C.101	HAC308	C.100	HDA025U	C.12	HED400U	C.50	HHA078Z	C.12
HA351	C.104	HAC310	C.100	HDA025Z	C.12	HED401U	C.50	HHA079Z	C.12
HA352	C.104	HAC406	C.100	HDA026U	C.12	HED630U	C.50	HHA080U	C.12
HA353	C.104	HAC408	C.100	HDA026Z	C.12	HED631U	C.50	HHA080Z	C.12
HA354	C.104	HAC410	C.100	HDA030Z	C.12	HEE800U	C.66	HHA081U	C.12
HA357	C.104	HAD310	C.100	HDA031Z	C.12	HEE801U	C.66	HHA081Z	C.12
HA358	C.104	HAD312	C.100	HDA032Z	C.12	HEE970U	C.66	HHA098Z	C.12
HA360	C.104	HAD410	C.100	HDA033Z	C.12	HEE971U	C.66	HHA099Z	C.12
HA362	C.104	HAD412	C.100	HDA038Z	C.12	HEF980U	C.78	HHA100U	C.12
HA364	C.104	HAE310	C.101	HDA039Z	C.12	HEF981U	C.78	HHA100Z	C.12
HA408	C.101	HAE312	C.101	HDA040U	C.12	HEF990U	C.78	HHA101U	C.12
HA451	C.104	HAE316	C.101	HDA040Z	C.12	HEF991U	C.78	HHA101Z	C.12
HA452	C.104	HAE410	C.101	HDA041U	C.12	HEG050U	C.37	HHA123Z	C.12
HA453	C.104	HAE412	C.101	HDA041Z	C.12	HEG063U	C.37	HHA124Z	C.12
HA454	C.104	HAE416	C.101	HDA048Z	C.12	HEG100U	C.37	HHA125U	C.12
HA457	C.104	HBA125H	C.13	HDA049Z	C.12	HEG125U	C.37	HHA125Z	C.12
HA458	C.104	HBA126H	C.13	HDA050Z	C.12	HEG160U	C.37	HHA126U	C.12
HA460	C.104	HBA127H	C.13	HDA051Z	C.12	HEG200U	C.37	HHA126Z	C.12
HA462	C.104	HBA128H	C.13	HDA061Z	C.12	HEG250U	C.37	HHA159Z	C.12
HA464	C.104	HBA160H	C.13	HDA062Z	C.12	HHA014Z	C.12	HHA160U	C.12
HA7100060	K.6	HBA161H	C.13	HDA063U	C.12	HHA015Z	C.12	HHA160Z	C.12
HA7100080	K.6	HBB161H	C.24	HDA063Z	C.12	HHA016Z	C.12	HHA161U	C.12
HA7100100	K.6	HBB251H	C.24	HDA064U	C.12	HHA017Z	C.12	HHA161Z	C.12
HA725025	K.6	HBD401H	C.50	HDA064Z	C.12	HHA018Z	C.12	HHB100Z	C.24
HA725040	K.6	HBD631H	C.50	HDA078Z	C.12	HHA019Z	C.12	HHB101Z	C.24
HA740025	K.6	HCA125Z	C.13	HDA079Z	C.12	HHA020Z	C.12	HHB125Z	C.24
HA740040	K.6	HCA126Z	C.13	HDA080U	C.12	HHA021Z	C.12	HHB126Z	C.24
HA740060	K.6	HCA160Z	C.13	HDA080Z	C.12	HHA023Z	C.12	HHB160Z	C.24
HA740080	K.6	HCA161Z	C.13	HDA081U	C.12	HHA024Z	C.12	HHB161Z	C.24
HA740100	K.6	HCB250Z	C.24	HDA081Z	C.12	HHA025U	C.12	HHB200Z	C.24
HA760025	K.6	HCB251Z	C.24	HDA098Z	C.12	HHA025Z	C.12	HHB201Z	C.24
HA760040	K.6	HCD400U	C.50	HDA099Z	C.12	HHA026U	C.12	HHB250Z	C.24
HA760060	K.6	HCD401U	C.50	HDA100U	C.12	HHA026Z	C.12	HHB251Z	C.24
HA760080	K.6	HCD630U	C.50	HDA100Z	C.12	HHA030Z	C.12	HHD250U	C.50
HA760100	K.6	HCD631U	C.50	HDA101U	C.12	HHA031Z	C.12	HHD400U	C.50

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HHG032U	C.37	HLE280S	D.16	HMD399	D.17	HMX416	D.15	HNB101Z	C.24
HHG063U	C.37	HLE290S	D.16	HMD480	D.17	HMX420	D.15	HNB125U	C.24
HHG100U	C.37	HLE299S	D.16	HMD490	D.17	HMX425	D.15	HNB125Z	C.24
HHG125U	C.37	HLE380S	D.16	HMD499	D.17	HMX432	D.15	HNB126U	C.24
HHG160U	C.37	HLE390S	D.16	HMJ180	D.18	HMX440	D.15	HNB126Z	C.24
HHG200U	C.37	HLE399S	D.16	HMJ190	D.18	HMX450	D.15	HNB160U	C.24
HHG250U	C.37	HLE480S	D.16	HMJ199	D.18	HMX463	D.15	HNB160Z	C.24
HI405R	C.111	HLE490S	D.16	HMJ280	D.18	HN370503	K.7	HNB161U	C.24
HI406R	C.111	HLE499S	D.16	HMJ290	D.18	HN500503	K.7	HNB161Z	C.24
HI451	C.113	HLF180S	D.16	HMJ299	D.18	HN500753	K.7	HNB200U	C.24
HI452	C.113	HLF190S	D.16	HMJ380	D.18	HN501003	K.7	HNB200Z	C.24
HI454	C.113	HLF199S	D.16	HMJ390	D.18	HN501253	K.7	HNB201U	C.24
HI456	C.113	HLF280S	D.16	HMJ399	D.18	HN750503	K.7	HNB201Z	C.24
HI458	C.113	HLF290S	D.16	HMJ480	D.18	HN750753	K.7	HNB250U	C.24
HI460	C.113	HLF299S	D.16	HMJ490	D.18	HN751003	K.7	HNB250Z	C.24
HI462	C.113	HLF380S	D.16	HMJ499	D.18	HN751253	K.7	HNB251U	C.24
HI464	C.113	HLF390S	D.16	HMK180	D.18	HNA016Z	C.13	HNB251Z	C.24
HIB412	C.118	HLF399S	D.16	HMK190	D.18	HNA017Z	C.13	HNC040U	C.37
HIB416	C.118	HLF480S	D.16	HMK199	D.18	HNA020Z	C.13	HNC041U	C.37
HIB425	C.118	HLF490S	D.16	HMK280	D.18	HNA021Z	C.13	HNC125U	C.37
HIB440	C.118	HLF499S	D.16	HMK290	D.18	HNA025U	C.13	HNC126U	C.37
HIB463	C.118	HMB180	D.17	HMK299	D.18	HNA025Z	C.13	HNC250U	C.37
HIB480	C.118	HMB190	D.17	HMK380	D.18	HNA026U	C.13	HNC251U	C.37
HIB490	C.118	HMB199	D.17	HMK390	D.18	HNA026Z	C.13	HND250U	C.50
HIB491	C.118	HMB280	D.17	HMK399	D.18	HNA040U	C.13	HND251U	C.50
HIB492	C.118	HMB290	D.17	HMK480	D.18	HNA040Z	C.13	HND400H	C.50
HIC402A	C.116	HMB299	D.17	HMK490	D.18	HNA041U	C.13	HND400U	C.50
HIC404A	C.116	HMB380	D.17	HMK499	D.18	HNA041Z	C.13	HND401H	C.50
HIC406A	C.116	HMB390	D.17	HMX110	D.15	HNA050Z	C.13	HND401U	C.50
HIC408A	C.116	HMB399	D.17	HMX116	D.15	HNA051Z	C.13	HND630U	C.50
HIC410A	C.116	HMB480	D.17	HMX120	D.15	HNA063U	C.13	HND631U	C.50
HIC412	C.118	HMB490	D.17	HMX125	D.15	HNA063Z	C.13	HNE630U	C.66
HIC412A	C.116	HMB499	D.17	HMX132	D.15	HNA064U	C.13	HNE631U	C.66
HIC416	C.118	HMC180	D.17	HMX140	D.15	HNA064Z	C.13	HNE800U	C.66
HIC416A	C.116	HMC190	D.17	HMX150	D.15	HNA080U	C.13	HNE801U	C.66
HIC425	C.118	HMC199	D.17	HMX163	D.15	HNA080Z	C.13	HNE970U	C.66
HIC440	C.118	HMC280	D.17	HMX210	D.15	HNA081U	C.13	HNE971U	C.66
HIC463	C.118	HMC290	D.17	HMX216	D.15	HNA081Z	C.13	HNH980U	C.78
HIC480	C.118	HMC299	D.17	HMX220	D.15	HNA100U	C.13	HNH981U	C.78
HIC490	C.118	HMC380	D.17	HMX225	D.15	HNA100Z	C.13	HNH990U	C.78
HIC491	C.118	HMC390	D.17	HMX232	D.15	HNA101U	C.13	HNH991U	C.78
HIC492	C.118	HMC399	D.17	HMX240	D.15	HNA101Z	C.13	HNG020U	C.37
HIM302	C.111	HMC480	D.17	HMX250	D.15	HNA125U	C.13	HNG032U	C.37
HIM304	C.111	HMC490	D.17	HMX263	D.15	HNA125Z	C.13	HNG063U	C.37
HIM306	C.111	HMC499	D.17	HMX310	D.15	HNA126U	C.13	HNG100U	C.37
HIM308	C.111	HMD180	D.17	HMX316	D.15	HNA126Z	C.13	HNG125U	C.37
HIM402	C.111	HMD190	D.17	HMX320	D.15	HNA160U	C.13	HNG160U	C.37
HIM404	C.111	HMD199	D.17	HMX325	D.15	HNA160Z	C.13	HNG200U	C.37
HIM406	C.111	HMD280	D.17	HMX332	D.15	HNA161U	C.13	HNG250250	K.7
HIM408	C.111	HMD290	D.17	HMX340	D.15	HNA161Z	C.13	HNG250U	C.37
HLE180S	D.16	HMD299	D.17	HMX350	D.15	HNB100U	C.24	HNG370250	K.7
HLE190S	D.16	HMD380	D.17	HMX363	D.15	HNB100Z	C.24	HNG370370	K.7
HLE199S	D.16	HMD390	D.17	HMX410	D.15	HNB101U	C.24	HNG370500	K.7

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HNG500250	K.7	HXA025H	C.25	HXC021H	C.79	HXF030H	C.79	HYB027H	C.26
HNG500370	K.7	HXA025H	C.38	HXC024H	C.38	HXF031H	C.79	HYB028H	C.26
HNG500500	K.7	HXA026H	C.14	HXC024H	C.51	HXF039H	C.79	HYB031H	C.26
HNG501000	K.7	HXA026H	C.25	HXC024H	C.67	HXF040H	C.79	HYB032H	C.26
HNG501250	K.7	HXA026H	C.38	HXC024H	C.79	HXF042H	C.79	HYB092H	C.26
HNG750370	K.7	HXA030H	C.15	HXC025H	C.51	HXF051H	C.79	HYB094H	C.26
HNG750500	K.7	HXA031H	C.15	HXC025H	C.67	HXF051H	C.79	HYC003H	C.39
HNG750750	K.7	HXA039H	C.15	HXC025H	C.79	HXF053H	C.79	HYC004H	C.39
HNG751000	K.7	HXA039H	C.25	HXC026H	C.51	HXF054H	C.79	HYC010H	C.39
HNG751250	K.7	HXA051H	C.14	HXC026H	C.67	HXF055H	C.79	HYC011H	C.39
HR500	C.107	HXA051H	C.25	HXC026H	C.79	HYA005H	C.15	HYC012H	C.39
HR502	C.107	HXA053H	C.14	HXC030H	C.38	HYA006H	C.15	HYC021H	C.39
HR510	C.107	HXA053H	C.25	HXC031H	C.38	HYA013H	C.15	HYC022H	C.39
HR520	C.107	HXA054H	C.14	HXC039H	C.39	HYA014H	C.15	HYC025H	C.39
HR522	C.107	HXA054H	C.25	HXC040H	C.39	HYA015H	C.15	HYC026H	C.39
HR523	C.107	HXA055H	C.14	HXC042H	C.39	HYA019H	C.15	HYC027H	C.39
HR525	C.107	HXA055H	C.25	HXC051H	C.38	HYA021H	C.15	HYC028H	C.39
HR534	C.107	HXB030H	C.25	HXC051H	C.51	HYA022H	C.15	HYC031H	C.39
HR700	C.107	HXB031H	C.25	HXC053H	C.38	HYA023H	C.15	HYC032H	C.39
HR741	C.107	HXB040H	C.25	HXC053H	C.51	HYA024H	C.15	HYD003H	C.52
HR742	C.107	HXB042H	C.25	HXC054H	C.38	HYA027H	C.15	HYD004H	C.52
HR743	C.107	HXB065H	C.26	HXC054H	C.51	HYA028H	C.15	HYD005H	C.52
HR744	C.107	HXC001H	C.38	HXC055H	C.38	HYA033H	C.15	HYD006H	C.52
HR745	C.107	HXC001H	C.51	HXC055H	C.51	HYA035H	C.15	HYD007H	C.52
HR822	C.107	HXC001H	C.67	HXC065H	C.39	HYA035H	C.26	HYD008H	C.52
HR823	C.107	HXC001H	C.79	HXD030H	C.51	HYA035H	C.39	HYD010H	C.52
HR824	C.107	HXC002H	C.38	HXD031H	C.51	HYA035H	C.52	HYD011H	C.52
HR830	C.107	HXC002H	C.51	HXD039H	C.51	HYA035H	C.68	HYD012H	C.52
HR831	C.107	HXC002H	C.67	HXD039H	C.68	HYA035H	C.79	HYD013H	C.52
HR832	C.107	HXC002H	C.79	HXD040H	C.52	HYA036H	C.15	HYD014H	C.52
HXA001H	C.14	HXC003H	C.38	HXD042H	C.52	HYA086H	C.15	HYD015H	C.52
HXA001H	C.25	HXC003H	C.51	HXD051H	C.51	HYA087H	C.15	HYD021H	C.52
HXA002H	C.14	HXC003H	C.67	HXD053H	C.51	HYA088H	C.15	HYD022H	C.52
HXA002H	C.25	HXC003H	C.79	HXD054H	C.51	HYA088H	C.26	HYD023H	C.52
HXA003H	C.14	HXC004H	C.38	HXD055H	C.51	HYA089H	C.15	HYD024H	C.52
HXA003H	C.25	HXC004H	C.51	HXD065H	C.52	HYA089H	C.26	HYD025H	C.52
HXA004H	C.14	HXC004H	C.67	HXE011H	C.67	HYA090H	C.15	HYD026H	C.52
HXA004H	C.25	HXC004H	C.79	HXE011H	C.79	HYA090H	C.26	HYD027H	C.52
HXA005H	C.14	HXC005H	C.38	HXE013H	C.67	HYA091H	C.15	HYD028H	C.52
HXA005H	C.25	HXC005H	C.51	HXE013H	C.79	HYA091H	C.26	HYD031H	C.52
HXA011H	C.14	HXC005H	C.67	HXE014H	C.67	HYB001H	C.26	HYD032H	C.52
HXA011H	C.25	HXC005H	C.79	HXE014H	C.79	HYB002H	C.26	HYD033H	C.52
HXA013H	C.14	HXC011H	C.38	HXE015H	C.67	HYB010H	C.26	HYD034H	C.52
HXA013H	C.25	HXC011H	C.51	HXE015H	C.79	HYB011H	C.26	HYD093H	C.52
HXA014H	C.14	HXC013H	C.38	HXE030H	C.68	HYB012H	C.26	HYD095H	C.52
HXA014H	C.25	HXC013H	C.51	HXE031H	C.68	HYB019H	C.15	HYD096H	C.52
HXA015H	C.14	HXC014H	C.38	HXE040H	C.68	HYB019H	C.26	HYD097H	C.52
HXA015H	C.25	HXC014H	C.51	HXE042H	C.68	HYB021H	C.26	HYD098H	C.52
HXA021H	C.14	HXC015H	C.38	HXE051H	C.68	HYB022H	C.26	HYE007H	C.68
HXA021H	C.25	HXC015H	C.51	HXE053H	C.68	HYB023H	C.26	HYE008H	C.68
HXA024H	C.14	HXC021H	C.38	HXE054H	C.68	HYB024H	C.26	HYE021H	C.68
HXA024H	C.25	HXC021H	C.51	HXE055H	C.68	HYB025H	C.26	HYE022H	C.68
HXA025H	C.14	HXC021H	C.67	HXE065H	C.68	HYB026H	C.26	HYE025H	C.68

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HYE026H	C.68	HZ163M	C.113	HZC213	C.100	JAE320	B.32	JG263IN	L.45
HYE031H	C.68	HZ164	C.118	HZC213	C.111	JAE325	B.32	JG263U	L.45
HYE032H	C.68	HZ164M	C.113	HZC214	C.100	JAE420	B.32	JG320IN	L.45
HYE033H	C.68	HZC001	C.101	HZC214	C.111	JAE425	B.32	JG320U	L.45
HYE034H	C.68	HZC002	C.104	HZC215	C.100	JAG331	B.32	JG332IN	L.45
HYF019H	C.79	HZC003	C.104	HZC216	C.100	JAG340	B.32	JG332U	L.45
HYG021H	C.39	HZC010	C.100	HZC217	C.101	JAG431	B.32	JG340IN	L.45
HYG022H	C.39	HZC011	C.100	HZC218	C.101	JAG440	B.32	JG340U	L.45
HZ021	B.32	HZC014	C.101	HZC218	C.116	JAH363	B.32	JG420IN	L.45
HZ022	C.101	HZC016	C.111	HZC311	C.100	JAH380	B.32	JG420U	L.45
HZ022	B.32	HZC101	C.104	HZC311	C.111	JAH390	B.32	JG432IN	L.45
HZ023	C.104	HZC101	C.113	HZC312	C.100	JAH392	B.32	JG432U	L.45
HZ023	B.32	HZC102	C.104	HZC312	C.111	JAH463	B.32	JG440IN	L.45
HZ025	B.32	HZC102	C.113	HZF201	B.30	JAH480	B.32	JG440U	L.45
HZ033	C.104	HZC103	C.101	HZF202	B.30	JAH490	B.32	JG463IN	L.45
HZ034	C.104	HZC103	C.111	HZF203	B.30	JAH492	B.32	JG463U	L.45
HZ035	C.104	HZC104	C.101	HZF204	B.30	JE001	B.82	JK01FK	B.6
HZ036	C.104	HZC104	C.111	HZF205	B.30	JE003	B.82	JK01SK	B.6
HZ036	B.32	HZC105	C.104	HZF206	B.30	JE003	B.106	JK160S	B.16
HZ037	C.104	HZC105	C.113	HZF207	B.30	JFB202U	B.30	JK1B022F1	B.10
HZ037	B.32	HZC106	C.104	HZF301	B.30	JFB203U	B.30	JK1B022S1	B.10
HZ043	C.104	HZC106	C.113	HZF302	B.30	JFB302U	B.30	JK1B042F1	B.10
HZ044	C.104	HZC111	C.100	HZI002	C.113	JFB303U	B.30	JK1B042S1	B.10
HZ045	C.104	HZC111	C.111	HZI003	C.113	JFB402U	B.30	JK1B044F1	B.10
HZ046	C.104	HZC112	C.100	HZI004	C.111	JFB403U	B.30	JK1B044S1	B.10
HZ046	B.32	HZC112	C.111	HZI201	C.118	JFD206U	B.30	JK1B04F1	B.10
HZ047	C.104	HZC113	C.100	HZI202	C.118	JFD306U	B.30	JK1B04S1	B.10
HZ047	B.32	HZC113	C.111	HZI203	C.118	JFD406U	B.30	JK1B062F1	B.10
HZ062	C.101	HZC114	C.101	HZI204	C.118	JFE210U	B.30	JK1B062S1	B.10
HZ062	C.111	HZC115	C.101	HZI205	C.118	JFE310U	B.30	JK1B064F1	B.10
HZ082	C.101	HZC116	C.101	HZI210	C.116	JFE410U	B.30	JK1B064S1	B.10
HZ082	C.111	HZC201	C.104	HZI230	C.116	JFG312U	B.30	JK1B066F1	B.10
HZ092	C.111	HZC201	B.32	HZI300	C.116	JFG316U	B.30	JK1B066S1	B.10
HZ093	C.101	HZC202	C.104	HZI400	C.116	JFG320U	B.30	JK1B06F1	B.10
HZ095	C.101	HZC202	C.113	HZI401	C.116	JFG325U	B.30	JK1B06S1	B.10
HZ096	C.101	HZC202	C.118	HZI811	C.118	JFG412U	B.30	JK1B082F1	B.10
HZ156	C.113	HZC202	B.32	HZI812	C.118	JFG416U	B.30	JK1B082S1	B.10
HZ156	C.118	HZC203	C.104	HZI910	C.118	JFG420U	B.30	JK1B084F1	B.10
HZ156R	C.111	HZC203	B.32	HZI911	C.118	JFG425U	B.30	JK1B084S1	B.10
HZ156R	C.113	HZC204	C.104			JFH331U	B.30	JK1B086F1	B.10
HZ157	C.113	HZC204	C.113	J		JFH340U	B.30	JK1B086S1	B.10
HZ157	C.118	HZC204	C.118	JAB302	B.32	JFH431U	B.30	JK1B088F1	B.10
HZ158	C.113	HZC204	B.32	JAB303	B.32	JFH440U	B.30	JK1B088S1	B.10
HZ158	C.118	HZC205	C.104	JAB306	B.32	JFI363U	B.30	JK1B08F1	B.10
HZ159	C.113	HZC205	B.32	JAB310	B.32	JFI380U	B.30	JK1B08S1	B.10
HZ159	C.118	HZC206	C.104	JAB402	B.32	JFI463U	B.30	JK1B104F1	B.10
HZ160	C.113	HZC206	C.113	JAB403	B.32	JFI480U	B.30	JK1B104S1	B.10
HZ160M	C.113	HZC206	C.118	JAB406	B.32	JG220IN	L.45	JK1B10F1	B.10
HZ160R	C.111	HZC206	B.32	JAB410	B.32	JG220U	L.45	JK1B10S1	B.10
HZ161M	C.113	HZC211	C.100	JAC312	B.32	JG232IN	L.45		
HZ162	C.118	HZC211	C.111	JAC316	B.32	JG232U	L.45		
HZ162M	C.113	HZC212	C.100	JAC412	B.32	JG240IN	L.45		
HZ163	C.118	HZC212	C.111	JAC416	B.32	JG240U	L.45		

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J		J		J		J		K	
JK1B12F1	B.10	JK2B08F1	B.16	JN2XBSP	B.26	JN8L8003MH	B.26	K895	G.8
JK1B12S1	B.10	JK2B08S1	B.16	JN4B00004S1	B.23	JP001	A.6	KB163N	G.2
JK1B14F1	B.10	JK2B10F1	B.16	JN4B00006S1	B.23	JP004	A.54	KB163P	G.2
JK1B14S1	B.10	JK2B10S1	B.16	JN4B00008S1	B.23	JZA700	B.32	KB190B	G.2
JK1B16F1	B.10	JK2B12F1	B.16	JN4B00010S1	B.23	JZA701	B.30	KB190C	G.2
JK1B16S1	B.10	JK2B12S1	B.16	JN4B00012S1	B.23	JZA701	B.32	KB263A	G.2
JK1B18F1	B.10	JK2B14F1	B.16	JN4B00016S1	B.23	JZA702	B.30	KB263C	G.2
JK1B18S1	B.10	JK2B14S1	B.16	JN4B00202S1	B.23	JZA702	B.32	KB280B	G.2
JK1B24F1	B.10	JK2B16F1	B.16	JN4B00204S1	B.23	JZA703	B.30	KB363A	G.2
JK1B24S1	B.10	JK2B16S1	B.16	JN4B00206S1	B.23			KB363A	G.2
JK1E01F	B.11	JK2B18F1	B.16	JN4B00208S1	B.23	K		KB363C	G.2
JK1E01S	B.11	JK2B18S1	B.16	JN4B00210S1	B.23	K010	G.6	KB363C	G.2
JK1E16F	B.11	JK2B24F1	B.16	JN4B00214S1	B.23	K018	G.6	KB380B	G.2
JK1E16S	B.11	JK2B24S1	B.16	JN4E01S	B.23	K023	G.6	KB480B	G.2
JK1E32F	B.11	JK2E01F	B.17	JN4E24S	B.23	K024	G.6	KD190B	G.3
JK1E32S	B.11	JK2E01S	B.17	JN4L4003D	B.23	K025	G.6	KDN263B	G.3
JK1E48F	B.11	JK2E16F	B.17	JN4L4003EB	B.23	K037	G.6	KDN363B	G.3
JK1E48S	B.11	JK2E16S	B.17	JN4L4003MH	B.23	K070	B.83	KDN463B	G.3
JK1L1003SM	B.11	JK2E32F	B.17	JN4XBTP	B.23	K071	B.83	KF82A	G.3
JK1L1003SMSL	B.11	JK2E32S	B.17	JN4XBTP	B.26	K073	B.83	KF83A	G.3
JK1L1004SM	B.11	JK2E48F	B.17	JN8B00004S1	B.26	K074	B.83	KF83B	G.3
JK1L1004SMSL	B.11	JK2E48S	B.17	JN8B00006S1	B.26	K085	G.6	KF83C	G.3
JK1L1253MM	B.11	JK2L1603MH	B.16	JN8B00008S1	B.26	K098	G.15	KF83D	G.3
JK1L1254MM	B.11	JK2L1603SK	B.16	JN8B00010S1	B.26	K099	G.15	KF84A	G.3
JK1XBSP	B.11	JK2L1604MH	B.16	JN8B00012S1	B.26	K106	G.15	KJ01A	A.54
JK1XBSP	B.17	JK2L2503D	B.16	JN8B00016S1	B.26	K110	G.15	KJ01A	G.4
JK1XGPF	B.11	JK2L2503MH	B.16	JN8B00202S1	B.26	K116	G.15	KJ01AN	G.4
JK1XGPS	B.11	JK2L2503SK	B.16	JN8B00204S1	B.26	K125	G.15	KJ01B	A.54
JK1XISF0	B.11	JK2L2504D	B.11	JN8B00206S1	B.26	K135	G.15	KJ01B	G.4
JK1XISF3	B.11	JK2L2504MH	B.16	JN8B00208S1	B.26	K140	G.10	KJ01BN	G.4
JK1XISS11	B.11	JK2XBMH1	B.17	JN8B00210S1	B.26	K142	G.10	KJ01C	A.54
JK1XISS13	B.11	JK2XBMH2	B.17	JN8B00214S1	B.26	K143	G.10	KJ01C	G.4
JK1XISS7	B.11	JK2XBSK1	B.17	JN8B00400S1	B.26	K144	G.10	KJ01CN	G.4
JK1XJKEF	B.11	JK2XBSK2	B.17	JN8B00402S1	B.26	K145	G.10	KJ01D	A.54
JK1XJKES	B.11	JK2XGPF	B.17	JN8B00404S1	B.26	K148	G.10	KJ01D	G.4
JK1XKLS	B.11	JK2XGPS	B.17	JN8B00406S1	B.26	K151	G.10	KJ02A	A.54
JK1XKLS	B.17	JK2XJKEF	B.17	JN8B00408S1	B.26	K156	G.10	KJ02A	G.4
JK1XKLS	B.20	JK2XJKES	B.17	JN8B00410S1	B.26	K158	G.10	KJ02A	B.78
JK1XKLS	B.23	JN2B00002S1	B.20	JN8B00600S1	B.26	K159	G.10	KJ02B	A.54
JK1XKLS	B.26	JN2B00004S1	B.20	JN8B00606S1	B.26	K160	G.10	KJ02B	G.4
JK1XNC	B.11	JN2B00006S1	B.20	JN8B00608S1	B.26	K162	G.10	KJ02B	B.78
JK1XNC	B.17	JN2B00008S1	B.20	JN8B00800S1	B.26	K206	G.15	KJ02C	A.54
JK1XSNT	B.11	JN2B00010S1	B.20	JN8B01000S1	B.26	K210	G.15	KJ02C	G.4
JK1XSNT	B.17	JN2B00012S1	B.20	JN8B01200S1	B.26	K2150	G.15	KJ02C	B.78
JK1XSNT	B.11	JN2B00016S1	B.20	JN8B01600S1	B.26	K216	G.15	KJ02D	A.54
JK1XSNT	B.17	JN2E01S	B.20	JN8E01S	B.26	K225	G.15	KJ02D	G.4
JK200S	B.16	JN2E20S	B.20	JN8E32S	B.23	K235	G.15	KJ02D	B.78
JK250S	B.16	JN2L2503D	B.20	JN8E32S	B.26	K270	G.15	KJ02E	G.4
JK250S	B.20	JN2L2503MH	B.20	JN8L6303D	B.26	K890	G.8	KJ03A	G.5
JK2B04F1	B.16	JN2L2503SK	B.20	JN8L6303EB	B.26	K891	G.8		
JK2B04S1	B.16	JN2L2504MH	B.20	JN8L6303MH	B.26	K892	G.8		
JK2B06F1	B.16	JN2XBSP	B.20	JN8L8003D	B.26	K893	G.8		
JK2B06S1	B.16	JN2XBSP	B.23	JN8L8003EB	B.26	K894	G.8		

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K		K		K		L		L	
KJ03A	B.78	KN18E	G.12	KZ002	G.5	L27799010	H.8	L43829010	J.4
KJ03B	G.5	KN18N	A.34	KZ002	B.78	L27809010	H.8	L43839010	J.5
KJ03B	B.78	KN18N	G.12	KZ004	G.5	L4180VERZ	I.27	L43849010	J.4
KM04L	G.10	KN18P	A.34	KZ004	B.78	L4181GNGE	I.27	L43889010	J.5
KM05B	A.34	KN18P	G.12	KZ005	G.5	L4181GNGE	J.7	L4389	J.6
KM07E	G.10	KN22E	A.34	KZ005	B.78	L4181GNGE	J.22	L43919010	J.4
KM07L	G.10	KN22E	G.12	KZ007	G.5	L4181GNGE	J.23	L43919010	J.6
KM08L	G.10	KN22N	A.34	KZ007	B.78	L4182GNGE	I.27	L4391ALU	J.6
KM10A	G.10	KN22N	G.12	KZ012	G.10	L4182GNGE	J.7	L43929010	J.4
KM10B	G.10	KN22P	A.34	KZ013	G.10	L4182GNGE	J.22	L43929010	J.6
KM10C	G.10	KN22P	G.12	KZ014	G.10	L4182GNGE	J.23	L4392ALU	J.6
KM10E	G.10	KN26E	A.34	KZ021	G.2	L4183GNGE	I.27	L43939010	J.5
KM10L	G.10	KN26E	G.12	KZ022	G.2	L4183GNGE	J.7	L43939010	J.7
KM10N	G.10	KN26N	A.34	KZ023A	G.2	L4183GNGE	J.22	L4393ALU	J.7
KM11B	G.10	KN26N	G.12	KZ024	G.2	L4183GNGE	J.23	L43949010	J.4
KM11E	G.10	KN26P	A.34	KZ051	G.5	L4187	J.6	L43989010	J.5
KM11L	G.10	KN26P	G.12	KZ051	B.78	L4187CHRO	I.27	L43989010	J.7
KM11N	G.10	KN99E	G.12	KZ052	G.5	L4187CHRO	J.22	L4398ALU	J.7
KM13A	A.34	KN99N	G.12	KZ052	B.78	L4187CHRO	J.23	L44119010	J.4
KM13E	G.10	KN99P	G.12	KZ059	G.2	L4188VERZ	J.47	L44129010	J.4
KM13N	G.10	KR15P	G.6	KZ060F	G.11	L4253BCHR	J.22	L44139010	J.5
KM17E	G.10	KR95P	G.6	KZ074	G.5	L4253BCHR	J.23	L44149010	J.4
KM17N	G.10	KS72B	B.77	KZ074	B.78	L43119010	J.5	L44189010	J.5
KM22A	A.34	KS72C	B.77	KZ075	G.5	L43419010	J.4	L44339010	J.5
KM25A	A.34	KW001	G.7	KZ075	B.78	L43419010	J.6	L44339010	J.7
KM25E	G.10	KW002	G.7			L4341ALU	J.6	L4433ALU	J.7
KM25N	G.10	KW003	G.7	L		L43429010	J.4	L44609010	J.5
KN00A	A.38	KW025	G.7	L1840	J.43	L43429010	J.6	L44629010	J.5
KN00A	A.41	KW026	G.7	L19067035	J.47	L4342ALU	J.6	L44639010	J.5
KN00A	G.12	KW031	G.7	L19087035	J.47	L43439010	J.5	L44649010	J.5
KN04N	G.12	KW033	G.7	L19107035	J.47	L43439010	J.7	L44659010	J.5
KN04P	G.12	KW034	G.7	L19127035	J.47	L4343ALU	J.7	L44669010	J.5
KN06E	A.34	KW035	G.7	L20627035	J.47	L43459010	J.4	L4467	J.7
KN06E	G.12	KW036	G.7	L2212	K.8	L43479010	J.5	L44719010	J.4
KN06N	A.34	KW037	G.7	L2222	K.8	L43489010	J.5	L44719010	J.6
KN06N	G.12	KX04F	G.7	L2232	K.8	L43489010	J.7	L4471ALU	J.6
KN06P	A.34	KX04H	G.7	L2242	K.8	L4348ALU	J.7	L44729010	J.4
KN06P	G.12	KX04N	G.7	L27339010	I.27	L43519010	J.5	L44729010	J.6
KN07N	G.12	KX06F	G.7	L2733UNLA	I.27	L43529010	J.5	L4472ALU	J.6
KN07P	G.12	KX06H	G.7	L27519010	I.26	L43549010	J.5	L44739010	J.5
KN10E	A.34	KX06N	G.7	L2751VERZ	I.26	L43559010	J.5	L44739010	J.7
KN10E	G.12	KX16F	G.7	L27529010	I.26	L43569010	J.5	L4473ALU	J.7
KN10N	A.34	KX16H	G.7	L2752VERZ	I.26	L43569010	J.5	L44779010	J.5
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KN10P	A.34	KX25F	G.7	L2753UNLA	I.27	L43599010	J.5	L44789010	J.7
KN10P	G.12	KX25H	G.7	L27559010	I.26	L43619010	J.4	L4478ALU	J.7
KN14E	A.34	KX25N	G.7	L2755VERZ	I.26	L43629010	J.4	L4770	I.11
KN14E	G.12	KX50F	G.7	L27569010	I.27	L43639010	J.5	L4770	J.6
KN14N	A.34	KX50H	G.7	L2756VERZ	I.27	L43649010	J.4	L4770	J.43
KN14N	G.12	KX50N	G.7	L27719010	H.8	L43689010	J.5	L4770	J.44
KN14P	A.34	KX70F	G.7	L27729010	H.8	L4369	J.4	L4770	J.45
KN14P	G.12	KZ001	G.5	L27739010	H.8	L4369	J.6	L501PV	D.39
KN18E	A.34	KZ001	B.78	L27749010	H.8	L43819010	J.4	L502PV	D.39

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L5067	K.9	L6821VERZ	I.30	L6958VERZ	I.33	LF304M	D.37	LF532M	D.37
L5085	K.9	L6822VERZ	I.30	L6959	I.33	LF304PV	D.39	LF540G	D.35
L5106	J.75	L6823VERZ	I.31	L6960VERZ	I.33	LF306G	D.35	LF540M	D.37
L5111	I.16	L6825VERZ	I.31	L6961VERZ	I.32	LF306M	D.37	LF550G	D.35
L5123	K.9	L6826VERZ	I.31	L6962VERZ	I.32	LF306PV	D.39	LF550M	D.37
L5262	K.9	L6828VERZ	I.31	L6963VERZ	I.33	LF308G	D.35	LF563G	D.35
L5263	K.9	L6829	I.31	L6965VERZ	I.33	LF308M	D.37	LF563M	D.37
L5264	K.9	L6850VERZ	I.31	L6966VERZ	I.33	LF308PV	D.39	LF580G	D.35
L5412	J.19	L6851VERZ	I.30	L6968VERZ	I.33	LF310G	D.35	LF580M	D.37
L5561	I.16	L6852VERZ	I.30	L6969	I.33	LF310M	D.37	LF590G	D.35
L5561	I.17	L6853VERZ	I.31	L6970VERZ	I.33	LF310PV	D.39	LF590M	D.37
L5561	H.12	L6855VERZ	I.31	L6971VERZ	I.32	LF312G	D.35	LF599G	D.35
L5561	K.9	L6856VERZ	I.31	L6972VERZ	I.32	LF312M	D.37	LF599M	D.37
L5562	I.16	L6858VERZ	I.31	L6973VERZ	I.33	LF312PV	D.39	LFC100159010A	I.18
L5562	I.17	L6858VERZ	I.31	L6975VERZ	I.33	LF316G	D.35	LFF2003508014	I.4
L5562	H.12	L6859	I.31	L6976VERZ	I.33	LF316M	D.37	LFF2003509010	I.4
L5732	I.31	L6860VERZ	I.31	L6978VERZ	I.33	LF316PV	D.39	LFF2003608014	I.4
L5732VERZ	I.33	L6861VERZ	I.30	L6979	I.33	LF320G	D.35	LFF2003609010	I.4
L5733	I.31	L6862VERZ	I.30	L7109	I.29	LF320M	D.37	LFF3003007030	I.4
L5733VERZ	I.33	L6863VERZ	I.31	L8034ELN	J.19	LF320PV	D.39	LFF3003009010	I.4
L5734	I.31	L6865VERZ	I.31	L8081ELN	J.18	LF325G	D.35	LFF3004507030	I.4
L5734VERZ	I.33	L6866VERZ	I.31	L8082ELN	J.19	LF325M	D.37	LFF3004509010	I.4
L5735	I.31	L6869	I.31	L8085ELN	J.19	LF332G	D.35	LFF3006007030	I.4
L5735VERZ	I.33	L6870VERZ	I.31	L87617030	I.12	LF332M	D.37	LFF3006009010	I.4
L5802	J.7	L6871VERZ	I.30	L87619010	I.12	LF402G	D.35	LFF300637030	I.4
L5802	J.22	L6872VERZ	I.30	L87627030	I.13	LF402M	D.37	LFF300639010	I.4
L5804	I.16	L6873VERZ	I.31	L87629010	I.13	LF404G	D.35	LFF300647030	I.4
L6490	K.9	L6875VERZ	I.31	L87657030	I.13	LF404M	D.37	LFF30064901	I.4
L6532ELN	J.19	L6876VERZ	I.31	L87659010	I.13	LF406G	D.35	LFF300657030	I.5
L6533ELN	J.19	L6878VERZ	I.31	L96817030	I.12	LF406M	D.37	LFF300659010	I.5
L6534ELN	J.19	L6879	I.31	L96819010	I.12	LF408G	D.35	LFF4004007030	I.6
L6565	I.16	L6910VERZ	I.33	L96827030	I.13	LF408M	D.37	LFF4004009010	I.6
L6565	I.33	L6911VERZ	I.32	L96829010	I.13	LF410G	D.35	LFF4006007030	I.6
L6632	I.30	L6912VERZ	I.32	L96857030	I.13	LF410M	D.37	LFF4006009010	I.6
L6632	I.32	L6913VERZ	I.33	L96859010	I.13	LF412G	D.35	LFF400637030	I.7
L6633	I.30	L6915VERZ	I.33	LF1001008014	I.4	LF412M	D.37	LFF400639010	I.7
L6633	I.32	L6916VERZ	I.33	LF1001009010	I.4	LF416G	D.35	LFF400647030	I.6
L6664VERZ	I.30	L6918VERZ	I.33	LF1001009010	I.18	LF416M	D.37	LFF400649010	I.6
L6664VERZ	I.32	L6919	I.33	LF1501508014	I.4	LF420G	D.35	LFF400657030	I.7
L6665VERZ	I.30	L6920VERZ	I.33	LF1501509010	I.4	LF420M	D.37	LFF400659010	I.7
L6665VERZ	I.32	L6921VERZ	I.32	LF1501509010A	I.18	LF425G	D.35	LFF4009007030	I.6
L6681GCHR	I.30	L6922VERZ	I.32	LF2002008014	I.4	LF425M	D.37	LFF4009007030	I.10
L6682	I.31	L6923VERZ	I.33	LF2002009010	I.4	LF432G	D.35	LFF4009009010	I.6
L6683	I.31	L6925VERZ	I.33	LF2002009010A	I.18	LF440G	D.35	LFF4009009010	I.10
L6810VERZ	I.31	L6926VERZ	I.33	LF300G	D.35	LF445G	D.35	LFF400937030	I.7
L6811VERZ	I.30	L6928VERZ	I.33	LF300M	D.37	LF450G	D.35	LFF400937030	I.10
L6812VERZ	I.30	L6929	I.33	LF301G	D.35	LF516G	D.35	LFF400939010	I.7
L6813VERZ	I.31	L6950VERZ	I.33	LF301M	D.37	LF516M	D.37	LFF400939010	I.10
L6815VERZ	I.31	L6951VERZ	I.32	LF302G	D.35	LF520G	D.35	LFF400947030	I.10
L6816VERZ	I.31	L6952VERZ	I.32	LF302M	D.37	LF520M	D.37	LFF400949010	I.6
L6818VERZ	I.31	L6953VERZ	I.33	LF302PV	D.39	LF525G	D.35	LFF400949010	I.10
L6819	I.31	L6955VERZ	I.33	LF303PV	D.39	LF525M	D.37	LFF400957030	I.7
L6820VERZ	I.31	L6956VERZ	I.33	LF304G	D.35	LF532G	D.35	LFF400957030	I.11

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LFF4011007030	1.6	LFF600969010	1.9	LFF71H0909010	1.11	LFR2003509010T2	1.17	LS671	D.33
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LFF401137030	1.7	LFF600979010	1.9	LFF71H110	1.7	LFS3004509010	1.26	LS703	D.33
LFF401137030	1.10	LFF600979010	1.11	LFF71H110	1.9	LFS300450VERZ	1.26	LS704	D.33
LFF401139010	1.7	LFF6011007030	1.8	LFF71H1109010	1.10	LFS4006009010	1.26	LS712	D.33
LFF401139010	1.10	LFF6011007030	1.10	LFF71H1109010	1.10	LFS400600VERZ	1.26	LS770	D.33
LFF401147030	1.6	LFF6011007030	1.12	LFF71H1109010	1.10	LFS6006009010	1.26	LS771	D.33
LFF401147030	1.10	LFF6011009010	1.8	LFF71H1109010	1.11	LFS600600VERZ	1.26	LZ060	N.5
LFF401149010	1.6	LFF6011009010	1.10	LFF71H119	1.9	LFS6010009010	1.26	LZ060	F.3
LFF401149010	1.10	LFF6011009010	1.12	LFF71H1199010	1.7	LFS601000VERZ	1.26		
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LFF600557030	1.9	LFF601147030	1.8	LFF71U110	1.7	LPT02H	J.13	M1614	1.29
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LFF6006009010	1.8	LFF601149010	1.8	LFF71U1109010	1.11	LPT06H	J.13	M16479001	1.18
LFF600637030	1.9	LFF601149010	1.10	LFF71Z110	1.7	LPT08H	J.13	M1647TRAN	1.18
LFF600639010	1.9	LFF601157030	1.9	LFF71Z110	1.9	LPT20H	J.13	M16489001	1.18
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LFF600667030	1.5	LFF601167030	1.7	LFF72BZ1109010	1.6	LPT25	J.13	M1659TRAN	1.18
LFF600667030	1.7	LFF601167030	1.9	LFF72BZ1109010	1.8	LR601	D.33	M16739001	1.18
LFF600667030	1.9	LFF601167030	1.11	LFF79B1	1.6	LR602	D.33	M1673TRAN	1.18
LFF600669010	1.5	LFF601169010	1.7	LFF79B1	1.8	LR603	D.33	M1794	J.39
LFF600669010	1.7	LFF601169010	1.9	LFF79B2	1.6	LR604	D.33	M1831	J.39
LFF600669010	1.9	LFF601169010	1.11	LFF79B2	1.8	LR612	D.33	M2024	1.6
LFF600679010	1.5	LFF601177030	1.11	LFF79H	1.7	LR701	D.33	M2024	1.10
LFF600679010	1.7	LFF601179010	1.7	LFF79H	1.9	LR702	D.33	M2024	J.43
LFF600679010	1.9	LFF601179010	1.9	LFF79H	1.10	LR703	D.33	M2024	J.44
LFF6009007030	1.8	LFF601179010	1.11	LFF79H	J.24	LR704	D.33	M2024	J.45
LFF6009007030	1.10	LFF6015007030	1.8	LFF79H	J.57	LR712	D.33	M2026	1.8
LFF6009009010	1.8	LFF6015009010	1.8	LFF79U	1.7	LS401	D.33	M2026	1.10
LFF6009009010	1.10	LFF6019007030	1.8	LFF79U	1.9	LS402	D.33	M2026	J.16
LFF600937030	1.9	LFF6019009010	1.8	LFF79U	1.11	LS403	D.33	M2026	J.45
LFF600937030	1.10	LFF6023007030	1.8	LFG400600GRAU	1.28	LS404	D.33	M5159	1.16
LFF600939010	1.9	LFF6023009010	1.8	LFG501000GRAU	1.28	LS412	D.33	M5159	K.9
LFF600939010	1.10	LFF60J9010	1.5	LFG501500GRAU	1.28	LS431	D.33	M51592	1.16
LFF600947030	1.8	LFF60J9010	1.7	LFG502000GRAU	1.28	LS501	D.33	M51593	K.9
LFF600947030	1.10	LFF60J9010	1.9	LFG801000GRAU	1.28	LS502	D.33	M5164	1.16
LFF600949010	1.8	LFF60J9010	1.11	LFG802000GRAU	1.28	LS503	D.33	M5164	K.9
LFF600949010	1.10	LFF71B1109010	1.6	LFG803000GRAU	1.28	LS504	D.33	M5280	1.13
LFF600957030	1.9	LFF71B1109010	1.8	LFH2002009010	1.24	LS509	D.33	M5281	1.13
LFF600957030	1.11	LFF71BZ1109010	1.6	LFH3004509010	1.24	LS512	D.33	M5282	1.13
LFF600959010	1.9	LFF71BZ1109010	1.8	LFH4006009010	1.24	LS531	D.33	M5283	1.13
LFF600959010	1.11	LFF71H090	1.7	LFH4006109010	1.24	LS601	D.33	M5284	1.13
LFF600967030	1.7	LFF71H090	1.9	LFH6009009010	1.24	LS602	D.33	M53037030	1.13
LFF600967030	1.9	LFF71H0909010	1.10	LFH6011009010	1.24	LS604	D.33	M53039010	1.13

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M53969010	I.5	M55257030	I.13	M58017030	I.6	M61428014	I.4	M66969010	I.25
M54067030	I.7	M55259010	I.9	M58019010	I.6	M61429010	I.4	M7239	I.5
M54069010	I.7	M55259010	I.13	M58027030	I.7	M61438014	I.5	M7239	I.7
M54167030	I.7	M55267030	I.9	M58029010	I.7	M61439010	I.5	M7239	I.9
M54167030	I.11	M55267030	I.13	M58037030	I.7	M61458014	I.5	M7248	I.7
M54169010	I.7	M55269010	I.9	M58039010	I.7	M61459010	I.5	M7248	I.9
M54169010	I.11	M55269010	I.13	M58057030	I.7	M61468014	I.5	M7248	I.11
M54467030	I.9	M55317030	I.8	M58059010	I.7	M61469010	I.5	M7249	I.7
M54469010	I.9	M55317030	I.12	M58067030	I.7	M61817030	I.4	M7249	I.9
M54567030	I.7	M55319010	I.8	M58069010	I.7	M61819010	I.4	M7249	I.11
M54567030	I.11	M55319010	I.12	M58337030	I.13	M61827030	I.4	M7250	I.9
M54569010	I.7	M55327030	I.9	M58339010	I.13	M61829010	I.4	M7251	I.9
M54569010	I.11	M55327030	I.13	M59017032	I.28	M61837030	I.5	M7252	I.9
M54667030	I.9	M55329010	I.9	M59027032	I.29	M61839010	I.5	MB106A	D.6
M54667030	I.11	M55329010	I.13	M59037032	I.29	M61857030	I.5	MB110A	D.6
M54669010	I.9	M55337030	I.9	M59057032	I.29	M61859010	I.5	MB116A	D.6
M54669010	I.11	M55337030	I.13	M59067032	I.29	M61867030	I.5	MB120A	D.6
M55019010	I.12	M55339010	I.9	M59117032	I.28	M61869010	I.5	MB125A	D.6
M55027030	I.13	M55339010	I.13	M59127032	I.29	M6250	I.29	MB132A	D.6
M55029010	I.13	M55357030	I.9	M59137032	I.29	M6290	I.27	MB140A	D.6
M55037030	I.13	M55357030	I.13	M59157032	I.29	M6291	I.27	MB150A	D.6
M55039010	I.13	M55359010	I.9	M59167032	I.29	M6292	I.27	MB163A	D.6
M55057030	I.13	M55359010	I.13	M59217032	I.28	M6293	I.27	MB206A	D.6
M55059010	I.13	M55367030	I.9	M59227032	I.29	M6311	J.39	MB210A	D.6
M55067030	I.9	M55367030	I.13	M59237032	I.29	M66139010	I.25	MB216A	D.6
M55067030	I.11	M55369010	I.9	M59257032	I.29	M6646	J.39	MB220A	D.6
M55067030	I.13	M55369010	I.13	M59267032	I.29	M66519010	I.24	MB225A	D.6
M55069010	I.9	M55417030	I.8	M59317032	I.28	M66529010	I.24	MB232A	D.6
M55069010	I.11	M55417030	I.12	M59327032	I.29	M66539010	I.25	MB240A	D.6
M55069010	I.13	M55419010	I.8	M59337032	I.29	M66559010	I.25	MB250A	D.6
M55117030	I.12	M55419010	I.12	M59357032	I.29	M66569010	I.25	MB263A	D.6
M55119010	I.12	M55427030	I.9	M59367032	I.29	M6660	I.25	MB306A	D.6
M55127030	I.13	M55427030	I.13	M59617030	I.4	M66619010	I.24	MB310A	D.6
M55129010	I.13	M55429010	I.9	M59619010	I.4	M66629010	I.24	MB316A	D.6
M55137030	I.13	M55429010	I.13	M59627030	I.4	M66639010	I.25	MB320A	D.6
M55139010	I.13	M55437030	I.9	M59629010	I.4	M66659010	I.25	MB325A	D.6
M55157030	I.13	M55437030	I.13	M59637030	I.5	M66669010	I.25	MB332A	D.6
M55159010	I.13	M55439010	I.9	M59639010	I.5	M6670	I.25	MB340A	D.6
M55167030	I.13	M55439010	I.13	M59657030	I.5	M66719010	I.24	MB350A	D.6
M55169010	I.13	M55457030	I.9	M59659010	I.5	M66729010	I.24	MB363A	D.6
M55217030	I.8	M55457030	I.13	M59667030	I.5	M66739010	I.25	MB406A	D.6
M55217030	I.12	M55459010	I.9	M59669010	I.5	M66759010	I.25	MB410A	D.6
M55219010	I.8	M55459010	I.13	M6014	I.29	M66769010	I.25	MB416A	D.6
M55219010	I.12	M55467030	I.9	M6015	I.29	M6680	I.25	MB420A	D.6
M55227030	I.9	M55467030	I.13	M6016	I.29	M66819010	I.24	MB425A	D.6
M55227030	I.13	M55469010	I.9	M6017	I.29	M66829010	I.24	MB432A	D.6
M55229010	I.9	M55469010	I.13	M6019	I.29	M66839010	I.25	MB440A	D.6
M55229010	I.13	M55609010	H.5	M61138014	I.5	M66859010	I.25	MB450A	D.6
M55237030	I.9	M55609010	H.8	M61139010	I.5	M66869010	I.25	MB463A	D.6
M55237030	I.13	M5690	K.8	M61238014	I.5	M66919010	I.24	MBN106A	D.4
M55239010	I.9	M5691	K.8	M61239010	I.5	M66929010	I.24	MBN110A	D.4
M55239010	I.13	M5692	K.8	M61418014	I.4	M66939010	I.25	MBN116A	D.4

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MBN140A	D.4	MC225A	D.6	MCN316A	D.4	MM902	D.10	MU116A	D.5
MBN150A	D.4	MC232A	D.6	MCN320A	D.4	MMN200	D.10	MU120A	D.5
MBN163A	D.4	MC240A	D.6	MCN325A	D.4	MMN201	D.10	MU125A	D.5
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MBN210A	D.4	MC263A	D.6	MCN340A	D.4	MMN203	D.10	MU140A	D.5
MBN216A	D.4	MC300A	D.6	MCN350A	D.4	MMN204	D.10	MU150A	D.5
MBN220A	D.4	MC301A	D.6	MCN363A	D.4	MMN206	D.10	MU163A	D.5
MBN225A	D.4	MC302A	D.6	MCN406A	D.4	MMN210	D.10	MU206A	D.5
MBN232A	D.4	MC303A	D.6	MCN410A	D.4	MMN213	D.10	MU210A	D.5
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MBN250A	D.4	MC306A	D.6	MCN420A	D.4	MMN220	D.10	MU220A	D.5
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MBN316A	D.4	MC325A	D.6	MCN450A	D.4	MMN302	D.10	MU250A	D.5
MBN320A	D.4	MC332A	D.6	MCN463A	D.4	MMN303	D.10	MU263A	D.5
MBN325A	D.4	MC340A	D.6	MHN706	D.2	MMN304	D.10	MU306A	D.5
MBN332A	D.4	MC350A	D.6	MHN710	D.2	MMN306	D.10	MU310A	D.5
MBN340A	D.4	MC363A	D.6	MHN716	D.2	MMN310	D.10	MU316A	D.5
MBN350A	D.4	MC400A	D.6	MHN720	D.2	MMN313	D.10	MU320A	D.5
MBN363A	D.4	MC401A	D.6	MHN725	D.2	MMN316	D.10	MU325A	D.5
MBN406A	D.4	MC402A	D.6	MHN732	D.2	MMN320	D.10	MU332A	D.5
MBN410A	D.4	MC403A	D.6	MHN740	D.2	MMN325	D.10	MU340A	D.5
MBN416A	D.4	MC404A	D.6	MJN702	D.2	MN07N	G.10	MU350A	D.5
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MBN432A	D.4	MC416A	D.6	MJN716	D.2	MT116A	D.5	MU410A	D.5
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MC100A	D.6	MC440A	D.6	MJN740	D.2	MT140A	D.5	MU432A	D.5
MC101A	D.6	MC450A	D.6	MLN702	D.2	MT150A	D.5	MU440A	D.5
MC102A	D.6	MC463A	D.6	MLN706	D.2	MT163A	D.5	MU450A	D.5
MC103A	D.6	MCN106A	D.4	MLN710	D.2	MT206A	D.5	MU463A	D.5
MC104A	D.6	MCN110A	D.4	MLN716	D.2	MT210A	D.5	MV106	D.3
MC106A	D.6	MCN116A	D.4	MLN720	D.2	MT216A	D.5	MV110	D.3
MC110A	D.6	MCN120A	D.4	MLN725	D.2	MT220A	D.5	MV116	D.3
MC116A	D.6	MCN125A	D.4	MLN732	D.2	MT225A	D.5	MV120	D.3
MC120A	D.6	MCN132A	D.4	MLN740	D.2	MT232A	D.5	MV125	D.3
MC125A	D.6	MCN140A	D.4	MM501N	D.11	MT240A	D.5	MV132	D.3
MC132A	D.6	MCN150A	D.4	MM502N	D.11	MT250A	D.5	MV140	D.3
MC140A	D.6	MCN163A	D.4	MM503N	D.11	MT263A	D.5	MV206	D.3
MC150A	D.6	MCN206A	D.4	MM504N	D.11	MT306A	D.5	MV210	D.3
MC163A	D.6	MCN210A	D.4	MM505N	D.11	MT310A	D.5	MV216	D.3
MC200A	D.6	MCN216A	D.4	MM506N	D.11	MT316A	D.5	MV220	D.3
MC201A	D.6	MCN220A	D.4	MM507N	D.11	MT320A	D.5	MV225	D.3
MC202A	D.6	MCN225A	D.4	MM508N	D.11	MT325A	D.5	MV232	D.3
MC203A	D.6	MCN232A	D.4	MM509N	D.11	MT332A	D.5	MV240	D.3
MC204A	D.6	MCN240A	D.4	MM510N	D.11	MT340A	D.5	MV306	D.3
MC206A	D.6	MCN250A	D.4	MM511N	D.11	MT350A	D.5	MV310	D.3

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MV320	D.3	MZ522N	D.11	NBN440A	D.8	NCN420A	D.8	NDN406A	D.8
MV325	D.3	MZ523N	D.11	NBN450A	D.8	NCN425A	D.8	NDN410A	D.8
MV332	D.3	MZ527N	D.11	NBN463A	D.8	NCN432A	D.8	NDN416A	D.8
MV340	D.3	MZ528N	D.11	NCN100A	D.8	NCN440A	D.8	NDN420A	D.8
MV406	D.3	MZ529N	D.11	NCN101A	D.8	NCN450A	D.8	NDN425A	D.8
MV410	D.3	MZ530N	D.11	NCN102A	D.8	NCN463A	D.8	NDN432A	D.8
MV416	D.3	MZ531N	D.11	NCN103A	D.8	NDN100A	D.8	NDN440A	D.8
MV420	D.3	MZ903	D.30	NCN104A	D.8	NDN101A	D.8	NDN450A	D.8
MV425	D.3	MZ905	D.30	NCN106A	D.8	NDN102A	D.8	NDN463A	D.8
MV432	D.3	MZ913	D.30	NCN110A	D.8	NDN103A	D.8	NGN100	D.7
MV440	D.3	MZ915	D.30	NCN116A	D.8	NDN104A	D.8	NGN101	D.7
MW106	D.3	MZN120	D.10	NCN120A	D.8	NDN106A	D.8	NGN102	D.7
MW110	D.3	MZN121	D.10	NCN125A	D.8	NDN110A	D.8	NGN103	D.7
MW116	D.3	MZN130	D.18	NCN132A	D.8	NDN116A	D.8	NGN104	D.7
MW120	D.3	MZN131	D.18	NCN140A	D.8	NDN120A	D.8	NGN106	D.7
MW125	D.3	MZN175	D.28	NCN150A	D.8	NDN125A	D.8	NGN110	D.7
MW132	D.3	MZN176	D.28	NCN163A	D.8	NDN132A	D.8	NGN116	D.7
MW140	D.3	MZN177	D.28	NCN200A	D.8	NDN140A	D.8	NGN120	D.7
MW206	D.3			NCN201A	D.8	NDN150A	D.8	NGN125	D.7
MW210	D.3	N		NCN202A	D.8	NDN163A	D.8	NGN132	D.7
MW216	D.3	NBN106A	D.8	NCN203A	D.8	NDN200A	D.8	NGN140	D.7
MW220	D.3	NBN110A	D.8	NCN204A	D.8	NDN201A	D.8	NGN150	D.7
MW225	D.3	NBN116A	D.8	NCN206A	D.8	NDN202A	D.8	NGN163	D.7
MW232	D.3	NBN120A	D.8	NCN210A	D.8	NDN203A	D.8	NGN200	D.7
MW240	D.3	NBN125A	D.8	NCN216A	D.8	NDN204A	D.8	NGN201	D.7
MW306	D.3	NBN132A	D.8	NCN220A	D.8	NDN206A	D.8	NGN202	D.7
MW310	D.3	NBN140A	D.8	NCN225A	D.8	NDN210A	D.8	NGN203	D.7
MW316	D.3	NBN150A	D.8	NCN232A	D.8	NDN216A	D.8	NGN204	D.7
MW320	D.3	NBN163A	D.8	NCN240A	D.8	NDN220A	D.8	NGN206	D.7
MW325	D.3	NBN206A	D.8	NCN250A	D.8	NDN225A	D.8	NGN210	D.7
MW332	D.3	NBN210A	D.8	NCN263A	D.8	NDN232A	D.8	NGN216	D.7
MW340	D.3	NBN216A	D.8	NCN300A	D.8	NDN240A	D.8	NGN220	D.7
MW406	D.3	NBN220A	D.8	NCN301A	D.8	NDN250A	D.8	NGN225	D.7
MW410	D.3	NBN225A	D.8	NCN302A	D.8	NDN263A	D.8	NGN232	D.7
MW416	D.3	NBN232A	D.8	NCN303A	D.8	NDN300A	D.8	NGN240	D.7
MW420	D.3	NBN240A	D.8	NCN304A	D.8	NDN301A	D.8	NGN250	D.7
MW425	D.3	NBN250A	D.8	NCN306A	D.8	NDN302A	D.8	NGN263	D.7
MW432	D.3	NBN263A	D.8	NCN310A	D.8	NDN303A	D.8	NGN300	D.7
MW440	D.3	NBN306A	D.8	NCN316A	D.8	NDN304A	D.8	NGN301	D.7
MZ201	D.28	NBN310A	D.8	NCN320A	D.8	NDN306A	D.8	NGN302	D.7
MZ202	D.28	NBN316A	D.8	NCN325A	D.8	NDN310A	D.8	NGN303	D.7
MZ203	E.6	NBN320A	D.8	NCN332A	D.8	NDN316A	D.8	NGN304	D.7
MZ203	D.28	NBN325A	D.8	NCN340A	D.8	NDN320A	D.8	NGN306	D.7
MZ204	E.6	NBN332A	D.8	NCN350A	D.8	NDN325A	D.8	NGN310	D.7
MZ204	D.28	NBN340A	D.8	NCN363A	D.8	NDN332A	D.8	NGN316	D.7
MZ205	E.6	NBN350A	D.8	NCN400A	D.8	NDN340A	D.8	NGN320	D.7
MZ205	D.28	NBN363A	D.8	NCN401A	D.8	NDN350A	D.8	NGN325	D.7
MZ206	E.6	NBN406A	D.8	NCN402A	D.8	NDN363A	D.8	NGN332	D.7
MZ206	D.28	NBN410A	D.8	NCN403A	D.8	NDN400A	D.8	NGN340	D.7
MZ209	E.6	NBN416A	D.8	NCN404A	D.8	NDN401A	D.8	NGN350	D.7
MZ209	D.28	NBN420A	D.8	NCN406A	D.8	NDN402A	D.8	NGN363	D.7
MZ520N	D.11	NBN425A	D.8	NCN410A	D.8	NDN403A	D.8	NGN400	D.7

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NGN401	D.7	NRF0008A00	J.62	NRN363	D.9	NSN332	D.9	R2581VERZ	I.26
NGN402	D.7	NRF0012A00	J.62	NRN400	D.9	NSN340	D.9	R25829010	I.26
NGN403	D.7	NRF0016A00	J.62	NRN401	D.9	NSN350	D.9	R2582VERZ	I.26
NGN404	D.7	NRF0020A00	J.62	NRN402	D.9	NSN363	D.9	R25859010	I.27
NGN406	D.7	NRF0023D00	J.62	NRN403	D.9	NSN400	D.9	R2585VERZ	I.27
NGN410	D.7	NRF0034D00	J.62	NRN404	D.9	NSN401	D.9	R26039010	I.27
NGN416	D.7	NRF0203B00	J.62	NRN406	D.9	NSN402	D.9	R2603VERZ	I.27
NGN420	D.7	NRF0204B00	J.62	NRN410	D.9	NSN403	D.9	R2604VERZ	I.27
NGN425	D.7	NRF0406B00	J.62	NRN416	D.9	NSN404	D.9	R26069010	I.27
NGN432	D.7	NRF4204D00	J.62	NRN420	D.9	NSN406	D.9	R2606VERZ	I.27
NGN440	D.7	NRF4204K00	J.62	NRN425	D.9	NSN410	D.9	R26469010	I.27
NGN450	D.7	NRF4406K00	J.62	NRN432	D.9	NSN416	D.9	R2646VERZ	I.27
NGN463	D.7	NRN100	D.9	NRN440	D.9	NSN420	D.9	R26619010	I.26
NQN106	D.9	NRN101	D.9	NRN450	D.9	NSN425	D.9	R2661VERZ	I.26
NQN110	D.9	NRN102	D.9	NRN463	D.9	NSN432	D.9	R26629010	I.26
NQN116	D.9	NRN103	D.9	NSN100	D.9	NSN440	D.9	R2662VERZ	I.26
NQN120	D.9	NRN104	D.9	NSN101	D.9	NSN450	D.9	R26659010	I.27
NQN125	D.9	NRN106	D.9	NSN102	D.9	NSN463	D.9	R2665VERZ	I.27
NQN132	D.9	NRN110	D.9	NSN103	D.9			R26939010	I.27
NQN140	D.9	NRN116	D.9	NSN104	D.9	P		R2693VERZ	I.27
NQN150	D.9	NRN120	D.9	NSN106	D.9	P031	A.6	R26969010	I.27
NQN163	D.9	NRN125	D.9	NSN110	D.9	P031	A.8	R2696VERZ	I.27
NQN206	D.9	NRN132	D.9	NSN116	D.9	P031	A.17	R27019010	I.26
NQN210	D.9	NRN140	D.9	NSN120	D.9	P031	A.54	R2701VERZ	I.26
NQN216	D.9	NRN150	D.9	NSN125	D.9	P032	A.6	R27029010	I.26
NQN220	D.9	NRN163	D.9	NSN132	D.9	P032	A.8	R2702VERZ	I.26
NQN225	D.9	NRN200	D.9	NSN140	D.9	P032	A.17	R27059010	I.27
NQN232	D.9	NRN201	D.9	NSN150	D.9	P032	A.54	R2705VERZ	I.27
NQN240	D.9	NRN202	D.9	NSN163	D.9	P032H	B.6	R27239010	I.27
NQN250	D.9	NRN203	D.9	NSN200	D.9	P032H	B.11	R2723VERZ	I.27
NQN263	D.9	NRN204	D.9	NSN201	D.9	P032H	B.17	R27319010	I.26
NQN306	D.9	NRN206	D.9	NSN202	D.9	P100H	B.11	R2731VERZ	I.26
NQN310	D.9	NRN210	D.9	NSN203	D.9	P100H	B.17	R27329010	I.26
NQN316	D.9	NRN216	D.9	NSN204	D.9			R2732VERZ	I.26
NQN320	D.9	NRN220	D.9	NSN206	D.9	R		R27359010	I.27
NQN325	D.9	NRN225	D.9	NSN210	D.9	R2290VERZ	I.27	R2735VERZ	I.27
NQN332	D.9	NRN232	D.9	NSN216	D.9	R2291VERZ	I.27	R27369010	I.27
NQN340	D.9	NRN240	D.9	NSN220	D.9	R2292VERZ	I.27	R2736VERZ	I.27
NQN350	D.9	NRN250	D.9	NSN225	D.9	R2293VERZ	I.27	R27539010	I.27
NQN363	D.9	NRN263	D.9	NSN232	D.9	R2320VERZ	I.27	R2753VERZ	I.27
NQN406	D.9	NRN300	D.9	NSN240	D.9	R2330VERZ	I.27	R4320VERZ	I.27
NQN410	D.9	NRN301	D.9	NSN250	D.9	R2504VERZ	I.27	R4330VERZ	I.27
NQN416	D.9	NRN302	D.9	NSN263	D.9	R25519010	I.26	R7811GRAU	I.28
NQN420	D.9	NRN303	D.9	NSN300	D.9	R2551VERZ	I.26	R7812GRAU	I.29
NQN425	D.9	NRN304	D.9	NSN301	D.9	R25529010	I.26	R7813GRAU	I.29
NQN432	D.9	NRN306	D.9	NSN302	D.9	R2552VERZ	I.26	R7815GRAU	I.29
NQN440	D.9	NRN310	D.9	NSN303	D.9	R25559010	I.27	R7821GRAU	I.28
NQN450	D.9	NRN316	D.9	NSN304	D.9	R2555VERZ	I.27	R7822GRAU	I.29
NQN463	D.9	NRN320	D.9	NSN306	D.9	R25669010	I.27	R7823GRAU	I.29
NRF0003D00	J.62	NRN325	D.9	NSN310	D.9	R2566VERZ	I.27	R7825GRAU	I.29
NRF0004D00	J.62	NRN332	D.9	NSN316	D.9	R25739010	I.27	R7831GRAU	I.28
NRF0006A00	J.62	NRN340	D.9	NSN320	D.9	R2573VERZ	I.27	R7832GRAU	I.29
NRF0006D00	J.62	NRN350	D.9	NSN325	D.9	R25819010	I.26	R7833GRAU	I.29

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R9200	J.39	SB432PV	D.39	SL200554D2	H.11	SL200802D3	H.10	SL200809609010	H.10
		SB440	E.5	SL200554D3	H.11	SL200802D4	H.10	SL200809609011	H.10
S		SB440F	E.5	SL200554D4	H.11	SL200802D5	H.10	SL20080960D1	H.10
S007	G.15	SB463	E.5	SL200554D5	H.11	SL200802D6	H.10	SL20080A9010	H.11
S021	G.15	SB463F	E.5	SL200554D6	H.11	SL2008039010	H.11	SL20080A9011	H.11
S038	G.15	SB480	E.5	SL2005569010	H.11	SL2008039011	H.11	SL20080AD1	H.11
S35S	A.41	SB480F	E.5	SL2005569011	H.11	SL200803D1	H.11	SL20080AD2	H.11
SA240	E.6	SB499	E.5	SL200556D1	H.11	SL200803D2	H.11	SL20080AD3	H.11
SA263	E.6	SB499F	E.5	SL200556D2	H.11	SL200803D3	H.11	SL20080AD4	H.11
SA280	E.6	SF115	E.8	SL200556D3	H.11	SL200803D4	H.11	SL20080AD5	H.11
SA440	E.6	SF118F	E.8	SL200556D4	H.11	SL200803D5	H.11	SL20080AD6	H.11
SA463	E.6	SF119F	E.8	SL200556D5	H.11	SL200803D6	H.11	SL201151	H.10
SA480	E.6	SF119G	E.8	SL200556D6	H.11	SL2008049010	H.11	SL2011529010	H.10
SB112	E.5	SF218F	E.8	SL2005579010	H.11	SL2008049011	H.11	SL2011529011	H.10
SB116	E.5	SF219F	E.8	SL2005579011	H.11	SL200804D1	H.11	SL2011539010	H.11
SB116V	E.5	SF219G	E.8	SL200557D1	H.11	SL200804D2	H.11	SL2011539011	H.11
SB125	E.5	SF263	E.8	SL200557D2	H.11	SL200804D3	H.11	SL2011549010	H.11
SB125V	E.5	SF319G	E.8	SL200557D3	H.11	SL200804D4	H.11	SL2011549011	H.11
SB132	E.5	SF419G	E.8	SL200557D4	H.11	SL200804D5	H.11	SL2011569010	H.11
SB132V	E.5	SF463	E.8	SL200557D5	H.11	SL200804D6	H.11	SL2011569011	H.11
SB140	E.5	SK600	E.9	SL200557D6	H.11	SL2008069010	H.11	SL20115819010	H.11
SB163	E.5	SK601	E.9	SL20055819010	H.11	SL2008069011	H.11	SL20115819011	H.11
SB180	E.5	SK602	E.9	SL20055819011	H.11	SL200806D1	H.11	SL2011589010	H.11
SB199	E.5	SK603	E.9	SL2005581D1	H.11	SL200806D2	H.11	SL2011589011	H.11
SB212	E.5	SK604	E.9	SL2005589010	H.11	SL200806D3	H.11	SL201159039010	H.10
SB216	E.5	SK606	E.9	SL2005589011	H.11	SL200806D4	H.11	SL201159039011	H.10
SB216V	E.5	SL1104007030	J.76	SL200558D1	H.11	SL200806D5	H.11	SL201159119010	H.10
SB225	E.5	SL1807507030	J.76	SL200559039010	H.10	SL200806D6	H.11	SL201159119011	H.10
SB225V	E.5	SL1807507035	J.76	SL200559039011	H.10	SL2008079010	H.11	SL201159609010	H.10
SB232	E.5	SL1807508014	J.76	SL20055903D1	H.10	SL2008079011	H.11	SL201159609011	H.10
SB232V	E.5	SL200551	H.10	SL200559119010	H.10	SL200807D1	H.11	SL20115A9010	H.11
SB240	E.5	SL20055219010	H.10	SL200559119011	H.10	SL200807D2	H.11	SL20115A9011	H.11
SB263	E.5	SL20055219011	H.10	SL20055911D1	H.10	SL200807D3	H.11	SLA180750ELN	J.76
SB280	E.5	SL20055229010	H.10	SL200559609010	H.10	SL200807D4	H.11	SM001	E.11
SB299	E.5	SL2005529010	H.10	SL200559609011	H.10	SL200807D5	H.11	SM005	E.10
SB312	E.5	SL2005529011	H.10	SL20055960D1	H.10	SL200807D6	H.11	SM015	E.10
SB316	E.5	SL200552D1	H.10	SL20055A9010	H.11	SL2008089010	H.11	SM020	E.11
SB325	E.5	SL200552D2	H.10	SL20055A9011	H.11	SL2008089010	H.11	SM030	E.10
SB332	E.5	SL200552D3	H.10	SL20055AD1	H.11	SL2008089011	H.11	SM050	E.10
SB332Q	E.5	SL200552D4	H.10	SL20055AD2	H.11	SL2008089011	H.11	SM100	E.10
SB340	E.5	SL200552D5	H.10	SL20055AD3	H.11	SL200808D1	H.11	SM102E	E.14
SB363	E.5	SL200552D6	H.10	SL20055AD4	H.11	SL200808D1	H.11	SM103E	E.14
SB363Q	E.5	SL2005539010	H.11	SL20055AD5	H.11	SL200808D2	H.11	SM150	E.10
SB380	E.5	SL2005539011	H.11	SL20055AD6	H.11	SL200808D3	H.11	SM151	E.11
SB399	E.5	SL200553D1	H.11	SL200801	H.10	SL200808D4	H.11	SM200	E.14
SB412	E.5	SL200553D2	H.11	SL20080219010	H.10	SL200808D5	H.11	SM201	E.14
SB412F	E.5	SL200553D3	H.11	SL20080219011	H.10	SL200808D6	H.11	SM202	E.14
SB416	E.5	SL200553D4	H.11	SL20080229010	H.10	SL200809039010	H.10	SM203	E.14
SB416F	E.5	SL200553D5	H.11	SL2008024D1	H.10	SL200809039011	H.10	SM250	E.10
SB425	E.5	SL200553D6	H.11	SL2008029010	H.10	SL20080903D1	H.10	SM400	E.10
SB425F	E.5	SL2005549010	H.11	SL2008029011	H.10	SL200809119010	H.10	SM401	E.11
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SM600	E.10	SR300	E.16	SVN373	E.3	UC003	B.71	UC288	B.82
SM601	E.11	SR300	F.22	SVN391	E.3	UC005	B.71	UC289	B.82
SM800	E.10	SR400	E.16	SVN411	E.3	UC008	B.71	UC310H	B.71
SM801	E.11	SR400	F.22	SVN413	E.3	UC009	B.71	UC310H	B.72
SM850	E.10	SR600	E.16	SVN422	E.3	UC010H	B.71	UC311H	B.71
SM900	E.10	SR600	F.22	SVN432	E.3	UC011H	B.71	UC311H	B.72
SM901	E.11	SR800	E.16	SVN433	E.3	UC012H	B.71	UC312H	B.71
SM910	E.10	SR800	F.22	SVN441	E.3	UC013H	B.71	UC313H	B.71
SM911	E.11	SR850	E.16	SVN452	E.3	UC014H	B.71	UC314H	B.71
SPN015D	D.42	SR850	F.22	SVN461	E.3	UC020H	B.71	UC320H	B.71
SPN015R	D.42	SR900	E.16	SVN462	E.3	UC021H	B.71	UC321H	B.71
SPN040C	D.42	SR900	F.22	SVN463	E.3	UC022H	B.71	UC321HM	B.71
SPN040D	D.42	SR910	E.16	SVN464	E.3	UC023H	B.71	UC322H	B.71
SPN040N	D.42	SR910	F.22	SZ010	E.8	UC024H	B.71	UC322HM	B.71
SPN040R	D.42	ST301	E.25			UC030H	B.71	UC323H	B.71
SPN065N	D.42	ST303	E.25	T		UC050H	B.72	UC324H	B.71
SPN065R	D.42	ST305	E.25	TG500A	N.42	UC051H	B.72	UC330H	B.71
SPN080	D.40	ST312	E.25	TG500B	N.42	UC054H	B.72	UC332	B.72
SPN080N	D.40	ST313	E.25	TG500C	N.42	UC055H	B.72	UC335	B.72
SPN140C	D.41	ST314	E.25	TG501A	N.42	UC060H	B.72	UC350H	B.72
SPN208S	D.43	ST315	E.25	TG501B	N.42	UC061H	B.72	UC350HM	B.72
SPN215D	D.41	SU212	E.25	TG501C	N.42	UC127H	B.71	UC351H	B.72
SPN215R	D.41	SU213	E.25	TN002S	A.59	UC128H	B.71	UC351HM	B.72
SPN240D	D.41	SU214	E.25	TN003S	A.59	UC140H	B.71	UC354H	B.72
SPN240R	D.41	SU215	E.25	TN004S	A.59	UC141H	B.71	UC355H	B.72
SPN265R	D.41	SVN121	E.2	TN111	A.59	UC142H	B.71	UC360H	B.72
SPN408S	D.43	SVN122	E.2	TN121	A.59	UC144H	B.71	UC360HM	B.72
SPN415D	D.41	SVN123	E.2	TN131	A.59	UC145H	B.71	UC361H	B.72
SPN415R	D.41	SVN124	E.2	TN204S	A.59	UC146H	B.71	UC361HM	B.72
SPN440D	D.41	SVN125	E.2	TN206S	A.59	UC147H	B.71	UC427H	B.71
SPN440R	D.41	SVN126	E.2	TN401B	A.58	UC148H	B.71	UC427HL	B.71
SPN465R	D.41	SVN127	E.2	TN411B	A.58	UC200	B.81	UC428H	B.71
SPN504	D.43	SVN128	E.2	TN421B	A.58	UC201	B.81	UC428HL	B.71
SPN505	D.43	SVN129	E.2	TN713	A.59	UC205	B.81	UC440H	B.71
SPN800	D.40	SVN131	E.2	TN714	A.59	UC209	B.81	UC441H	B.71
SPN800R	D.40	SVN132	E.2	TN715	A.59	UC220	B.81	UC441HM	B.71
SPN801	D.40	SVN133	E.2	TN901	A.59	UC221	B.81	UC442H	B.71
SPN801R	D.40	SVN134	E.2	TN902	A.59	UC222	B.81	UC442HM	B.71
SPN802	D.40	SVN135	E.2	TU202	N.43	UC223	B.81	UC444H	B.71
SPN802R	D.40	SVN136	E.2	TU204	N.43	UC224	B.81	UC445H	B.71
SPV025	D.42	SVN221	E.2	TU209	N.43	UC225	B.81	UC446H	B.71
SPV025E	D.42	SVN222	E.2	TU301	N.43	UC226	B.81	UC447H	B.71
SPV325	D.39	SVN311	E.3	TU302	N.43	UC230	B.81	UC448H	B.71
SR051	E.16	SVN312	E.3	TU304	N.43	UC231	B.81	UC811	B.74
SR051	F.22	SVN321	E.3	TU350	N.43	UC232	B.81	UC812	B.74
SR101	E.16	SVN322	E.3	TWS70VERZ	I.26	UC233	B.81	UC815	B.76
SR101	F.22	SVN331	E.3	TWS70VERZ	J.23	UC234	B.81	UC816	B.76
SR150	E.16	SVN332	E.3			UC235	B.81	UC820	B.74
SR150	F.22	SVN341	E.3	U		UC236	B.81	UC821	B.74
SR200	E.16	SVN342	E.3	U82A	A.41	UC239	B.81	UC822	B.74
SR200	F.22	SVN351	E.3	U842B	A.37	UC268	B.81	UC823	B.74
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UC826	B.74	UM30A1	B.77	US21A3	A.38	UZ00K1	A.41	VB18A	A.17
UC827	B.74	UM30A2	B.77	US21A3	A.40	UZ00K2	A.41	VB36A	A.17
UC828	B.74	UM30A3	B.77	US22A1	A.40	UZ01A2	A.38	VB54A	A.17
UC830	B.76	UM30A4	B.77	US23A1	A.40	UZ01A2	A.40	VB72A	A.17
UC832	B.77	UM30A5	B.77	US31A1	A.38	UZ01V1	B.106	VE103F	A.29
UC834	B.76	UM92V	B.80	US31A1	A.40	UZ01V2	A.40	VE106F	A.29
UC842	B.77	UM92W	B.80	US31A3	A.38	UZ03A1	A.38	VE110F	A.29
UC844	B.77	UM92X	B.80	US31A3	A.40	UZ03A1	A.40	VE112F	A.29
UC851	B.77	UM92Y	B.80	US32A1	A.40	UZ04A1	A.38	VE118F	A.29
UC853	B.77	UM92Z	B.80	US33A1	A.40	UZ04A1	A.40	VE212F	A.29
UC855	B.77	UN03A	A.39	US41A1	A.38	UZ05A1	A.40	VE218F	A.29
UC856E	B.77	UN03FN	A.37	US41A1	A.40	UZ06A1	A.43	VE312F	A.29
UC868	B.79	UN03GN	A.38	US41A3	A.38	UZ21M6	A.37	VE318F	A.29
UC869	B.79	UN04A	A.39	US41A3	A.40	UZ21M6	A.39	VE412F	A.29
UC870	B.80	UN04FN	A.37	US42A1	A.40	UZ25A1	A.53	VF104PF	A.12
UC871	B.79	UN04GN	A.38	US51A1	A.38	UZ25V1	A.53	VF104PJ	A.12
UC874	B.80	UN05A	A.39	US51A1	A.40	UZ25V1	B.82	VF104TF	A.12
UC875	B.79	UN05FN	A.37	US51A3	A.38	UZ25V1	B.106	VF104TJ	A.12
UC876	B.80	UN05GN	A.38	US51A3	A.40	UZ25V2	A.40	VF108PF	A.12
UC877	B.79	UN06A	A.39	US61A3	A.38	UZ25V2	A.53	VF108PJ	A.12
UC879	B.79	UN06FN	A.37	US61A3	A.40	UZ25V2	B.82	VF108TF	A.12
UC911	B.82	UN06GN	A.38	UT22B	A.41	UZ25V2	B.106	VF108TJ	A.12
UC912	B.82	UN07A	A.39	UT26A	A.40	UZ30F1	A.40	VF112PF	A.12
UC915	B.82	UN07FN	A.37	UT26B	A.40	UZ31M5	A.37	VF112PJ	A.12
UC916	B.82	UN07GN	A.38	UT44AN	A.38	UZ31M5	A.39	VF112TF	A.12
UC922	B.77	UN31TN	A.37	UT44BN	A.38	UZ31M6	A.37	VF112TJ	A.12
UC951	B.81	UN31TN	A.39	UT44CN	A.38	UZ31M6	A.39	VF118PF	A.13
UC960	B.81	UN32TN	A.37	UT44DN	A.38	UZ32M5	A.37	VF118PJ	A.13
UC962	B.81	UN32TN	A.39	UT44FN	A.38	UZ32M5	A.39	VF118TF	A.13
UC964	B.81	UN41TN	A.37	UT50A1	A.53	UZ40F1	A.40	VF118TJ	A.13
UC966	B.77	UN41TN	A.39	UT50C	A.53	UZ41M5	A.37	VF122PF	A.13
UC967	B.77	UN42TN	A.37	UT50C	B.106	UZ41M5	A.39	VF122PJ	A.13
UC969	B.81	UN42TN	A.39	UT87E	B.64	UZ41M6	A.37	VF122TF	A.13
UC969	B.100	UN51TN	A.37	UT87E	B.77	UZ41M6	A.39	VF122TJ	A.13
UC969	K.9	UN51TN	A.39	UT88A	B.64	UZ42M5	A.37	VF212PF	A.12
UC971	B.83	UN52TN	A.37	UT88B	B.64	UZ42M5	A.39	VF212PJ	A.12
UC972	B.83	UN52TN	A.39	UT88C	B.64	UZ50F1	A.40	VF212TF	A.12
UC975	B.83	UN61TN	A.37	UT88D	B.64	UZ51M5	A.37	VF212TJ	A.12
UC975S	B.83	UN61TN	A.39	UT91A	G.11	UZ51M5	A.39	VF218PF	A.13
UC976	B.83	UN62TN	A.37	UW31U	A.37	UZ52M5	A.37	VF218PJ	A.13
UC976S	B.83	UN62TN	A.39	UW31V	A.39	UZ52M5	A.39	VF218TF	A.13
UC988	B.76	UN71TN	A.37	UW41U	A.37	UZ60F1	A.40	VF218TJ	A.13
UC988	B.82	UN71TN	A.39	UW41V	A.39	UZ61M5	A.37	VF312PF	A.12
UC990	B.83	UN72TN	A.37	UW51U	A.37	UZ61M5	A.39	VF312PJ	A.12
UC991	B.83	UN72TN	A.39	UW51V	A.39	UZ62M5	A.37	VF312TF	A.12
UC992	B.83	US11A1	A.38	UW61U	A.37	UZ62M5	A.39	VF312TJ	A.12
UD22A5	A.53	US11A1	A.40	UW61V	A.39	UZ70F1	A.40	VF318PF	A.13
UD22B3	A.53	US11A3	A.38	UW71U	A.37			VF318PJ	A.13
UD22B3	A.53	US11A3	A.40	UW71V	A.39	V		VF318TF	A.13
UD22C2	A.53	US12A1	A.40	UX01V1	B.82	VA12D	A.21	VF318TJ	A.13
UK22A2	A.53	US13A1	A.40	UZ005	A.41	VA24D	A.21	VF412PF	A.12
UL01G1	A.37	US21A1	A.38	UZ006	A.41	VA36D	A.21	VF412PJ	A.12

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VF412TF	A.12	VS418TJ	A.15	VZ007	A.17	VZ630N	A.16	WE048	M.29
VF412TJ	A.12	VT04FM	B.2	VZ008	A.17	VZ699N	A.16	WE050	M.29
VF418PF	A.13	VT04MF	B.4	VZ009	A.17	VZ706	A.53	WE051	M.29
VF418PJ	A.13	VT04MS	B.4	VZ010	A.17	VZ707	A.53	WE063	M.29
VF418TF	A.13	VT04PNF	B.4	VZ053	A.17	VZ708	A.17	WE064	M.29
VF418TJ	A.13	VT04PNS	B.4	VZ054	A.17	VZ708	A.53	WE100	M.27
VH12NE	A.26	VT04SM	B.2	VZ111N	A.27	VZ709	A.17	WE10050	M.27
VH24NE	A.26	VT04TF	B.4	VZ112N	A.27	VZ709	A.53	WE100G	M.27
VH36NE	A.26	VT04TS	B.4	VZ113N	A.27	VZ710	G.12	WE102	M.27
VH48NE	A.26	VT06FM	B.2	VZ114N	A.27	VZ711	G.12	WE102G	M.27
VS104PF	A.14	VT06SM	B.2	VZ131N	A.27	VZ717	A.41	WE105	M.27
VS104PJ	A.14	VT08FM	B.2	VZ132N	A.27	VZ754	A.30	WE155	J.9
VS104TF	A.14	VT08MF	B.4	VZ133N	A.27	VZ758	A.30	WE155	M.27
VS104TJ	A.14	VT08MS	B.4	VZ134N	A.27	VZ786N	A.16	WE155	M.53
VS108PF	A.14	VT08PNF	B.4	VZ225N	A.27	VZ787N	A.16	WE156	M.27
VS108PJ	A.14	VT08PNS	B.4	VZ292N	A.27	VZ788N	A.16	WE157	M.27
VS108TF	A.14	VT08SM	B.2	VZ293N	A.27	VZ789N	A.16	WE200	M.28
VS108TJ	A.14	VT08TF	B.4	VZ302N	A.21	VZ794N	A.16	WE211	M.28
VS112PF	A.14	VT08TS	B.4	VZ302N	A.27	VZ801N	A.27	WE214	M.28
VS112PJ	A.14	VT10FM	B.2	VZ303	B.6	VZ802N	A.27	WE214G	M.28
VS112TF	A.14	VT10SM	B.2	VZ304N	A.27	VZ803N	A.27	WE220	M.28
VS112TJ	A.14	VT12FM	B.2	VZ310	A.17	VZ804N	A.27	WE223	M.28
VS118PF	A.15	VT12MF	B.4	VZ311	A.30	VZ805N	A.27	WE223G	M.28
VS118PJ	A.15	VT12MS	B.4	VZ313	A.2	VZ806N	A.27	WE226	M.28
VS118TF	A.15	VT12PNF	B.4	VZ403	A.21	VZ807N	A.27	WE250	M.28
VS118TJ	A.15	VT12PNS	B.4	VZ403	A.30	VZ809N	A.27	WE250G	M.28
VS122PF	A.15	VT12SM	B.2	VZ405	A.53	VZ810N	A.27	WE253	M.28
VS122PJ	A.15	VT12TF	B.4	VZ405N	A.27	VZ811N	A.27	WE253G	M.28
VS122TF	A.15	VT12TS	B.4	VZ413	A.30	VZ812N	A.27	WE256	M.28
VS122TJ	A.15	VT16FM	B.2	VZ415	A.30	VZ813N	A.27	WE257	M.28
VS212PF	A.14	VT16MF	B.4	VZ416	A.30	VZ814N	A.27	WE259	M.28
VS212PJ	A.14	VT16MS	B.4	VZ428	A.21			WE290	M.28
VS212TF	A.14	VT16PNF	B.4	VZ428	A.30	W		WE291	M.28
VS212TJ	A.14	VT16PNS	B.4	VZ601N	A.16	WE000	M.26	WE300	M.30
VS218PF	A.15	VT16SM	B.2	VZ602	A.41	WE000G	M.26	WE301	M.30
VS218PJ	A.15	VT16TF	B.4	VZ602N	A.16	WE001	M.26	WE310	M.30
VS218TF	A.15	VT16TS	B.4	VZ603N	A.16	WE00150	M.26	WE314	M.30
VS218TJ	A.15	VT20MF	B.4	VZ604N	A.16	WE001G	M.26	WE401	M.30
VS312PF	A.14	VT20MS	B.4	VZ605N	A.16	WE002	M.26	WE40150	M.30
VS312PJ	A.14	VT20PNF	B.4	VZ606N	A.16	WE002G	M.26	WE402	M.30
VS312TF	A.14	VT20PNS	B.4	VZ607N	A.16	WE010	M.26	WE403	M.30
VS312TJ	A.14	VT20TF	B.4	VZ608N	A.16	WE022	M.26	WE406	M.30
VS318PF	A.15	VT20TS	B.4	VZ609N	A.16	WE022G	M.26	WE407	M.30
VS318PJ	A.15	VU12NE	A.26	VZ610N	A.16	WE023	M.26	WGC1	L.39
VS318TF	A.15	VU12NT	A.26	VZ621N	A.16	WE023G	M.26	WGC1CA	L.39
VS318TJ	A.15	VU24NE	A.26	VZ622N	A.16	WE025	M.26	WGC1-GD	L.39
VS412PF	A.14	VU24NT	A.26	VZ623N	A.16	WE025G	M.26	WGC1MP	L.39
VS412PJ	A.14	VU36NE	A.26	VZ624N	A.16	WE040	M.26	WGC1-SV	L.39
VS412TF	A.14	VU36NT	A.26	VZ625N	A.16	WE040G	M.26	WGC1TG	L.39
VS412TJ	A.14	VU48NE	A.26	VZ626N	A.16	WE044	M.26	WGC2	L.39
VS418PF	A.15	VU48NT	A.26	VZ627N	A.16	WE044G	M.26	WGC2CA	L.39
VS418PJ	A.15	VZ005	A.17	VZ628N	A.16	WE045	M.26	WGC2-GD	L.39
VS418TF	A.15	VZ006	A.17	VZ629N	A.16	WE045	M.26	WGC2MP	L.39

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WGC2TG	L.39	WGR32D1	L.30	WK050	M.55	WK697	M.27	WK761T	M.67
WGDC01	L.36	WGR45CCU	L.30	WK051	M.55	WK697	M.53	WK762B	M.64
WGHBD	L.31	WGR45D1	L.30	WK055	M.52	WK730B	M.65	WK762C	M.64
WGHDC	L.31	WGR45D2	L.30	WK063	M.55	WK730C	M.65	WK762D	M.64
WGHKT	L.31	WGS105S	L.33	WK064	M.55	WK730D	M.65	WK762T	M.64
WGHKTCARD	L.31	WGS10IS	L.35	WK065	M.55	WK730M1	M.65	WK780B	M.64
WGL101	L.28	WGS10U	L.35	WK066	M.55	WK730M2	M.65	WK780B	M.65
WGL111	L.28	WGS10U2	L.35	WK067	M.55	WK730M3	M.65	WK780C	M.64
WGL111N	L.28	WGS10US	L.35	WK100	M.53	WK730M4	M.65	WK780C	M.65
WGL112	L.28	WGS113	L.33	WK101	M.53	WK730T	M.65	WK780D	M.64
WGL112N	L.28	WGS113N	L.33	WK102	M.53	WK731B	M.65	WK780D	M.65
WGL11B	L.29	WGS113S	L.33	WK105	M.53	WK731C	M.65	WK780M1	M.64
WGL11P	L.29	WGS115	L.34	WK106	M.53	WK731D	M.65	WK780M1	M.65
WGL121	L.28	WGS115S	L.34	WK155	M.53	WK731T	M.65	WK780M2	M.64
WGL121N	L.28	WGS116	L.34	WK157	M.53	WK733B	M.65	WK780M2	M.65
WGL122	L.28	WGS116S	L.34	WK211	M.54	WK733C	M.65	WK780M3	M.64
WGL122N	L.28	WGS200	L.34	WK212	M.54	WK733D	M.65	WK780M3	M.65
WGL131	L.28	WGS213	L.33	WK214	M.54	WK733T	M.65	WK780M4	M.64
WGL131N	L.28	WGS213N	L.33	WK215	M.54	WK739B	M.65	WK780M4	M.65
WGL132	L.28	WGS213S	L.33	WK217	M.54	WK739C	M.65	WK780T	M.64
WGL132N	L.28	WGSM113	L.37	WK218	M.54	WK739D	M.65	WK780T	M.65
WGL211	L.28	WGSM13I	L.37	WK220	M.54	WK739T	M.65	WK781B	M.64
WGL211N	L.28	WGSM16EA	L.37	WK221	M.54	WK740B	M.66	WK781C	M.64
WGL212	L.28	WGSM216EA	L.37	WK223	M.54	WK740C	M.66	WK781D	M.64
WGL212N	L.28	WGSMT16EA	L.37	WK224	M.54	WK740D	M.66	WK781M1	M.64
WGL221	L.28	WGT1M	L.32	WK226	M.54	WK740T	M.66	WK781M2	M.64
WGL221N	L.28	WGT1RJ	L.32	WK227	M.54	WK741B	M.66	WK781M3	M.64
WGL222	L.28	WGT1RJ5	L.32	WK250	M.54	WK741C	M.66	WK781M4	M.64
WGL222N	L.28	WGT1RJ6	L.32	WK251	M.54	WK741D	M.66	WK781T	M.64
WGL231	L.28	WGT1S	L.32	WK252	M.54	WK741T	M.66	WK782B	M.64
WGL231N	L.28	WGT2RJ	L.32	WK253	M.54	WK742B	M.66	WK782C	M.64
WGL232	L.28	WGT2RJ5	L.32	WK254	M.54	WK742C	M.66	WK782D	M.64
WGL232N	L.28	WGT2RJ6	L.32	WK255	M.54	WK742D	M.66	WK782T	M.64
WGL2D1	L.30	WGTBT5	L.32	WK256	M.54	WK742T	M.66	WK783B	M.64
WGL2D1AC	L.31	WGTD	L.32	WK257	M.54	WK750B	M.66	WK783C	M.64
WGL2D1AV	L.31	WGTV75	L.32	WK259	M.54	WK750C	M.66	WK783D	M.64
WGL2D1CB	L.31	WGTV75F	L.32	WK290	M.54	WK750D	M.66	WK783T	M.64
WGL2D1CH	L.31	WGTVMF2	L.32	WK291	M.54	WK750T	M.66	WK784B	M.64
WGL2D1DR	L.31	WGV1	L.35	WK300	M.56	WK751B	M.66	WK784C	M.64
WGL2D1DW	L.31	WGV2	L.35	WK301	M.56	WK751C	M.66	WK784D	M.64
WGL2D1FR	L.31	WGVE2	L.37	WK304	M.56	WK751D	M.66	WK784T	M.64
WGL2D1N	L.30	WGVE3	L.37	WK305	M.56	WK751T	M.66	WK785B	M.64
WGL2D1WH	L.31	WK001	M.52	WK310	M.56	WK752B	M.66	WK785C	M.64
WGL2D1WM	L.31	WK001	M.55	WK311	M.56	WK752C	M.66	WK785D	M.64
WGLD400	L.29	WK003	M.52	WK314	M.56	WK752D	M.66	WK785M1	M.64
WGLD600	L.29	WK005	M.52	WK681	M.53	WK752T	M.66	WK785M2	M.64
WGMRJ11	L.37	WK008	M.52	WK682	M.53	WK760B	M.67	WK785M3	M.64
WGMRJ45	L.37	WK010	M.52	WK691	M.53	WK760C	M.67	WK785M4	M.64
WGMRJ456	L.37	WK022	M.52	WK696	M.9	WK760D	M.67	WK785T	M.64
WGR13	L.36	WK023	M.52	WK696	M.27	WK760T	M.67	WK786B	M.64
WGR13S	L.36	WK024	M.52	WK696	M.53	WK761B	M.67	WK786C	M.64
WGR13SN	L.36	WK040	M.52	WK697	J.9	WK761C	M.67	WK786D	M.64

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WK786T	M.64	WS000	M.4	WS065	J.11	WS123T	J.8	WS173	J.9
WK787B	M.64	WS001	M.4	WS065	M.13	WS123T	M.7	WS173	M.8
WK787C	M.64	WS001N	M.4	WS065T	M.13	WS123V	M.7	WS173E	M.8
WK787D	M.64	WS001T	M.4	WS066	J.11	WS130	J.8	WS173N	J.9
WK787T	M.64	WS002	M.4	WS066	M.13	WS130	M.7	WS173N	M.8
WK788B	M.64	WS002T	M.4	WS067	J.11	WS131	M.7	WS173T	M.8
WK788C	M.64	WS005	M.4	WS067	M.13	WS132	J.8	WS173V	M.8
WK788D	M.64	WS006	M.4	WS067T	M.13	WS132	M.7	WS181	M.9
WK788T	M.64	WS008	M.4	WS100	J.8	WS133	J.8	WS182	J.9
WK790B	M.67	WS009	M.4	WS100	M.6	WS133	M.7	WS182	M.9
WK790C	M.67	WS010	M.4	WS100E	M.6	WS136	J.8	WS183	J.9
WK790D	M.67	WS011	M.4	WS100N	M.6	WS136	M.7	WS183	M.9
WK790T	M.67	WS012	M.4	WS100R	M.6	WS137	J.8	WS185	J.9
WK791B	M.67	WS012T	M.4	WS100T	M.6	WS137	M.7	WS185	M.8
WK791C	M.67	WS013	M.4	WS100V	M.6	WS137N	M.7	WS186	J.9
WK791D	M.67	WS013T	M.4	WS101	J.8	WS138	J.8	WS186	M.8
WK791T	M.67	WS014	M.4	WS101	M.6	WS138	M.7	WS187	M.8
WK792B	M.67	WS020	M.4	WS101N	M.6	WS155	J.9	WS200	J.10
WK792C	M.67	WS020T	M.4	WS102	J.8	WS155	M.9	WS210	J.10
WK792D	M.67	WS022	M.4	WS102	M.6	WS155N	M.9	WS210	M.10
WK792T	M.67	WS022N	M.4	WS103	J.8	WS155T	M.9	WS210T	M.10
WK793B	M.67	WS023	M.4	WS103	M.6	WS160	J.9	WS211	J.10
WK793C	M.67	WS023T	M.4	WS105	J.8	WS160	M.8	WS211	M.10
WK793D	M.67	WS024	M.4	WS105	M.6	WS160E	M.8	WS211T	M.10
WK793T	M.67	WS025	M.4	WS106	J.8	WS160N	M.8	WS213	J.10
WK794B	M.67	WS027	M.4	WS106	M.6	WS160T	M.8	WS213	M.10
WK794C	M.67	WS027T	M.4	WS120	J.8	WS160V	M.8	WS213N	M.10
WK794D	M.67	WS029	M.4	WS120	M.7	WS161	M.8	WS213T	M.10
WK794T	M.67	WS030	M.4	WS120	M.9	WS161N	M.8	WS214	J.10
WK795B	M.67	WS030T	M.4	WS120SCF	J.8	WS162	M.8	WS214	M.10
WK795C	M.67	WS031	M.4	WS121	M.7	WS163	M.8	WS214N	M.10
WK795D	M.67	WS032	M.5	WS121E	M.7	WS163N	M.8	WS214T	M.10
WK795M1	M.67	WS033	M.5	WS121N	M.7	WS164	M.8	WS216	J.10
WK795M2	M.67	WS035	M.5	WS121R	M.7	WS166	J.9	WS216	M.10
WK795M3	M.67	WS036	M.5	WS121T	M.7	WS166	M.9	WS216T	M.10
WK795M4	M.67	WS048	J.11	WS121V	M.7	WS167	J.9	WS217	J.10
WK795T	M.67	WS048	M.13	WS122	J.8	WS167	M.9	WS217	M.10
WK796B	M.67	WS050	L.38	WS122	M.7	WS168	J.9	WS217T	M.10
WK796C	M.67	WS050	J.11	WS122E	M.7	WS168	M.9	WS219	J.10
WK796D	M.67	WS050	M.13	WS122N	J.8	WS169	J.9	WS219	M.10
WK796M1	M.67	WS050T	M.13	WS122N	M.7	WS169	M.7	WS219N	M.10
WK796M2	M.67	WS051	L.38	WS122R	M.7	WS169N	M.7	WS219T	M.10
WK796M3	M.67	WS051	J.11	WS122SCF	J.8	WS171	M.8	WS220	J.10
WK796M4	M.67	WS051	M.13	WS122T	J.8	WS171E	M.8	WS220	M.10
WK796T	M.67	WS051T	M.13	WS122T	M.7	WS171T	M.8	WS220N	M.10
WK797B	M.67	WS055	M.5	WS122TSCF	J.8	WS171V	M.8	WS220T	M.10
WK797C	M.67	WS063	L.38	WS122V	M.7	WS172	J.9	WS222	J.10
WK797D	M.67	WS063	J.11	WS123	J.8	WS172	M.8	WS222	M.10
WK797T	M.67	WS063	M.13	WS123	M.7	WS172E	M.8	WS222N	M.10
WK798B	M.67	WS064	L.38	WS123E	M.7	WS172N	J.9	WS222T	M.10
WK798C	M.67	WS064	J.11	WS123N	J.8	WS172N	M.8	WS223	J.10
WK798D	M.67	WS064	M.13	WS123N	M.7	WS172T	M.8	WS223	M.10
WK798T	M.67	WS065	L.38	WS123R	M.7	WS172V	M.8		

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WS223T	M.10	WS290	M.10	WS453	M.16	XC9002	L.21	XP8241	L.2
WS225	J.10	WS290	M.12	WS454	M.16	XD9001	L.21	XP8242	L.2
WS225	M.10	WS290N	M.12	WS455	M.16	XH9001	L.25	XP8310	L.2
WS225N	M.10	WS291	J.10	WS456	M.16	XH9001CARD	L.25	XP8320	L.2
WS225T	M.10	WS291	M.10	WS681	M.16	XH9002	L.25	XP8410	L.2
WS226	J.10	WS291	M.12	WS681T	M.16	XH9003	L.25	XP8420	L.2
WS226	M.10	WS291N	M.12	WS682	M.16	XL9001	L.22	XP8510	L.2
WS226N	M.10	WS300	L.38	WS682T	M.16	XL9110	L.22	XP8515	L.3
WS226T	M.10	WS300	J.12	WS683	M.16	XL9117	L.22	XP8520	L.2
WS250	J.10	WS300	M.14	WS683T	M.16	XL9120	L.22	XP8525	L.3
WS250	M.11	WS300T	M.14	WS686	M.16	XL9127	L.22	XP8910	L.2
WS250T	M.11	WS301	L.38	WS686T	M.16	XL9200	L.24	XP8911	L.2
WS251	J.10	WS301	J.12	WS687	J.9	XL9206	L.24	XP9001	L.12
WS251	M.11	WS301	M.14	WS687	M.9	XL9206WH	L.24	XP9105	L.13
WS252	J.10	WS301T	M.14	WS688	J.9	XL9210	L.22	XP9110	L.12
WS252	M.11	WS304	J.12	WS688	M.9	XL9211	L.22	XP9120	L.12
WS253	J.10	WS304	M.14	WS688N	M.9	XL9212	L.22	XP9210	L.12
WS253	M.11	WS305	J.12	WS688T	M.9	XL9217	L.22	XP9211	L.12
WS253N	M.11	WS305	M.14	WS689	J.9	XL9220	L.22	XP9212	L.12
WS253T	M.11	WS310	J.12	WS689	M.9	XL9221	L.24	XP9220	L.12
WS254	J.10	WS310	M.14	WS689N	M.9	XL9221-2	L.22	XP9221	L.12
WS254	M.11	WS311	J.12	WS689T	M.9	XL9222	L.24	XP9222	L.12
WS254N	M.11	WS311	M.14	WS690	M.5	XL9222-2	L.22	XP9231	L.12
WS255	J.10	WS314	J.12	WS690	M.26	XL9222WM	L.24	XP9232	L.12
WS255	M.11	WS401	M.15	WS691	M.5	XL9227	L.22	XP9241	L.12
WS256	J.10	WS401T	M.15	WS691	M.26	XL9231	L.22	XP9242	L.12
WS256	M.11	WS402	M.15	WS692	M.5	XL9232	L.22	XP9310	L.12
WS256N	M.11	WS402T	M.15	WS692	M.26	XL9241	L.22	XP9320	L.12
WS256T	M.11	WS403	M.15	WS696	J.9	XL9242	L.22	XP9410	L.12
WS257	J.10	WS403T	M.15	WS697	J.9	XL9310	L.22	XP9412	L.12
WS257	M.11	WS404	M.15	WS697	M.9	XL9317	L.22	XP9420	L.12
WS257N	M.11	WS404T	M.15	WS697	M.27	XL9320	L.22	XP9515	L.13
WS257T	M.11	WS406	M.15	WS697	M.53	XL9327	L.22	XP9525	L.13
WS259	J.10	WS406T	M.15	WUZ680	M.64	XL9410	L.22	XP9610	L.12
WS259	M.11	WS407	M.15	WUZ690	M.52	XL9420	L.22	XP9620	L.12
WS259T	M.11	WS407T	M.15	WUZ691	M.52	XL9515	L.24	XP9810	L.12
WS260	M.12	WS408	M.15	WUZ692	M.52	XL9525	L.24	XP9820	L.12
WS261	M.12	WS408T	M.15	WUZ694	J.9	XL9910	L.24	XP9910	L.13
WS262	M.12	WS409	M.15	WUZ694	M.5	XL9911	L.24	XP9911	L.13
WS263	M.12	WS409T	M.15	WUZ694	M.9	XL9911NM	L.24	XPW5110	L.41
WS264	M.12	WS410	M.15	WUZ694	M.52	XP8001	L.2	XPW5120	L.41
WS265	M.12	WS410T	M.15			XP8105	L.3	XPW5210	L.41
WS266	M.12	WS411	M.15	X		XP8110	L.2	XPW5220	L.41
WS267	M.12	WS411T	M.15	XB8001	L.10	XP8110RED	L.2	XPW5310	L.41
WS270	M.12	WS412	M.15	XB8002	L.10	XP8120	L.2	XPW5320	L.41
WS271	M.12	WS412T	M.15	XB8003	L.10	XP8210	L.2	XPW5910	L.41
WS273	M.12	WS413	M.16	XB8351	L.11	XP8211	L.2	XR8130	L.9
WS274	M.12	WS413T	M.16	XB8352	L.11	XP8212	L.2	XR8131	L.9
WS275	M.12	WS416	M.16	XB8471	L.11	XP8220	L.2	XR8137	L.9
WS276	M.12	WS416T	M.16	XB8472	L.11	XP8221	L.2	XR8138	L.9
WS278	M.12	WS450	M.16	XC001	L.44	XP8222	L.2	XR8200	L.3
WS279	M.12	WS451	M.16	XC002	L.44	XP8231	L.2	XR8203	L.3

cat. ref.	page	cat. ref.	page	cat. ref.	page	cat. ref.	page	cat. ref.	page
X		X		X					
XR8204	L.3	XS8214	L.6	XT9010	L.16				
XR8206	L.3	XS8217	L.6	XT9011	L.16				
XR8206AC	L.4	XS8221P	L.8	XT9012	L.16				
XR8206CB	L.4	XS8314	L.8	XT9013	L.16				
XR8206CH	L.4	XS8413	L.7	XT9014	L.16				
XR8206CP	L.4	XS8414	L.7	XT9015	L.16				
XR8206DR	L.4	XS8905	L.7	XT9016	L.16				
XR8206DW	L.4	XS8906	L.7	XT9017	L.16				
XR8207	L.3	XS8915	L.7	XT9025	L.16				
XR8222	L.3	XS8916	L.7	XT9607	L.16				
XR8250	L.9	XS9113	L.18	XT9608	L.16				
XR8327	L.4	XS9114	L.18	XV8101	L.5				
XR8327DW	L.4	XS9117	L.18	XV8102	L.5				
XR8327FR	L.4	XS9200	L.17	XV9101	L.17				
XR8327OV	L.4	XS9211P	L.19	XV9102	L.17				
XR8327WM	L.4	XS9212P	L.19						
XR8450	L.9	XS9213	L.18	Z					
XR8456	L.4	XS9214	L.18	ZZ10H	A.38				
XR8457	L.4	XS9217	L.18	ZZ10H	A.40				
XR8458	L.4	XS9221P	L.19	ZZ34S	A.41				
XR9130	L.20	XS9314P	L.19						
XR9131	L.20	XS9413	L.19						
XR9137	L.20	XS9414	L.19						
XR9138	L.20	XS9905	L.18						
XR9200	L.14	XS9906	L.18						
XR9201	L.14	XS9915	L.19						
XR9201AC	L.15	XS9916	L.19						
XR9203	L.14	XSW5113	L.42						
XR9204	L.14	XSW5114	L.42						
XR9206	L.14	XSW5213	L.42						
XR9206WH	L.15	XSW5214	L.42						
XR9207	L.14	XSW6113	L.43						
XR9207AC	L.15	XSW6213	L.43						
XR9207WH	L.15	XSW6214	L.43						
XR9222	L.14	XT8001	L.5						
XR9250	L.21	XT8002	L.5						
XR9327	L.14	XT8004	L.5						
XR9327AC	L.15	XT8005	L.5						
XR9450	L.21	XT8007	L.5						
XR9456	L.14	XT8010	L.5						
XR9457	L.14	XT8012	L.5						
XR9458	L.15	XT8014	L.5						
XRW5200	L.41	XT8017	L.5						
XRW6130	L.43	XT8607	L.5						
XRW6131	L.43	XT9001	L.16						
XS113FM	L.44	XT9002	L.16						
XS213FM	L.44	XT9003	L.16						
XS8113	L.6	XT9004	L.16						
XS8114	L.6	XT9005	L.16						
XS8117	L.6	XT9006	L.16						
XS8211P	L.8	XT9007	L.16						
XS8212P	L.8	XT9008	L.16						
XS8213	L.6	XT9009	L.16						

Small enclosures


Easy to use

As a specialist for housing and commercial premises enclosures, Hager provides a large range of products. Plastic or steel enclosures, flush or surface mounting, there is always a Hager solution to answer your need.



mini gamma	A.2
gamma 13	A.6
gamma 18	A.8
golf	A.10
vega	A.19
gala	A.21
volta	A.26
vector	A.29
FW	A.34
vega D	A.50
media hub nodeis	A.58

Enclosures 1 row, from 2 to 10 ■
 Supplied with :
 - Earth terminals (GD102E without terminal),
 - marking labels,
 - sealing grommets to maintain Class II.

Characteristics
 IP 30 - IK 05 (without door)
 IP 40 - IK 05 (with door)
 Class II enclosure &
 Complies with
 BS EN 60 695-2-10
 and 11 : 850°C

Options
 - keylock
 - doors
 - terminals and terminal supports
 Comply with IEC 60 439-3.

Designation	Characteristics	Cat. ref.	
1 row, 2 ■	w. 55 x h. 160 x d. 82 mm	GD102E	
1 row, 4 ■	w. 110 x h. 180 x d. 82 mm	GD104E	
1 row, 6 ■	w. 146 x h. 180 x d. 82 mm	GD106E	
1 row, 8 ■	w. 182 x h. 180 x d. 82 mm	GD108E	
1 row, 10 ■	w. 218 x h. 180 x d. 82 mm	GD110E	
Plain doors with integrated handle	for : GD102A	GP102P	
	GD104A	GP104P	
	GD106A	GP106P	
	GD108A	GP108P	
	GD110A	GP110P	
Transparent doors with integrated handle	for : GD102A	GP102T	
	GD104A	GP104T	
	GD106A	GP106T	
	GD108A	GP108T	
	GD110A	GP110T	
Terminal supports	for : GD104A	GZ104S	
	GD106A	GZ106S	
	GD108A	GZ108S	
	GD110A	GZ110S	
Keylock	for plain or transparent door	VZ313	



GD106E



GP106P



GD110T



GZ108S



VZ313

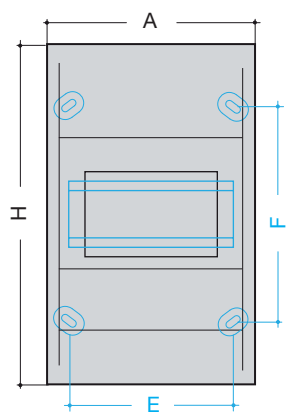


GZ04E

■ = module 17,5 mm

Designation	Characteristics	Cat. ref.	
		N	E
Terminals	2 x 16 + 2 x 10 mm ²	GZ04N	GZ04E
	3 x 16 + 4 x 10 mm ²	GZ07N	GZ07E

Dimensions



Dimensions

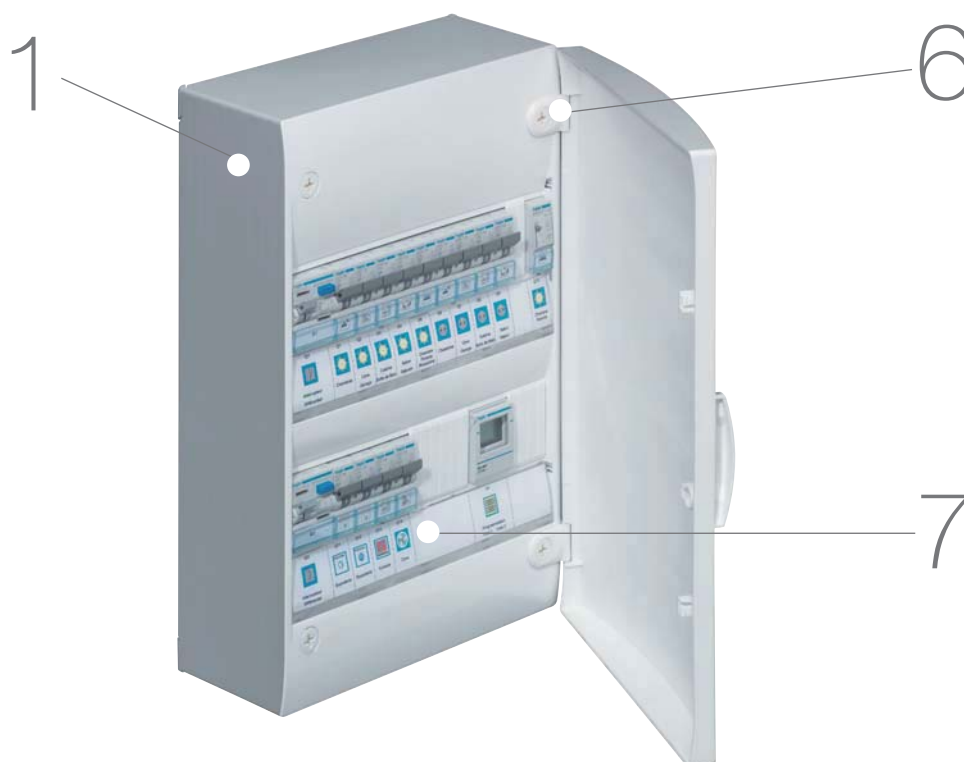
References	Dimensions (mm)			Fixing centers	
	A	H	depth	E	F
GD102E	55	160	82	-	-
GD104E	110	180	82	86	114
GD106E	146	180	82	124	114
GD108E	182	180	82	158	114
GD110E	218	180	82	194	114

Distribution enclosures gamma 13 and 18

The solution reference for your projects !

Gamma 13 and 18 are innovating products made to answer your needs. The range includes 1 to 4 rows enclosures, from 13 to 72 modules, and is completed with mini gamma enclosures, from 2 to 10 modules.

A range of accessories is available to adapt the product to your specifications.



Your benefits

- Easy to mount and to wire.
- Proper installation.
- Professional result.

Characteristics

- From 1 to 4 rows.
- From 13 to 72 modules.
- IP40 - IK07 (with door).

Expert tips



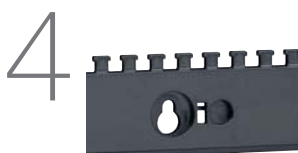
Removable DIN rails
Allows to place easily the wire.



Terminal support
Equipped with Quick Connect earth terminals, it can be quickly mounted or removed for a better cable positioning.



PE and N terminals
Can be fixed in the angles. It allows to have more space available at the top or at the bottom of the enclosure.



Fixing
Allows quick positioning and easy mounting of the enclosure.



Horizontal and vertical connecting
The horizontal or vertical association is facilitated through to parts delivered with fixing support.



Door mounting
Gamma 13 and 18 can be equipped with transparent or plain doors which mounting is quick and easy.



Marking labels
Pre-mounted marking label is easy to place / remove.

Enclosures 1 to 4 rows, from 13 to 52

Supplied with :
 - IP2X earth terminal + terminal support
 - IP2X Ph + N terminals (except 1R) + mounting plate (except 1 and 2 R)
 - accessories for vertical and horizontal connecting (except 1 R)

- marking strip
 - blanking clips

Characteristics

- **IP 30** - IK 07 (without door)
 - **IP 40** - IK 07 (with door)
 - DIN rail distance between centres: 125 mm



IEC 60 695-2-10 and 11
 750°C : enclosures, doors
 960°C : plates

Comply with IEC 60439-3

Options

- doors
 - back plates
 - keylocks



GD213A

Designation	Quick Connect	Nr of modules	Cat. ref.
1 row, 13 w. 250 x h. 250 x d. 103 mm	 E : 3 x 25 + 11 x 4 mm ²	6	GD113A
2 rows, 26 w. 250 x h. 375 x d. 103 mm	Ph : 2 x 16 + 2 x 10 mm ² N : 2 x 16 + 2 x 10 mm ² E : 5 x 25 + 17 x 4 mm ²	6	GD213A
3 rows, 39 w. 250 x h. 500 x d. 103 mm	Ph : 3 x 16 + 4 x 10 mm ² N : 3 x 16 + 4 x 10 mm ² E : 7 x 25 + 25 x 4 mm ²	13	GD313A
4 rows, 52 w. 250 x h. 625 x d. 103 mm	Ph : 3 x 16 + 4 x 10 mm ² N : 3 x 16 + 4 x 10 mm ² E : 10 x 25 + 34 x 4 mm ²	13	GD413A



GP213P-GP213T

Designation	Characteristics	Cat. ref.	
		Transp.	Plain
Plain and transparent doors depth : 30 mm	for : GD113A	GP113T	GP113P
	GD213A	GP213T	GP213P
	GD313A	GP313T	GP313P
	GD413A	GP413T	GP413P

Designation	Characteristics	Nr of modules	Cat. ref.
Keylock for plain and transparent doors			GZ35A



GS113D

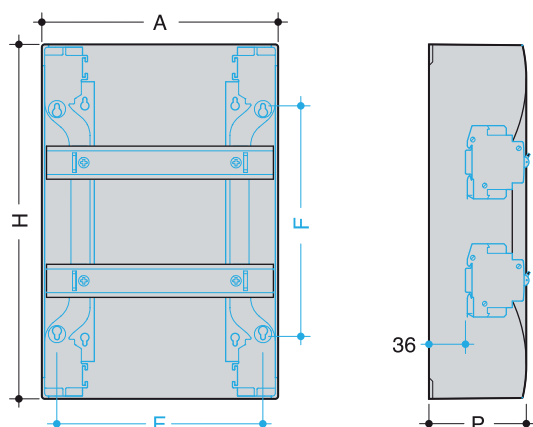
Back plate insulated material	for : GD113A		GS113D
	GD213A		GS213D
	GD313A		GS313D
	GD413A		GS413D



P032 P031

Blanking clips		1/2	P031
		1	P032
Blanking strips	RAL 9010	6	JP001

gamma 13



Dimensions

References	Dimensions (mm)			Fixing centers	
	A	H	P	E	F
GD113A	250	250	103	180	177
GD213A	250	375	103	180	302
GD313A	250	500	103	180	427
GD413A	250	625	103	180	552

Note : allow 28 mm extra in width for door opening.

Enclosures 1 to 4 rows, from 18 to 72

Supplied with :
 - IP2X earth terminal + terminal support
 - IP2X Ph + N terminals (except 1R) + mounting plate (except 1 and 2 R)
 - accessories for vertical and horizontal connecting (except 1 R)

- marking strip
- blanking clips

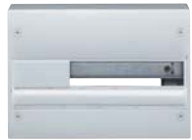
Characteristics

- IP 30 - IK 07 (without door)
- IP 40 - IK 07 (with door)
- distance between rails: 125 mm

Options

- doors
 - back plates
 - keylocks
- Comply with IEC 60 439-3.

IEC 60 695-2-10 and 11
 750°C : enclosures
 960°C : plates



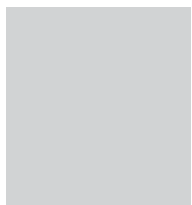
GD118A



GD218A



GP118P-GP118T



GS218D



P032 P031

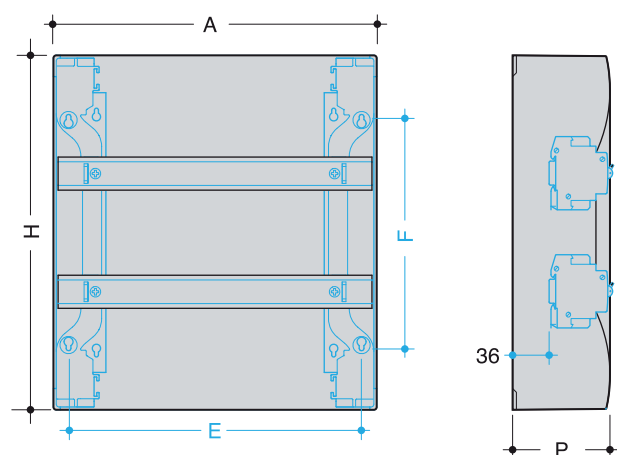
Designation	Quick Connect	Nr of modules	Cat. ref.
1 row, 18 w. 355 x h. 250 x d. 103 mm	E : 4 x 25 + 14 x 4 mm ²	6	GD118A
2 rows, 36 w. 355 x h. 375 x d. 103 mm	Ph : 2 x 16 + 2 x 10 mm ² N : 2 x 16 + 2 x 10 mm ² E : 6 x 25 + 20 x 4 mm ²	12	GD218A
3 rows, 54 w. 355 x h. 500 x d. 103 mm	Ph : 3 x 16 + 4 x 10 mm ² N : 3 x 16 + 4 x 10 mm ² E : 8 x 25 + 28 x 4 mm ²	18	GD318A
4 rows, 72 w. 355 x h. 625 x d. 103 mm	Ph : 3 x 16 + 4 x 10 mm ² N : 3 x 16 + 4 x 10 mm ² E : 10 x 25 + 34 x 4 mm ²	24	GD418A

Designation	Characteristics	Cat. ref.	
		Transp.	Plain
Plain and transparent doors depth : 30 mm	for : GD118A, GD018A	GP118T	GP118P
	GD218A	GP218T	GP218P
	GD318A	GP318T	GP318P
	GD418A	GP418T	GP418P

Designation	Characteristics	Nr of modules	Cat. ref.
Keylock for plain and transparent doors			GZ35A
Back plates - insulated material - class II to mount on the back of gamma 18 enclosure.	for : GD118A		GS118D
	GD218A		GS218D
	GD318A		GS318D
	GD418A		GS418D

Blanking clips to blank unused rows		1/2	P031
		1	P032

gamma 18



Dimensions

References	Dimensions (mm)			Fixing centers	
	A	H	P	E	F
GD118A	355	250	103	285	177
GD218A	355	375	103	285	302
GD318A	355	500	103	285	427
GD418A	355	625	103	285	552

Note : allow 28 mm extra in width for door opening.

Small enclosure golf VS

The enclosure for surface mounting installation

When building or renovating residential buildings, compact solutions are often required for electrical installations. The golf VS small enclosure is particularly suitable thanks to its ease of mounting on walls.

The small enclosure is easily and swiftly mounted and offers space for a large number of modular devices. Thanks to a patented convenient cable management system, cables can be laid safely and swiftly.



Your benefits

- Easy installation of the surface-mounted enclosure - can be turned though 180°
- Sure 6-point fixture with 2 keyholes arranged in the centre
- Optimised pipe and trunking entries
- More wiring space between the modular devices and terminals as well as behind the DIN rails
- Clean and convenient wiring thanks to patented integrated cable management system
- Unbreakable door hinges
- Same door for VS surface-mounted version and VF flush mounted version

Characteristics

- Surface mounted
- Assembly of devices up to 63A
- Ingress protection IP30 (without door), IP40 (with door)
- Isolation class II, double insulation
- Impact resistance IK07

Expert tips

1



Convenient cable management

Clean and easy wiring thanks to patented, integrated fixation for cable clips and cable ties.

2



Snap-in PE/N terminal strips

Quick Connect or brass terminal strips can be easily mounted by simply snapping into the wall sleeve.

3



Self-explanatory graphics in the wall box

All product features are explained by integrated graphics in the wall box.

4



More space for wiring

Easier wiring of the installed modular devices guaranteed by larger wiring space between the devices and PE/N terminals. More space behind the DIN rails facilitates installation of insulated wires.

5



Easily-accessible DIN rail mounting saves time and effort

DIN rail can be swiftly mounted using the keyhole on the side. The screwed fixture is outside the modular device area providing easy access.

6



Vertical and horizontal connecting of the enclosures

Connecting pieces permits safe, vertical and horizontal connection of the enclosures.

7



Swift and safe cover fixing with 1/4 turn

Position the cover and turn the screw through 90°. Quick-fixing screws can not get lost.

8



Unbreakable door hinges

Defective hinges are now a thing of the past. Same door for surface-mounted and flush-mounted distributors. Symmetrical door installation; door hinges can be mounted on left or right.



reddot design award
winner 2010

Flush mounted distribution boxes from 1 to 4 rows, from 4 to 72

Supplied with:
- opaque or transparent door for devices up to 70 mm installation depth
- DIN profile for modular devices 47 mm under the cover.

Distance between the DIN rails axis 125 mm.

Distribution boards manufactured from plastic material.

Door can be fitted on right or left without dismounting the cover; optional lock and keys.
Door opens up to 180°. Wall box and cover can be installed either way up.
- Removable cable entry slider.
- Cable entries for cable and conduit.

Components included

- Brass screw-type terminals
- Marking stickers
- Towers to fix cable ties for clear cable management are included, cable-retaining clips are optional

(except in 4 and 8 enclosures.)
- Door protected by a plastic film.
- Carton packaging
- DIN rails directly fixed to the wall box allow room for wiring behind them.



VF104



VF212



VF312






Designation	Brass terminal 	Pack qty.	Cat. ref.	
			plain	transp.
1 row 4	Earth: 2 x 16 mm ² + 2 x 10 mm ²	1	VF104PF	VF104TF
(H x W x D): Wall niche: 189 x 170 x 72 mm	Earth: 2 x 16 mm ² + 2 x 10 mm ² Neutral: 2 x 16 mm ² + 2 x 10 mm ²	1	VF104PJ	VF104TJ
1 row 8	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF108PF	VF108TF
(H x W x D): Wall niche: 189 x 242 x 72 mm	Earth: 2 x 16 mm ² + 2 x 10 mm ² Neutral: 2 x 16 mm ² + 2 x 10 mm ²	1	VF108PJ	VF108TJ
1 row 12	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF112PF	VF112TF
(H x W x D): Wall niche: 257 x 318 x 72 mm	Earth: 3 x 16 mm ² + 4 x 10 mm ² Neutral: 2 x 16 mm ² + 2 x 10 mm ²	1	VF112PJ	VF112TJ
2 row 24	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF212PF	VF212TF
(H x W x D): Nicho mural: 382 x 318 x 72 mm	Earth: 4 x 16 mm ² + 6 x 10 mm ² Neutral: 3 x 16 mm ² + 3 x 10 mm ²	1	VF212PJ	VF212TJ
3 row 36	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF312PF	VF312TF
(H x W x D): Wall niche: 507 x 318 x 72 mm	Earth: 5 x 16 mm ² + 6 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VF312PJ	VF312TJ
4 row 48	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF412PF	VF412TF
(H x W x D): Wall niche: 652 x 318 x 72 mm	Earth: 6 x 16 mm ² + 8 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VF412PJ	VF412TJ

Technical data

- IP rating:
IP30 without door
IP40 with door
IK07
- Isolation Class II
- White colour RAL 9010
- Rated current:
for devices up to 63 A
- Rated insulation:
400 V a.c./50 Hz
- Glow wiring test: 650°C

Certification according to
IEC 60 439-3.

All products conform to the
RoHS and WEEE directives.

	Designation	Brass terminal 	Pack qty.	Cat. ref.	
				plain	transp.
 VF218	1 row 18 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF118PF	VF118TF
	(H x W x D): Wall niche: 257 x 426 x 72 mm	Earth: 1 x 25 mm ² + 4 x 16 mm ² + 5 x 10 mm ² Neutral: 3 x 16 mm ² + 3 x 10 mm ²	1	VF118PJ	VF118TJ
 VF318	2 row 36 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF218PF	VF218TF
	(H x W x D): Wall niche: 382 x 426 x 72 mm	Earth: 1 x 25 mm ² + 6 x 16 mm ² + 7 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VF218PJ	VF218TJ
 VF418	3 row 54 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF318PF	VF318TF
	(H x W x D): Wall niche: 507 x 426 x 72 mm	Earth: 1 x 25 mm ² + 7 x 16 mm ² + 8 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VF318PJ	VF318TJ
 VF418	4 row 72 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF418PF	VF418TF
	(H x W x D): Nicho mural: 652 x 426 x 72 mm	Earth: 1 x 25 mm ² + 8 x 16 mm ² + 9 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VF418PJ	VF418TJ
 VF418	1 row 22 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VF122PF	VF122TF
	(H x W x D): Wall niche: 257 x 498 x 72 mm	Earth: 4 x 16 mm ² + 6 x 10 mm ² Neutral: 3 x 16 mm ² + 3 x 10 mm ²	1	VF122PJ	VF122TJ



reddot design award
winner 2010

Surface mounted distribution box from 1 to 4 rows, from 4 to 72 I

Supplied with:
- opaque or transparent door for devices up to 70 mm installation depth,
- DIN profile for modular devices 47 mm under the cover.

Distance between the DIN profiles axis 125 mm.

Distribution boards manufactured from plastic material.
Door can be fitted on right or left without dismantling the cover, optional lock with keys.
Door opens up to 180°.

Enclosure can be installed either way up.
Cable entries for cable, conduit and trunking.

Components included

- Brass screw-type terminals
- Directly fixed DIN rails to the wall box let to have room enough for wiring behind them.
- marking stickers
- Towers to fix cable ties for clear cable management are included, cable-retaining clips are optional (except in 4 and 8 I enclosures.)
- Door protected by a plastic film.
- Carton packaging



VS108




VS212



VS412

Designation	Brass terminal 	Pack qty.	Cat. ref.	
			plain	transp.
1 row 4 I (H x W x D): 184 x 138 x 99 mm	Earth: 2 x 16 mm ² + 2 x 10 mm ²	1	VS104PF	VS104TF
	Earth: 2 x 16 mm ² + 2 x 10 mm ² Neutral: 2 x 16 mm ² + 2 x 10 mm ²	1	VS104PJ	VS104TJ
1 row 8 I (H x W x D): 184 x 210 x 99 mm	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS108PF	VS108TF
	Earth: 2 x 16 mm ² + 2 x 10 mm ² Neutral: 2 x 16 mm ² + 2 x 10 mm ²	1	VS108PJ	VS108TJ
1 row 12 I (H x W x D): 252 x 282 x 99 mm	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS112PF	VS112TF
	Earth: 3 x 16 mm ² + 4 x 10 mm ² Neutral: 2 x 16 mm ² + 2 x 10 mm ²	1	VS112PJ	VS112TJ
2 row 24 I (H x W x D): 377 x 282 x 99 mm	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS212PF	VS212TF
	Earth: 4 x 16 mm ² + 6 x 10 mm ² Neutral: 3 x 16 mm ² + 3 x 10 mm ²	1	VS212PJ	VS212TJ
3 row 36 I (H x W x D): 500 x 282 x 99 mm	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS312PF	VS312TF
	Earth: 5 x 16 mm ² + 6 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VS312PJ	VS312TJ
4 row 48 I (H x W x D): 647 x 282 x 99 mm	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS412PF	VS412TF
	Earth: 6 x 16 mm ² + 8 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VS412PJ	VS412TJ

Technical data

- IP rating:
IP30 without door
IP40 with door
IK07
- Isolation Class II 
- White colour RAL 9010
- Rated current:
for devices up to 63 A
- Rated insulation:
400 V a.c./50 Hz
- Glow wiring test: 650°C

Certification according to
IEC 60 439-3.

All products conform to the
ROHS and WEEE directives.








	Designation	Brass terminal 	Pack qty.	Cat. ref.	
				plain	transp.
 VS218	1 row 18 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS118PF	VS118TF
	(H x W x D): 257 x 426 x 72 mm	Earth: 1 x 25 mm ² + 4 x 16 mm ² + 5 x 10 mm ² Neutral: 3 x 16 mm ² + 3 x 10 mm ²	1	VS118PJ	VS118TJ
 VS318	2 row 36 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS218PF	VS218TF
	(H x W x D): 377 x 390 x 99 mm	Earth: 1 x 25 mm ² + 6 x 16 mm ² + 7 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VS218PJ	VS218TJ
 VS418	3 row 54 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS318PF	VS318TF
	(H x W x D): 500 x 390 x 99 mm	Earth: 1 x 25 mm ² + 7 x 16 mm ² + 8 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VS318PJ	VS318TJ
	4 row 72 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS418PF	VS418TF
	(H x W x D): 647 x 390 x 99 mm	Earth: 1 x 25 mm ² + 8 x 16 mm ² + 9 x 10 mm ² Neutral: 3 x 16 mm ² + 4 x 10 mm ²	1	VS418PJ	VS418TJ
	1 row 22 ■	Earth: 3 x 16 mm ² + 4 x 10 mm ²	1	VS122PF	VS122TF
	(H x W x D): 252 x 462 x 99 mm	Earth: 4 x 16 mm ² + 6 x 10 mm ² Neutral: 3 x 16 mm ² + 3 x 10 mm ²	1	VS122PJ	VS122TJ



New golf boxes include an excellent range of accessories, every single feature is conceived to save time and increase simplicity of mounting. It is also possible to find spare parts and additional accessories to the range, such as keys, locks and doors.



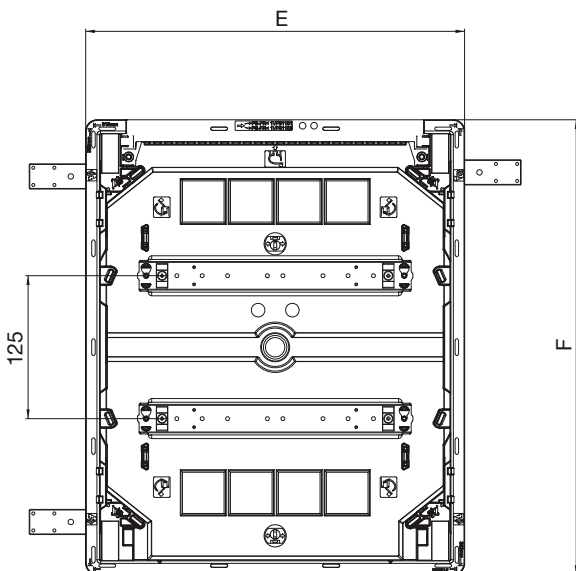
reddot design award
winner 2010

	Designation	Pack qty.	Cat. ref.	
 VZ610N	Opaque doors (spare parts)			
	Doors made of plastic material, RAL 9010			
	For the box	VF/VS104	1	VZ601N
		VF/VS108	1	VZ602N
		VF/VS112	1	VZ603N
		VF/VS212	1	VZ604N
		VF/VS312	1	VZ605N
		VF/VS412	1	VZ606N
		VF/VS118	1	VZ607N
		VF/VS218	1	VZ608N
		VF/VS318	1	VZ609N
		VF/VS418	1	VZ610N
 VZ630N	Transparent doors, (polycarbonate)			
	For the box	VF/VS104	1	VZ621N
		VF/VS108	1	VZ622N
		VF/VS112	1	VZ623N
		VF/VS212	1	VZ624N
		VF/VS312	1	VZ625N
		VF/VS412	1	VZ626N
		VF/VS118	1	VZ627N
		VF/VS218	1	VZ628N
		VF/VS318	1	VZ629N
	VF/VS418	1	VZ630N	
 VZ794N	Lock Supplied with 2 keys	1	VZ794N	
 VZ699N	Cable guides VF/VS	4 pieces	VZ699N	
 VZ789N	Class II caps VS and horizontal assembly kit	4 pieces	VZ789N	
 VZ786N	Brick wall fixation brackets	4 pieces	VZ786N	
 VZ787N	Transparent label holder VF/VS 450 mm	5 pieces	VZ787N	
	Labelling sticker	10 pieces	VZ788N	

Cable entries

- top/bottom

One side cable entry slide, knockout-type, (VF104... and VF108...). The other side pre cuts with diameters 20 mm, 25 mm, 32 mm and 40 mm the wall box is 180° turnable (slider can be placed at top or bottom).



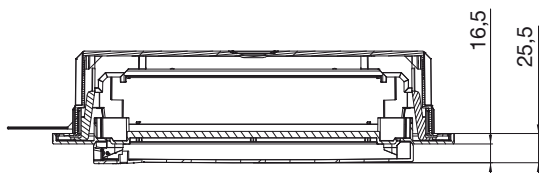
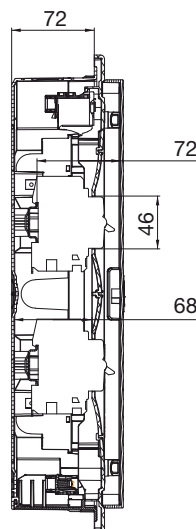
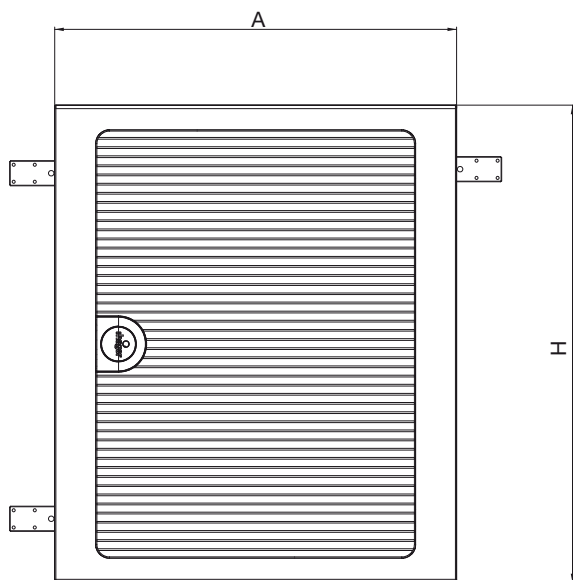
- side

Each one knockout Ø 25 mm on the left and right in the upper and lower connection space.

As of 2 rows, knockouts Ø 25 mm on the left and right between the device rows. (no knockouts at 4 and 8 module enclosures).

Ref.		Dimension (mm)			
		Frame		Wall niche	
		A	H	E	F
VF104...	1 row 4	204	225	170	189
VF108...	2 row 8	275	225	242	189
VF112...	1 row 12	352	293	318	257
VF212...	2 row 12	352	418	318	382
VF312...	3 row 12	352	543	318	507
VF412...	4 row 12	352	688	318	652
VF118...	1 row 18	460	293	426	257
VF218...	2 row 18	460	418	426	382
VF318...	3 row 18	460	543	426	507
VF418...	4 row 18	460	688	426	652
VF122...	1 row 22	532	293	498	257

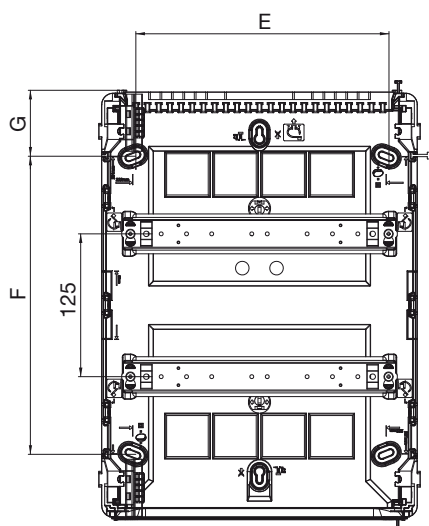
For the wall niche, these dimensions are minimal.



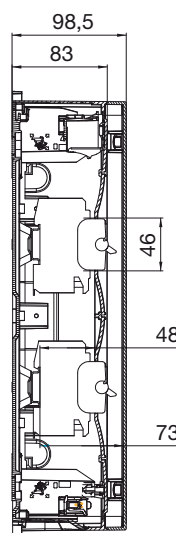
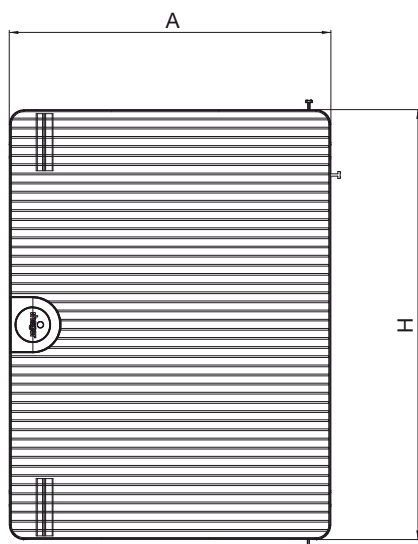
Cable entries

- top/bottom

One side cable entry optimised for use of trunking, knockout-type.
The other side pre cuts with diameters 20 mm, 25 mm,
32 mm and 40 mm the wall box is 180° turnable.



Ref.		Dimension		Wall fixation		
		A	H	E	F	G
VS104...	1 row 4	137,5	183,5	101	68	58
VS108...	2 row 8	209,5	183,5	173,5	68	58
VS112...	1 row 12	281,5	251,5	221,5	135,5	58
VS212...	2 row 12	281,5	376,5	221,5	260,5	58
VS312...	3 row 12	281,5	500	221,5	385,5	58
VS412...	4 row 12	281,5	646,5	221,5	491	78
VS118...	1 row 18	389,5	251,5	329,5	135,5	58
VS218...	2 row 18	389,5	376,5	329,5	260,5	58
VS318...	3 row 18	389,5	500	329,5	385,5	58
VS418...	4 row 18	389,5	646,5	329,5	491	78
VS122...	1 row 22	461,5	251,5	401,5	135,5	58





VB36A - VZ006

IP40 surface mounting enclosures

1-3 rows 18-72 modules.
Enclosures are made of an insulating material coloured white RAL 9010.
The enclosures feature a removable chassis with DIN rails for ease of installation.

Top and bottom cable entry plates are removable and interchangeable. The door is also reversible with an integral flush

handle.

Options

- door look.
- cable trunking.

IP30
IP40

IK 07 without door
IK 08 with door

class II



IEC 60 695-2-1/0
and 60 695-2-1/1

Designation		Pack qty.	Cat. ref.
Surface enclosures			
1 row 18 w.370 x h.300 x d.135mm	E : 1x25 + 7x16 + 9x10 mm ²	1	VB18A
2 rows 36 w. 370 x h. 450 x d. 135mm	E : 1x25 + 11x16 + 13x10 mm ²	1	VB36A
3 rows 54 w. 370 x h. 600 x d. 135mm	E : 2x(1x25 + 7x16 + 9x10 mm ²)	1	VB54A
4 rows 72 w. 370 x h. 750 x d. 135 mm	E : 2x(1x25 + 9x16 + 12x10 mm ²)	1	VB72A



VB18A + VZ008

VB18A + VZ005



VB54A + VZ010

VB54A + VZ007

Designation	Characteristics	Cat. ref.	
		Transp.	Plain
Plain and transparent doors depth : 30 mm	for : VB18A	VZ005	VZ008
	VB36A	VZ006	VZ009
	VB54A	VZ007	VZ010
	VB72A	VZ053	VZ054

Designation	Characteristics	Nr of modules	Cat. ref.
Keylock supplied with 2 keys			VZ310
Connection assembly 63A	2x (3x16 mm ² + 4x10 mm ²)		VZ708
	3x (3x16 mm ² + 2x10 mm ²) + 1x (5x16 mm ² + 6x10 mm ²)		VZ709

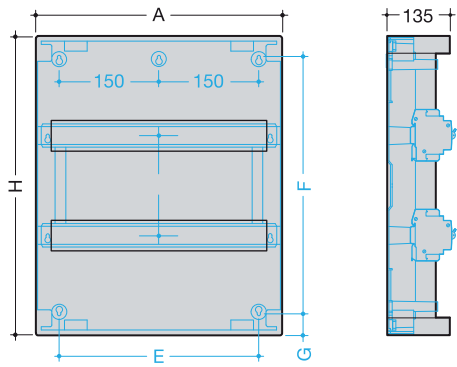


P032 P031

Blanking clips	1/2	P031
	1	P032

vega

VB 36A - 2 rows 36 ■



Dimensions

References		Dimensions (mm)		Fixing centers		
		A	H	E	F	G
VB18A	18 ■	370	300	300	236	32
VB36A	36 ■	370	450	300	386	32
VB54A	54 ■	370	600	300	536	32
VB72A	72 ■	370	750	300	686	32



VA 24D

Surface mounting enclosures with metallic door 1 to 4 rows, 12 to 48 I

Manufactured from insulated material, colour RAL 9010, for devices up to 68 mm depth, DIN rails for shoulder measurement 47 mm, distance between rails 125 mm. metallic door, reversible with integrated handle, sealable front cover.

IP 30 IK 07

class II

Delivered with terminals, blanking stripes with 12 I premarked, and circuit identification labelling IEC 60439-3

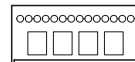
Options

- key lock
- connection assembly



IEC 60 695-2-10 and 60 695-2-11: 750°C

Designation



Réf.



VA 24D

1 row, 12 I
w. 305 x h. 245 x d. 97 mm

Quick Connect earth terminals
E : 3 x 25 mm² + 11 x 4 mm²

VA12D

2 rows, 24 I
w. 305 x h. 370 x d. 97 mm

Quick Connect earth terminals
E : 5 x 25 mm² + 17 x 4 mm²

VA24D



VA 48D

3 rows, 36 I
w. 305 x h. 515 x d. 97 mm

Quick Connect earth terminals
E : 6 x 25 mm² + 20 x 4 mm²

VA36D

4 rows, 48 I
w. 305 x h. 640 x d. 97 mm

Quick Connect earth terminals
E : 8 x 25 mm² + 28 x 4 mm²

VA48D



VZ302N

Keylock standard

1

VZ302N



VZ 711

Connection assembly 63 A

1 phase + neutral
2 x (3 x 16 + 4 x 10 mm²)

VZ403

VZ 403

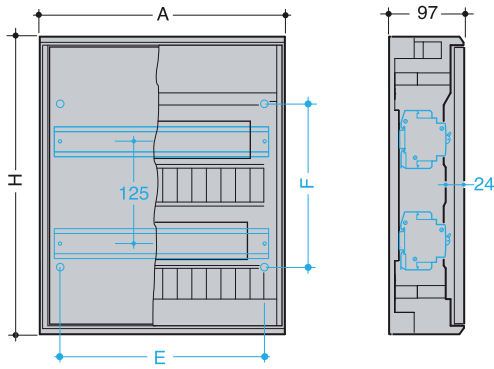
VZ 428

3 phases + neutral
3 x (3 x 16 + 2 x 10 mm²) + 1 x (5 x 16 + 6 x 10 mm²)

VZ428

volta

VA24D - 2 rows 24 ■



Dimensions

References			Dimensions (mm)		Fixing centers	
			A	H	E	F
VA12D	12 ■	1 row	305	245	270	91
VA24D	24 ■	2 rows	305	370	270	216
VA36D	36 ■	3 rows	305	515	270	331
VB48D	48 ■	4 rows	305	640	270	456

New volta 30% more wiring space



The next generation: simple and effective

An outstanding feature of the new generation of volta systems is the enormous space benefits. The housing now offers a full 30 percent more wiring space, boasting the most spacious interior in its class.

The new volta also offers a wide range of designs and accessories that bring individual touch to the product.

hager

www.near-east.hager.com

New generation volta flush enclosures

For installation under plaster and in hollow wall mounting

When building or renovating residential buildings, compact solutions are often required for electrical and multimedia installations.

The volta small distribution board is especially suitable thanks to its easy assembly in walls as well as its manifold versions with 30% larger wiring space by lateral wiring trunking and larger upper and lower connection areas.



Your benefits

- Protection against power theft - the screws can be sealed
- High degree of safety - the door lock can be retrofitted without requiring any additional conversions.
- Large selection of design variants
- Installation even in thin walls
- 30% more wiring space
- Power distributor
- Shorter mounting time
- Swift mounting in cavity walls

Characteristics

- From 1 to 4 rows.
- From 12 to 48 modules.
- IP30
- Protection class II, totally insulated

Expert tips

1



Larger upper and lower connection areas

Offering more space for terminals and wiring.

5



By pressing in the screw in the cavity wall anchor

The levers swivel outwards and click into place. The wall sleeve is fixed into place.

2



All wall sleeves avail of separate side areas

For cable management and retaining clamps.

6



The slides are removed

Before cables are entered. Pre-punched segments on the side facilitate knockouts.

3



Retaining clamps

In the door for circuit tables and plans.

7



New quick connection for the cover

Simply turn to secure or release.

4



A miniature spirit level

Is integrated in all wall sleeves as an installation aid. It can be used for aligning.

8



Flat version

Any standard version with 90 mm installation depth can be converted into a "flat version" with 72 mm installation depth using the raising frame.

Distribution enclosure with metallic door

1 to 4 rows, 12 to 48

- Assembly of devices: to 63A
- Quick connection for the cover with 90° screw, sealable
- Reversible frame with 15mm perpendicularity adjustment
- Integrated spirit level
- Reversible door with

integrated handle

- Frame height 9mm
 - Brass terminal
 - Side cabling channel
 - Colour : RAL 9010 (pure white)
 - IEC 60439-3
- For Quick Connect terminals, please contact us.
- Delivered with:
- Neutral and earth terminals

- plaster connection

- clip for circuit designation table on door (except 12 enclosure)



IEC60695-2-10
IEC60695-2-11: 850°C

Designation	Neutral terminal Earth terminal	Pack qty.	Cat. ref. plain door	transp. door
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Volta flush mounting enclosures



VU12NE

1 row 12 L x H 348 x 356 mm	1x25 + 5x16 + 7x10 1x25 + 5x16 + 7x10	1	VU12NE	VU12NT
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VU24NE

2 rows 24 L x H 348 x 505 mm	1x25 + 7x16 + 9x10 1x25 + 7x16 + 9x10	1	VU24NE	VU24NT
--	--	---	---------------	---------------



VU36NE

3 rows 36 L x H 348 x 630 mm	1x25 + 9x16 + 12x10 1x25 + 9x16 + 12x10	1	VU36NE	VU36NT
--	--	---	---------------	---------------

4 rows 48 L x H 348 x 755 mm	1x25 + 11x16 + 13x10 1x25 + 11x16 + 13x10	1	VU48NE	VU48NT
--	--	---	---------------	---------------

Volta hollow wall flush mounting enclosures



VU48NE

1 row 12 L x H 348 x 356 mm	1x25 + 5x16 + 7x10 1x25 + 5x16 + 7x10	1	VH12NE	-
---------------------------------------	--	---	---------------	---

2 rows 24 L x H 348 x 505 mm	1x25 + 7x16 + 9x10 1x25 + 7x16 + 9x10	1	VH24NE	-
--	--	---	---------------	---

3 rows 36 L x H 348 x 630 mm	1x25 + 9x16 + 12x10 1x25 + 9x16 + 12x10	1	VH36NE	-
--	--	---	---------------	---

4 rows 48 L x H 348 x 755 mm	1x25 + 11x16 + 13x10 1x25 + 11x16 + 13x10	1	VH48NE	-
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VZ302N



VZ304N



VZ131N



VZ808N



VZ811N



VZ814N



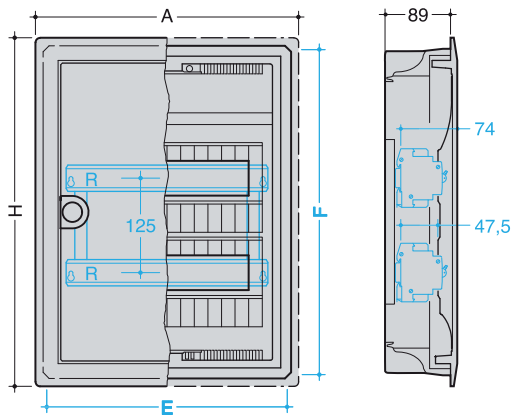
VZ293N



VZ405N

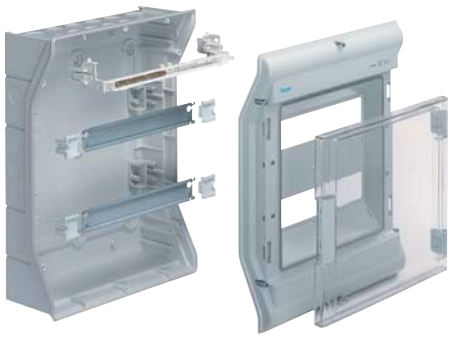
Designation	Characteristics	Pack qty.	Cat. ref.
Keylock standard		1	VZ302N
Spare keys Set of 2 keys	for lock VZ302N	1	VZ304N
Lock bolts Set of 2 lock bolts		1	VZ225N
Transparent door for flush mounting Volta enclosure Frame width 40 mm Colour : RAL 9010 white	1 row	1	VZ131N
	2 rows	1	VZ132N
	3 rows	1	VZ133N
	4 rows	1	VZ134N
Raising frame Allows to convert standard versions into "flat" versions with 72mm installation depth.	for VU12ND	1	VZ111N
	for VU24ND	1	VZ112N
	for VU36ND	1	VZ113N
	for VU48ND	1	VZ114N
Support frame For mirror and picture insert	support frame, Volta, 2 rows, white	1	VZ801N
	support frame, Volta, 3 rows, white	1	VZ802N
	support frame, Volta, 2 rows, black	1	VZ803N
	support frame, Volta, 3 rows, black	1	VZ804N
	support frame, Volta, 2 rows, matt silver	1	VZ807N
	support frame, Volta, 3 rows, matt silver	1	VZ808N
	support frame, Volta, 2 rows, sky blue	1	VZ809N
	support frame, Volta, 3 rows, sky blue	1	VZ810N
Mirror	Mirror for Volta, 2 rows	1	VZ811N
	Mirror for Volta, 3 rows	1	VZ812N
Picture insert	Picture insert, Volta, 2 rows	1	VZ813N
	Picture insert, Volta, 3 rows	1	VZ814N
Pinboard door black expanded plastic plate with aluminium frame colour: silver	Frame, Volta, 2 rows pinboard	1	VZ292N
	Frame, Volta, 3 rows pinboard	1	VZ293N
Mounting kit for hollow wall distribution enclosures		1	VZ405N

VU24NE/NT - 2 rows 24 ■



Dimensions in mm

Ref.		R	enclosure dimension		Wall box hollow wall	
			A	H	E	F
VU12NE/NT	12 ■	1	348	356	315	322
VU24NE/NT	24 ■	2	348	505	315	471
VU36NE/NT	36 ■	3	348	630	315	596
VU18NE/NT	48 ■	4	348	755	315	721



VE212

Surface mounting enclosures with transparent doors

1 to 4 rows from 2 to 48 ■, 1 to 3 rows from 18 to 54 ■.

Adjustable DIN rail for shoulder measurement 47 and 63 mm, transparent hinged cover (2 to 10) or door (12 to 54), 2 lateral knock outs for cable entry or coupling pieces. With premarked knock outs for bushes or cable glands M20, M25, M32, M40 and M50; delivered with loose cable bushes, colour : light grey RAL 7035 nominal voltage : U_i 400V~ nominal current : 63A at 230/400V~

IP65 IK07 < 12 ■ IK08 > 12 ■

class II □

IEC 60 439-3



IEC 60 695-2-10 and 60 695-2-11: 850°C

Designation



Pack qty.

Cat. ref. 1 terminal



VE106.

1 row 2 + 1 ■
w. 111 x h. 175 x d. 93 mm

E : 2x16 + 2x10 mm²
supplied cable bushes
3xM20

1

VE103F

1 row, 4 + 2 ■
w. 165 x h. 190 x d. 113 mm

E : 3x16 + 4x10 mm²
supplied cable bushes
2xM20+2xM25+1xM32

1

VE106F



VE312.

1 row, 8 + 2 ■
w. 237 x h. 210 x d. 114 mm

E : 5x16 + 6x10 mm²
supplied cable bushes
4xM20+2xM25+1xM32

1

VE110F

1 row, 12 ■
w. 310 x h. 302 x d. 151 mm

E : 1x25 + 5x16 + 7x10 mm²
supplied cable bushes
10xM20+2xM25+1xM32

1

VE112F

2 rows, 24 ■
w. 310 x h. 427 x d. 151 mm

E : 1x25 + 7x16 + 9x10 mm²
supplied cable bushes
14xM20+4xM25+1xM32

1

VE212F

3 rows, 36 ■
w. 310 x h. 552 x d. 151 mm

E : 1x25 + 10x16 + 11x10 mm²
supplied cable bushes
14xM20+10xM25+2xM32

1

VE312F



VE218.

4 rows, 48 ■
w. 310 x h. 677 x d. 151 mm

E : 1x25 + 11x16 + 13x10 mm²
supplied cable bushes
14xM20+10xM25+2xM32

1

VE412F

1 row, 18 ■
w. 418 x h. 302 x d. 151 mm

E : 1x25 + 7x16 + 9x10 mm²
supplied cable bushes
8xM20+10xM25+1xM32

1

VE118F

2 rows, 36 ■
w. 418 x h. 452 x d. 151 mm

E : 1x25 + 10x16 + 11x10 mm²
supplied cable bushes
8xM20+14xM25+1xM32

1






VE218F

3 rows, 54 ■
w. 418 x h. 602 x d. 151 mm

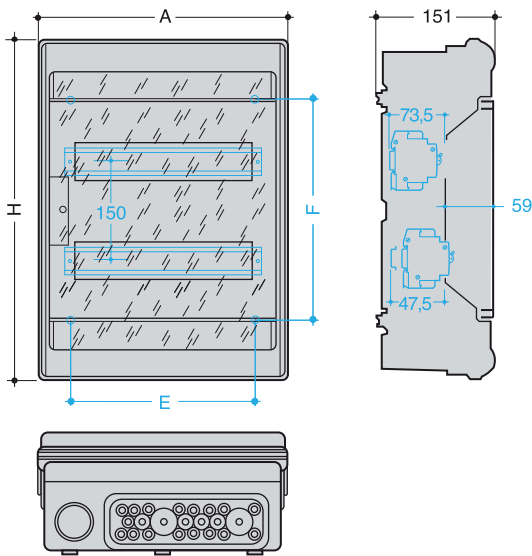
E : 1x (1x25 + 11x16 + 13x10 mm²)
+ 1x(1x25 + 2x16 + 2x10 mm²)
supplied cable bushes
8xM20+18xM25+2xM32

1

VE318F

	Designation	Characteristics	Nr of modules	Pack qty.	Cat. ref.
 VZ403	Single phase connection assembly 63A	2x(3x16 + 4x10 mm ²)		1	VZ403
 VZ428	Three phase + N connection assembly 63A	3x(3x16 + 2x10 mm ²) 1x(5x16 + 6x10 mm ²)		1	VZ428
 VZ311	Lock with 2 keys	for all enclosures from 2 to 54 ■		1	VZ311
 VZ754	Coupling sleeve to juxtapose enclosures reduction of degree of protection to IP54	fit on lateral PG21 knock outs of the enclosures VE112, VE212, VE312, VE412, VE118, VE218 and VE318		1 set	VZ754
 VZ754	Cable entry reduction of degree of protection IP54	14xM20 + 10xM25 + 2xM32		1	VZ754
	Blanking strips	RAL 7035		6 ■	VZ413
				12 ■	VZ415
				18 ■	VZ416

VE212F - 2 rangées 24

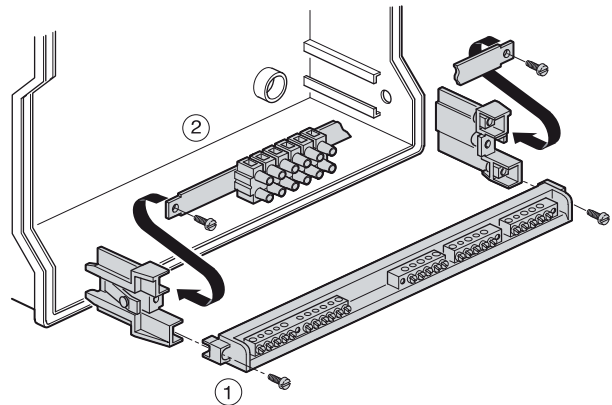


Dimensions in mm

Ref.	R	enclosure dimension		fixing centres	
		A	H	E	F
VE103F	3	111	175	-	147
VE106F	6	165	190	108	158
VE110F	10	237	210	180	173
VE112F	12	310	302	230	155
VE212F	24	310	427	230	280
VE312F	36	310	552	230	405
VE412F	48	310	677	230	550
VE118F	18	418	302	338	155
VE218F	36	418	452	338	305
VE318F	54	418	602	338	455

Connection assembly

mounting on insulating support at both end of the chassis
 additional connection assembly : VZ403 or VZ428



Ref.	knock outs	side mounted
VE103F	2 x M20	-
VE106F	1 x M20 + 1 x M25 + 1 x M20/32	2 x 16
VE110F	1 x M20/32 + 1 x M25 + 3 x M20	2 x 16
VE112F	2 x M20/32/40 + 2 x M25/32 + 3 x M25 + 6 x M20	2 x 21
VE212F	1 x M20/40/50 + 2 x M20/32 + 12 x M25 + 2 x M20	2 x 21
VE312F	2 x M20/32/40 + 2 x M25/32 + 3 x M25 + 6 x M20	3 x 21
VE412F	1 x M20/40/50 + 2 x M20/32 + 12 x M25 + 2 x M20	3 x 21
VE118F	2 x M20/32/40 + 2 x M25/32 + 3 x M25 + 6 x M20	4 x 21
VE218F	1 x M20/40/50 + 2 x M20/32 + 12 x M25 + 2 x M20	4 x 21
VE318F	2 x M20/32/40 + 2 x M25/32 + 3 x M25 + 6 x M20	5 x 21

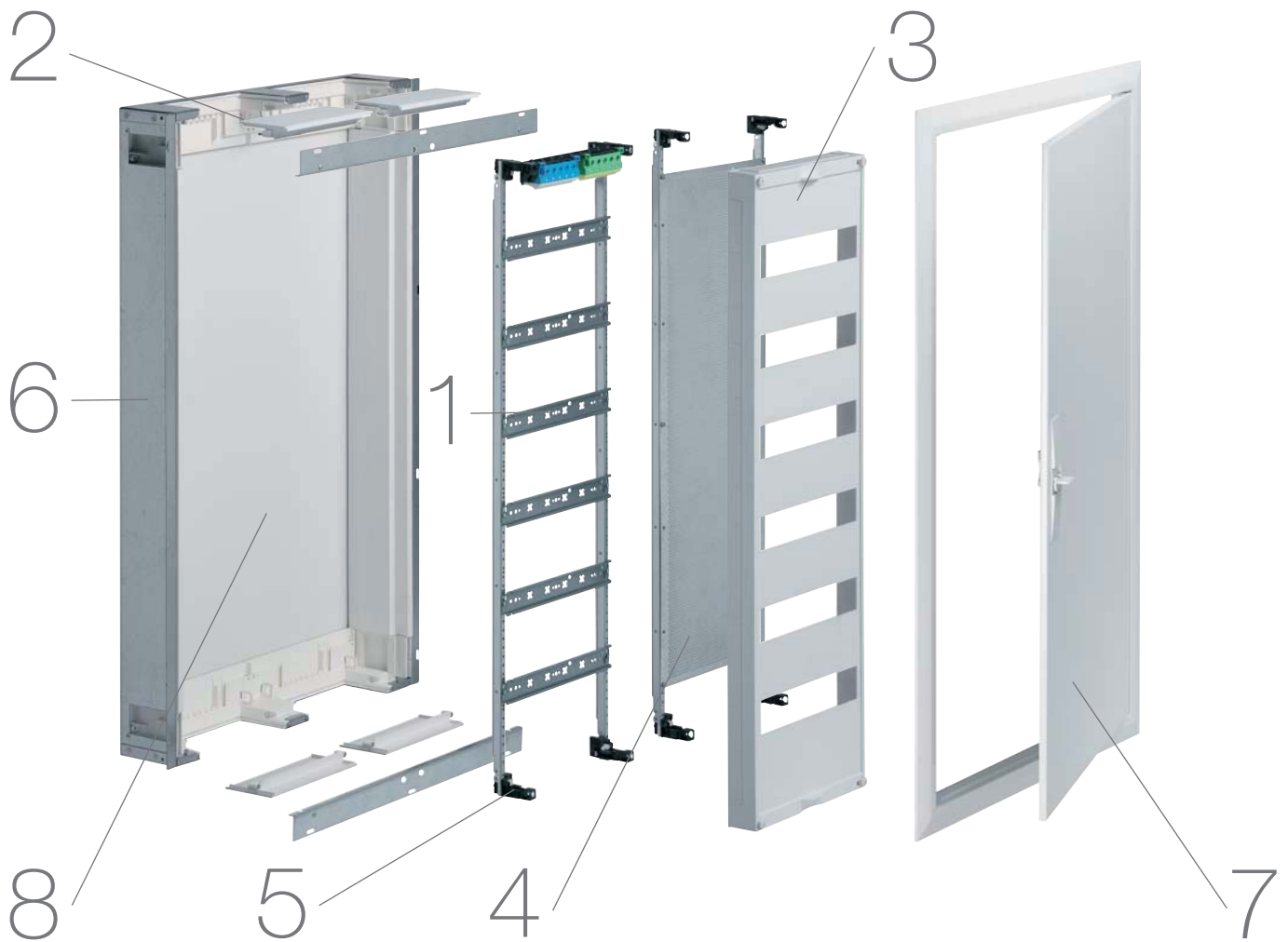
Intelligent installation solutions

FW flush enclosures

Ideal for modern homes and functional buildings

The advanced FW enclosure internal fitting system makes these enclosures the ideal basis for intelligent installation solutions in the construction of modern homes and functional buildings.

Cable entries on the top and bottom, transparent doors optional.



Your benefits

- Recess depth of only 110mm
- For devices up to 125A
- Complete boards come with door, DIN Rail chassis and shock protective cover
- Cable entries top and bottom
- Flat trimming frames
- Integrated cable rails
- Delivered with an earth Quick Connect Terminal. For non Quick Connect terminals, please contact us.

Characteristics

- From 3 to 7 rows.
- From 36 to 336 modules.
- IP30
- Protection class II, totally insulated
- Material: sheet steel

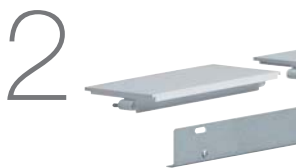
Expert tips



Quick Connect terminals
(According the versions)
standard with complete boards.
Non Quick Connect terminals also
available.



DIN rail kits
Singly detachable.



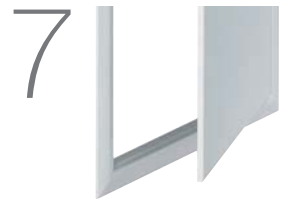
Cable entry plates
Top and bottom, plastic, for feeding
cables in from the front.



Compact size
Only 110mm recess depth.
A robust, galvanised steel wall
cabinet; recess depth 110mm,
galvanised steel mounting brackets
as standard.



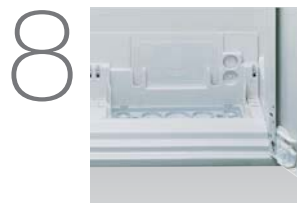
17 references available
3 to 7 Rows
1 to 4 Fields
36 to 336 mod



Flat trimming frames
Trimming frames with door packed
separately, flat trimming frames with
flush differential of <12mm.



Compatible for new media
Slotted mounting plates for fitting of
additional devices e.g. modem, TV
equipment etc...



Integrated cable rails
Top and bottom.

FW flush enclosures IP30 Class II, 110mm depth



- Complete FW flush enclosure**
- for devices up to 125A
 - complete boards come with door, DIN Rail chassis and shock protective cover
 - Quick Connect Terminals for ease and safety
 - cable entries top and bottom
 - flat trimming frames
 - colour: RAL 9010 (pure white)
 - integrated cable rails
 - depth 110 mm
 - material: sheet steel

Comply with IEC 60 439-3.



IEC 60 695-2-10
IEC 60 695-2-11

Glow wire test: 850°C



FW62US2



KM25A



KM05B



KN06P



KN10N



KN14E

Designation	Height (mm)	Width (mm)	PE/N Terminals	Fields	Rows	Nr of modules	Pack qty.	Cat. ref. plain door	transp. door
FW flush enclosure with PE/N terminals per field DIN Rail 35 x 7,5mm 125mm gap	500	300	2 x 17	1	3	36	1	FW31US2	FW31UG2
		550	2 x 17	2	3	72	1	FW32US2	FW32UG2
		800	2 x 17	3	3	108	1	FW33US2	FW33UG2
	650	300	2 x 22	1	4	48	1	FW41US2	FW41UG2
		550	2 x 22	2	4	96	1	FW42US2	FW42UG2
		800	2 x 22	3	4	144	1	FW43US2	FW43UG2
	800	300	2 x 25	1	5	60	1	FW51US2	FW51UG2
		550	2 x 25	2	5	120	1	FW52US2	FW52UG2
		800	2 x 25	3	5	180	1	FW53US2	FW53UG2
		1050	2 x 25	4	5	240	1	FW54US2	FW54UG2
	950	300	2 x 25	1	6	72	1	FW61US2	FW61UG2
		550	2 x 25	2	6	144	1	FW62US2	FW62UG2
		800	2 x 25	3	6	216	1	FW63US2	FW63UG2
		1050	2 x 25	4	6	288	1	FW64US2	FW64UG2
	1100	300	2 x 25	1	7	84	1	FW71US2	FW71UG2
		550	2 x 25	2	7	168	1	FW72US2	FW72UG2
		800	2 x 25	3	7	252	1	FW73US2	FW73UG2

* For non Quick Connect Terminal, use below KMxxx accessories.

Designation	PE/N Terminals	Section in mm ²	Pack qty.	Cat. ref.
PE + N connections snap on lateral support	2 x 13 each	6 x 16, 7 x 10	2	KM13A
	2 x 22 each	10 x 16, 12 x 10	2	KM22A
	2 x 25 each	11 x 16, 14 x 10	2	KM25A
	4 x 5 each	1 x 25, 2 x 16, 2 x 10	1	KM05B

Designation	Description	Width (mm)	Pack qty.	Cat. ref. N terminals	Cat. ref. Ph terminals	Cat. ref. PE terminals
Quick Connect terminals	6 units	30	1	KN06N	KN06P	KN06E
	10 units	45	1	KN10N	KN10P	KN10E
	14 units	60	1	KN14N	KN14P	KN14E
	18 units	75	1	KN18N	KN18P	KN18E
	22 units	90	1	KN22N	KN22P	KN22E
	26 units	105	1	KN26N	KN26P	KN26E

FW metal surface enclosures IP44 Class II, 160mm depth



Distribution enclosures

- extra slim depth 160 mm
- insulation class: II - IP44
- for devices up to 125A

3 to 7 rows, 1 to 7 sections,
from 36 to 336 ■
for distribution < 125A in
commercial installations for
modular devices on DIN rails,
max. depth 96 mm,
shoulder measur. 47 mm
depth: 160 mm

Ingress protection :
IP44 to IEC 529

Class II, additional internal
insulation by polystyrene plates
(P.S.), glow wire test till 850°C
extinguishing = 5 sec.

- Rated insulated voltage:
Ui : 400 V~
In : 125A - three phase 380 V~
- enclosure manufactured from sheet steel
 - colour RAL 9010 (pure white)
 - polyester front covers width 1 section
 - 12 modules per row
 - 125 mm between DIN rails

- 63 A connection assembly with earth and neutral bar in each section
- Quick Connect terminals

Options:

- trimming frame
- lock with key
- separators
- connection assembly TP+N 63A
- sealing kit



FWB52

Designation	Height (mm)	Width x depth (mm)	Fields	Rows	Nr of Modules	Pack qty.	Cat. ref. plain door	transp. door
FW metal surface enclosures	500	300 x 160	1	3	36 ■	1	FWB31S	FWB31GS
		550 x 160	2	3	72 ■	1	FWB32S	FWB32GS
		800 x 160	3	3	108 ■	1	FWB33S	FWB33GS
		1050 x 160	4	3	144 ■	1	FWB34S	FWB34GS
	650	300 x 160	1	4	48 ■	1	FWB41S	FWB41GS
		550 x 160	2	4	96 ■	1	FWB42S	FWB42GS
		800 x 160	3	4	144 ■	1	FWB43S	FWB43GS
		1050 x 160	4	4	192 ■	1	FWB44S	FWB44GS
	800	300 x 160	1	5	60 ■	1	FWB51S	FWB51GS
		550 x 160	2	5	120 ■	1	FWB52S	FWB52GS
		800 x 160	3	5	180 ■	1	FWB53S	FWB53GS
		1050 x 160	4	5	240 ■	1	FWB54S	FWB54GS
	950	300 x 160	1	6	72 ■	1	FWB61S	FWB61GS
		550 x 160	2	6	144 ■	1	FWB62S	FWB62GS
		800 x 160	3	6	216 ■	1	FWB63S	FWB63GS
		1050 x 160	4	6	288 ■	1	FWB64S	FWB64GS
	1100	300 x 160	1	7	84 ■	1	FWB71S	FWB71GS
		550 x 160	2	7	168 ■	1	FWB72S	FWB72GS
		800 x 160	3	7	252 ■	1	FWB73S	FWB73GS
		1050 x 160	4	7	336 ■	1	FWB74S	FWB74GS



FZ132F

Designation	Characteristics	Pack qty.	Cat. ref.	
Doors with flush mounting frame right transparent door delivered with a closure	for FW31U..	1	FZ131F	
	for FW32U..	1	FZ132F	
	for FW33U..	1	FZ133F	
	for FW41U..	1	FZ141F	
	for FW42U..	1	FZ142F	
	for FW43U..	1	FZ143F	
	for FW51U..	1	FZ151F	
	for FW52U..	1	FZ152F	
	for FW53U..	1	FZ153F	
	for FW54U..	1	FZ154F	
	for FW61U..	1	FZ161F	
	for FW62U..	1	FZ162F	
	for FW63U..	1	FZ163F	
	for FW64U..	1	FZ164F	
	for FW71U..	1	FZ171F	
for FW72U..	1	FZ172F		
for FW73U..	1	FZ173F		



FZ003F

Designation	Characteristics	Pack qty.	Cat. ref. left door	right door w/ closure
Plain doors	for FW31U..	1	-	FZ001F
	for FW32U..	1	-	FZ002F
	for FW33U..	1	FZ003F	FZ002F
	for FW41U..	1	-	FZ005F
	for FW42U..	1	-	FZ006F
	for FW43U..	1	FZ007F	FZ006F
	for FW51U..	1	-	FZ009F
	for FW52U..	1	-	FZ010F
	for FW53U..	1	FZ011F	FZ010F
	for FW54U..	1	FZ012F	FZ010F
	for FW61U..	1	-	FZ013F
	for FW62U..	1	-	FZ014F
	for FW63U..	1	FZ015F	FZ014F
	for FW64U..	1	FZ016F	FZ014F
	for FW71U..	1	-	FZ021F
	for FW72U..	1	-	FZ022F
	for FW73U..	1	FZ023F	FZ022F



FZ014F

Slotted doors usage of slotted doors: - don't reduce IP30 - the rated power adjusted as far as 45% on appliance one section; on appliance 2 sections as far as 90%	for FW42U..	1	-	FZ006NV
	for FW43U..	1	FZ007NV	FZ006NV
	for FW51U..	1	-	FZ009NV
	for FW52U..	1	-	FZ010NV
	for FW53U..	1	FZ011NV	FZ010NV
	for FW62U..	1	-	FZ014NV
	for FW71U..	1	-	FZ021NV
	for FW72U..	1	-	FZ022NV
	for FW73U..	1	FZ023NV	FZ022NV



FZ014FT

Designation	Characteristics	Pack qty.	Cat. ref.
Transparent doors w. 550mm, 2 spans right transparent door delivered with a closure			
for enclosures h. 650mm	for FW42/43U..	1	FZ006FT
for enclosures h. 800mm	for FW52/53/54U..	1	FZ010FT
for enclosures h. 950mm	for FW62/63/64U..	1	FZ014FT
for enclosures h. 1100mm	for FW72/73U..	1	FZ022FT



UW31U

Designation	Height (mm)	Width (mm)	No. of spans	No. of rows	No. of modules	Pack qty.	Cat. ref.
Mounting kits							
for flush enclosures 500mm	450	250	1	3	36	1	UW31U
for flush enclosures 650mm	600	250	1	4	48	1	UW41U
for flush enclosures 800mm	750	250	1	5	60	1	UW51U
for flush enclosures 950mm	900	250	1	6	72	1	UW61U
for flush enclosures 1100mm	1050	250	1	7	84	1	UW71U



UN61TN

Designation	Characteristics	Height (mm)	Width (mm)	No. of spans	No. of rows	Pack qty.	Cat. ref.
Kits for perforated mounting plates							
	for FW31U..	310	248	1	3	1	UN31TN
	for FW32/33U..	310	498	2	3	1	UN32TN
	for FW41U..	460	248	1	4	1	UN41TN
	for FW42/43U..	460	498	2	4	1	UN42TN
	for FW51U..	610	248	1	5	1	UN51TN
	for FW52/53/54U..	610	498	2	5	1	UN52TN
	for FW61U..	760	248	1	6	1	UN61TN
	for FW62/63/64U..	760	498	2	6	1	UN62TN
	for FW71U..	910	248	1	7	1	UN71TN
	for FW72/73U..	910	498	2	7	1	UN72TN



UZ61M5

Perforated mounting plates		240	248	1	2	1	UZ21M6
		310	248	1	3	1	UZ31M5
		390	248	1	3	1	UZ31M6
		310	498	2	3	1	UZ32M5
		460	248	1	4	1	UZ41M5
		570	248	1	4	1	UZ41M6
		460	498	2	4	1	UZ42M5
		610	248	1	5	1	UZ51M5
		610	498	2	5	1	UZ52M5
		760	248	1	6	1	UZ61M5
		760	498	2	6	1	UZ62M5







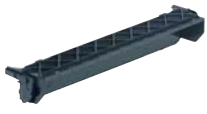

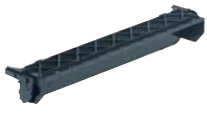


UN03A

Set of 2 uprights		for enclosures h. 500 mm	1 set	UN03FN
		for enclosures h. 650 mm	1 set	UN04FN
		for enclosures h. 800 mm	1 set	UN05FN
		for enclosures h. 950 mm	1 set	UN06FN
		for enclosures h. 1100 mm	1 set	UN07FN

Rail DIN	7,5 mm	1	30	U842B
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Connection earth for perforated plates	400mm, 1,5 mm ²	1	UL01G1
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	Designation	Height (mm)	Width (mm)	No. of spans	No. of rows	No. of modules	Pack qty.	Cat. ref.	
 UN06GN	Supporting structures	450	250	1	3	36	1	UN03GN	
	DIN rails with distance between the centres: 125mm, without plate	600	250	1	4	48	1	UN04GN	
		750	250	1	5	60	1	UN05GN	
		900	250	1	6	72	1	UN06GN	
		1050	250	1	7	84	1	UN07GN	
 US11A3	Opened protective covers	150	250	1	1	12	1	US11A3	
	DIN rails with distance between the centres: 125mm, for modular devices	300	250	1	2	24	1	US21A3	
		450	250	1	3	36	1	US31A3	
		600	250	1	4	48	1	US41A3	
		750	250	1	5	60	1	US51A3	
		900	250	1	6	72	1	US61A3	
 US21A1	Closed protective covers	150	250	1	1	12	1	US11A1	
		300	250	1	2	24	1	US21A1	
		450	250	1	3	36	1	US31A1	
		600	250	1	4	48	1	US41A1	
		750	250	1	5	60	1	US51A1	
 ZZ10H	Vertical partitions	for enclosures height:							
		500 mm					1	UT44AN	
		650 mm					1	UT44BN	
		800 mm					1	UT44CN	
		950 mm					1	UT44DN	
	1100 mm					1	UT44FN		
 UZ04A1	Horizontal partitions	to mount between the plates						1	ZZ10H
	Double towers with screw							1	UZ04A1
 UZ03A1	Tower underparts with bar							1	UZ03A1
	Low tower underparts							1	UZ01A2
 UZ00K1	Adapter kits	- 12 mm adjustable - max. 32 mm						1 set	FZ279
	Hollow wall mounting kits							1 set	FZ276
 UZ03A1	Sliders							1	FZ277
	Connection assembly for Quick Connect							1	UZ00K1
 KN00A	Universal adaptor							1	KN00A
	Door shields with handle							1	FZ598N

Complete spans for modular devices and telecom applications can be easily integrated in the enclosure and combined according to the needs.



UN06GN



UW61V



UN61TN



UZ61M5



UN03A

Designation	Height (mm)	Width (mm)	No. of spans	No. of rows	No. of modules	Pack qty.	Cat. ref.
Mounting kits for enclosures	450	250	1	3	36	1	UW31V
for surface enclosures 500mm	600	250	1	4	48	1	UW41V
for surface enclosures 650mm	750	250	1	5	60	1	UW51V
for surface enclosures 800mm	900	250	1	6	72	1	UW61V
for surface enclosures 950mm	1050	250	1	7	84	1	UW71V
for surface enclosures 1100mm							
Kits for perforated mounting plates	310	248	1	3		1	UN31TN
(to be used with partitions, see next page for references)	310	498	2	3		1	UN32TN
	460	248	1	4		1	UN41TN
	460	498	2	4		1	UN42TN
	610	248	1	5		1	UN51TN
	610	498	2	5		1	UN52TN
	760	248	1	6		1	UN61TN
	760	498	2	6		1	UN62TN
	910	248	1	7		1	UN71TN
	910	498	2	7		1	UN72TN
Perforated mounting plates	240	248	1	2		1	UZ21M6
	310	248	1	3		1	UZ31M5
	390	248	1	3		1	UZ31M6
	310	498	2	3		1	UZ32M5
	460	248	1	4		1	UZ41M5
	570	248	1	4		1	UZ41M6
	460	498	2	4		1	UZ42M5
	610	248	1	5		1	UZ51M5
	610	498	2	5		1	UZ52M5
	760	248	1	6		1	UZ61M5
	760	498	2	6		1	UZ62M5
Set of 2 uprights	for enclosure h.500 mm					1	UN03A
	for enclosure h.650 mm					1	UN04A
	for enclosure h.800 mm					1	UN05A
	for enclosure h.950 mm					1	UN06A
	for enclosure h.1100 mm					1	UN07A
Connection earth for perforated plates	400mm, 1,5 mm ²					1	UL01G1



US31A3



UZ04A1



UZ05A1



UZ03A1



UZ01A2



UZ40F1



ZZ10H



UZ25V2



UZ01V2



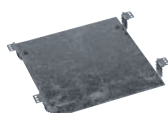
FZ803B



FZ890N



U850S



UT26B

Designation	Height (mm)	Width (mm)	No. of spans	No. of rows	No. of modules	Pack qty.	Cat. ref.
Opened protective covers	150	250	1	1	12	1	US11A3
DIN rails with distance between the centres: 125mm, for modular devices	300	250	1	2	24	1	US21A3
	450	250	1	3	36	1	US31A3
	600	250	1	4	48	1	US41A3
	750	250	1	5	60	1	US51A3
	900	250	1	6	72	1	US61A3
Closed protective covers	150	250	1	1	12	1	US11A1
	300	250	1	2	24	1	US21A1
	450	250	1	3	36	1	US31A1
	600	250	1	4	48	1	US41A1
	750	250	1	5	60	1	US51A1
	150	500	2	1	24	1	US12A1
	300	500	2	2	48	1	US22A1
	450	500	2	3	72	1	US32A1
	600	500	2	4	96	1	US42A1
	150	500	3	1	24	1	US13A1
	300	500	3	2	48	1	US23A1
	450	500	3	3	72	1	US33A1
Double towers with screw						1	UZ04A1
Top tower overpart	15 mm / 1 set = 4 pieces					1	UZ05A1
Tower underparts with bar						1	UZ03A1
Low tower underparts						1	UZ01A2
Partitions							
vertical	for enclosures height:						
	500 mm					1	UZ30F1
	650 mm					1	UZ40F1
	800 mm					1	UZ50F1
	950 mm					1	UZ60F1
	1100 mm					1	UZ70F1
horizontal	for 1 span width					1	ZZ10H
Cable guides	strap small section					1	UZ25V2
1 set = 20 pieces							
Fixing support for cable guide	clip fixing					1	UZ01V2
vertical							
Wall fixing brackets	for flush and surface mounting					1	FZ803B
1 set = 4 pieces							
Suspension rail	to mount enclosures delivered with 4 brackets					1	FZ890N
length: 2 m							
Suspension brackets	for wall fixing rails FZ890N					1	FZ799N
Strain relief rails	length: 140 mm for mounting on lower / upper part profile C 25 x 10 mm, slot 11 mm					1	U850S
Mounting plates							
with adjustable angle brackets	h.115 x w.210 mm lowering 29 mm					1	UT26A
	h.215 x w.210 mm lowering 29 mm					1	UT26B

	Designation	Characteristics	Pack qty.	Cat. ref.
	Locks	with 2 keys, to replace the original lock.	1	FZ597N
FZ597N	Sealing caps without cap		1	FZ226
	with cap	male square 8 mm centre, plastic	1	FZ821N
FZ226		male square 6 mm centre, metal	1	FZ822N
		with slot, plastic	1	FZ823N
FZ821N		with lock cylinder	1	FZ824N
	Rails 7,5 mm lowered	1 span, lowering up to 21 mm	1	UT22B
FZ821N		1 span, lowering up to 32 mm	1	U82A
	Diagram holders	Flexible, A4 format, self adhesive, to stick inside the doors	10	FZ794
UT22B		Rigid, A4 format, made of metal sheet, delivered with fixing screws (from door height 800 mm and width 550 mm)	1	FZ707
	Touch up paint	for final touch colour RAL 9010 (pure white)	1	FZ791N
FZ794	Blanking stripes length 221 mm	to blank opening 9 mm pre-cut, RAL 9010 (pure white)	10	S35S
	length 221 mm, lockable	to blank and lock opening 9 mm pre-cut, RAL 9010 (pure white)	10	ZZ34S
FZ791N	Identifier stripes 1 span	to stick on protection plates, delivered with label (1set = 12 pieces)	1 set	UZ005
	Identifier labels 1 span	to insert in UZ005 identifier stripe, available on sheet (1 sheet = 12 labels)	1	UZ006
UZ005	Marking systems 1 set = 10 pieces	sheet "circuits caption" to stick on the inner side of the door	1	VZ717
	Marking strips 1 set = 10 pieces	transparent stripe with 14 ■ length label.	1	VZ602
UZ006	Connection assemblies	for Quick Connect	1	UZ00K1
	Universal adapters			KN00A
UZ00K1	Level adapters			UZ00K2



FZ22B

Designation	Internal dimensions		Pack qty.	Cat. ref.	
	Height	Width (ext. dimension + 48 mm)			
Finishing frame max. adjustment 45 mm	for enclosures:				
	500	300	FWB31	1	FZ011B
		550	FWB32	1	FZ012B
		800	FWB33	1	FZ013B
		1050	FWB34	1	FZ014B
	650	300	FWB41	1	FZ021B
		550	FWB42	1	FZ022B
		800	FWB43	1	FZ023B
		1050	FWB44	1	FZ024B
	800	300	FWB51	1	FZ11B
		550	FWB52	1	FZ12B
		800	FWB53	1	FZ13B
		1050	FWB54	1	FZ14B
	950	300	FWB61	1	FZ21B
		550	FWB62	1	FZ22B
		800	FWB63	1	FZ23B
		1050	FWB64	1	FZ24B
	1100	300	FWB71	1	FZ31B
		550	FWB72	1	FZ32B
		800	FWB73	1	FZ33B
		1050	FWB74	1	FZ34B



FZ001N

Designation	Characteristics	Pack qty.	Cat. ref.	
			left door	right door w/ closure
Plain doors	for FWB31	1	-	FZ001N
	for FWB32	1	-	FZ002N
	for FWB33	1	FZ003N	FZ002N
	for FWB34	1	FZ004N	FZ002N
	for FWB41	1	-	FZ005N
	for FWB42	1	-	FZ006N
	for FWB43	1	FZ007N	FZ006N
	for FWB44	1	FZ008N	FZ006N
	for FWB51	1	-	FZ009N
	for FWB52	1	-	FZ010N
	for FWB53	1	FZ011N	FZ010N
	for FWB54	1	FZ012N	FZ010N
	for FWB61	1	-	FZ013N
	for FWB62	1	-	FZ014N
	for FWB63	1	FZ015N	FZ014N
	for FWB64	1	FZ016N	FZ014N
	for FWB71	1	-	FZ021N
	for FWB72	1	-	FZ022N
	for FWB73	1	FZ023N	FZ022N
	for FWB74	1	FZ024N	FZ022N
Slotted doors	for FWB42	1	-	FZ006NV
	for FWB43	1	FZ007NV	FZ006NV
	for FWB51	1	-	FZ009NV
	for FWB52	1	-	FZ010NV
	for FWB53	1	FZ011NV	FZ010NV
	for FWB62	1	-	FZ014NV
	for FWB71	1	-	FZ021NV
	for FWB72	1	-	FZ022NV



FZ106N



FZ401



FZ598N



FZ425



FZ428



UZ06A1

Designation	Characteristics	Pack qty.	Cat. ref.
Transparent doors width 550mm, 2 sections			
for enclosures height 500 mm	FWB32 , FWB33 , FWB34 enclosures width 550 to 1050 mm	1	FZ107N
for enclosures height 650 mm	FWB42S, FWB43S, FWB44S enclosures width 550 to 1050 mm	1	FZ104N
for enclosures height 800 mm	FWB52S, FWB53S, FWB54S enclosures width 550 to 1050 mm	1	FZ106N
for enclosures height 950 mm	FWB62S, FWB63S, FWB64S enclosures width 550 to 1050 mm	1	FZ110N
for enclosures height 1100 mm	FWB72S, FWB73S, FWB74S enclosures width 550 to 1050 mm	1	FZ102N
width 300mm, 1 section			
for enclosures height 500 mm	FWB31 enclosures width 300 mm	1	FZ105N
for enclosures height 650 mm	FWB41 enclosures width 300 mm	1	FZ108N
All transparent doors can also use for appliance FW flush mounting.			
Set of stoppers	to block opened cable entries	1	FZ401
Door shield with handle	with camlock, IP44	1	FZ598N
Cable entry	for top and bottom	1	FZ425
Cable entry	for rear cable entry	1	FZ428
Fixing screws for plates	spare screws, sealable for plate	1	UZ06A1

General description :

Flush mounting enclosures for domestic and commercial electrical distribution.

Included in delivery :

- enclosures with door,
- carrier rails with complete board,
- device covers with 46mm slots, with complete board,
- comes fitted with

Quick Connect Terminals in complete boards or with brass terminals (according the versions)

Complies with Standards :

IEC 60 439-3

Nominal voltage:

AC 400V / 50Hz

Current rating:

for devices up to 125A

Protection class:

II (insulation protected)

IP rating:

IP30

Protection details:

Protection against direct contact: IP3X behind the door

Protection with indirect contact: insulation protection

Door :

frontal fastening, with internal hinges, all adjustable, removable without tools, optionnally attachable on right or left, width from 800mm double door, opening angle 110°.

Door lock :

twist release lock, exchangeable with other locks, 3 point bar locks on double door cabinet.

Quick Connect Terminals :

built in per field to every complete board

Colour :

RAL 9010 (pure white)

Cable entries :

cable entry plates top and bottom made of plastic to feed in the cable from the front.

Material :

Housing and door made of steel, powder coated.

Carrier rails :

Steel, powder coated.

Supports :

Plastic

Device rails :

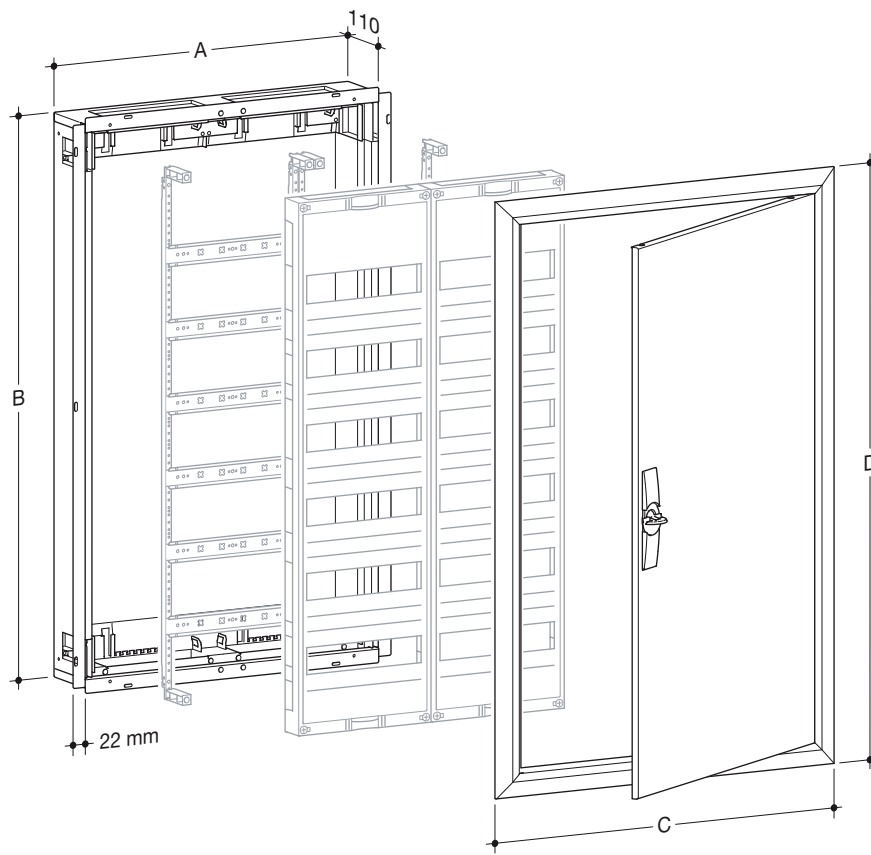
Steel, galvanised

Covers and knockouts :

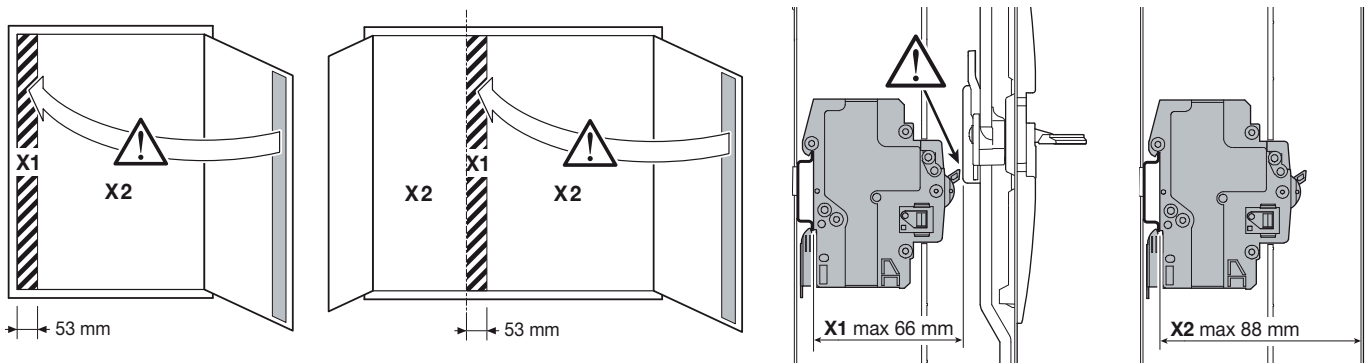
Plastic

	height (mm)	width (mm)	depth (mm)	DIN rails (12)	fields across	Nr of modules	IP class (standard)
FW31US2	500	300	110	3	1	36	IP30
FW32US2		550	110	3	2	72	IP30
FW33US2		1050	110	3	3	108	IP30
FW41US2	650	300	110	4	1	48	IP30
FW42US2		550	110	4	2	96	IP30
FW43US2		1050	110	4	3	144	IP30
FW51US2	800	300	110	5	1	60	IP30
FW52US2		550	110	5	2	120	IP30
FW53US2		800	110	5	3	180	IP30
FW54US2		1050	110	5	4	240	IP30
FW61US2	950	300	110	6	1	72	IP30
FW62US2		550	110	6	2	144	IP30
FW63US2		800	110	6	3	216	IP30
FW64US2		1050	110	6	4	288	IP30
FW71US2	1100	300	110	7	1	84	IP30
FW72US2		550	110	7	2	168	IP30
FW73US2		1050	110	7	3	252	IP30

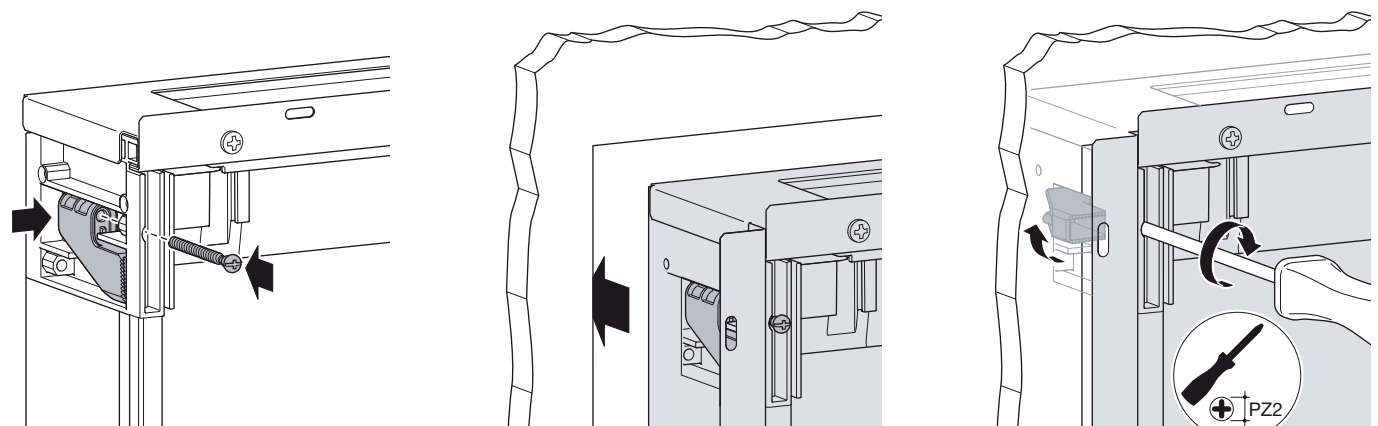
FW Flush enclosures, depth 110mm



Ref.	Recess dimensions		Dimensions incl. trimming frame	
	A	B	C	D
FW31US2	305	502	353	553
FW32US2	555	502	603	553
FW33US2	805	502	853	553
FW41US2	305	652	353	703
FW42US2	555	652	603	703
FW43US2	805	652	853	703
FW51US2	305	802	353	853
FW52US2	555	802	603	853
FW53US2	805	802	853	853
FW54US2	1055	802	1103	853
FW61US2	305	952	353	1003
FW62US2	555	952	603	1003
FW63US2	805	952	853	1003
FW64US2	1055	952	1103	1003
FW71US2	305	1102	353	1153
FW72US2	555	1102	603	1153
FW73US2	805	1102	853	1153



Hollow wall mounting



General description :

Surface mounting enclosures for domestic and commercial electrical distribution.

Included in delivery :

- enclosures with door,
- carrier rails with complete board,
- device covers with 46mm slots, with complete board,

Complies with Standards :

IEC 60 439-3

Nominal voltage:

AC 230/400V, 50Hz

Current rating:

for devices up to 125A

Protection class:

II (insulation protected)

IP rating:

IP44

Protection details:

Protection against direct contact: IP3X behind the door

Protection with indirect contact: insulation protection

Door :

frontal fastening, with internal hinges, all adjustable, removable without tools, optionnally attachable on right or left, width from 800mm double door, opening angle 110°.

Door lock :

twist release lock, exchangeable with other locks, 3 point bar locks on double door cabinet.

Quick Connect Terminals or brass terminals

(according the versions) :

please contact us

Colour :

RAL 9010 (pure white)

Cable entries :

cable entry plates top and bottom made of plastic to feed in the cable from the front.

Material :

Housing and door made of steel, powder coated.

Carrier rails :

Steel, powder coated.

Supports :

Plastic

Device rails :

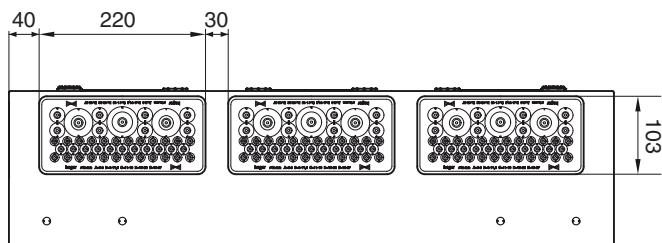
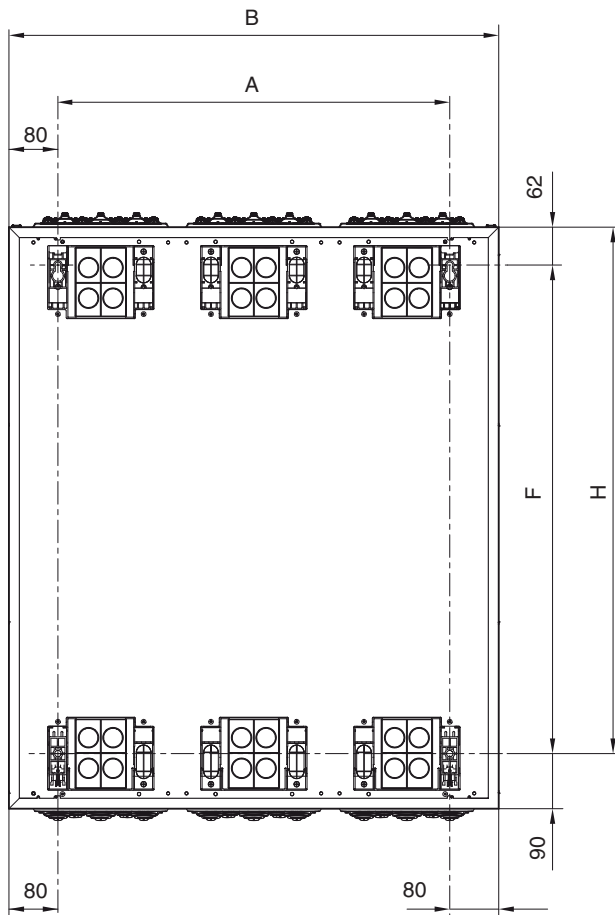
Steel, galvanised

Covers and knockouts :

Plastic

	height (mm)	width (mm)	depth (mm)	DIN rails (12)	fields across	No of modules	IP class (standard)
FWB31	500	300	161	3	1	36	IP44
FWB32		550	161	3	2	72	IP44
FWB33		800	161	3	3	108	IP44
FWB34		1050	161	3	4	144	IP44
FWB41	650	300	161	4	1	48	IP44
FWB42		550	161	4	2	96	IP44
FWB43		800	161	4	3	144	IP44
FWB44		1050	161	4	4	192	IP44
FWB51	800	300	161	5	1	60	IP44
FWB52		550	161	5	2	120	IP44
FWB53		800	161	5	3	180	IP44
FWB54		1050	161	5	4	240	IP44
FWB61	950	300	161	6	1	72	IP44
FWB62		550	161	6	2	144	IP44
FWB63		800	161	6	3	216	IP44
FWB64		1050	161	6	4	288	IP44
FWB71	1100	300	161	7	1	84	IP44
FWB72		550	161	7	2	168	IP44
FWB73		800	161	7	3	252	IP44
FWB74		1050	161	7	4	336	IP44

FWB surface enclosures

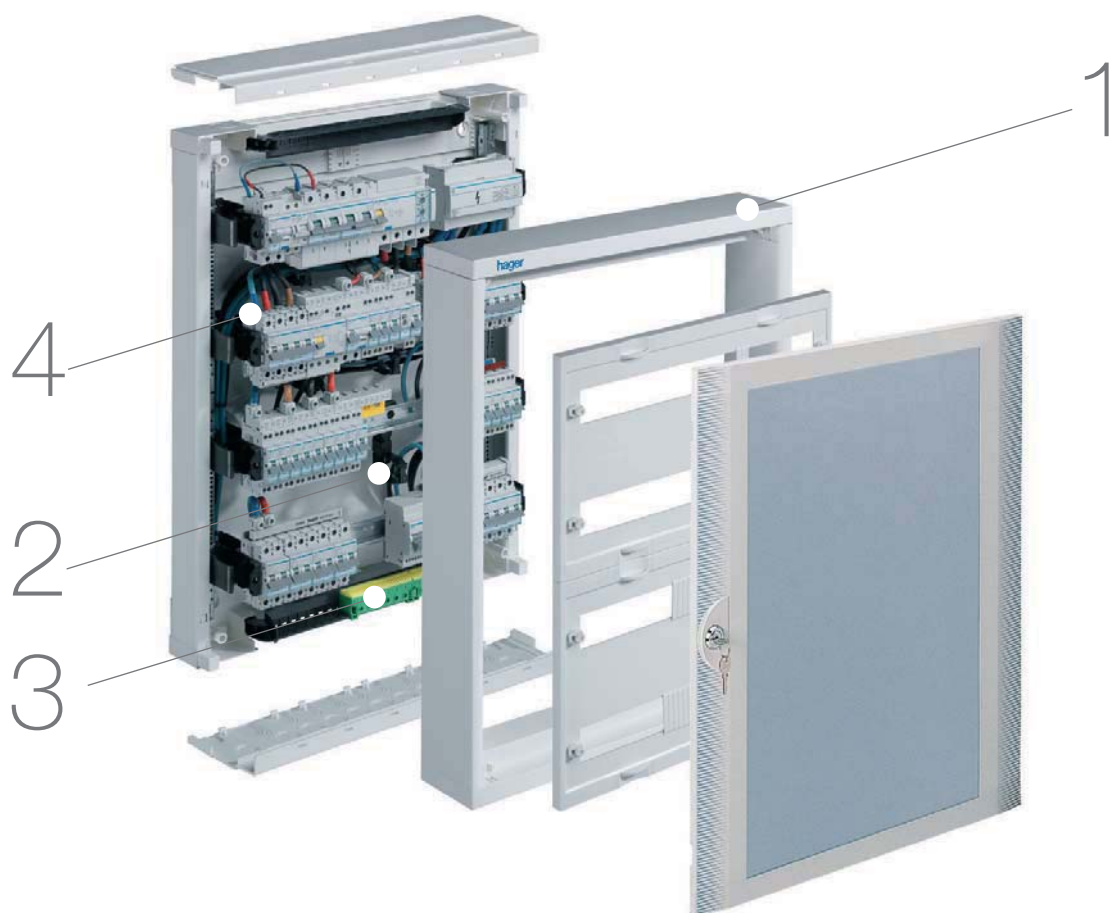


Ref.	dimensions			
	H	B	A	F
FWB31S	500	300	348	140
FWB32S	500	550	348	390
FWB33S	500	800	348	640
FWB34S	500	1050	348	890
FWB41S	650	300	498	140
FWB42S	650	550	498	390
FWB43S	650	800	498	640
FWB44S	650	1050	498	890
FWB51S	800	300	648	140
FWB52S	800	550	648	390
FWB53S	800	800	648	640
FWB54S	800	1050	648	890
FWB61S	950	300	798	140
FWB62S	950	550	798	390
FWB63S	950	800	798	640
FWB64S	950	1050	798	890
FWB71S	1100	300	948	140
FWB72S	1100	550	948	390
FWB73S	1100	800	948	640
FWB74S	1100	1050	948	890

Distribution enclosure vega D

For housing and commercial premises


The vega D enclosure is adapted for installations in houses and commercial premises up to 160A. It can be delivered in a ready-to-mount configuration or to be completed. All the enclosures of this range have 24 modules rows.



Your benefits

- Easy to install cables inside the enclosure
- Common solution for housing and commercial premises
- Design in harmony with quadro distribution boards

Characteristics

- From 2 to 7 rows.
- From 48 to 168 modules.
- IP30 - IP41 - IP54
- Protection class II , totally insulated
- Material: sheet steel
- Available in surface or flush mounting version

Expert tips

1



Removable frame

For an optimal access to the devices installed inside the enclosure.

3



Integrated Quick Connect terminals

All the enclosures of the range are pre-equipped with Quick connect earth terminals.

2



Horizontal wire guides

Optional, to mount on DIN rails.

4




Vertical stream

Double capacity vertical passage for more comfort.

The flush mounting vega D enclosures can be installed in brick or partition walls (with a specific kit available as an option) and is made of 3 distinctive parts :

- **a metallic flush mounting box** depth 110 mm with insulated cable entries on top and bottom,


- **a removable chassis** with uprights and units for modular


devices (24  per row), the front plates being fixed directly on the chassis. The modular distribution enclosures are fitted with specific internal modules.

- **a metallic finishing frame** of 70mm fixed on the flush box by means of 4 screws. This frame will accept a plain or transparent door. Additional brass terminals without base can be added on


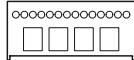





the connection assemblies fitted in the enclosures.

IP 30 / IK 07 without door
IP 41 / IK 07 without door

class II 

 IEC 60 695-2-1/0 and 60 695-2-1/1

Comply with IEC 60 439-3.

Designation	Quick Connect Terminals	Height (mm)	Pack qty.	Cat. ref.	
 Enclosures to be completed without door w. 600 x d. 182 mm frame height: 70 mm					
	with an empty space for internal module				
	5 x 25 + 17 x 4 mm ²	500	1	FU22A	
	+ 1 row (24 )	2(5 x 25 + 17 x 4 mm ²)	650	1	FU32A
	+ 2 rows (48 )	(5 x 25 + 17 x 4 mm ²) + (6 x 25 + 20 x 4 mm ²)	800	1	FU42A
	+ 3 rows (72 )	(5 x 25 + 17 x 4 mm ²) + (6 x 25 + 20 x 4 mm ²)	950	1	FU52A
+ 4 rows (96 )	3(6 x 25 + 20 x 4 mm ²)	1100	1	FU62A	
+ 5 rows (120 )	3(6 x 25 + 20 x 4 mm ²)	1250	1	FU72A	

FU22A




FU42A



FU62A

The vega D surface mounting enclosures is made of 3 distinctive parts :

- a **U shaped bottom** with removable cable entries on top and bottom allowing an easier access to fixing points and wire circulation. Cable of larger section can be fixed on it with cable ties,


- a **removable chassis** with uprights and units for modular devices (24  per row), the front plates being fixed directly on the chassis,


- a **finishing frame**, fixed on the U shaped bottom, which will accept a plain or transparent door.

Additional brass terminals without base can be added on

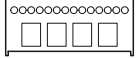





the connection assemblies fitted in the enclosures.

IP30 / IK07 without door
IP41 / IK07 with door

class II 

 IEC 60 695-2-1/0 and 60 695-2-1/1

Comply with IEC 60 439-3.

Designation	Quick Connect Terminals	Height (mm)	Pack qty.	Cat. ref.	
Enclosures to be completed without door, w. 550 x d. 185 mm					
	with an empty space for internal module				
	5 x 25 + 17 x 4 mm ²	400	1	FD22A	
	+ 1 row (24 )	2(5 x 25 + 17 x 4 mm ²)	550	1	FD32A
	+ 2 rows (48 )	(5 x 25 + 17 x 4 mm ²) + (6 x 25 + 20 x 4 mm ²)	700	1	FD42A
	+ 3 rows (72 )	(5 x 25 + 17 x 4 mm ²) + (6 x 25 + 20 x 4 mm ²)	850	1	FD52A
+ 4 rows (96 )	3(6 x 25 + 20 x 4 mm ²)	1000	1	FD62A	
+ 5 rows (120 )	3(6 x 25 + 20 x 4 mm ²)	1150	1	FD72A	



FD32A



FD52A



FD72A

The weatherproof IP54 vega D enclosure is equipped with:
 - removable cable entries on top and bottom,
 - a removable chassis with uprights and units for modular devices (24 ■ per row).

Delivered with:
 - plain door
 - external fixing bracket

Additional brass terminals without base can be added on the connection assemblies fitted in the enclosures.

IP 30 / IK 07 without door
IP 41 / IK 07 with door

class II



IEC 60 695-2-10 and 60 695-2-11

Comply with IEC 60 439-3.



FV42A



FV62A

Designation	Quick Connect Terminals 	Height (mm)	Pack qty.	Cat. ref.
Enclosures to be completed with door, w. 550 x d. 218 mm	with an empty space for internal module			
	5 x 25 + 17 x 4 mm ²	500	1	FV22A
+ 1 row (24 ■)	2(5 x 25 + 17 x 4 mm ²)	650	1	FV32A
+ 2 rows (48 ■)	(5 x 25 + 17 x 4 mm ²) + (6 x 25 + 20 x 4 mm ²)	800	1	FV42A
+ 3 rows (72 ■)	(5 x 25 + 17 x 4 mm ²) + (6 x 25 + 20 x 4 mm ²)	950	1	FV52A
+ 4 rows (96 ■)	3(6 x 25 + 20 x 4 mm ²)	1100	1	FV62A
+ 5 rows (120 ■)	3(6 x 25 + 20 x 4 mm ²)	1250	1	FV72A

Designation	Characteristics	Cat. ref.
Equipment units	for 3 or 4 poles MCCBs - DIN rail vertical position	UK22A2
	for DIN rail modular devices 2 row of 24	UD22B3
	with perforated plate w.415 x h.235 mm	UD22C2
	for terminal blocks	UD22A5
Plain doors	for FD22A / FU22A, h. 350mm	FD22P
	for FD32A / FU32A, h. 500mm	FD32P
	for FD42A / FU42A, h. 650mm	FD42P
	for FD52A / FU52A, h. 800mm	FD52P
	for FD62A / FU62A, h. 950mm	FD62P
	for FD72A / FU72A, h. 1100mm	FD72P
Transparent doors	for FD22A / FU22A, h. 350mm	FD22T
	for FD32A / FU32A, h. 500mm	FD32T
	for FD42A / FU42A, h. 650mm	FD42T
	for FD52A / FU52A, h. 800mm	FD52T
	for FD62A / FU62A, h. 950mm	FD62T
	for FD72A / FU72A, h. 1100mm	FD72T
Keylocks with 2 keys	IP4	FZ497
	IP5	FZ507
Wire guides	big section	UZ25V1
	small section	UZ25V2
Covers for wire guide	2m length	UT50C
Horizontal wire ducts	2 x (h. 85 x w. 31 x l. 500 mm)	UZ25A1
Base of pillar adaptators	10 sets of 2 (left and right)	UT50A1
Mounting kits for hollow wall		VZ405
Cable entries replacement for IP4 boards	round marks for tubes and cables	VZ706
	rectangular marks for trunking	VZ707
Connection assemblies for IP4 boards	1Ph+N, 63A 2 x (3x16 + 4x10 mm ²)	VZ708
	3Ph+N, 63A 3 x (3x16 + 2x10 mm ²) + 1 x (5x16 + 6x10 mm ²)	VZ709
	1Ph+N, 90A 1x25 + 4x16 mm ²	VZ712



FD22P



FD42T






FZ507



VZ706

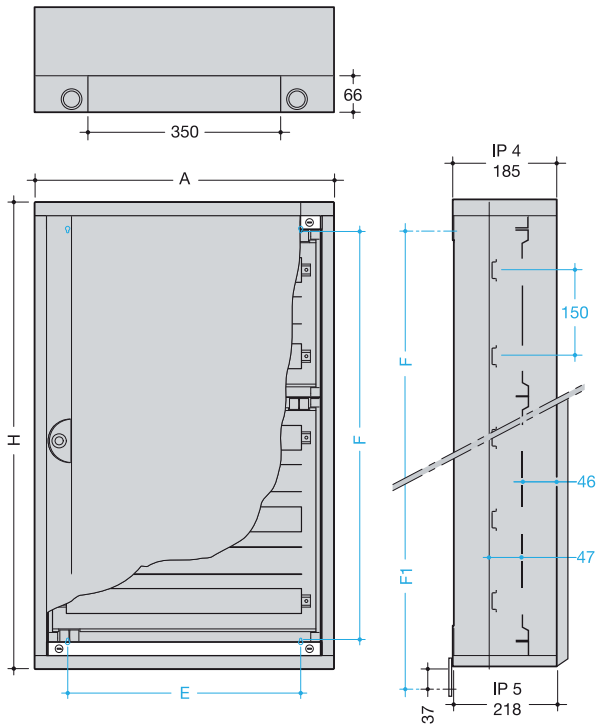


VZ709

	Designation	Characteristics	Cat. ref.
	Blanking clips	1/2 ■	P031
		1 ■	P032
P031 P032			
	Blanking strips color RAL 9010	24 ■	JP004
FZ794			
	A4 pocket plans		FZ794
	Terminal blocks fixing by clip on DIN rail	In 100A – two poles (Icc : 29kA) connectors on each terminal : incoming : 1x35 mm ² flexible, outgoing : 1x25 + 10x16 mm ² flexible	KJ01A
		delivered with : - insulated back plate - transparent protection front cover	w. 129 (7,5 ■) x h. 86 x d. 44 mm
KJ 01B			
	Terminal blocks fixing by clip on DIN rail	In 80A – four poles (Icc : 21kA) connectors on each terminal : incoming : 1x16 mm ² flexible, outgoing : 8x10 mm ² flexible	KJ01B
		In : by 40°C	w. 88 (5 ■) x h. 86 x d. 44 mm
	Terminal blocks fixing by clip on DIN rail	In 125A – four pole (Icc : 29kA) connectors on each terminal : incoming : 1x35 mm ² flexible, outgoing : 1x25 + 10x16 mm ² flexible	KJ01C
			w. 129 (7,5 ■) x h. 86 x d. 44 mm
KJ 01C			
	Modular shapes monobloc, insulated protection for each phase terminal. Cover removable with a tool.	In 160A - four poles (Icc : 20 kA) connectors on each terminal : incoming : 4x50 mm ² flexible, outgoig : 3x35 mm ² + 8x16 mm ² flexible w. 162(9,5 ■) x h 87 x d. 60 mm (modular shoulder measurement 45mm)	KJ01D
KJ 01D			
	Distribution blocks single pole monobloc, insulated, grey colour fixing by clip on DIN rail	connection capacity per block	
		- 125A (Isc peak 30kA) incoming : 1x25 mm ² + 1x16 mm ² flexible, outgoing : 6x16 mm ² flexible w.129 x h.86 x d.44 mm	KJ02D
		- 160A (Isc peak 50kA) 1x16 [□] + 8x10 mm ² flexible w.88 x h.86 x d.44 mm	KJ02C
		- 250A (Isc peak 50kA) 1x35 mm ² + 1x25 mm ² + 10x16 mm ² flexible w.129 x h.86 x d.44 mm	KJ02A
		- 400A (Isc peak 50kA) 1x50 mm ² + 3x35 mm ² + 8x16 mm ² flexible w.162 x h.87 x d.60 mm	KJ02B
4 x KJ02C			
4 x KJ02A			

vega D enclosures
surface, weatherproof

FD52D - 5 rows 120



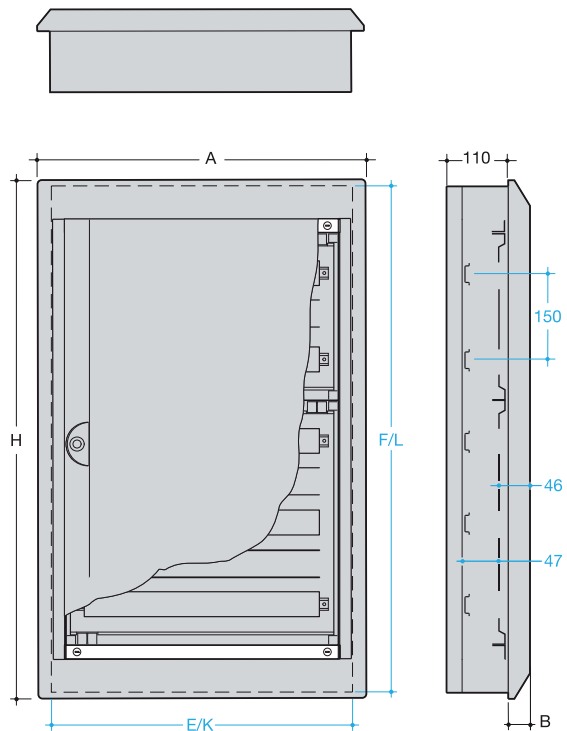
Dimensions

Surface enclosures (to be completed)

Ref.	enclosure dimensions		fixing		number of			
	A	H	E	F	rows	mod.	doors	lock
FD22A	550	400	428	292	-	-	1	1
FD32A	550	550	428	442	+1	24	1	1
FD42A	550	700	428	592	+2	48	1	1
FD52A	550	850	428	742	+3	72	1	1
FD62A	550	1000	428	892	+4	96	1	1
FD72A	550	1150	428	1042	+5	120	1	1

flush

FU52D - 5 rows 120



Flush enclosures (to be completed)

Ref.	enclosure dimensions		wall box		partition wall		number of			
	A	H	E min	F min	K max	L max	rows	mod.	doors	lock
FU22A	600	400	580	400	550	570	-	-	1	1
FU32A	600	650	580	650	550	620	+1	24	1	1
FU42A	600	800	580	800	550	770	+2	48	1	1
FU52A	600	950	580	950	550	920	+3	72	1	1
FU62A	600	1100	580	1100	550	1070	+4	96	1	1
FU72A	600	1150	580	1150	550	1120	+5	120	1	1

Weatherproof enclosures (to be completed)

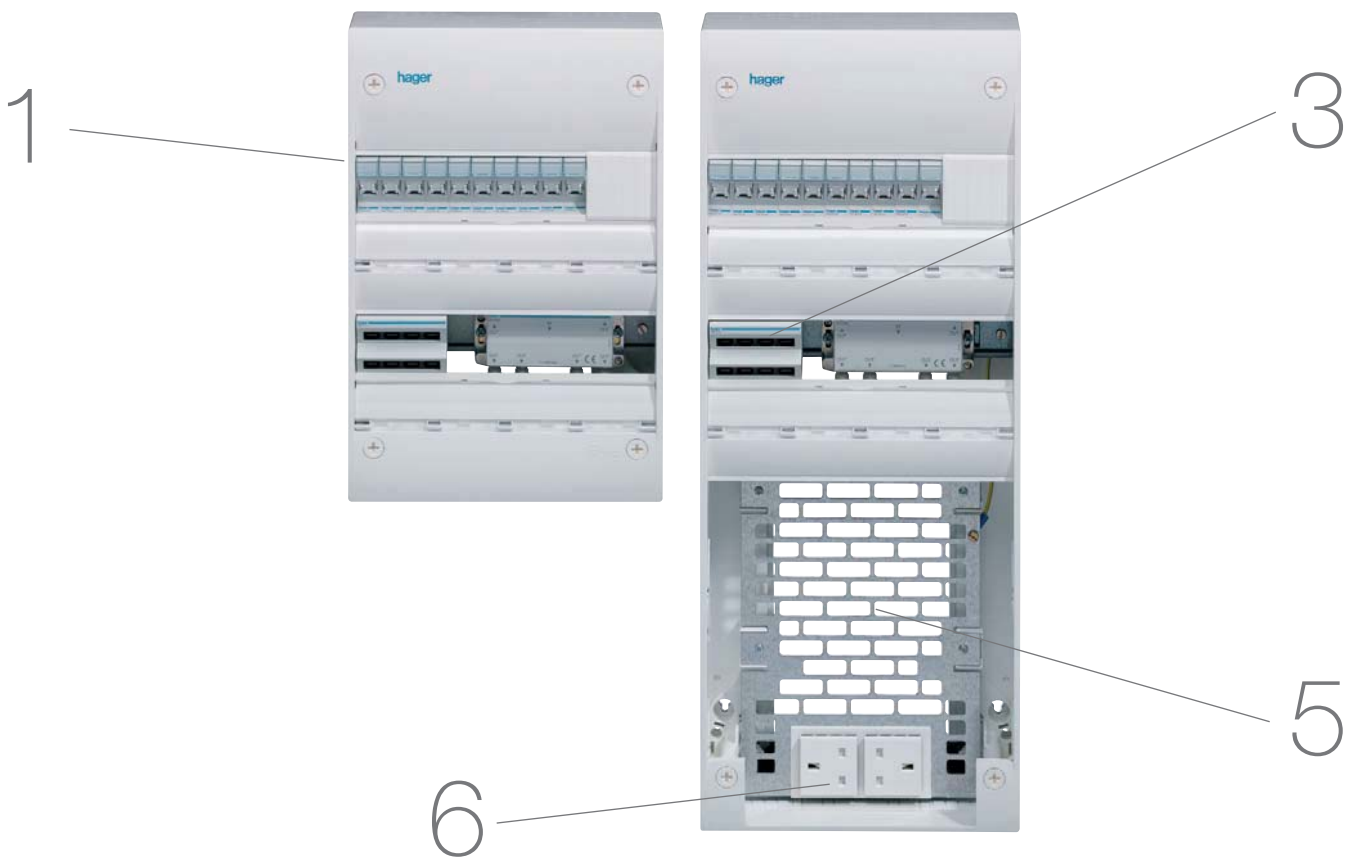
Ref.	enclosure dimensions		fixing		number of			
	A	H	E	F1	rows	mod.	doors	lock
FV22A	550	500	405	574	-	-	1	1
FV32A	550	650	405	724	+1	24	1	1
FV42A	550	800	405	874	+2	48	1	1
FV52A	550	950	405	1024	+3	72	1	1
FV62A	550	1100	405	1174	+4	96	1	1
FV72A	550	1250	405	1324	+5	120	1	1

Communication enclosures media hub nodeis

Integrate multimedia in your projects

Most new homes are fitted with structured cabling and coax cabling as standard to distribute phone, TV and internet around the house or apartment. Often, the cables are brought to one area inside or outside the dwelling and connected up loosely.

Hager now offers a media enclosure which ties up the loose ends of the cabling network into a neat consumer unit using the tried and trusted DIN rail and modular concept known from the Hager standard boards.



Your benefits

- Kit solution: 3 references for semi-equipped enclosures
- Modular range, easy to install
- Standard RJ45 connectors allows compatibility with most of the devices
- Mounting grid to fix broadband and TV modems
- Identification kit for patch cables

Characteristics

- 1 or 2 rows, 10 to 26 modules
- From 13 to 26 modules
- IP40 - IK07 (with door)
- Compatible with gamma offer

Expert tips

1



RJ45 connectors

they can be removed to have more space in the enclosure. You can install the exact number of connector that is needed.

2



Modular ADSL filter

Guarantees a quality telephone service by a telephone line transporting ADSL, ADSL2+, VDSL and VDSL2 signals.

3



Telephone splitter

Enables distribution for the following devices analogue telephone line with 4 outputs. It allows the connection of one or more phone, fax and/or modem sets.

4



Patch cables

Allows to match with all the coax cabling products.

5



Mounting grid

Available on 4 rows enclosures (13 or 18). It allows to mount broadband modems, cable TV modems and/or TV signal amplifiers.

6



2 power sockets

allow to operate the products mounted on the grid.

7



Devices cabling




ADSL filter, SPD and telephone splitter can be connected on RJ45 sockets to spare cabling time.

8



Homogeneous design

Design matches with the other enclosures of the Hager range.

	Designation	Characteristics	Cat. ref.
 <p>TN401B</p>	<p>Media enclosures (pre-equipped)</p> <p>1 row 10 ■ h.250 x w. 250 x d. 103 mm</p>	<p>8 x connectors RJ45 cat.5e UTP + supports 4 x RJ45 patch cables cat.6 S/FTP, 0,3m 1 x 4 outputs telephone splitter 4-way TV splitter 1 x identification kit for patch cables</p>	<p>TN401B</p>
 <p>TN411B</p>	<p>2 rows 26 ■ h.375 x w. 250 x d. 103 mm</p>	<p>8 x connectors RJ45 cat.5e UTP + supports 4 x RJ45 patch cables cat.6 S/FTP, 0,3m 2 x 4 outputs telephone splitter 6-way TV splitter (DIN rail mounted) 1 x identification kit for patch cables</p>	<p>TN411B</p>
 <p>TN421B</p>	<p>2 rows 26 ■ h.625 x w. 250 x d. 103 mm</p>	<p>8 x connectors RJ45 cat.5e UTP + supports 4 x RJ45 patch cables cat.6 S/FTP, 0,3m 2 x 4 outputs telephone splitter 2 x power sockets (BS standard) 6-way TV splitter (DIN rail mounted) 1 x identification kit for patch cables 1 x fixing kit</p>	<p>TN421B</p>



TN002S



TN713



TN111



TN121



TN901



TN902

Designation	Characteristics	Cat. ref.
RJ45 connectors	4 RJ45 connectors cat.6 STP + supports	TN002S
	4 RJ45 connectors cat.6 UTP + supports	TN003S
	4 RJ45 connectors cat.5e UTP + supports	TN004S
Patch cables	4 x RJ45 patch cables cat.6 S/FTP 0,5m	TN713
	1 RJ45 patch cable cat.6 S/FTP 1m	TN714
	4 x RJ45 patch cables cat.6 S/FTP 0,3m	TN715
Telephone splitters	1 x 4 outputs telephone splitter	TN131
	2 x 4 outputs telephone splitter	TN111
TV splitters	4 outputs TV splitter	TN204S
	6 outputs TV splitter	TN206S
ADSL filter		TN121
Accessories	fixing kit	TN901
	identification kit	TN902

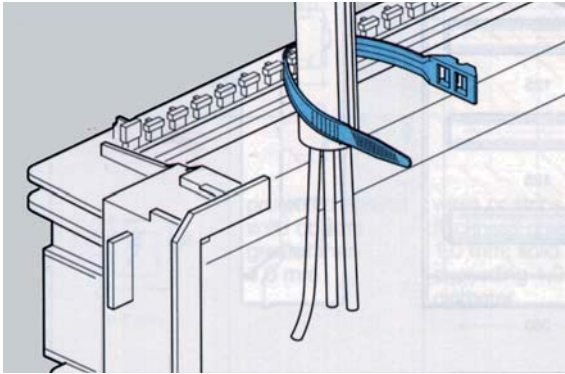
Installing the system

allow a loop of spare cable for flexibility in making off connections to the DIN rail modules, and to provide for late changes equipment selection.

Note: The quantity of cables used for a VDI system may require separate trunking for data circuits.

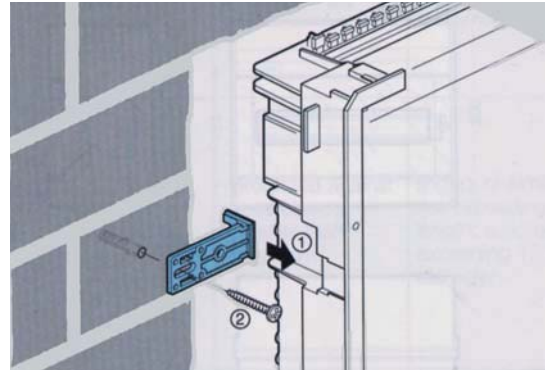
Surface mount

Cable entry top or bottom

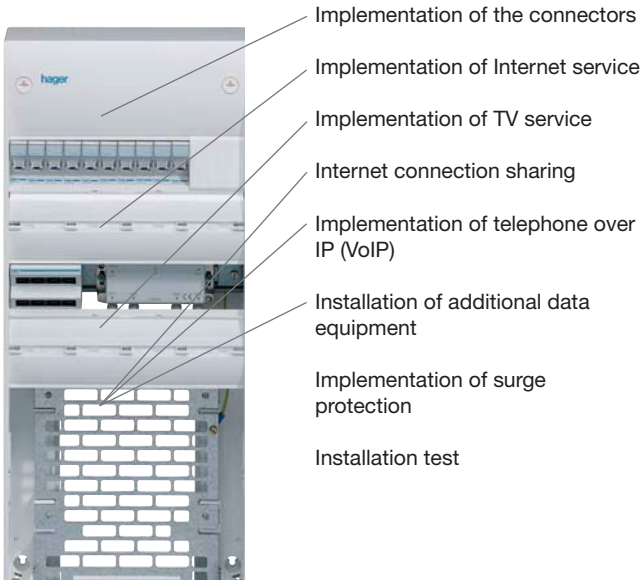


In the case of a surface mount installation, the loop of spare cable can be made upstream or downstream of the enclosure.

Flush mount



In the case of a flush mount installation, the loop of spare cable can be made behind the DIN rails within the enclosure.



- Implementation of the connectors
- Implementation of Internet service
- Implementation of TV service
- Internet connection sharing
- Implementation of telephone over IP (VoIP)
- Installation of additional data equipment
- Implementation of surge protection
- Installation test

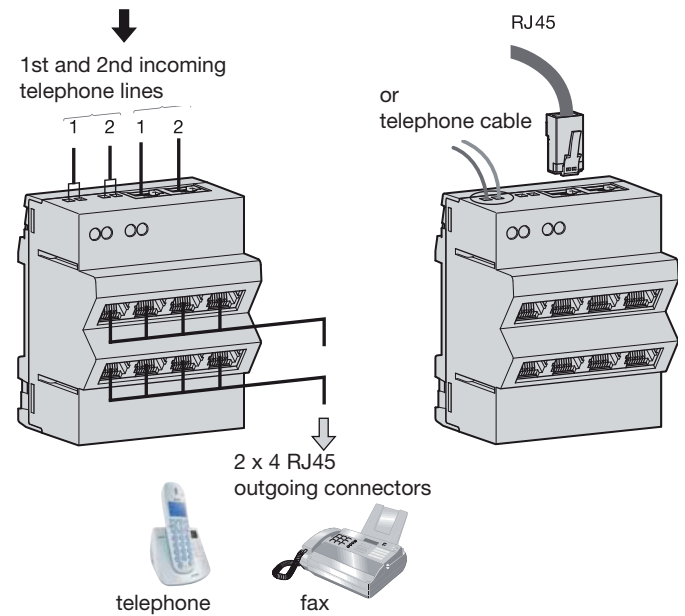
Fitting connectors in the enclosure

The connectors can be installed on the rail from above or below. However, in order to facilitate cable entry, it is recommended to install the connectors on the top rail. Witing the connectors requires organizing the different wire pairs in a certain way. To do this, we refer to Standard EIA / TIA 568. It defines two types of cabling that can be used interchangeably with Hager cables and connectors. (The most importantly thing is to use the same type at both ends of the cables).

The telephone splitter

It allows the splitting of a telephone signal for distribution over several communications lines. The TN111 splitter accepts two different telephone lines. It is compatible with VoIP.

Connection



Depending on the type of access to the Internet via broadband, a filter must sometimes be installed.

The ADSL filter

The ADSL filter is used to preserve the analogue quality of the phone signal in some cases. It can be installed:

- at the top of a cabling infrastructure at the level of the communication cabinet, designated as a master filter;
- or at a level of each wall phone jack, designated as a microfilter.

Internet access by ADSL (continued)

The ADSL filter is not necessary in the following cases:

- no high-speed Internet connection (dial-up connection);
- presence of a high-speed Internet connection with full unbundling.

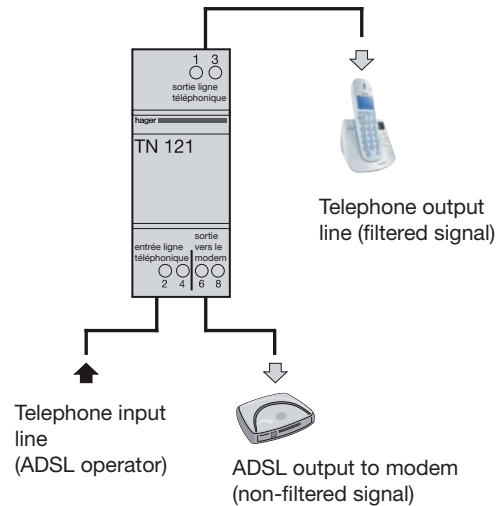
The ADSL filter is necessary in the following cases:

- presence of a bulk high-speed Internet connection or partial unbundling;

Here, the facility must be equipped with a filter to allow good ADSL quality of the telephone service. The filter splits the telephone signal in 2:

- the first type of unfiltered signal contains the full frequency spectrum and should be directed to the Internet box to allow its connection to the Internet;
- the second kind of signal filters frequency intervals needed for conventional telephone service. Filtering high frequencies helps maintain the telephone signal quality. The filtered signal must be directly connected to the telephone splitter.

ADSL filter installation



Internet connection sharing

1. The case of ADSL

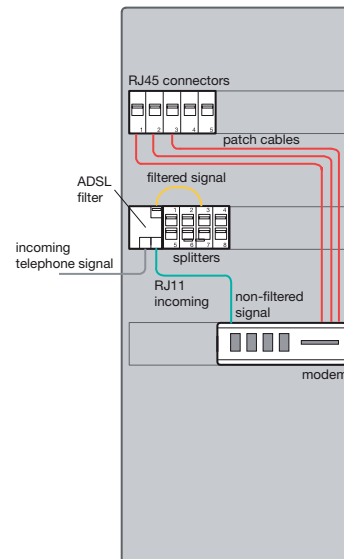
As part of a VDI communications system, sharing an Internet connection is possible in several ways:

- a) Internet service via a modem installed in the cabinet. The majority of modems offered by the Internet service providers have a “switch” function with the consequent presence of several Internet outlets.
- b) Internet service via a modem installed in a room. Two dedicated communication points must be provided near the modem. The first is designed to deliver the non-filtered signal to allow connection to the Internet. The second allows delivery of the Internet signal from the modem back to the media hub and then distribution to the different communication outlets via a router.

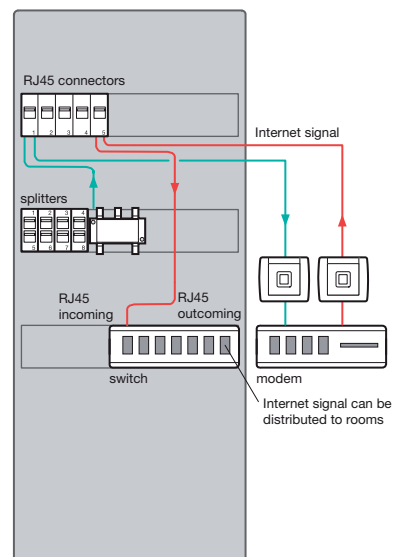
Caution

These diagrams show only the locations of the various elements relative to each other. In certain scenarios, and depending on the requirements, it is possible that the user may have to relocate equipment.

a) Modem in enclosure



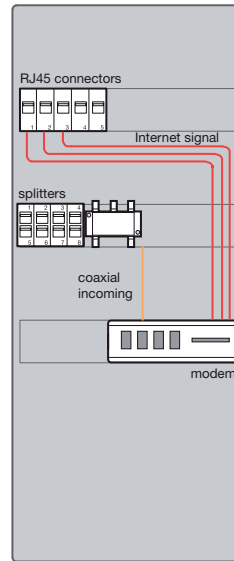
b) Modem in room



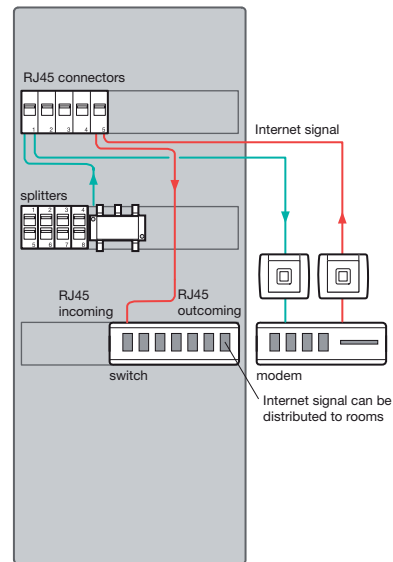
Installation of the Hager media hub

2. The case of cable network

Modem in enclosure



Modem in room (only for CAT6)



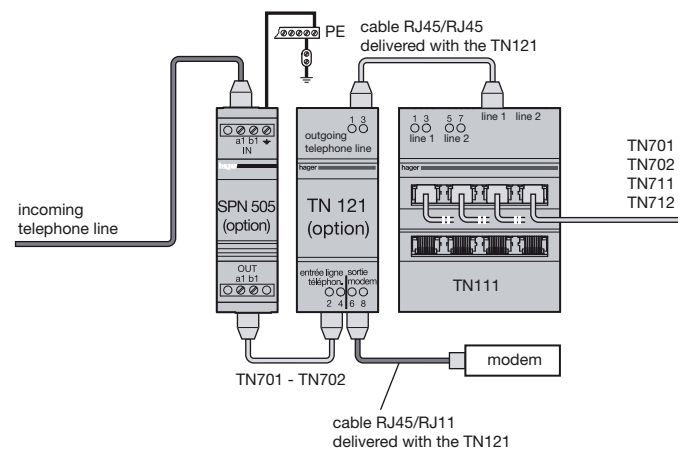
Caution

These diagrams show only the locations of the various elements relative to each other. In certain scenarios, and depending on the requirements, it is possible that the user may have to relocate equipment.

The case of surge protection

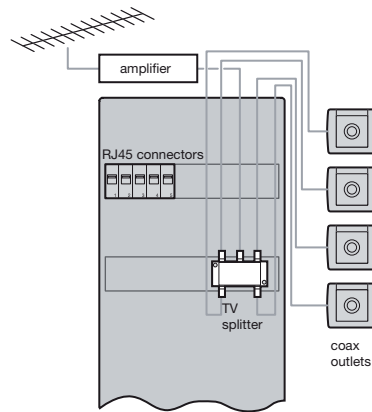
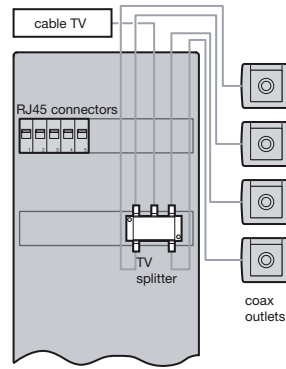
The SPN505 unit provides protection in the event of surge disturbances on telephone line. It is always installed before the ADSL filter and the telephone splitter if present.

Connection



Implementation of TV service

The incoming TV signal is brought to the common input connection of the TV splitter. the outgoing connections then feed the signal to the individual locations.



Telephone over Internet (VoIP)

Certain ISPs offer, in addition to the Internet connection, a telephone service usable by connecting a phone to the modem.

The Hager telephone splitter is compatible with this function.

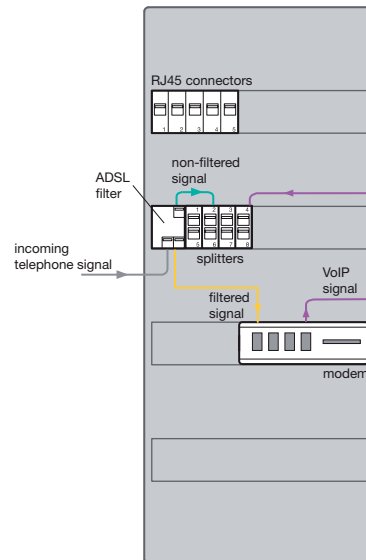
2 cases can be distinguished:

- modem is installed in the media hub:

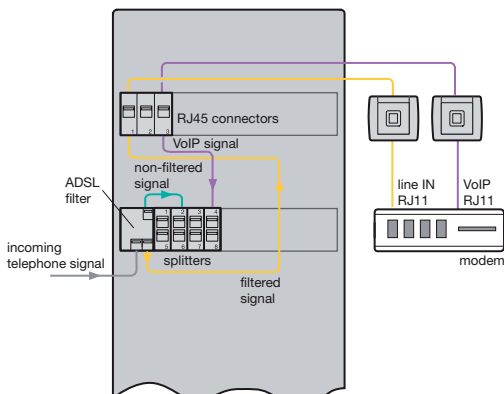
It is possible to connect VoIP output directly from the modem to the splitter to distribute this telephone service. this link can be done through a 50 cm cable RJ11/RJ45, ref. Hager TN822.

- modem is installed in a room:

The user wants to return the VoIP signal to the media hub in order to distribute it over the VDI network. We must then provide for the fitting of an outlet near the modem.



These diagrams show only the implementation of the telephone signal over the Internet (VoIP)



Installation of equipment (netcam, network hard disk...)

Any kind of equipment fitted with an RJ45 port can use the VDI network as a communications channel to connect with other equipment.

2 cases can be distinguished:

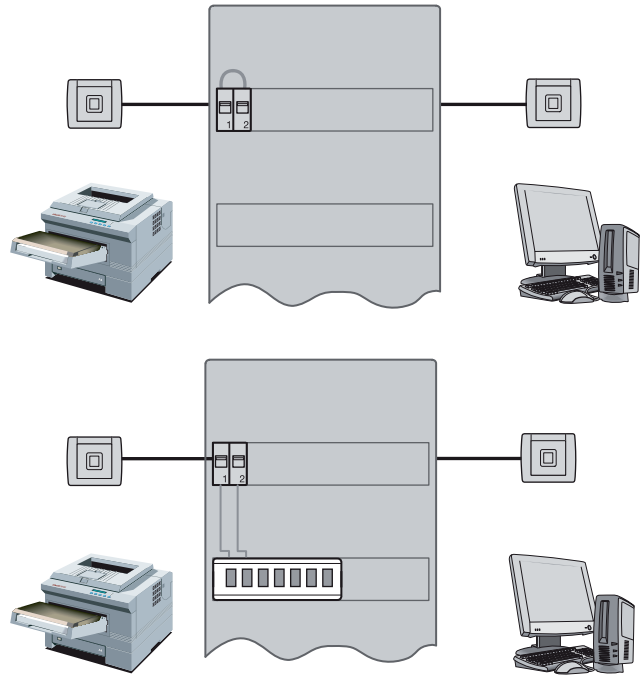
- Direct connection:

To match directly items of equipment with an RJ45 port to each other, it is sufficient to establish a "bridge" at the media hub between the two connections for the items.

- Connecting via a router/switch or a switch

To match items of equipment with an RJ45 to each other via a switch, the switch is located in the media hub.

The equipment is then connected to the latter.



Testing the installation

There are a wide variety of tests in the computer world for checking the quality of a link. We present here a few of the main tests that can be performed.

Note: at present, the standard imposes no verification in the context of the installation of a VDI communication system. However, a test of basic continuity and copper pairing is advisable to ensure the smooth operation of the system.

Electrical test

It allows to verify the copper continuity, correct pairing of the connector (proper arrangement of wires in the connector); the length of cables and the earth connection. It is carried out by the means of a tester connected at one end of the link and a remote identifier at the other end.

Problems and solutions

Wire length

This test ensures that the recommended length of a wire has been met.

- difference of less than 10% in the lengths of the wire: these differences are due to differences in the transmission speed of the wires.

- difference exceeding 10% may have different causes such as poor quality cable (low speed of propagation), cable too long, bad wiring apparatus, damage to the insulation of the cable or one of the pairs.

Continuity

This test verifies that there has been no breakage of copper conductors during cable draw-in.

Pairing the connectors

This test can be used to check that the wire pairs have been connected in the same order at both ends of the link.

Dynamic test

These tests simulate the passage of signals in the computer link and measure their behavior. They are carried out by testers more sophisticated than those used in the electrical control tests.

The main measurements made by this type of device are:

- attenuation: it usually depends on the length of the link and must be the lowest possible
- NEXT: measures the disturbance of one pair on another
- ACR: this calculation is a ratio of NEXT.

Main switchboards

invicta, orion+, quadro4, quadro5
and quadro+ evo

The Hager main switchboard offer is composed of a wide choice of references. Secure and aesthetic, they have been developed as solutions for modern commercial distribution.



consumer unit	B.2
<hr/>	
invicta VT	B.4
<hr/>	
invicta DR	B.6
<hr/>	
invicta TP&N	
- 125 type B distribution boards	B.10
- 250 type B distribution boards	B.16
<hr/>	
invicta panel board systems	
- 250A	B.20
- 400A	B.23
- 630/800A	B.26
<hr/>	
enclosed fuse combination	
- switches 32-800A	B.30
- load break switches 20-1600A	B.32
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quadro	
- quadro4	B.36
- quadro5	B.48
- quadro+ evo	B.58
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orion plus	B.86
<hr/>	
control desk monobloc enclosures	B.111
<hr/>	



Characteristics

- compact size
- fitted with 100A tinned copper busbar
- easy to install
- large wiring space
- fitted with tinned neutral and earth terminal

Technical data

- 1,2mm thick sheet steel RAL 9002 epoxy powder coated enclosure
- IP4X
- Rated voltage (V_E): 240V~
- Rated current (I_N): 100A
- Insulation voltage (U_i): 6kV
- Conditional short circuit

current: 25kA
Comply with BS EN60439-1 and EN60439-3.

Description	Characteristics	Cat. ref.
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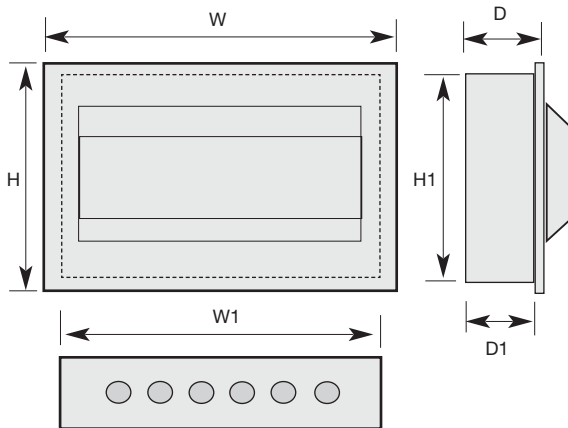
VT04SM

Consumer unit surface mounted
with 100A SP busbar, plain door

1 row, 6	4 outgoing ways wall niche: h.231 x w.214 x d.70mm	VT04SM
1 row, 8	6 outgoing ways wall niche: h.231 x w.250 x d.70mm	VT06SM
1 row, 10	8 outgoing ways wall niche: h.231 x w.286 x d.70mm	VT08SM
1 row, 12	10 outgoing ways wall niche: h.231 x w.322 x d.70mm	VT10SM
1 row, 14	12 outgoing ways wall niche: h.231 x w.358 x d.70mm	VT12SM
1 row, 18	16 outgoing ways wall niche: h.231 x w.430 x d.70mm	VT16SM

Consumer unit flush mounted
with 100A SP busbar, plain door

1 row, 6	4 outgoing ways wall niche: h.226 x w.208 x d.70mm	VT04FM
1 row, 8	6 outgoing ways wall niche: h.226 x w.244 x d.70mm	VT06FM
1 row, 10	8 outgoing ways wall niche: h.226 x w.280 x d.70mm	VT08FM
1 row, 12	10 outgoing ways wall niche: h.226 x w.316 x d.70mm	VT10FM
1 row, 14	12 outgoing ways wall niche: h.226 x w.352 x d.70mm	VT12FM
1 row, 18	16 outgoing ways wall niche: h.226 x w.424 x d.70mm	VT16FM





Reference	H	W	D	H1	W1	D1
VT04FM	251	234	71.2	226	208	71.2
VT06FM	251	270	71.2	226	244	71.2
VT08FM	251	306	71.2	226	280	71.2
VT10FM	251	342	71.2	226	316	71.2
VT12FM	251	378	71.2	226	352	71.2
VT16FM	251	450	71.2	226	424	71.2
VT04SM	231	214	71.2	226	208	71.2
VT06SM	231	250	71.2	226	244	71.2
VT08SM	231	286	71.2	226	280	71.2
VT10SM	231	322	71.2	226	316	71.2
VT12SM	231	358	71.2	226	352	71.2
VT16SM	231	430	71.2	226	424	71.2

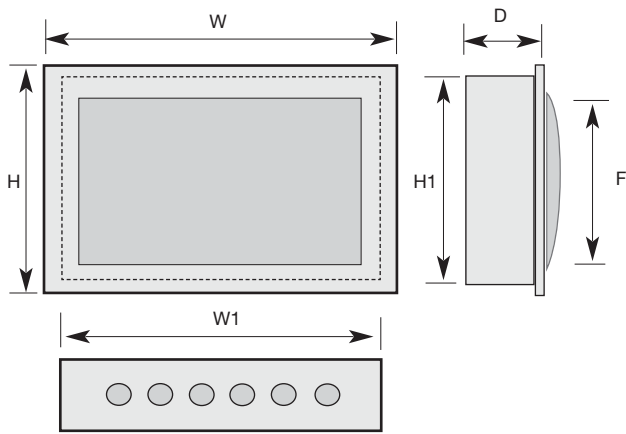


- Characteristics**
- compact size
 - easy to install
 - large wiring space
 - fitted with tinned neutral and earth terminal
 - removable DIN rail assembly
 - improved aesthetics
 - door maintained position

- Technical data**
- 1,2mm thick sheet steel RAL 9002 epoxy powder coated enclosure
 - IP41

Comply with BS EN60439-1 and EN60439-3

	Description	Characteristics	Cat. ref.
 VT12MF	invicta VT flush mounted consumer unit 1 row, 4 I wall niche: h.220 x w.206 x d.80mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT04MF VT04PNF VT04TF
	1 row, 8 I wall niche: h.220 x w.277 x d.80mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT08MF VT08PNF VT08TF
	1 row, 12 I wall niche: h.220 x w.348 x d.80mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT12MF VT12PNF VT12TF
	1 row, 16 I wall niche: h.220 x w.420 x d.80mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT16MF VT16PNF VT16TF
	1 row, 20 I wall niche: h.220 x w.491 x d.80mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT20MF VT20PNF VT20TF
 VT12TF	invicta VT surface mounted consumer unit 1 row, 4 I wall niche: h.253 x w.245 x d.93mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT04MS VT04PNS VT04TS
	1 row, 8 I wall niche: h.253 x w.316 x d.93mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT08MS VT08PNS VT08TS
	1 row, 12 I wall niche: h.253 x w.387 x d.93mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT12MS VT12PNS VT12TS
	1 row, 16 I wall niche: h.253 x w.458 x d.93mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT16MS VT16PNS VT16TS
	1 row, 20 I wall niche: h.253 x w.529 x d.93mm	- with metal flap (non transparent) - with opaque plastic flap - with transparent flap	VT20MS VT20PNS VT20TS



Reference (fixed load)	H	W	D	H1	W1	D1
VT04MF/PNF/TF	253	245	93	220	206	80
VT08MF/PNF/TF	253	316	93	220	277	80
VT12MF/PNF/TF	253	387	93	220	348	80
VT16MF/PNF/TF	253	458	93	220	420	80
VT20MF/PNF/TF	253	529	93	220	491	80
VT04MS/PNS/TS	253	245	93	250	242	80
VT08MS/PNS/TS	253	316	93	250	313	80
VT12MS/PNS/TS	253	387	93	250	384	80
VT16MS/PNS/TS	253	458	93	250	456	80
VT20MS/PNS/TS	253	529	93	220	527	80



Characteristics

- Easy to install
- Removable DIN chassis
- Height adjustable DIN chassis
- Centre distance between two rows is 150 mm
- Removable door
- Removable prepunched top and bottom gland plates

Technical data

- 1.2mm thickness sheet steel with Epoxy powder coating in RAL 9002
- IP4x
- 1 row (16 I) up to 6 rows (96 I)
- Suitable for modular incomers and outgoing only

- Accessories like key lock, joining kits, etc.
- Boards can be assembled vertically

Comply with BS EN60439-1 and EN60439-3.

Description	Characteristics	Cat. ref.
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DR32S

Distribution boards flush mounted

1 row, 16 I	-with metallic door: wall niche: h.365 x w.445 x d.110mm	DR16F
2 rows, 32 I	wall niche: h.515 x w.445 x d.110mm	DR32F
3 rows, 48 I	wall niche: h.665 x w.445 x d.110mm	DR48F
4 rows, 64 I	wall niche: h.815 x w.445 x d.110mm	DR64F
5 rows, 80 I	wall niche: h.965 x w.445 x d.110mm	DR80F
6 rows, 96 I	wall niche: h.1115 x w.445 x d.110mm	DR96F

-with metallic door, transparent cut out:

1 row, 12 I	wall niche: h.365 x w.445 x d.110mm	DR12FT
2 rows, 24 I	wall niche: h.515 x w.445 x d.110mm	DR24FT
3 rows, 36 I	wall niche: h.665 x w.445 x d.110mm	DR36FT

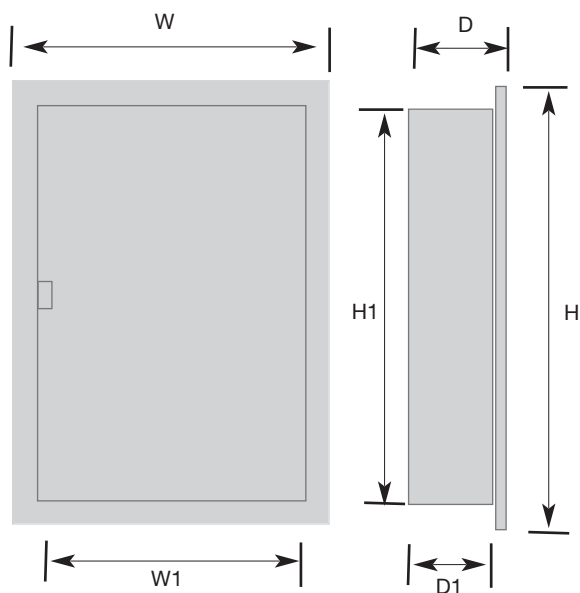
Distribution boards surface mounted

1 row, 16 I	- with metallic door: wall niche: h.325 x w.405 x d.110mm	DR16S
2 rows, 32 I	wall niche: h.475 x w.405 x d.110mm	DR32S
3 rows, 48 I	wall niche: h.625 x w.405 x d.110mm	DR48S
4 rows, 64 I	wall niche: h.775 x w.405 x d.110mm	DR64S
5 rows, 80 I	wall niche: h.925 x w.405 x d.110mm	DR80S
6 rows, 96 I	wall niche: h.1075 x w.405 x d.110mm	DR96S

-with metallic door, transparent cut out:

1 row, 12 I	wall niche: h.325 x w.405 x d.110mm	DR12ST
2 rows, 24 I	wall niche: h.475 x w.405 x d.110mm	DR24ST
3 rows, 36 I	wall niche: h.625 x w.405 x d.110mm	DR36ST

Accessories	joining kits for flush boards	JK01FK
	joining kits for surface boards	JK01SK
	1 I blanking strip	P032H
	keylock	VZ303



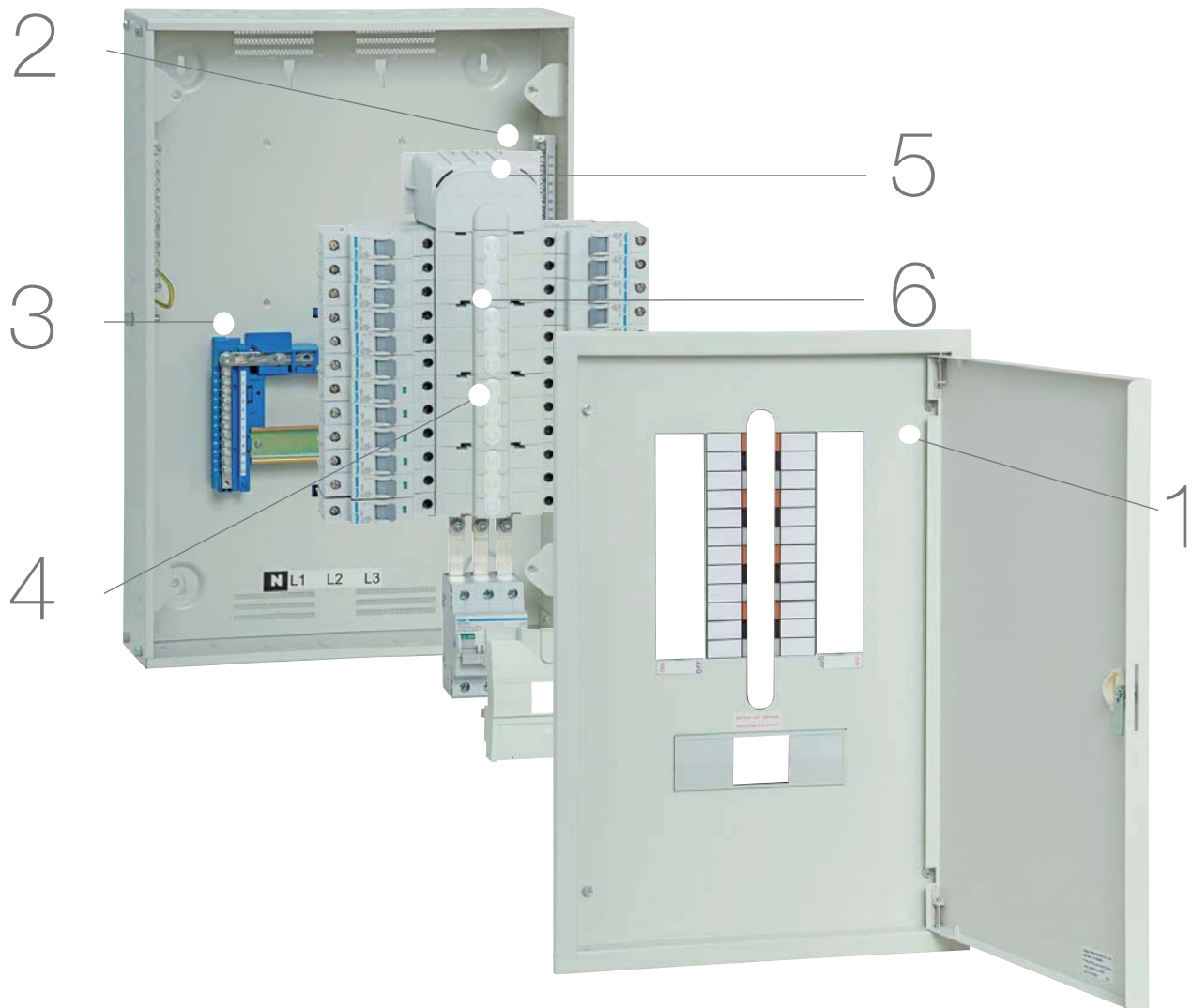
Reference (surface)	H	W	H1	W1	D1
DR16S	325	405	320	400	110
DR32S	475	405	470	400	110
DR48S	625	405	620	400	110
DR64S	775	405	770	400	110
DR80S	925	405	920	400	110
DR96S	1075	405	1070	400	110
DR12ST	325	405	320	400	110
DR24ST	475	405	470	400	110
DR36ST	625	405	470	400	110

Reference (flush)	H	W	H1	W1	D1
DR16F	350	445	320	400	110
DR32F	500	445	470	400	110
DR48F	650	445	620	400	110
DR64F	800	445	770	400	110
DR80F	950	445	920	400	110
DR96F	1110	445	1070	400	110
DR12FT	350	445	320	400	110
DR24FT	500	445	470	400	110
DR36FT	650	445	470	400	110

Main switchboards

Distribution boards TPN125 type B

125A incoming, 63A outgoing



Your benefits

- ASTA certified
- Easy to install
- Reversible door
- Removable pre-punched top and bottom gland plates
- Incomer cut out width: 9 ■
- More wiring space

Characteristics

- Standard BS EN60439-1 / IEC 60439-3
- Busbar rating 125A
- 1.2mm thickness sheet steel with Epoxy powder coating in RAL 9002
- IP41
- 4 way to 24 way, 3 pole ways
- 20kA at 415V for 0.2 sec.
- 9 ■ cut out for fixed load, 13 ■ cut out for split load

Expert tips

1



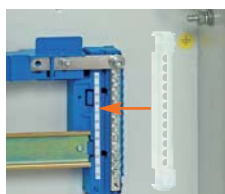
Removable and reversible door
For ease of fitting.

2



Earth terminal bars
They are mounted offset to neutral terminal bars and angled towards the installer for easy cable installation. The screws are fully turned down for simple and fast cabling.

3



Transparent IP2X neutral cover
Allows an easy cable installation. Screw fully turned down for easy and fast cabling.

4



Easy phase identification
L1, L2, L3 mouldings show through when the front cover is fitted. Textured surface on busbar assembly allows contractor to write circuit identification.

5



Top tap off
For simple board extensions or split load in 125A or an additional MCB up to 125A.

6



Whole set of busbar
Separated into "circuit A & circuit B" in split load board.

Technical characteristics

Comply with BS EN 60439-3 and IEC60439-3.

Suitable for modular incomers as well as non modular incomers

Busbar current rating:
125A

ASTA certified insulated tinned copper busbar assembly:

- Rated short circuit withstand for busbars:

20 kA at 415V for 0.2 sec.

Removable pre punched top and bottom gland plates.

Incomer cutout width:

9 modules for fixed load
13 modules for split load.

Reversible door.

1.2 mm thickness sheet steel with epoxy powder coating in RAL 9002
IP41

Accessories like key lock, DIN rail extension boxes etc...

Description	Characteristics	Cat. ref. flush	Cat. ref. surface
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JK1B08S1

TPN125 type B distribution boards fixed load boards	4 ways	JK1B04F1	JK1B04S1
	6 ways	JK1B06F1	JK1B06S1
	8 ways	JK1B08F1	JK1B08S1
	10 ways	JK1B10F1	JK1B10S1
	12 ways	JK1B12F1	JK1B12S1
	14 ways	JK1B14F1	JK1B14S1
	16 ways	JK1B16F1	JK1B16S1
	18 ways	JK1B18F1	JK1B18S1
	24 ways	JK1B24F1	JK1B24S1



JK1B042S1

TPN125 type B distribution boards split load boards	2+2 ways	JK1B022F1	JK1B022S1
	4+2 ways	JK1B042F1	JK1B042S1
	4+4 ways	JK1B044F1	JK1B044S1
	6+2 ways	JK1B062F1	JK1B062S1
	6+4 ways	JK1B064F1	JK1B064S1
	6+6 ways	JK1B066F1	JK1B066S1
	8+2 ways	JK1B082F1	JK1B082S1
	8+4 ways	JK1B084F1	JK1B084S1
	8+6 ways	JK1B086F1	JK1B086S1
	8+8 ways	JK1B088F1	JK1B088S1
	10+4 ways	JK1B104F1	JK1B104S1

Invicta TPN type B distribution boards can be extended vertically by combining them with DIN rail boards, for

installation of modular devices like time switches, contactors etc...

Joining kits are used to combine TPN type B boards and DIN rail boards



JK1L1004SM

Description	Characteristics	Cat. ref.
Incoming link kits	3P 63 to 100A switch disconnecter / RCCB or 63A MCB incomer kit for 125A fixed load	JK1L1003SM
	3P 63 to 100A switch disconnecter/ RCCB or 63A MCB incomer kit for 125A split load	JK1L1003SMSL
	3P 80 to 125A MCB incomer kit for 125A JK	JK1L1253MM
	4P 63 to 100A switch disconnecter / RCCB or 63A MCB incomer kit for 125A fixed load	JK1L1004SM
	4P 63 to 100A switch disconnecter / RCCB or 63A MCB incomer kit for 125A split load	JK1L1004SMSL
	4P 80 to 125A MCB incomer kit for 125A JK	JK1L1254MM
	4P 125A direct connection kit	JK2L2504D
Cable spreader boxes and extension boxes	JK1 - flush box cable spreader	JK1E01F
	JK1 - surface box cable spreader	JK1E01S
	JK1 - 16 DIN rail extension box - flush box	JK1E16F
	JK1 - 32 DIN rail extension box - flush box	JK1E32F
	JK1 - 48 DIN rail extension box - flush box	JK1E48F
	JK1 - 16 DIN rail extension box - surface box	JK1E16S
	JK1 - 32 DIN rail extension box - surface box	JK1E32S
JK1 - 48 DIN rail extension box - surface box	JK1E48S	
Joint kit for spreader and extension box	JK1 - Joint kit for spreader box - (Flush)	JK1XJKEF
	JK1 - Joint kit for spreader box - (Surface)	JK1XJKES
Accessories	1 module blank	P032H
	Busbar protective boot	P100H
	2 pieces of gland plate with screw for 125A flush boards	JK1XGPF
	2 pieces of gland plate with screws for 125A surface boards	JK1XGPS
	Single phase blank for TPN boards	JK1XBSP
	Key lock for distribution boards	JK1XKLS
	Incomer shroud in 125A fixed load board in 9M with 3M cutout	JK1XISF3
	Incomer shroud in 125A fixed load board in 9M without cutout	JK1XISF0
	Incomer shroud in 125A split load board in 13M with 7M cutout	JK1XISS7
	Incomer shroud in 125A split load board in 13M with 11M cutout	JK1XISS11
	Incomer shroud in 125A split load board in 13M with 13M cutout	JK1XISS13
	Neutral terminal cover IP2X	JK1XNC
	Spare neutral terminal (4 ways)	JK1XSNT
	Spare neutral terminal extra (10 ways)	JK1XSNTE



JK1XBSP



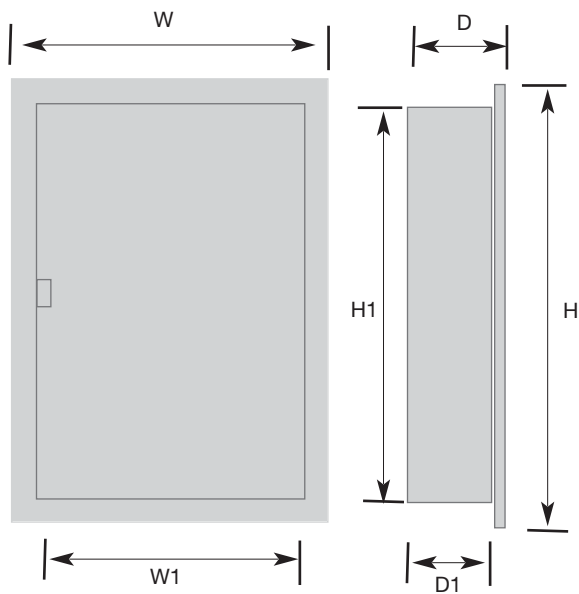
P032H



P100H

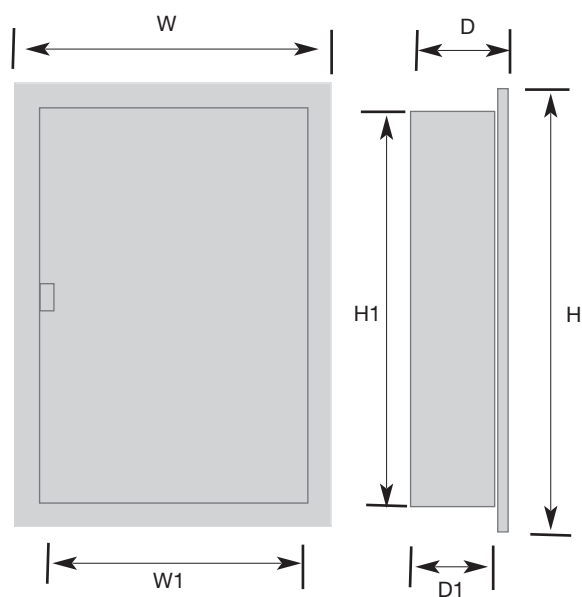


JK1XNST



Reference (surface)	H	W	D	H1	W1	D1
JK1B04S1	495	405	115	490	400	110
JK1B06S1	555	405	115	550	400	110
JK1B08S1	605	405	115	600	400	110
JK1B10S1	660	405	115	655	400	110
JK1B12S1	715	405	115	710	400	110
JK1B14S1	770	405	115	765	400	110
JK1B16S1	820	405	115	815	400	110
JK1B18S1	940	405	115	935	400	110
JK1B24S1	1105	405	115	1100	400	110

Reference (flush)	H	W	D	H1	W1	D1
JK1B04F1	520	430	115	490	400	110
JK1B06F1	580	430	115	550	400	110
JK1B08F1	630	430	115	600	400	110
JK1B10F1	685	430	115	655	400	110
JK1B12F1	740	430	115	710	400	110
JK1B14F1	795	430	115	765	400	110
JK1B16F1	845	430	115	815	400	110
JK1B18F1	965	430	115	935	400	110
JK1B24F1	1130	430	115	1100	400	110



Dimensions of spreader box + din extension box

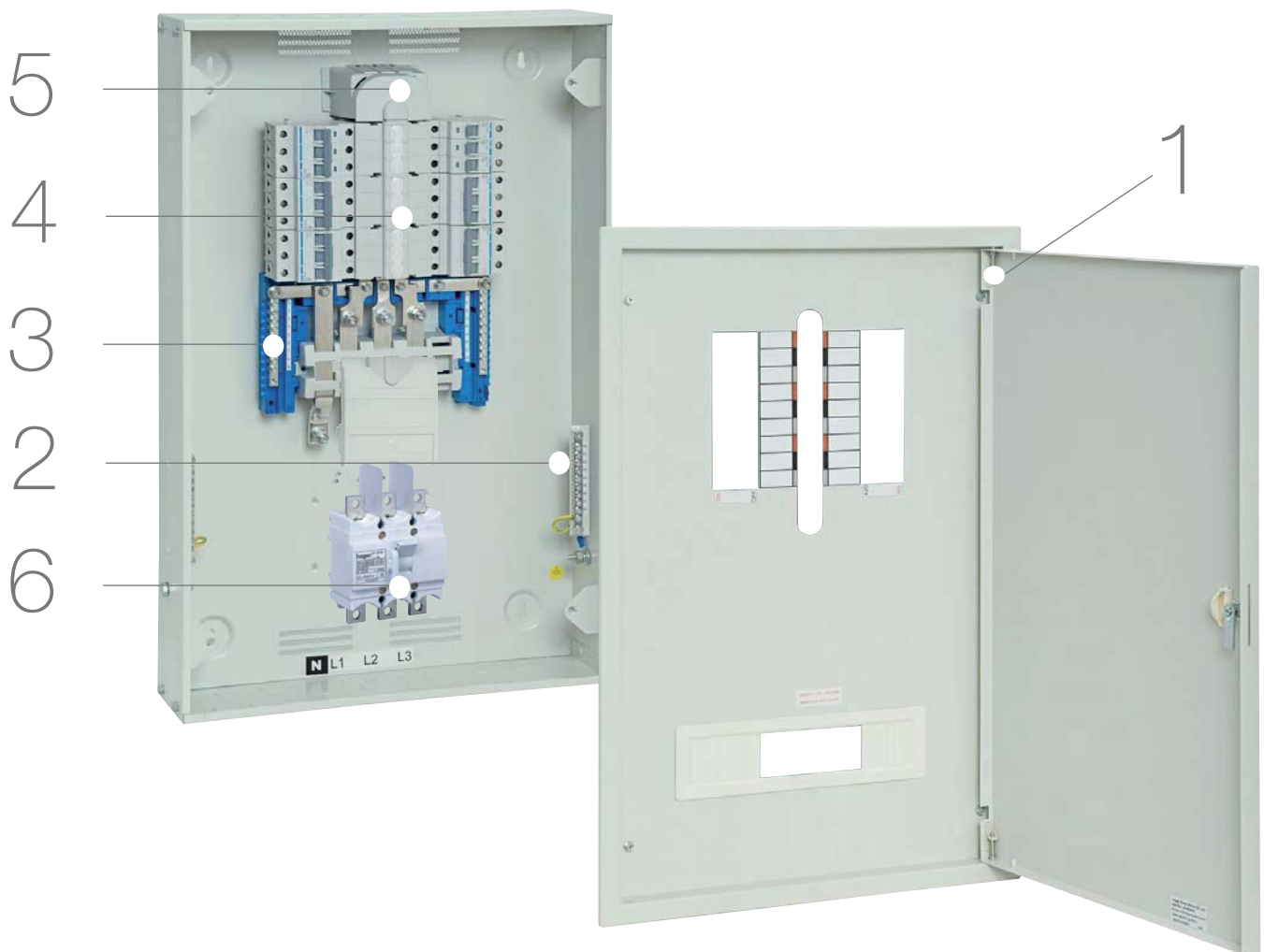
Reference	H	W	D
JK1E01S	275	405	115
JK1E16S	275	405	115
JK1E32S	425	405	115
JK1E48S	655	405	115
JK1E01F	300	430	115
JK1E16F	300	430	115
JK1E32F	450	430	115
JK1E48F	680	430	115

Reference (surface)	H	W	D	H1	W1	D1
JK1B022S1	555	445	115	550	440	110
JK1B042S1	610	445	115	605	440	110
JK1B044S1	665	445	115	660	440	110
JK1B062S1	665	445	115	660	440	110
JK1B064S1	720	445	115	715	440	110
JK1B066S1	775	445	115	770	440	110
JK1B082S1	720	445	115	715	440	110
JK1B084S1	775	445	115	770	440	110
JK1B086S1	830	445	115l	825	440	110
JK1B088S1	885	445	115	880	440	110
JK1B104S1	935	445	115	930	440	110

Reference (flush)	H	W	D	H1	W1	D1
JK1B022F1	580	470	115	550	440	110
JK1B042F1	635	470	115	605	440	110
JK1B044F1	690	470	115	660	440	110
JK1B062F1	690	470	115	660	440	110
JK1B064F1	745	470	115	715	440	110
JK1B066F1	800	470	115	770	440	110
JK1B082F1	745	470	115	715	440	110
JK1B084F1	800	470	115	770	440	110
JK1B086F1	855	470	115l	825	440	110
JK1B088F1	910	470	115	880	440	110
JK1B104F1	960	470	115	930	440	110

Distribution boards TPN250 type B

250A incoming, 63A outgoing



Your benefits

- Easy to install
- Reversible door
- More wiring space

Characteristics

- Standard BS EN60439-1 / IEC 60439-3
- 1.2mm thickness sheet steel RAL 9002 Epoxy powder coated
- IP41
- 4 way to 24 way, 3 pole ways
- 20 kA at 415V for 0.2 sec.
- 13 cut out

Expert tips

1



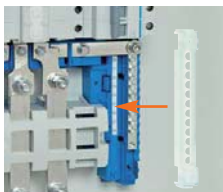
Removable and reversible door
For ease of fitting.

2



Earth terminal bars
They are mounted offset to neutral terminal bars and angled towards the installer for easy cable installation. The screws are fully turned down for simple and fast cabling.

3



Transparent IP2X neutral cover
Allows an easy cable installation. Screw fully turned down for easy and fast cabling.

4



Easy phase identification
L1, L2, L3 mouldings show through when the front cover is fitted. Textured surface on busbar assembly allows contractor to write circuit identification.

5



Top tap off
For simple board extensions or split load in 125A or an additional MCB up to 125A.

6



Multiple incomer choices
For switch or MCCB.

invicta - TPN250 type B distribution board 250A incoming, 63A outgoing



Technical characteristics

- Suitable non modular incomers
- Busbar current rating: 250A
- ASTA certified insulated tinned copper busbar assembly
- Rated short circuit withstand

- for busbars: 20 kA at 415V for 0.2 sec.
- Removable pre punched top and bottom gland plates
- Reversible door
- 1.2 mm thickness with sheet steel epoxy powder coating in

- RAL 9002
- IP41
- Accessories like key lock, DIN rail extension boxes etc...
- Comply with BS EN 60 439-3 and IEC 60 439-3.



JK2B08S1

Description	Characteristics	Cat. ref. flush	Cat. ref. surface
TPN250 type B distribution boards fixed load boards	4 ways	JK2B04F1	JK2B04S1
	6 ways	JK2B06F1	JK2B06S1
	8 ways	JK2B08F1	JK2B08S1
	10 ways	JK2B10F1	JK2B10S1
	12 ways	JK2B12F1	JK2B12S1
	14 ways	JK2B14F1	JK2B14S1
	16 ways	JK2B16F1	JK2B16S1
	18 ways	JK2B18F1	JK2B18S1
	24 ways	JK2B24F1	JK2B24S1

invicta - TPN250 type B distribution board extensions and accessories

Invicta TPN type B distribution boards can be extended vertically by combining them with DIN rail boards, for

installation of modular devices like time switches, contactors etc...

Joint kits are used to combine TPN type B boards and DIN rail extension boxes

Description	Characteristics	Cat. ref.
Incoming link kits	3P 160A switch disconnecter incomer kit for JK 250A	JK2L1603SK
	3P 200/250A switch disconnecter incomer kit for JK 250A	JK2L2503SK
	3P 160A MCB / MCS incomer kit for JK 250A	JK2L1603MH
	3P 200/250A MCB / MCS incomer kit for JK 250A	JK2L2503MH
	3P 200/250A direct connection kit	JK2L2503D
	4P 125/160A MCCB incomer kit for JK 200/250A	JK2L1604MH
	4P 250A MCCB incomer kit for JK 250A	JK2L2504MH
	4P 200/250A direct connection kit	JK2L2504D
	3P 160A switch disconnecter	JK160S
	3P 200A switch disconnecter	JK200S
3P 250A switch disconnecter	JK250S	

Description	Characteristics	Cat. ref.
Cable spreader boxes and extension boxes	JK2 - flush box cable spreader	JK2E01F
	JK2 - surface box cable spreader	JK2E01S
	JK2 - 16 I DIN rail extension box - flush box	JK2E16F
	JK2 - 32 I DIN rail extension box - flush box	JK2E32F
	JK2 - 48 I DIN rail extension box - flush box	JK2E48F
	JK2 - 16 I DIN rail extension box - surface box	JK2E16S
	JK2 - 32 I DIN rail extension box - surface box	JK2E32S
	JK2 - 48 I DIN rail extension box - surface box	JK2E48S
Joint kit for spreader and extension box	JK2 - Joint kit for spreader box - (Flush)	JK2XJKEF
	JK2 - Joint kit for spreader box - (Surface)	JK2XJKES
Accessories	1 module blank	P032H
	Busbar protective boot	P100H
	JK2 - 2 pieces of gland plate with screws for 250A flush boards	JK2XGPF
	JK2 - 2 pieces of gland plate with screws for 250A surface boards	JK2XGPS
	Single phase blank for TPN boards	JK1XBSP
	Key lock for distribution boards	JK1XKLS
	13M blank for 125/160A switch on cover in 250A boards	JK2XBSK1
	13M blank for 200/250A switch on cover in 250A boards	JK2XBSK2
	13M blank for 125/160A MCCB / MCS on cover in 250A boards	JK2XBMH1
	13M blank for 200/250A MCCB / MCS on cover in 250A boards	JK2XBMH2
	Neutral terminal cover IP2X	JK1XNC
	Spare neutral terminal (4 ways)	JK1XSNT
	Spare neutral terminal extra (10 ways)	JK1XSNTTE



JK1XBSP



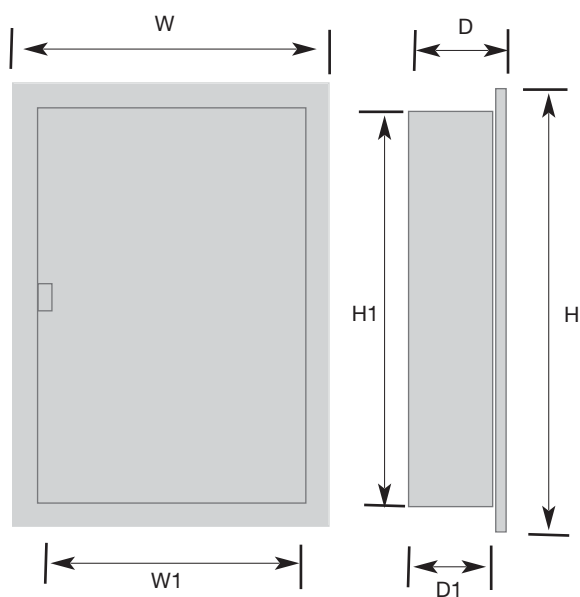
P032H



P100H



JK1XNST



Reference (surface)	H	W	D	H1	W1	D1
JK2B04S1	665	445	115	650	440	110
JK2B06S1	705	445	115	700	440	110
JK2B08S1	760	445	115	755	440	110
JK2B10S1	815	445	115	810	440	110
JK2B12S1	865	445	115	860	440	110
JK2B14S1	920	445	115	915	440	110
JK2B16S1	975	445	115	970	440	110
JK2B18S1	1030	445	115	1025	440	110
JK2B24S1	1195	445	115	1190	440	110

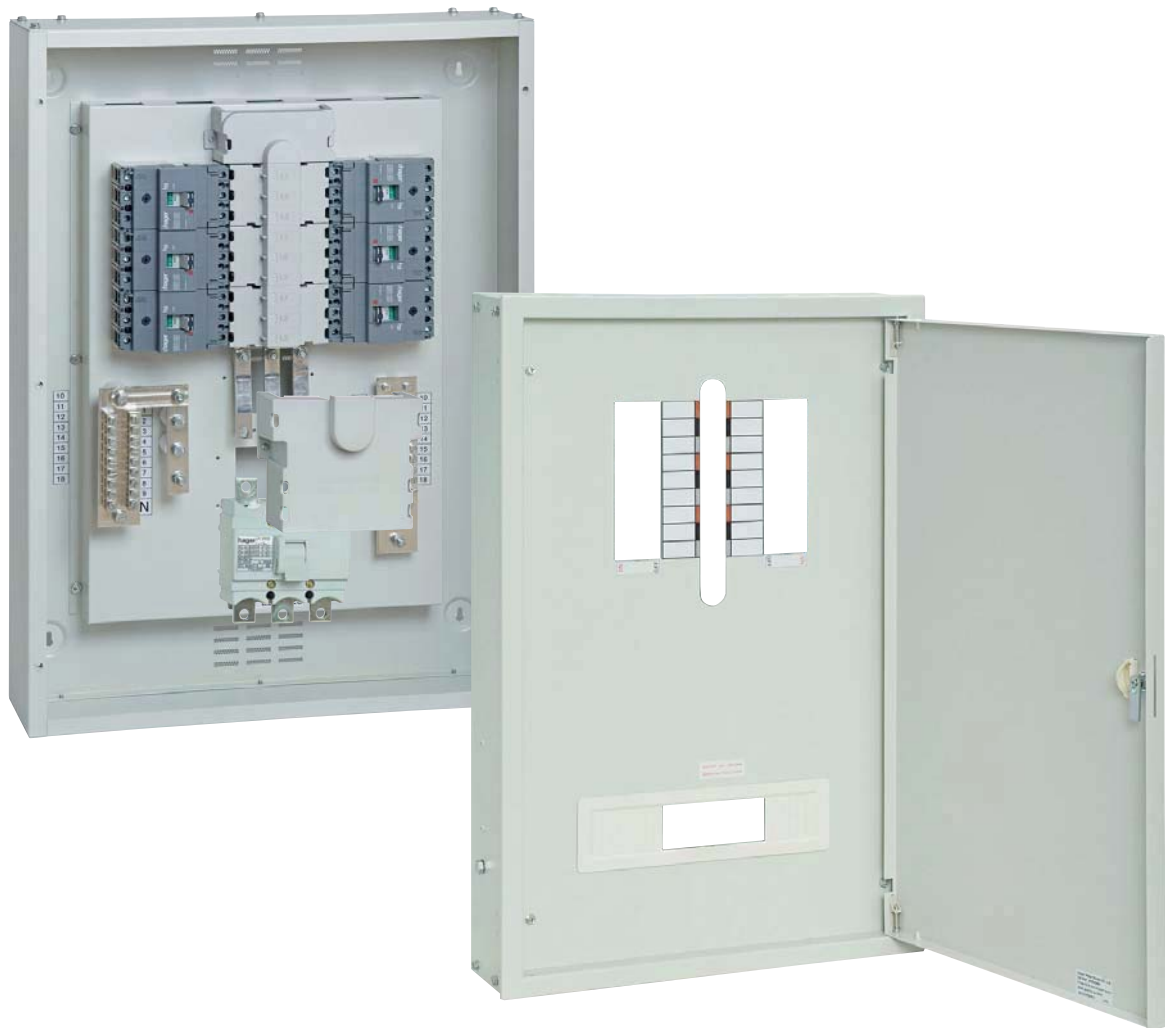
Reference (flush)	H	W	D	H1	W1	D1
JK2B04F1	680	470	115	650	440	110
JK2B06F1	730	470	115	700	440	110
JK2B08F1	785	470	115	755	440	110
JK2B10F1	840	470	115	810	440	110
JK2B12F1	890	470	115	860	440	110
JK2B14F1	945	470	115	915	440	110
JK2B16F1	1000	470	115	970	440	110
JK2B18F1	1055	470	115	1025	440	110
JK2B24F1	1220	470	115	1190	440	110

Dimensions of spreader box + din extension box

Reference	H	W	D
JK2E01F	300	470	115
JK2E01S	275	445	115
JK2E16S	275	445	115
JK2E32S	425	445	115
JK2E48S	575	445	115
JK2E16F	300	470	115
JK2E32F	450	470	115
JK2E48F	600	470	115

Panel boards systems invicta 250A

250A incoming, 125A outgoing



Your benefits

- Easy to install
- More wiring space
- Full door
- Earth and neutral bars are positioned for easier cabling

Characteristics

- Standard BS EN60439-1 / IEC 60439-3
- 1.5mm thickness sheet steel RAL 9002 Epoxy powder coated
- IP41
- Breaking capacity: 25 kA for 0.3 sec.

invicta - 250A panel board system

250A incoming, 125A outgoing



Technical characteristics

Suitable for MCCBs & isolating switches incomers.

ASTA certified insulated tinned copper busbar assembly:
 - Rated short circuit withstand capacity for 250A busbar 25kA at 415V for 0.3 sec.
 - Removable pre punched top and bottom gland plates.
 - 1.5 mm thickness sheet steel

with epoxy powder coating RAL 9002
 - IP41

Accessories like key lock, DIN rail extension boxes etc...

Comply with BS EN 60 439-1 and IEC 60 439-1.



JK2B0008S1

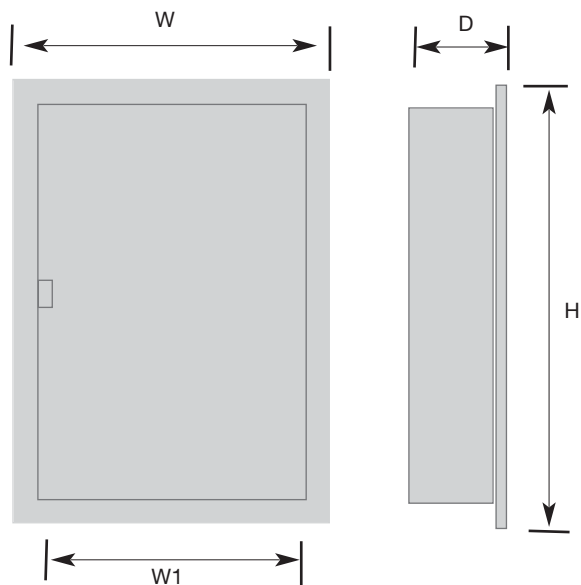
Description	Characteristics	Cat. ref.
invicta 250 panel board system 250A incoming and 125A (x160) MCCB outgoing Surface mounted	2 ways	JN2B00002S1
	4 ways	JN2B00004S1
	6 ways	JN2B00006S1
	8 ways	JN2B00008S1
	10 ways	JN2B00010S1
	12 ways	JN2B00012S1
	16 ways	JN2B00016S1

Note: Link kits are not supplied with standard, please order I/e link kits separately

invicta - 250A panel board system

extensions and accessories

Description	Characteristics	Cat. ref.
Incoming kits	250A 3P MCCB incomer kit	JN2L2503MH
	250A 4P MCCB incomer kit	JN2L2504MH
	250A 3P isolator incomer kit	JN2L2503SK
	250A direct incomer kit	JN2L2503D
Switch disconnecter	Switch 3 x 250A 400V	JK250S
Extension boxes	250A spreader box	JN2E01S
	250A DIN rail box - 20	JN2E20S
Accessories / spares	Single pole blanking plate 125A frame	JN2XBSP
	Keylock for distribution board	JK1XKLS



Main
switchboards

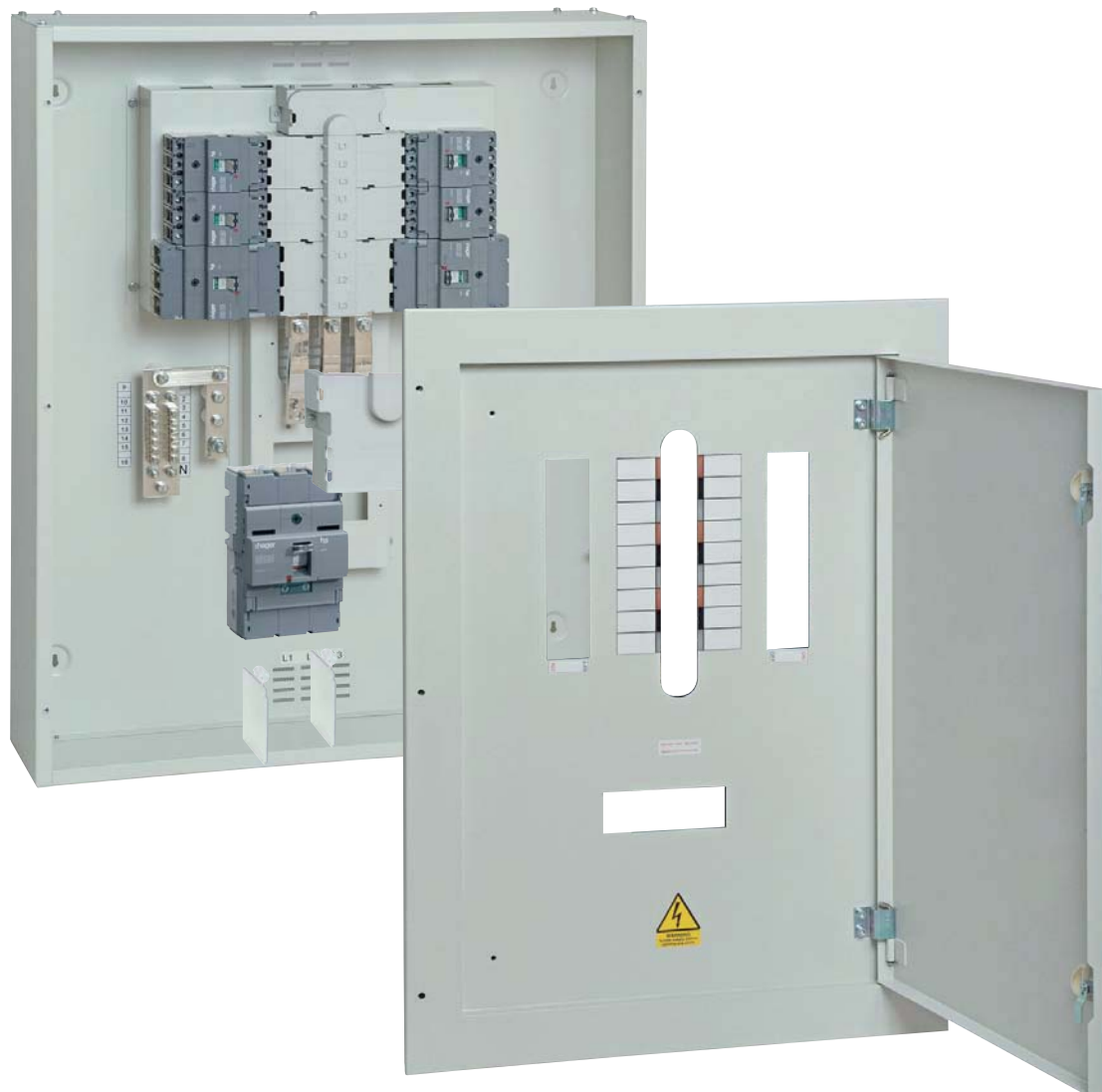
Reference (surface)	H	W	D
JN2B00002S1	700	615	160
JN2B00004S1	775	615	160
JN2B00006S1	855	615	160
JN2B00008S1	925	615	160
JN2B00010S1	1000	615	160
JN2B00012S1	1115	615	160
JN2B00016S1	1375	615	160

Dimensions of spreader box + din extension box

Reference	H	W	D
JN2E01S	303	615	160
JN2E20S	303	615	160

Panel boards systems invicta 400A

400A incoming, 125A / 250A outgoing



Your benefits

- Easy to install
- More wiring space
- Full door
- Earth and neutral bars are positioned for easier cabling

Characteristics

- Standard BS EN60439-1 / IEC 60439-3
- 1.5mm thickness sheet steel RAL 9002 Epoxy powder coated
- IP41
- Breaking capacity: 35 kA at 415V for 1 sec.

Technical characteristics

Suitable for (MCCBs) incomers and outgoing.
ASTA certified insulated tinned copper busbar assembly:
- Rated short circuit withstand capacity for busbar 35kA at 415V for 1 sec.

- Removable pre punched top and bottom gland plates.
- 1.5 mm thickness with sheet steel epoxy powder coating in RAL 9002
- IP41

Accessories like key lock, DIN rail extension boxes etc...
- 4P incomer on request

Comply with BS EN 60 439-1 and IEC 60 439-1.

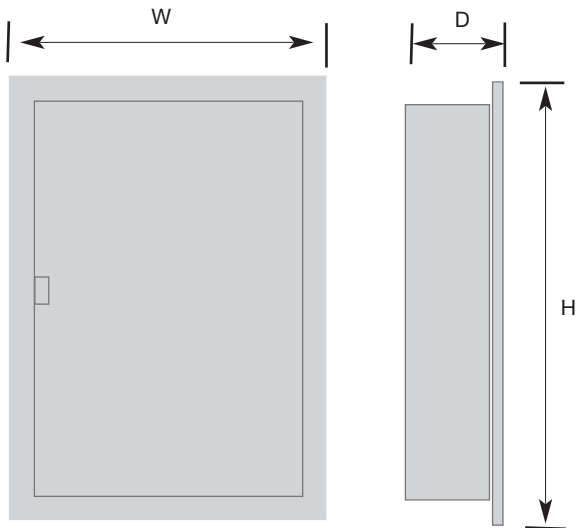


JN4B00008S1

Description	Characteristics	Cat. ref.
Invicta 400 panel board system up to 400A incoming up to 125A (x160) outgoing	4 ways	JN4B00004S1
	6 ways	JN4B00006S1
	8 ways	JN4B00008S1
	10 ways	JN4B00010S1
	12 ways	JN4B00012S1
	16 ways	JN4B00016S1
Invicta 400 panel board system up to 400A incoming up to 125A (x160) outgoing	2 ways 250A + 2 ways 125A	JN4B00202S1
	2 ways 250A + 4 ways 125A	JN4B00204S1
	2 ways 250A + 6 ways 125A	JN4B00206S1
	2 ways 250A + 8 ways 125A	JN4B00208S1
	2 ways 250A + 10 ways 125A	JN4B00210S1
	2 ways 250A + 14 ways 125A	JN4B00214S1

invicta - 400A panel board system
extensions and accessories

Description	Characteristics	Cat. ref.
Incoming kits	400A 3P MCCB incomer kit	JN4L4003MH
	400A 3P MCCB extension bar	JN4L4003EB
	400A 3P direct incomer kit	JN4L4003D
Extension boxes	400A spreader box	JN4E01S
	400A small DIN rail box (125A outgoing only) - 24	JN4E24S
	400A large DIN rail box (250A+125A outgoing only) - 32	JN8E32S
Accessories / spares	Single pole blanking plate 125A frame	JN2XBSP
	Three pole blanking plate 250A frame	JN4XBTP
	Keylock for distribution board	JK1XKLS



Reference (surface)	H	W	D
JN4B00004S1	930	690	200
JN4B00006S1	1005	690	200
JN4B00008S1	1080	690	200
JN4B00010S1	1155	690	200
JN4B00012S1	1230	690	200
JN4B00016S1	1380	690	200
JN4B00202S1	960	846	200
JN4B00204S1	1035	846	200
JN4B00206S1	1110	846	200
JN4B00208S1	1185	846	200
JN4B00210S1	1260	846	200
JN4B00214S1	1410	846	200

Dimensions of spreader box + din extension box

Reference	H	W	D
JN4E01S	303	690	200
JN4E24S	303	690	200
JN8E32S	453	615	160

Panel boards systems invicta 800A

630A/800A incoming, 400A outgoing



Your benefits

- Easy to install
- More wiring space
- Full door
- Earth and neutral bars are positioned for easier cabling

Characteristics

- Standard BS EN60439-1 / IEC 60439-3
- 1.5mm thickness sheet steel RAL 9002 Epoxy powder coated
- IP41
- 40 kA at 415V for 1 sec.
- 43 kA at 415V for 0.2 sec.

Technical characteristics

Suitable for MCCBs incomers and outgoing.

ASTA certified insulated tinned copper busbar assembly:

- Rated short circuit withstand capacity for 630/ 800A

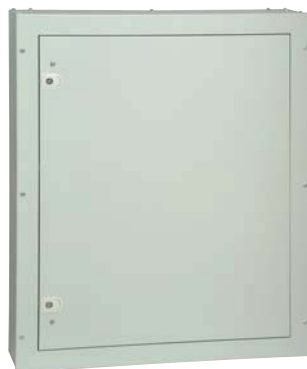
busbar 40kA for 1 sec. or 43kA for 0.2 sec

- Removable pre punched top and bottom gland plates
- 1.5 mm thickness sheet steel with epoxy powder coating in RAL 9002

- IP41

- 4P incomer on request
Accessories like key lock, DIN rail extension boxes etc...

Comply with BS EN 60 439-1 and IEC 60 439-1.

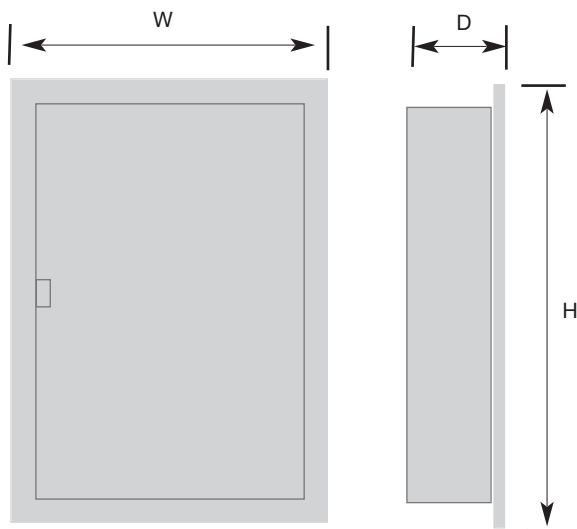


JN8B00008S1

Description	Characteristics	Cat. ref.
invicta 630A/800A panel board system up to 630/800A incoming up to 125A (x160) MCCB outgoings	4 ways 125A	JN8B00004S1
	6 ways 125A	JN8B00006S1
	8 ways 125A	JN8B00008S1
	10 ways 125A	JN8B00010S1
	12 ways 125A	JN8B00012S1
invicta 630A/800A panel board system up to 630/800A incoming up to 250A (x250) MCCB outgoings	16 ways 125A	JN8B00016S1
	4 ways 250A	JN8B00400S1
	6 ways 250A	JN8B00600S1
	8 ways 250A	JN8B00800S1
	10 ways 250A	JN8B01000S1
invicta 630A/800A panel board system up to 630/800A incoming up to 250A (x250) MCCB outgoings and up to 125A (x160) MCCB outgoings	12 ways 250A	JN8B01200S1
	16 ways 250A	JN8B01600S1
	2 ways 250A + 2 ways 125A	JN8B00202S1
	2 ways 250A + 4 ways 125A	JN8B00204S1
	2 ways 250A + 6 ways 125A	JN8B00206S1
invicta 630A/800A panel board system up to 630/800A incoming up to 250A (x250) MCCB outgoings and up to 125A (x160) MCCB outgoings	2 ways 250A + 8 ways 125A	JN8B00208S1
	2 ways 250A + 10 ways 125A	JN8B00210S1
	2 ways 250A + 14 ways 125A	JN8B00214S1
	4 ways 250A + 2 ways 125A	JN8B00402S1
	4 ways 250A + 4 ways 125A	JN8B00404S1
invicta 630A/800A panel board system up to 630/800A incoming up to 250A (x250) MCCB outgoings and up to 125A (x160) MCCB outgoings	4 ways 250A + 6 ways 125A	JN8B00406S1
	4 ways 250A + 8 ways 125A	JN8B00408S1
	4 ways 250A + 10 ways 125A	JN8B00410S1
	6 ways 250A + 6 ways 125A	JN8B00606S1
	6 ways 250A + 8 ways 125A	JN8B00608S1

invicta - 800A panel board system
extensions and accessories

Description	Characteristics	Cat. ref.
Incoming kits	630A 3P MCCB incomer kit	JN8L6303MH
	630A 3P direct incomer kit	JN8L6303D
	800A 3P MCCB incomer kit	JN8L8003MH
	800A 3P direct incomer kit	JN8L8003D
	630A 3P MCCB extension bar	JN8L6303EB
	800A 3P MCCB extension bar	JN8L8003EB
	Extension boxes	800A spreader box
800A DIN rail box - 32		JN8E32S
Accessories / spares	Single pole blanking plate 125A frame	JN2XBSP
	Three pole blanking plate 250A frame	JN4XBTP
	Keylock for distribution board	JK1XKLS



Reference (surface)	H	W	D
JN8B00004S1	1035	846	200
JN8B00006S1	1110	846	200
JN8B00008S1	1215	846	200
JN8B00010S1	1320	846	200
JN8B00012S1	1410	846	200
JN8B00016S1	1620	846	200

JN8B00400S1	1095	846	200
JN8B00600S1	1200	846	200
JN8B00800S1	1305	846	200
JN8B01000S1	1410	846	200
JN8B01200S1	1515	846	200
JN8B01600S1	1725	846	200

JN8B00202S1	1065	846	200
JN8B00204S1	1140	846	200
JN8B00206S1	1215	846	200
JN8B00208S1	1320	846	200
JN8B00210S1	1410	846	200
JN8B00214S1	1560	846	200

JN8B00402S1	1170	846	200
JN8B00404S1	1245	846	200
JN8B00406S1	1350	846	200
JN8B00408S1	1440	846	200
JN8B00410S1	1650	846	200

JN8B00606S1	1485	846	200
JN8B00608S1	1620	846	200

Dimensions of spreader box + din extension box

Reference	H	W	D
JN8E01S	303	846	200
JN8E32S	453	846	200

Enclosed fuse combination switches and switch disconnectors



Your benefits

- Easy to install
- Positive action door handle
- Lockable off

Characteristics

- Standard IEC 60947-3
- Robust 1,2mm steel enclosure

Expert tips

1



Knock outs and removable gland plate
2.0 mm (up to 400A)
2.5 mm (up to 630A - 800A)

2



Robust 1.2 mm steel enclosure

3



Terminal cover

4



Lockable off

5



Neutral bar

6



Top or bottom fed

7



Accepts BS88 fuses

8



Key hole mounting slots

Description

The range of enclosed FCS have been designed to match the TP&N range of distribution boards. The number of enclosure sizes have been optimized, to ensure that the installation is easy and uniform. The FCS products are designed to protect and isolate individual circuits. All handles can be padlocked in the off position. Extension boxes are available for extra cabling space.

Operation is through a door operated rotary handle.

Note

Maximum rate fuse links are fitted in all fuse combination switches.

Electrical specification

Tested and complies to IEC 60 497-3
LBS Sequence 1 & 3
FCS Sequence 1 & 4

Electrical Supply

415V~AC Rating AC23 (100A~AC22A)

Mechanical specification

Material 1.2mm CR4 Steel
Powder Coated RAL 9002

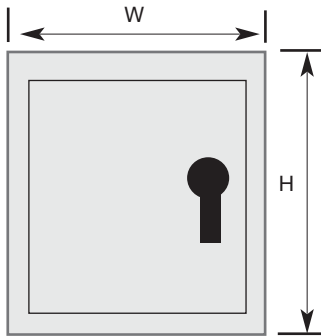
Devices & accessories

SPSN 20 - 100A (4 ratings)
TP & N 20 - 800A (12 ratings)
TPSN 20 - 800A (12 ratings)



JFD306U

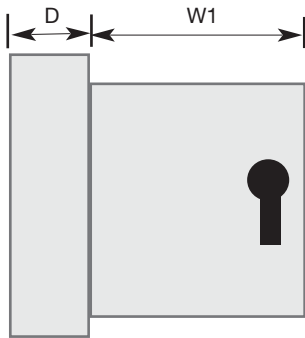
Description	In A	Utilisation category	Fuse type		Cat. ref.
Single pole switched neutral	20A	AC23A	A1		JFB202U
	32A	AC23A	A1		JFB203U
	63A	AC23A	A2-A3		JFD206U
	100A	AC22A	A4		JFE210U
Triple pole and neutral	20A	AC23A	A1		JFB302U
	32A	AC23A	A1		JFB303U
	63A	AC23A	A2-A3		JFD306U
	100A	AC22A	A4		JFE310U
	125A	AC23A	B1-B2		JFG312U
	160A	AC23A	B1-B2		JFG316U
	200A	AC23A	B1-B2		JFG320U
	250A	AC23A	B1-B3		JFG325U
	315A	AC23B	B1-B3		JFH331U
	400A	AC23B	B1-B4		JFH340U
	630A	AC23B	C1-C2		JFI363U
	800A	AC23B	C1-C3		JFI380U
Triple pole switched neutral	20A	AC23A	A1		JFB402U
	32A	AC23A	A1		JFB403U
	63A	AC23A	A2-A3		JFD406U
	100A	AC22A	A4		JFE410U
	125A	AC23A	B1-B2		JFG412U
	160A	AC23A	B1-B2		JFG416U
	200A	AC23A	B1-B2		JFG420U
	250A	AC23A	B1-B3		JFG425U
	315A	AC23B	B1-B3		JFH431U
	400A	AC23B	B1-B4		JFH440U
	630A	AC23B	C1-C2		JFI463U
	800A	AC23B	C1-C3		JFI480U
Cable extension boxes triple pole and triple pole switched neutral	125A, 160A, 200A, 250A				JZA701
	315A, 400A				JZA702
	630A, 800A				JZA703
Auxiliary contact	1AC type NO				HZF301
	1AC type NC				HZF302
Description	In A	Cat. ref.	Cat. ref.		Cat. ref.
			2P	3P	
Terminal cover	100A	HZF201	HZF202	HZF203	HZF203
	125A, 160A,	-	HZF202	HZF203	HZF203
	200A to 400A	-	HZF204	HZF205	HZF205
	630A to 800A	-	HZF206	HZF206	HZF207



Reference	Product type	Rating	H	W	D	W1	A	B
JFB202U	SPSN	20A/ A1	250	200	150	182	120	172
JFB302U	TPN	20A/ A1	250	200	150	182	120	172
JFB402U	TPSN	20A/ A1	250	200	150	182	120	172
JFB203U	TPSN	32A/ A1	250	200	150	182	120	172
JFB303U	TPN	32A/ A1	250	200	150	182	120	172
JFB403U	TPSN	32A/ A1	250	200	150	182	120	172

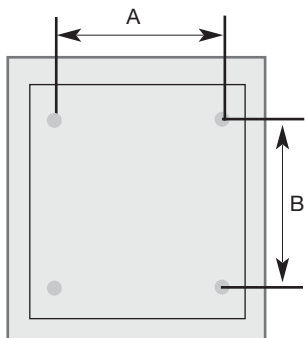
3

JFD206U	SPSN	63A/ A2-A3	325	300	150	282	190	217
JFD306U	TPN	63A/ A2-A3	325	300	150	282	190	217
JFD406U	TPSN	63A/ A2-A3	325	300	150	282	190	217



4

JFE210U	SPSN	100A/ A4	400	375	200	357	265	292
JFE310U	TPN	100A/ A4	400	375	200	357	265	292
JFE410U	TPSN	100A/ A4	400	375	200	357	265	292



6

JFG312U	TPN	125A/ B1-B2	500	375	200	357	265	380
JFG412U	TPSN	125A/ B1-B2	500	375	200	357	265	380
JFG316U	TPN	125A/ B1-B2	500	375	200	357	265	380
JFG416U	TPSN	125A/ B1-B2	500	375	200	357	265	380
JFG320U	TPN	125A/ B1-B2	500	375	200	357	265	380
JFG420U	TPSN	125A/ B1-B2	500	375	200	357	265	380
JFG325U	TPN	125A/ B1-B2	500	375	200	357	265	380
JFG425U	TPSN	125A/ B1-B2	500	375	200	357	265	380

7

JFH331U	TPN	315A/ B1-B3	650	500	300	481.5	390	529
JFH431U	TPSN	315A/ B1-B3	650	500	300	481.5	390	529
JFH340U	TPN	400A/ B1-B4	650	500	300	481.5	390	529
JFH440U	TPSN	400A/ B1-B4	650	500	300	481.5	390	529

8

JFI363U	TPN	630A/ C1-C2	800	600	350	581.5	490	679
JFI463U	TPSN	630A/ C1-C2	800	600	350	581.5	490	679
JFI380U	TPN	800A/ C1-C2	800	600	350	581.5	490	679
JFI480U	TPSN	800A	800	600	350	581.5	490	679

Description

The range of enclosed LBS have been designed to match the TP&N range of distribution boards. The number of enclosure sizes have been optimized, to ensure that the installation is easy and uniform. Products are designed to isolate individual circuits. All handles can be padlocked in the off position.

Extension boxes are available for extra cabling space. Operation is through a door operated rotary handle.

Electrical specification

Tested and complies to
BS EN 60439-1 (enclosure)
BS EN 60947-3 (device)
LBS Sequence 1 & 3
FCS Sequence 1 & 4

Electrical Supply

415V ~ AC
Rating AC23A (100, 315, 400 & 630A AC22A)

Mechanical specification

Material 1.2 mm CR4 Steel
Powder Coated RAL 9002

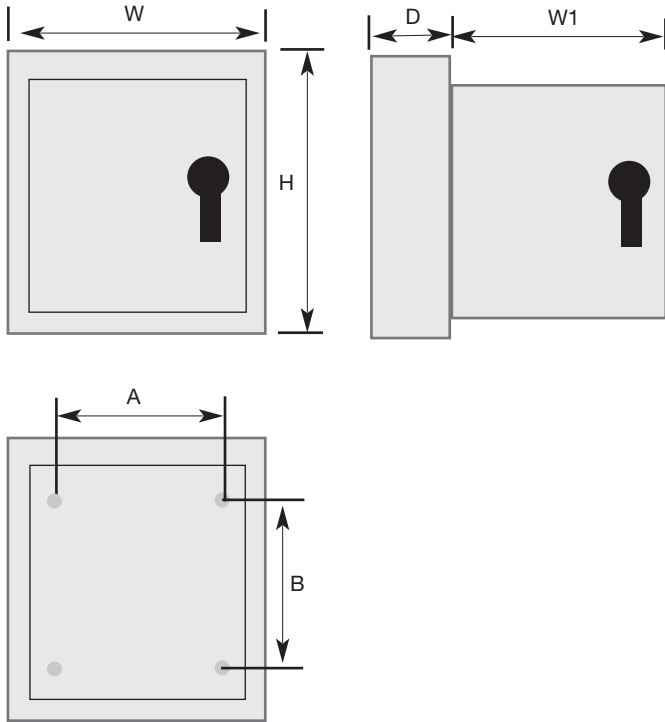
Devices & accessories

TPN 20-1600A (14 ratings)
TPSN 20-1600A (14 ratings)



JAB306

Description	In A	Utilisation category	Cat. ref.
Triple pole and neutral	20A	AC23A	JAB302
	32A	AC23A	JAB303
	63A	AC23A	JAB306
	100A	AC22A	JAB310
	125A	AC23A	JAC312
	160A	AC23A	JAC316
	200A	AC23A	JAE320
	250A	AC23A	JAE325
	315A	AC22A	JAG331
	400A	AC22A	JAG340
	630A	AC22B	JAH363
	800A	AC23B	JAH380
	1250A	AC23A	JAH390
	1600A	AC23A	JAH392
Triple pole switched neutral	20A	AC23A	JAB402
	32A	AC23A	JAB403
	63A	AC23A	JAB406
	100A	AC22A	JAB410
	125A	AC23A	JAC412
	160A	AC23A	JAC416
	200A	AC23A	JAE420
	250A	AC23A	JAE425
	315A	AC22A	JAG431
	400A	AC22A	JAG440
	630A	AC22B	JAH463
	800A	AC23B	JAH480
	1250A	AC23A	JAH490
	1600A	AC23A	JAH492
Cable extension boxes triple pole and triple pole switched neutral	125A, 160A		JZA700
	200A, 250A, 315A, 400A		JZA701
	630A, 800A		JZA702
Auxiliary contact 1NO+1NC	20A to 63A		HZ021
	100A to 160A		HZ022
	200A to 630A		HZ023
	800A to 1600A		HZ025
Description	In A	Cat. ref. 3P	Cat. ref. 4P
Terminal cover	125A to 200A,	HZC201	HZC202
	250A to 400A	HZC203	HZC204
	630A	HZC205	HZC206
	800A	HZ036	HZ046
	1250A to 1600A	HZ037	HZ047



Reference	H	W	D	H1	A	B
JAB302	250	180	105	177	110	172
JAB402	250	180	105	177	120	172
JAB303	250	180	105	177	110	172
JAB403	250	180	105	177	120	172
JAB306	250	180	105	177	120	172
JAB406	250	180	105	177	120	172
JAB310	250	200	150	182	120	172
JAB410	250	200	150	182	120	172
JAC312	300	200	150	182	140	196
JAC412	300	200	150	182	140	196
JAC316	300	200	150	182	140	196
JAC416	300	200	150	182	140	196
JAE320	400	375	200	357	265	292
JAE420	400	375	200	357	265	292
JAE325	400	375	200	357	265	292
JAE425	400	375	200	357	265	292
JAG331	500	375	200	357	265	380
JAG431	500	375	200	357	265	380
JAG340	500	375	200	357	265	380
JAG440	500	375	200	357	265	380
JAH363	650	500	300	481.5	390	529
JAH463	650	500	300	481.5	390	529
JAH380	650	500	300	481.5	390	529
JAH480	650	500	300	481.5	390	529
JAH390	1058	750	300	732	390	937
JAH392	1058	750	300	732	130	937
JZA700	200	250	150	/	140	100
JZA701	200	375	200	/	265	100
JZA702	250	500	300	/	390	134
JZA703	300	600	350	/	490	134

Boards and floor standing enclosures quadro4

Multiple and easy combinations

The quadro4 boards and floor standing enclosures are designed for an easy assembling using 3 basic elements: back plate, sides and top and base panels or top panel and plinth.

The vertical and horizontal combination of elements makes it possible to build “tailor made” enclosures for most requirements up to 630A.

Thanks to slim packaging, storage and transport are optimized.



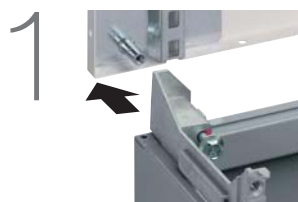
Your benefits

- Easy cabling thanks to a full accessibility to the whole enclosure
- Complete solution from enclosures to low voltage boards up to 630A.

Technical characteristics

- Metal enclosures, class I, delivered in kit.
- Height : 500 to 1850 mm.
- Depth : 267 mm.
- Width : 370 and 620 mm.
- Protection class : IP 30 – IP 40 – IP 43.

Expert tips



Pre-mounted screws

Screws and pillars are pre-mounted on the basic elements.



Sides mounting

Mounting guides on top and bottom elements facilitate the sides mounting.



Horizontal association kit

Composed of 2 screws, 2 connection clamps and 1 support for central front plate.



Vertical association kit

Composed of 2 screws and 2 pillars.



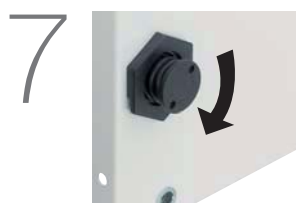
Doors mounting

Without any tool or screw.




Wall mounting

Equipped with fixing points and central fixing point.



Mounting on irregular wall

Adjustable stops on the back.

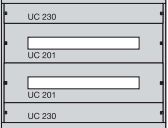
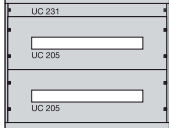
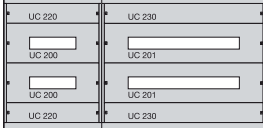
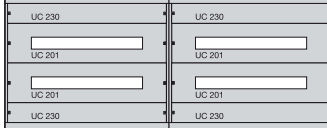
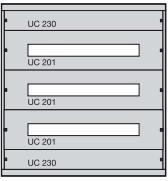
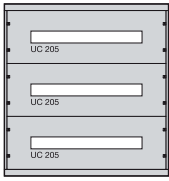
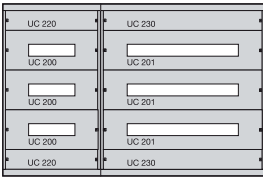
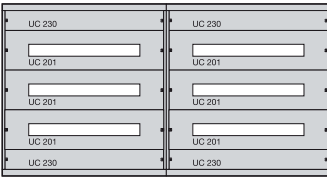
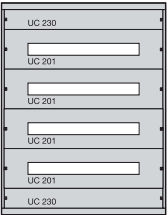
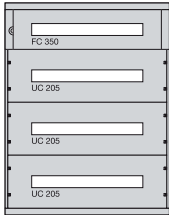
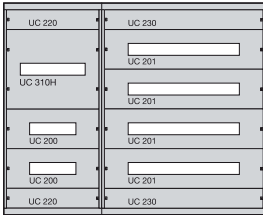
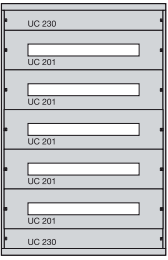
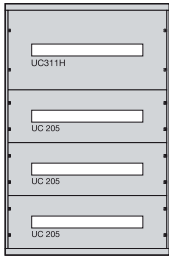
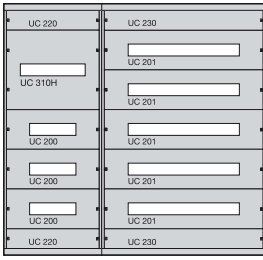
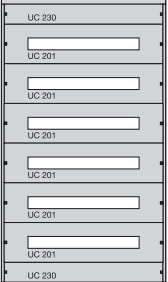
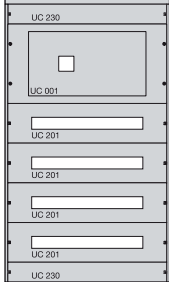
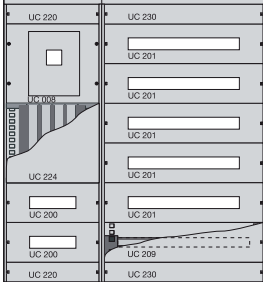
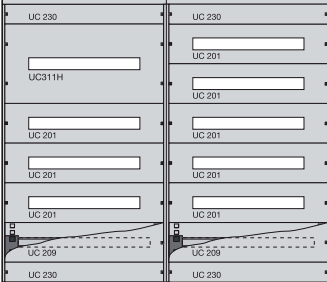
260 mm depth		Back plate	Top and bottom panels	Top panel and plinth	Sides (set of 2)			
			 IP40 and IP43	 IP40 and IP43				
enclosures height with top and plinth	inside height capacity	ref. for enclosure width:		ref. for enclosure width:		ref. for enclosure width:		ref.
-	150 mm	-	-	-	-	-	-	-
500 mm	450 mm	FC110	FC210	FC415 <i>FC416</i>	FC425 <i>FC426</i>	FC445 <i>FC446</i>	FC455 <i>FC456</i>	FC010
650 mm	600 mm	FC111	FC211	FC415 <i>FC416</i>	FC425 <i>FC426</i>	FC445 <i>FC446</i>	FC455 <i>FC456</i>	FC011
800 mm	750 mm	FC112	FC212	FC415 <i>FC416</i>	FC425 <i>FC426</i>	FC445 <i>FC446</i>	FC455 <i>FC456</i>	FC012
950 mm	900 mm	FC113	FC213	FC415 <i>FC416</i>	FC425 <i>FC426</i>	FC445 <i>FC446</i>	FC455 <i>FC456</i>	FC013
1100 mm	1050 mm	FC114	FC214	FC415 <i>FC416</i>	FC425 <i>FC426</i>	FC445 <i>FC446</i>	FC455 <i>FC456</i>	FC014
1250 mm	1200 mm	FC115	FC215	FC415 <i>FC416</i>	FC425 <i>FC426</i>	FC445 <i>FC446</i>	FC455 <i>FC456</i>	FC015
1400 mm	1350 mm	FC116	FC216	FC415 <i>FC416</i>	FC425 <i>FC426</i>	FC445 <i>FC446</i>	FC455 <i>FC456</i>	FC016
1550 mm	1500 mm	-	-	-	-	-	-	-
1700 mm	1650 mm	FC118	FC218	FC415 <i>FC416</i>	FC425 <i>FC426</i>	FC445 <i>FC446</i>	FC455 <i>FC456</i>	FC012 + FC013
1850 mm	1800 mm	FC119	FC219	FC415 <i>FC416</i>	FC425 <i>FC426</i>	FC445 <i>FC446</i>	FC455 <i>FC456</i>	2 x FC013

ref. in italic = IP43

		Plain door	Transparent door	DIN rail equipment unit with door	Assembling kits	
		 delivered with keylock	 delivered with keylock		horizontal	vertical
Doors height		ref. for enclosure width: 370 mm 620 mm	ref. for enclosure width: 620 mm	ref. width: 620 mm	ref.	ref.
150 mm		- -	-	FC 350	-	-
450 mm		FC310 FC330	FC340	-	FC120	FC230
600 mm		FC311 FC331	FC341	-	FC121	FC230
750 mm		FC312 FC332	FC342	-	FC122	FC230
900 mm		FC313 FC333	FC343	-	FC123	FC230
1050 mm		FC314 FC334	FC344	-	FC124	FC230
1200 mm		FC315 FC335	FC345	-	FC125	FC230
1350 mm		FC316 FC336	FC346	-	FC126	FC230
1500 mm		FC317 FC337	FC347	-	-	-
1650 mm		FC318 FC338	FC348	-	FC122 + FC123	FC230
1800 mm		FC319 FC339	FC349	-	2 x FC123	FC230

quadro4

examples of equipments

Examples of equipments of quadro4, IP 40 enclosures :		the references of the equipments units, to use + needed references of enclosures		
	width 620 mm	width 990 mm	width 1240 mm	
height 450 mm	 <p>FC210 FC010 FC425</p> <p>+ mod. kits centre distance 150 mm with 48 ■</p>	 <p>FC210 FC010 FC425</p> <p>+ mod. kits centre distance 200 mm with 48 ■</p>	 <p>FC110 FC210 FC010 FC120 FC415 FC425</p> <p>+ mod. kits centre distance 150 mm with 68 ■</p>	 <p>2x FC210 FC010 2x FC425 FC120</p> <p>+ mod. kits centre distance 150 mm with 96 ■</p>
height 600 mm	 <p>FC211 FC011 FC425</p> <p>+ mod. kits centre distance 150 mm with 72 ■</p>	 <p>FC211 FC011 FC425</p> <p>+ mod. kits centre distance 200 mm with 72 ■</p>	 <p>FC111 FC211 FC121 FC011 FC415 FC425</p> <p>+ mod. kits centre distance 150 mm with 102 ■</p>	 <p>2x FC211 FC011 2x FC425 FC121</p> <p>+ mod. kits centre distance 150 mm with 144 ■</p>
height 750 mm	 <p>FC212 FC012 FC425</p> <p>+ mod. kits centre distance 150 mm with 96 ■</p>	 <p>FC212 FC012 FC425</p> <p>+ mod. door 24 ■ + mod. kits centre distance 200 mm with 72 ■</p>	 <p>FC112 FC212 FC012 FC122 FC415 FC425</p> <p>+ kit x160 + mod. kits centre distance 150 mm with 116 ■</p>	
height 900 mm	 <p>FC213 FC013 FC425</p> <p>+ mod. kits centre distance 150 mm with 120 ■</p>	 <p>FC213 FC013 FC425</p> <p>+ kit x160 + mod. kits centre distance 200 mm with 72 ■</p>	 <p>FC113 FC213 FC013 FC123 FC415 FC425</p> <p>+ kit x160 + mod. kits centre distance 150 mm with 150 ■</p>	
height 1050 mm	 <p>FC214 FC014 FC425</p> <p>+ mod. kits centre distance 150 mm with 144 ■</p>	 <p>FC214 FC014 FC425</p> <p>+ kit HA 160A + mod. kits centre distance 150 mm with 96 ■</p>	 <p>FC114 FC214 FC014 FC124 FC415 FC425</p> <p>+ kit HA 160A + mod. kits centre distance 150 mm with 140 ■ + set of tiled bars + terminal blocks 22 ■</p>	 <p>2x FC214 FC014 2x FC425 FC124</p> <p>+ kit x160 + mod. kits centre distance 150 mm with 192 ■ + 2 terminal blocks 44 ■</p>

Examples of equipments of quadro4, IP 40 enclosures :

the references of the equipments units, to use + needed references of enclosures

	width 620 mm	width 990 mm	width 1610 mm
height 1200 mm	<p> FC215 FC015 FC425 </p> <ul style="list-style-type: none"> + horizontal kit x250 or h250 + mod. kits centre distance 200 mm with 92 ■ + busbars in bottom behind modular devices 	<p> FC118 FC218 FC012 FC013 FC122 FC123 FC455 FC445 </p> <ul style="list-style-type: none"> + kit x250 + mod. kits centre distance 150 and 200 mm with 164 ■ + busbar downstream + departure kit x160 + grid + 2 terminal blocks 44 ■ 	<p> 2 x FC218 FC118 FC012 FC013 2 x FC122 2 x FC123 2 x FC455 FC445 </p> <ul style="list-style-type: none"> + kit x250 or h250 + mod. kits centre distance 150 mm with 360 ■ + 4 terminal blocks 88 ■ + door modular cuttings 24 ■ + central busbars in cables sheath
height 1350 mm	<p> FC216 FC016 FC455 </p> <ul style="list-style-type: none"> + horizontal kit x250 or h250 + mod. kits centre distance 150 mm with 120 ■ + terminal blocks 22 ■ 	<p> FC119 FC219 2 x FC013 2 x FC123 FC445 FC455 </p> <ul style="list-style-type: none"> + kit h630 + mod. kits centre distance 150 and 200 mm with 216 ■ + vertical busbars + busbars in bottom behind modular + departure kit x160 + 2 terminal blocks 44 ■ 	<p> FC119 2 x FC219 2 x FC013 4 x FC123 FC445 2 x FC455 </p> <ul style="list-style-type: none"> + kit h630 + mod. kits centre distance 150 mm with 336 ■ + grid + central busbars in busbar compartment + 4 terminal blocks 88 ■ + departure kit x160 + departure kit x250 or h250
height 1650 mm	<p> FC218 FC012 FC013 FC455 </p> <ul style="list-style-type: none"> + horizontal kit x250 or h250 + mod. kits centre distance 150 mm with 120 ■ + horizontal busbars + terminal blocks 22 ■ 	<p> 2 x FC119 2 x FC219 2 x FC013 6 x FC123 2 x FC445 2 x FC455 </p> <ul style="list-style-type: none"> + kit h630 + mod. kits centre distance 150 and 200 mm with 322 ■ + busbars in bottom behind modular + busbars in devices busbar compartment + horizontal distribution busbar + modular door 24 ■ + horizontal outgoing for x250 or h250 + busbar compartment for terminals outgoings for departure on terminal blocks + horizontal outgoing for x160 	

For enclosed distribution up to 630A.
Depth: 267 mm

quadro4 are composed of :
- back plate
- kit of 2 sides
- top and bottom panel kit


- top panel and plinth kit, height 150mm
- plain or transparent door

- IP30, IK07 without door
- IP40, IK08 with door
- IP43, IK08 with door

- color of sides and doors: RAL 9010
- color of plinth: RAL 7042

All these kits allow multiple combinations of enclosures.

Complies to EN 50 298.

Designation	Height	Cat. ref. 2 sides kits	bottoms		
			370mm	620mm	
	Sides and back plate				
	450 mm	FC010	FC110	FC210	
	600 mm	FC011	FC111	FC211	
	750 mm	FC012	FC112	FC212	
	900 mm	FC013	FC113	FC213	
	1050 mm	FC014	FC114	FC214	
	1200 mm	FC015	FC115	FC215	
	1350 mm	FC016	FC116	FC216	
	* The back plates are delivered with 2 intermediate pillars	1650 mm*	-	FC118	FC218
	1800 mm*	-	FC119	FC219	

FC113

FC013



FC415

Top and bottom panels
delivered with the pre-mounting screws (unloosable), cable entry

delivered with cable entry plate in insulating material and with contractor name plate holder to ensure IP40

FC415 **FC425**

delivered with cable entry plates in insulating material to ensure IP43 and with contractor name plate holder

FC416 **FC426**



FC456

Top panel and plinth
delivered with the pre-mounting screws (unloosable), cable entry and 150mm height plinth

delivered with cable entry to ensure IP40

FC445 **FC455**

delivered with cable entry to ensure IP43

FC446 **FC456**



FC333



FC343



FC350



FZ597



FZ451



FZ450



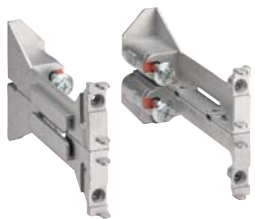


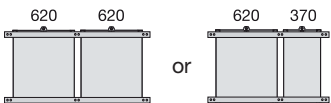

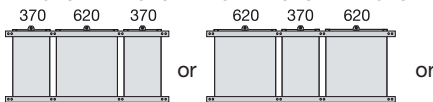


FZ449



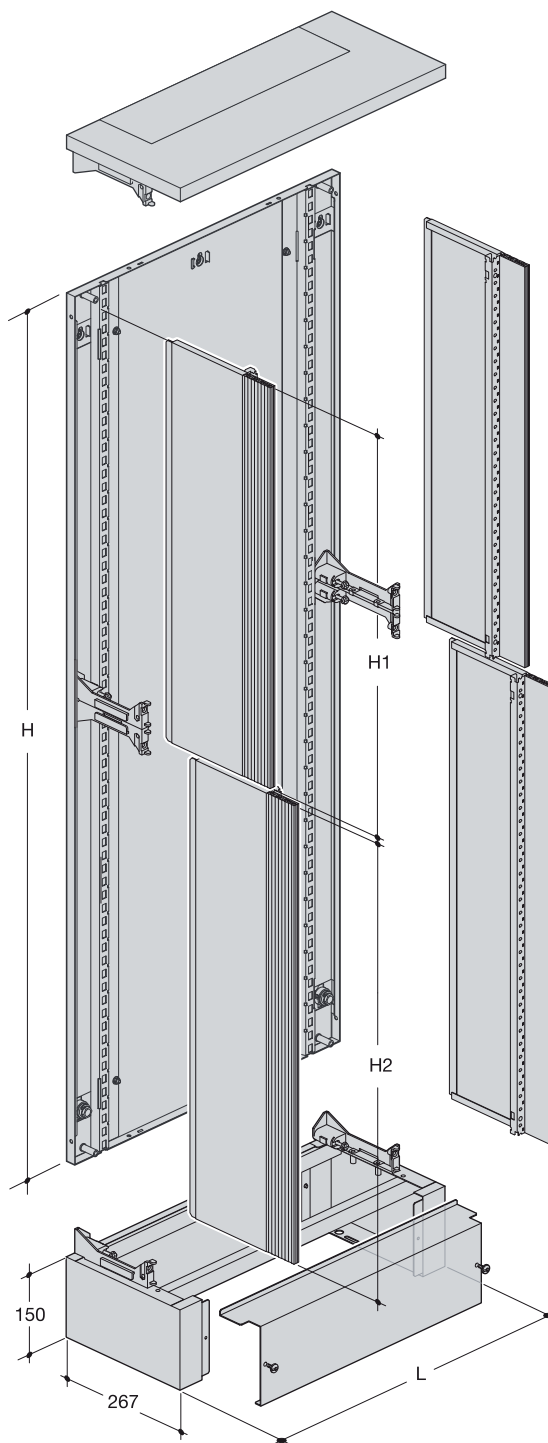
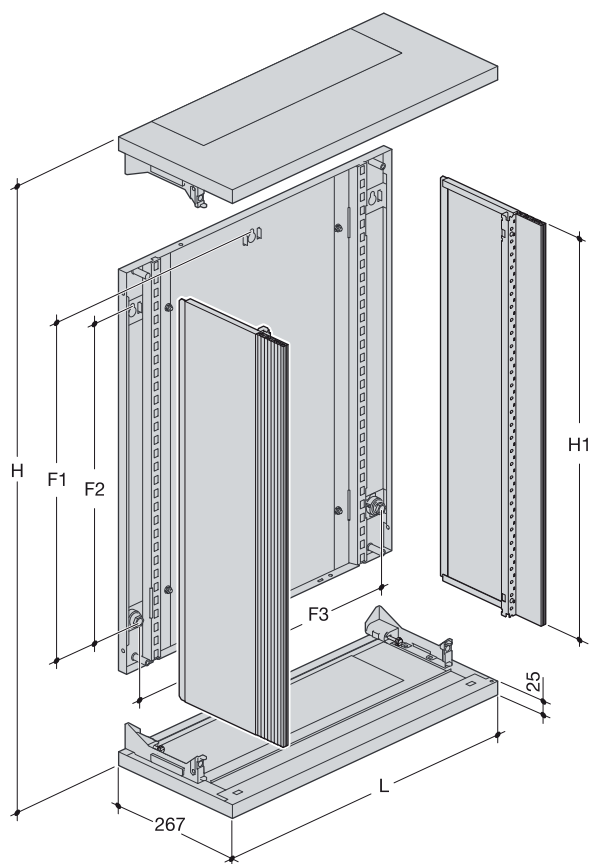
FM640

Designation	Height	Cat. ref. transp. 620 mm	plain	plain
			370 mm	620 mm
Transparent and plain doors delivered with adjustable hinges and key lock	450 mm	FC340	FC310	FC330
	600 mm	FC341	FC311	FC331
	750 mm	FC342	FC312	FC332
	900 mm	FC343	FC313	FC333
	1050 mm	FC344	FC314	FC334
	1200 mm	FC345	FC315	FC335
	1350 mm	FC346	FC316	FC336
	1500 mm	FC347	FC317	FC337
	1650 mm	FC348	FC318	FC338
1800 mm	FC349	FC319	FC339	

Designation	Characteristics	Cat. ref. 620mm
Equipment unit with door for modular devices and DIN rail	equipment 1 row, 24 I for enclosure width 620 mm reversible kit delivered complete with lock adjustable in depth	FC350
Locks replace the original latch	key lock n° 1242E delivered with 2 keys key lock n° 405 delivered with 2 keys key lock n° 455 delivered with 2 keys lock with male square of 7 mm chrome plated with 1 key lock with male triangle of 7 mm chrome plated with 1 key lock with double chrome plated bar of 3mm with 1 key	FZ597 FZ452 FZ453 FZ451 FZ450 FZ449
Flexible schematics holder self-adhesive, to stick inside the doors	A4 format	FZ794
Rigid schematics holder self-adhesive, to stick inside the doors	A4 format	FZ795
Wall mounting lugs fixed at the back delivered with fastening screws	1 set = 2 lugs	FM640

	Designation	Characteristics	Cat. ref.	
 FC230	Connection kits between enclosures - for vertical association width 370 and 620 mm the continuity of equipments is guaranteed	1 set is composed of 2 bolts with screws for connection of the bottoms and of 2 pillars for connection on the sides	FC230	
	- for horizontal association the kit is common for the bottoms of width 370 and 620mm	1 set is composed of 2 bolts with screws, 2 spacers for connection of the bottoms and to maintain the tops and bases as well as central support of front plates		
 FC123		for height :	FC120	
			450 mm	FC121
			600 mm	FC122
			750 mm	FC123
	for bottom of 1650mm take : 1 FC 122 + 1 FC 123		900 mm	FC124
	for bottom of 1800mm take : 2 FC 123		1050 mm	FC125
		1200 mm	FC126	
		1350 mm		
 FC671	Horizontal link bars to link several enclosures to facilitate transport or fixing on the wall precuts allow to adapt the bars to the desired length	set of 2 bars delivered with fastening screw on enclosures : to connect 2 enclosures : 2 x 620 mm or 1 x 620 + 1 x 370 mm	FC192	
	It is strongly recommended to use the link bars during the association of several bottoms			
 FZ402	Painting kit for the final touch-up of the enclosures Quadro and their base plates	to connect 3 enclosures : 2 x 370 + 1 x 620 mm or 2 x 620 + 1 x 370 mm	FC193	
				
 FZ404	Cable entry plate for replacement, top and bottom	1 set includes : - 1 can RAL 9010 for enclosures - 1 can RAL 7042 for base plates	FC671	
		IP54 IP43	FZ402 FZ403	
 FC419	Cable entry plate plain		FZ404	
	Partition	in sheet metal for quadro4 and quadro5	width: 620mm	FC664
	Designation		Ref. 370mm 620mm	
	Replacement plate in IP40, RAL 9010		FC419 FC429	

quadro4 enclosures



Dimensions in mm

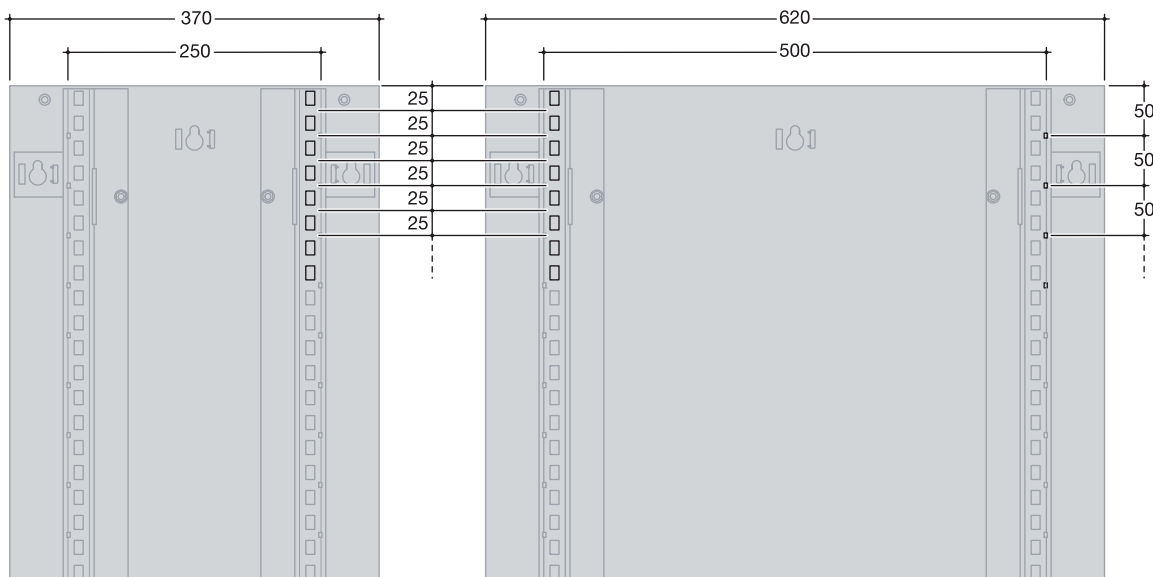
references		H	H1	L	fixing holes position		
bottoms	sides				F1	F2	F3
FC110	FC010	500	450	370	305	270	315
FC210	FC010	500	450	620	305	270	565
FC111	FC011	650	600	370	455	420	315
FC211	FC011	650	600	620	455	420	565
FC112	FC012	800	750	370	605	570	315
FC212	FC012	800	750	620	605	570	565
FC113	FC013	950	900	370	755	720	315
FC213	FC013	950	900	620	755	720	565
FC114	FC014	1100	1050	370	905	870	315
FC214	FC014	1100	1050	620	905	870	565
FC115	FC015	1250	1200	370	1055	1020	315
FC215	FC015	1250	1200	620	1055	1020	565
FC116	FC016	1400	1350	370	1205	1170	315
FC216	FC016	1400	1350	620	1205	1170	565

Dimensions in mm

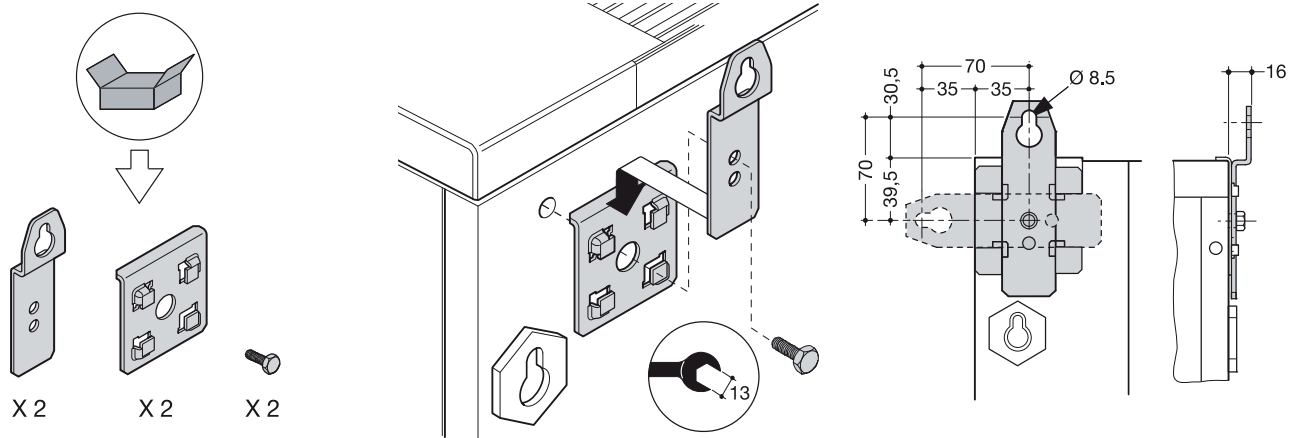
bottoms > 1400	sides	H	L	H1	H2
FC118	FC012 + FC013	1650	370	750	900
FC218	FC012 + FC013	1650	620	750	900
FC119	2 X FC013	1800	370	900	900
FC219	2 X FC013	1800	620	900	900

Main
switchboards

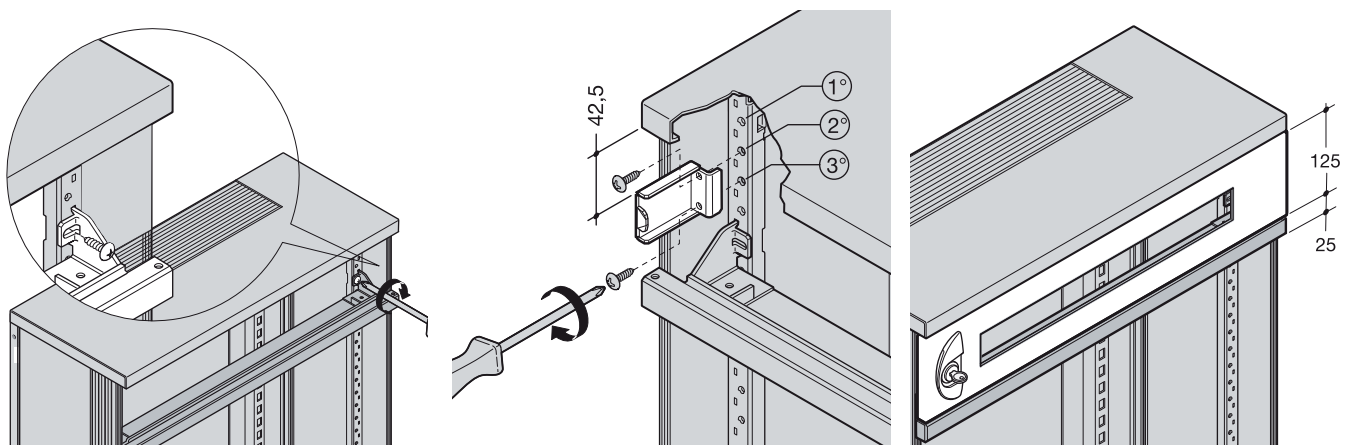
Back plates (dimensions in mm)



Wall mounting brackets FM640 (dimensions in mm)



Mounting of hinged front plate door of DIN rail equipment unit (dimensions in mm)



quadro

the modular solution



quadro: a wide range of boards and enclosures

The quadro boards and enclosures are designed for an easy installation. Modular elements are simply assembled to compose boards according to your specific needs. Equipment kits are also available to mount energy distribution devices in the enclosures.

 **hager**

www.africa.hager.com

Boards and enclosures quadro5

IP5 protection degree

The quadro5 boards and enclosures in IP55 are ideal for commercial applications such as: kitchens, hospitals, hotels, bank... Monobloc, but with large access thanks to removable sides.



Your benefits

- Easy cabling
- Identical design to the quadro4 and quadro+ ranges
- Common equipment units with quadro4 and quadro+ evo up to 630 A

Technical characteristics

- Metal enclosures, class I
- Boards height : 510 to 1410 mm
- Enclosures height : 1710, 1860, 2010 mm
- Depth : 260 and 400 mm
- Protection class : IP 55 with door

Expert tips

1



Easy cabling

High and low cable entry plates.

3



Horizontal or vertical association

To create "tailor made" enclosures.

2



Internal cable sleeves

Possibility to create a 200 mm sleeve in 900 mm width enclosures.

4



Enclosures can be linked horizontally

To create cell-type systems.

		Enclosures depth 260 mm delivered without plinth			Enclosures depth 260 mm and 400 mm delivered with plinth of 150 mm		Enclosures depth 260 mm and 400 mm delivered with plinth of 150 mm	
								
enclosures height with top and bottom or plinth	internal equipment height	enclosures width : (685mm usable) pair of 700 mm total sides		plinth 150 mm	enclosures width : (435 mm usable) 450 mm total d. 260 mm d.400 mm		(685 mm usable) 700 mm total d. 260 mm d. 400 mm	
510 mm	450 mm	FM 200	FM 400	FM 450	-	-	-	-
660 mm	600 mm	FM 201	FM 401	FM 450	-	-	-	-
810 mm	750 mm	FM 202	FM 402	FM 450	-	-	-	-
960 mm	900 mm	FM 203	FM 403	FM 450	-	-	-	-
1110 mm	1050 mm	FM 204	FM 404	FM 450	-	-	-	-
1260 mm	1200 mm	FM 205	FM 405	FM 450	-	-	-	-
1410 mm	1350 mm	FM 206	FM 406	FM 450	-	-	-	-
1710 mm	1500 mm	-	-	-	FM 107	FM 117	FM 207	FM 217
1860 mm	1650 mm	-	-	-	FM 108	FM 118	FM 208	FM 218
2010 mm	1800 mm	-	-	-	FM 109	FM 119	FM 209	FM 219
vertical association kit		FM 630	-	-	-	-	FM 630 possible	-
horizontal association kit		FM 635	-	-	FM 635	FM 635	FM 635	-

<p>Enclosures depth 260 mm and 400 mm delivered with plinth of 150 mm</p> 	<p>Side panels</p> 		<p>Busbar compartment and cable sleeve</p> 		<p>Doors</p>  					
<p>(885 mm usable) 900 mm total d. 260 mm d. 400 mm</p>	<p>pair of sides d. 260 mm d. 400 mm</p>		<p>for enclosure: width 900 mm total d. 260 mm d. 400 mm</p>		<p>plain doors :</p> <p>width width width 435 mm 685 mm 885 mm</p>			<p>transparent doors:</p> <p>width width 685 mm 885 mm</p>		
-	-	-	-	-	-	FM 530	-	FM 540	-	
-	-	-	-	-	-	FM 531	-	FM 541	-	
-	-	-	-	-	-	FM 532	-	FM 542	-	
-	-	-	-	-	-	FM 533	-	FM 543	-	
-	-	-	-	-	-	FM 534	-	FM 544	-	
-	-	-	-	-	-	FM 535	-	FM 545	-	
-	-	-	-	-	-	FM 536	-	FM 546	-	
FM 307	FM 317	FM 407	FM 417	FM 427	FM 437	FM 517	FM 537	FM 557	FM 547	FM 567
FM 308	FM 318	FM 408	FM 418	FM 428	FM 438	FM 518	FM 538	FM 558	FM 548	FM 568
FM 309	FM 319	FM 409	FM 419	FM 429	FM 439	FM 519	FM 539	FM 559	FM 549	FM 569
-	-	-	-	-	-	-	-	-	-	-
FM 635	-	-	-	-	-	-	-	-	-	-

The quadro5 enclosures are designed for enclosed distribution up to 630A. Delivered without sides, they can be joined horizontally and vertically to create multiple assemblies.

The enclosures are delivered with a pre-mounted plinth.

Moreover, a cable sleeve or busbar compartment of 200mm width can be carried out in the enclosures of width 900mm.

The quadro5 enclosures can be equipped with full or transparent doors. The whole of the equipment units, accessories of wiring, power distribution, can be

assembled on the bottom.

- IP30 / IK08 without door
- IP55 / IK10 with door

- color: RAL9010
- plinth color: RAL7042

Complies to EN 50 298,
EN 60 439-1.



FM208

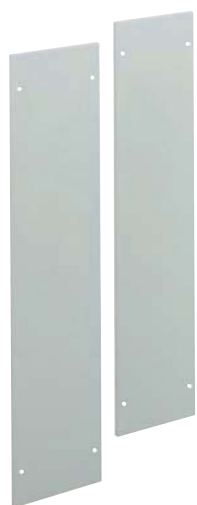


FM204



FM450

Designation	Total height	Equipment height	Depth	Cat. ref.	
Enclosures with plinth depth : 260 mm and 400 mm plinth height : 150 mm delivered with 2 mounting lugs cover plate	1710 mm	1500 mm	260 mm	FM107	
	1710 mm	1500 mm	400 mm	FM117	
	1860 mm	1650 mm	260 mm	FM108	
	inside width : 435 mm total width : 450 mm (with sides)	1860 mm	1650 mm	400 mm	FM118
	2010 mm	1800 mm	260 mm	FM109	
	2010 mm	1800 mm	400 mm	FM119	
	inside width : 685 mm total width : 700 mm (with sides)	1710 mm	1500 mm	260 mm	FM207
	1710 mm	1500 mm	400 mm	FM217	
	1860 mm	1650 mm	260 mm	FM208	
	1860 mm	1650 mm	400 mm	FM218	
2010 mm	1800 mm	260 mm	FM209		
2010 mm	1800 mm	400 mm	FM219		
inside width: 885 mm total width : 900 mm (with sides) to use with a kit for cable sleeve or busbar compartment cable sleeve or busbar compartment: 200 mm	1710 mm	1500 mm	260 mm	FM307	
	1710 mm	1500 mm	400 mm	FM317	
	1860 mm	1650 mm	260 mm	FM308	
	1860 mm	1650 mm	400 mm	FM318	
	2010 mm	1800 mm	260 mm	FM309	
	2010 mm	1800 mm	400 mm	FM319	
Boards depth : 260 mm delivered with 4 mounting lugs, cover plate	510 mm	450 mm	260 mm	FM200	
	660 mm	600 mm	260 mm	FM201	
	810 mm	750 mm	260 mm	FM202	
	useful width : 685 mm total width : 700 mm (with sides)	960 mm	900 mm	260 mm	FM203
	1110 mm	1050 mm	260 mm	FM204	
	1260 mm	1200 mm	260 mm	FM205	
	1410 mm	1350 mm	260 mm	FM206	
Plinth depth 260 mm height : 150 mm useful width : 685 mm total width : 700 mm RAL 9042	for enclosures of width 700 mm			FM450	
	delivered with 4 screws + 4 nuts + cover plates				



FM403



FM428



FM630



FM635

Designation	Characteristics	depth	Cat. ref.	
Set of 2 sides				
for boards and enclosures depth 260mm	height :	510 mm	FM400	
		660 mm	FM401	
		810 mm	FM402	
		960 mm	FM403	
		1110 mm	FM404	
		1260 mm	FM405	
		1410 mm	FM406	
for enclosures	height :	1710 mm	FM407	
		400 mm	FM417	
		1860 mm	FM408	
		400 mm	FM418	
		2010 mm	FM409	
		400 mm	FM419	
Kits for cable compartment				
allow to create a cable sheath with cable of 200mm in an enclosure of width 885mm	for enclosures	FM307	260 mm	FM427
		FM317	400 mm	FM437
		FM308	260 mm	FM428
		FM318	400 mm	FM438
		FM309	260 mm	FM429
		FM319	400 mm	FM439
Association kits				
kit of vertical association for boards	this kit includes : - 4 screws + M12 nuts - 4 washers - 1 self-adhesive seal		FM630	
kit of horizontal association for boards and enclosures	this kit includes : - 6 screws + M6 nuts - 1 self-adhesive seal		FM635	
Back plates				
	h. 300 x w.500 mm		FM484	
	h. 600 x w.500 mm		FM486	



FM532

Designation	Height	Cat. ref.		
		435 mm	685 mm	885 mm
Full doors delivered with hinges and equipped by triangle lock	510 mm	-	FM530	-
	660 mm	-	FM531	-
	810 mm	-	FM532	-
	960 mm	-	FM533	-
	1110 mm	-	FM534	-
	1260 mm	-	FM535	-
	1410 mm	-	FM536	-
	1710 mm	FM517	FM537	FM557
	1860 mm	FM518	FM538	FM558
	2010 mm	FM519	FM539	FM559



FM568

Transparent doors in sheet steel with a tempered smoked grey glass plate, thickness 3mm	510 mm	-	FM540	-
	660 mm	-	FM541	-
	810 mm	-	FM542	-
	960 mm	-	FM543	-
	1110 mm	-	FM544	-
	1260 mm	-	FM545	-
	1410 mm	-	FM546	-
	1710 mm	-	FM547	FM567
	1860 mm	-	FM548	FM568
	2010 mm	-	FM549	FM569

Designation	Characteristics	Cat. ref.
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FZ597



FZ449



FZ451



FZ450

Locks replace the lock of origin for the following doors height :	510 mm	key lock n° 1242E delivered with 2 keys	FZ597
	660 mm	key lock n° 405 delivered with 2 keys	FZ452
	810 mm	key lock n° 455 delivered with 2 keys	FZ453
	960 mm	lock with male square of 7 mm chrome plated with 1 key	FZ451
	1110 mm	lock with male triangle of 7 mm chrome plated with 1 key	FZ450
1260 mm	lock with double bar of 3 mm chrome plated with 1 key	FZ449	
1410 mm			



FZ517



FZ850



FZ515

Inserts for locks replace the lock of origin on the doors height:	1710 mm	triangle insert 8 mm	FZ515
	1860 mm	square insert 6 x 6 mm	FZ516
	2010 mm	square insert 8 x 8 mm	FZ517
		rotary handle lock with key 1242E lock cylinder	FZ508
		triangle key + square + double bar	FZ850

Designation	Characteristics	Cat. ref.
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FZ794

Flexible schematics holder self-adhesive to stick inside the doors	size A4	FZ794
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Rigid schematics holder In sheet metal with adhesive for sticking inside the doors	size A4	FC620
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FM640

2 wall mounting lugs		FM640
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for quadro4 and quadro5

To fix the enclosures on the wall, the lugs can be positioned vertically and horizontally



FM653

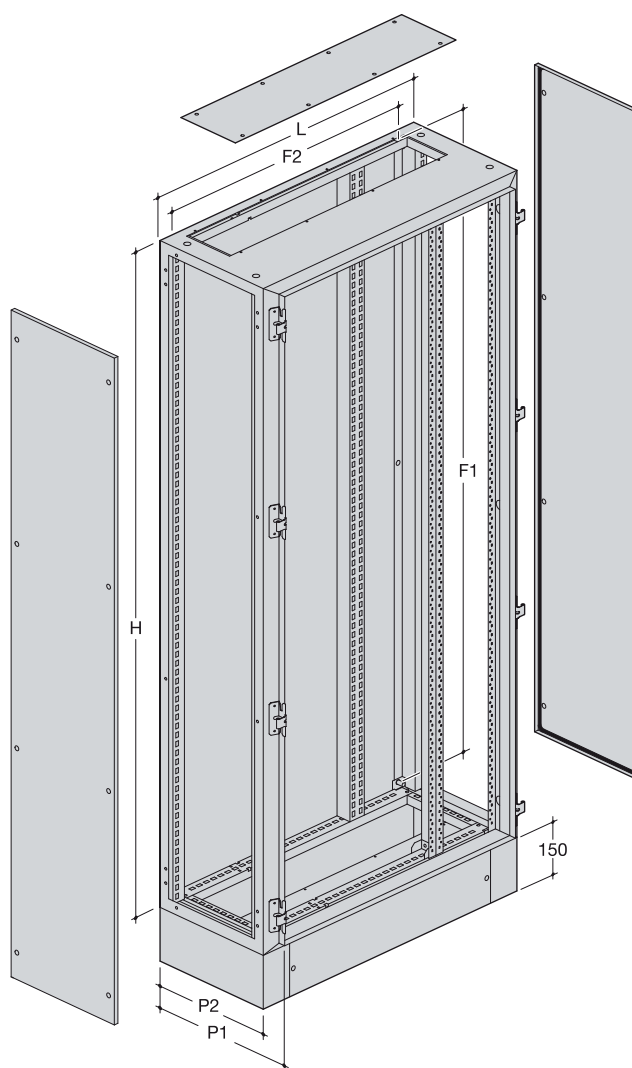
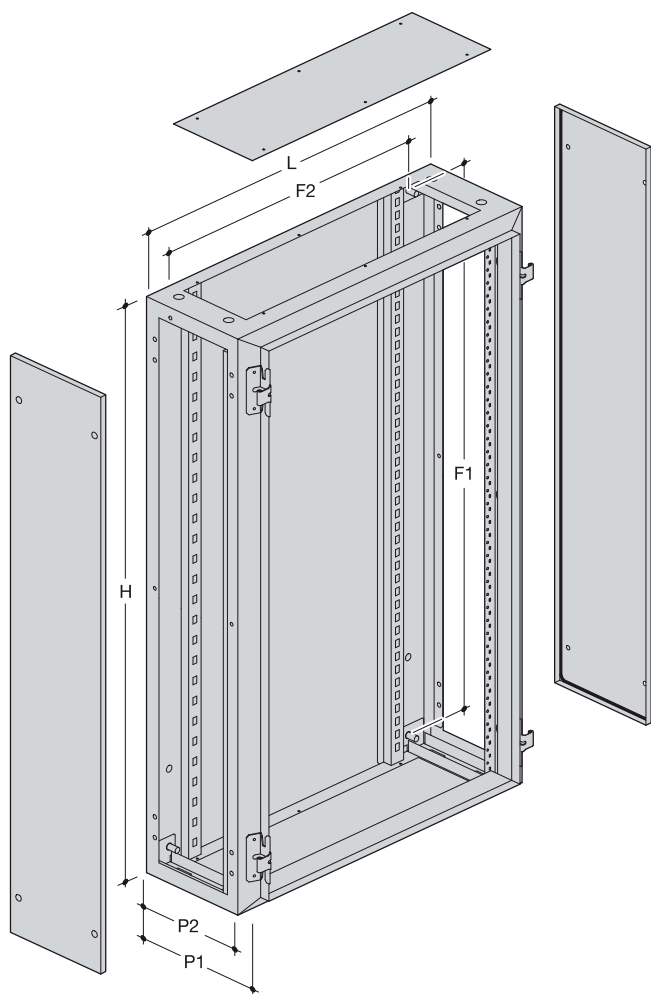
2 lifting rings	this kit includes :	FM653
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allow the transport (lifting) of a unit

- 2 rings
- 2 nuts M12 screws

maximum weight 250 kg

quadro5 enclosures and boards



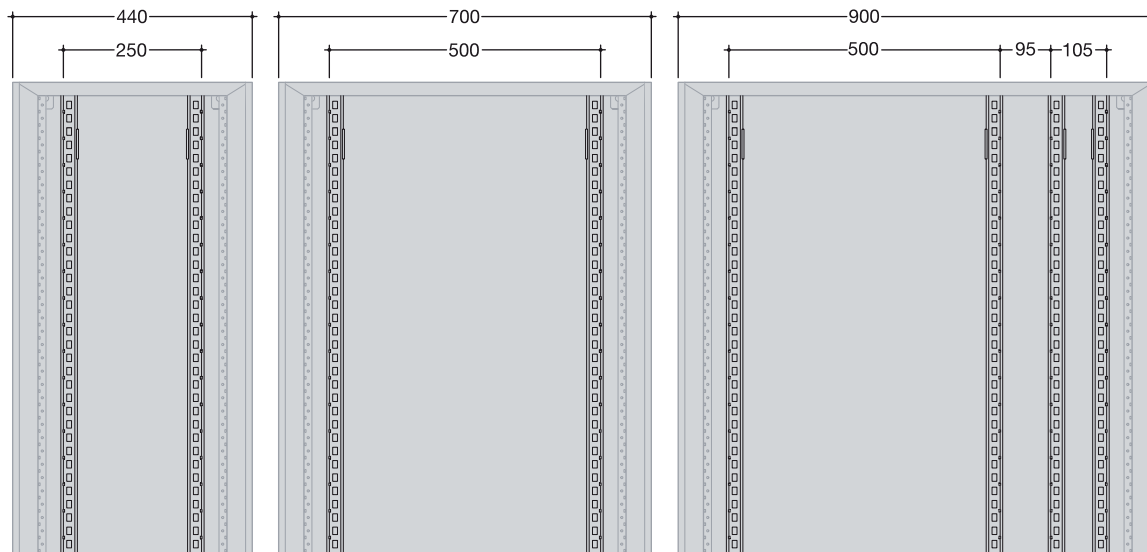
Dimensions in mm

references						fixing	
bodies	sides	H	L	P1	P2	F1	F2
FM200	FM400	510	700	260	220	430	570
FM201	FM401	660	700	260	220	580	570
FM202	FM402	810	700	260	220	730	570
FM203	FM403	960	700	260	220	880	570
FM204	FM404	1100	700	260	220	1030	570
FM205	FM405	1260	700	260	220	1180	570
FM206	FM406	1410	700	260	220	1330	570

Dimensions in mm

references						fixing	
bodies	sides	H	L	P1*	P2	F1	F2
FM107	FM407	1560	450	260	220	1480	320
FM108	FM408	1710	450	260	220	1630	320
FM109	FM409	1860	450	260	220	1780	320
FM207	FM407	1560	700	260	220	1480	570
FM208	FM408	1710	700	260	220	1630	570
FM209	FM409	1860	700	260	220	1780	570
FM307	FM407	1560	900	260	220	1480	770
FM308	FM408	1710	900	260	220	1630	770
FM309	FM409	1860	900	260	220	1780	770
FM117	FM407	1560	450	400	360	1480	320
FM118	FM408	1710	450	400	360	1630	320
FM119	FM409	1860	450	400	360	1780	320
FM217	FM407	1560	700	400	360	1480	570
FM218	FM408	1710	700	400	360	1630	570
FM219	FM409	1860	700	400	360	1780	570
FM317	FM407	1560	900	400	360	1480	770
FM318	FM408	1710	900	400	360	1630	770
FM319	FM409	1860	900	400	360	1780	770

Back plates quadro5



	width (mm)	distance between pillars (mm)	top panel width (mm)
quadro5	450	250	350
	700	500	600
	900	700	800
		500 + cable sleeve	600 + 200

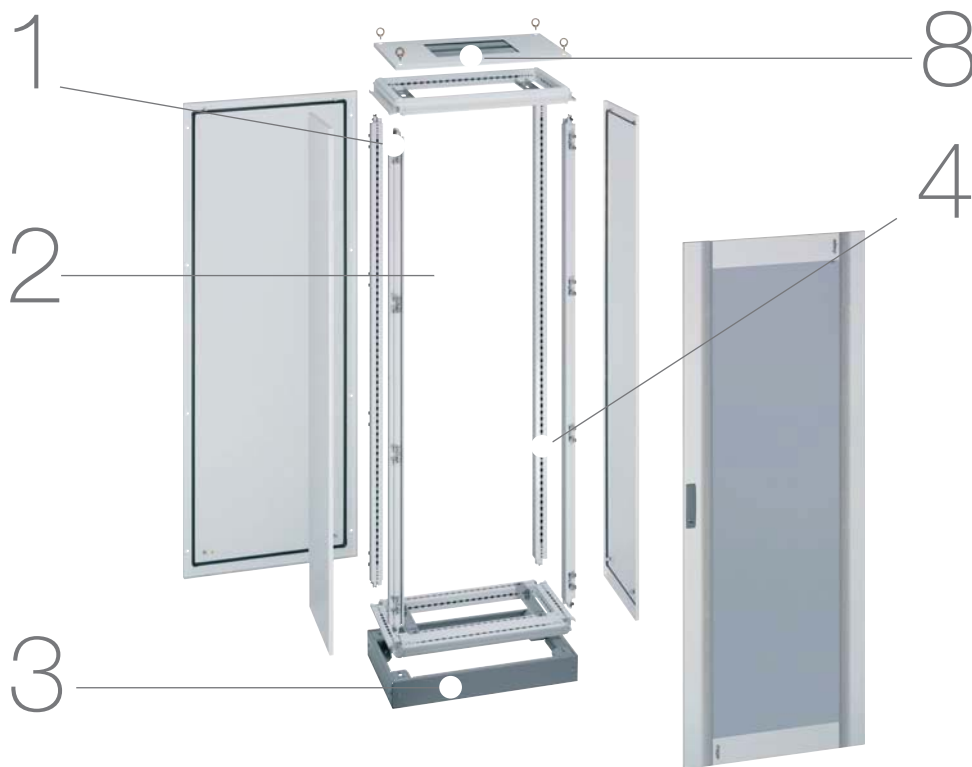
	distance between pillars (mm)	top panel width (mm)
1 x 10 ■	250	350
1 x 24 ■	500	600
1 x 36 ■	700	800

New enclosures to be assembled **quadro+ evo**

Quick and easy to install

quadro+ evo enclosures are robust and aesthetic. Thanks to assembly and association flexibility, quadro+ evo makes it possible to carry out made to measure distribution boards up to 1600A and where the need for space is important.

Available volume is maximum and accessibility to the enclosure is possible from all the sides. quadro+ evo accepts all the systems of energy distribution up to 1600A (and all kits up to 1600A) from the quadro equipment system.



Your benefits

- **Quick to install**
- **Access is possible from all sides**
- **High flexibility for internal mounting: on the back, at the bottom, in the depth**
- **Common internal equipment with quadro4 and quadro5**

Technical characteristics

- Metal enclosures, class I
- Depth : 400, 600, 800 mm
- Width: 450, 700, 900, 1000 mm
- Height : 1900, 2100 mm
- Protection class : IP 55 with door

Expert tips

1



Fast and easy enclosure mounting

Upright fitted with only one unloosable screw for fixing top and bottom.

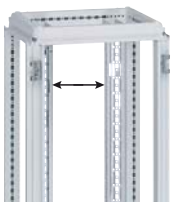
5



Multiple vertical associations

Thanks to 4 fixing pads.

2



Small width cell 450 mm

Kits mounting is possible in enclosures from 450 mm width.

6



Multiple fixings

Using crossbars at the bottom and in the depth.

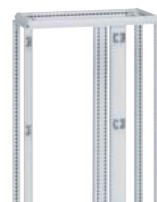
3



Easy handling

Pillars and plinth are removable for a complete accessibility while handling the enclosures.

7



Internal cable sheath

Optional for 900 and 1000 mm width enclosures.

4



2 mountings possible

Pillars have double holes to increase mounting possibilities.

8

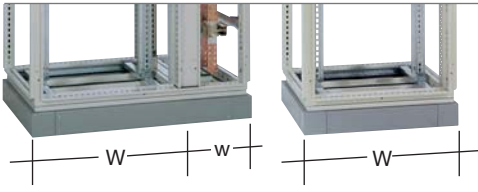









Accessibility for cables

Opened cable entry plate. Adjustable opening.

quadro+ evo

references guide











 Dimensions				 top and bottom frame	 4 uprights	 vertical dividing upright	 horizontal dividing upright	 plain plate for top and bottom frames	 sliding plate for top and bottom frames	 plain door
width W+w (mm)	width W (mm)	height H (mm)	depth D (mm)							
-	450	1900	400	FN018E	FN046E	-	-	FN078E	FN098E	FN546E
-	450	2100	400	FN018E	FN047E	-	-	FN078E	FN098E	FN547E
-	450	1900	600	FN020E	FN046E	-	-	FN080E	FN100E	FN546E
-	450	2100	600	FN020E	FN047E	-	-	FN080E	FN100E	FN547E
-	450	1900	800	FN022E	FN046E	-	-	FN082E	FN102E	FN546E
-	450	2100	800	FN022E	FN047E	-	-	FN082E	FN102E	FN547E
-	700	1900	400	FN021E	FN046E	-	-	FN081E	FN101E	FN506E
-	700	2100	400	FN021E	FN047E	-	-	FN081E	FN101E	FN507E
-	700	1900	600	FN029E	FN046E	-	-	FN089E	FN109E	FN506E
-	700	2100	600	FN029E	FN047E	-	-	FN089E	FN109E	FN507E
-	700	1900	800	FN013E	FN046E	-	-	FN073E	FN093E	FN506E
-	700	2100	800	FN013E	FN047E	-	-	FN073E	FN093E	FN507E
-	900	1900	400	FN023E	FN046E	-	-	FN083E	FN103E	FN526E
-	900	2100	400	FN023E	FN047E	-	-	FN083E	FN103E	FN527E
-	900	1900	600	FN031E	FN046E	-	-	FN091E	FN111E	FN526E
-	900	2100	600	FN031E	FN047E	-	-	FN091E	FN111E	FN527E
-	900	1900	800	FN017E	FN046E	-	-	FN077E	FN097E	FN526E
-	900	2100	800	FN017E	FN047E	-	-	FN077E	FN097E	FN527E
700+200	-	1900	400	FN023E	FN046E	FN286E	FN289E	FN083E	FN103E	FN506E ⁽¹⁾
700+200	-	2100	400	FN023E	FN047E	FN287E	FN289E	FN083E	FN103E	FN507E ⁽²⁾
700+200	-	1900	600	FN031E	FN046E	FN286E	FN291E	FN091E	FN111E	FN506E ⁽¹⁾
700+200	-	2100	600	FN031E	FN047E	FN287E	FN291E	FN091E	FN111E	FN507E ⁽²⁾
700+200	-	1900	800	FN017E	FN046E	FN286E	FN292E	FN077E	FN097E	FN506E ⁽¹⁾
700+200	-	2100	800	FN017E	FN047E	FN287E	FN292E	FN077E	FN097E	FN507E ⁽²⁾
700+300	-	1900	400	FN024E	FN046E	FN286E	FN289E	FN084E	FN104E	FN506E ⁽³⁾
700+300	-	2100	400	FN024E	FN047E	FN287E	FN289E	FN084E	FN104E	FN507E ⁽⁴⁾
700+300	-	1900	600	FN032E	FN046E	FN286E	FN291E	FN092E	FN112E	FN506E ⁽³⁾
700+300	-	2100	600	FN032E	FN047E	FN287E	FN291E	FN092E	FN112E	FN507E ⁽⁴⁾
700+300	-	1900	800	FN037E	FN046E	FN286E	FN292E	FN121E	FN117E	FN506E ⁽³⁾
700+300	-	2100	800	FN037E	FN047E	FN287E	FN292E	FN121E	FN117E	FN507E ⁽⁴⁾

⁽¹⁾ Door + busbar compartment panel FN 266

⁽²⁾ Door + busbar compartment panel FN 267

⁽³⁾ Door + busbar compartment panel FN 206

⁽⁴⁾ Door + busbar compartment panel FN 207

									
transparent doors	back panel	finishing frame (without door)	busbar compartment or cable sleeve (front/rear)	plain panel (sides)	plinth H = 100mm	Internal steel door	galvanized steel plate	functionnal uprights whole height 1900 mm	functionnal uprights partial height 1600 mm
-	FN216E	-	-	FN356E	FN438E	-	FN726E	FN696E	FN896E + 2 x FN690E
-	FN217E	-	-	FN357E	FN438E	-	FN727E	FN697E	FN897E + 2 x FN690E
-	FN216E	-	-	FN366E	FN440E	-	FN726E	FN696E	FN896E + 2 x FN691E
-	FN217E	-	-	FN367E	FN440E	-	FN727E	FN697E	FN897E + 2 x FN691E
-	FN216E	-	-	FN376E	FN442E	-	FN726E	FN696E	FN896E + 2 x FN692E
-	FN217E	-	-	FN377E	FN442E	-	FN727E	FN697E	FN897E + 2 x FN692E
FN516E	FN276E	FN406E	-	FN356E	FN441E	FN700E	FN736E	FN696E	FN896E + 2 x FN690E
FN517E	FN277E	FN407E	-	FN357E	FN441E	FN701E	FN737E	FN697E	FN897E + 2 x FN690E
FN516E	FN276E	FN406E	-	FN366E	FN451E	FN700E	FN736E	FN696E	FN896E + 2 x FN691E
FN517E	FN277E	FN407E	-	FN367E	FN451E	FN701E	FN737E	FN697E	FN897E + 2 x FN691E
FN516E	FN276E	FN406E	-	FN376E	FN433E	FN700E	FN736E	FN696E	FN896E + 2 x FN692E
FN517E	FN277E	FN407E	-	FN377E	FN433E	FN701E	FN737E	FN697E	FN897E + 2 x FN692E
FN536E	FN296E	FN426E	-	FN356E	FN443E	FN706E	FN746E	FN696E	FN896E + 2 x FN690E
FN537E	FN297E	FN427E	-	FN357E	FN443E	FN711E	FN747E	FN697E	FN897E + 2 x FN690E
FN536E	FN296E	FN426E	-	FN366E	FN453E	FN706E	FN746E	FN696E	FN896E + 2 x FN691E
FN537E	FN297E	FN427E	-	FN367E	FN453E	FN711E	FN747E	FN697E	FN897E + 2 x FN691E
FN536E	FN296E	FN426E	-	FN376E	FN437E	FN706E	FN746E	FN696E	FN896E + 2 x FN692E
FN537E	FN297E	FN427E	-	FN377E	FN437E	FN711E	FN747E	FN697E	FN897E + 2 x FN692E
FN516E ⁽¹⁾	FN296E	FN426E	FN266E	FN356E	FN443E	FN706E	FN746E	FN696E	FN896E + 2 x FN690E
FN517E ⁽²⁾	FN297E	FN427E	FN267E	FN357E	FN443E	FN711E	FN747E	FN697E	FN897E + 2 x FN690E
FN516E ⁽¹⁾	FN296E	FN426E	FN266E	FN366E	FN453E	FN706E	FN746E	FN696E	FN896E + 2 x FN691E
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FN517E ⁽²⁾	FN297E	FN427E	FN267E	FN377E	FN437E	FN711E	FN747E	FN697E	FN897E + 2 x FN692E
FN516E ⁽³⁾	FN246E	FN406E	FN206E	FN356E	FN444E	FN700E	FN736E	FN696E	FN896E + 2 x FN690E
FN517E ⁽⁴⁾	FN247E	FN407E	FN207E	FN357E	FN444E	FN701E	FN737E	FN697E	FN897E + 2 x FN690E
FN516 ⁽³⁾	FN246E	FN406E	FN206E	FN366E	FN454E	FN700E	FN736E	FN696E	FN896E + 2 x FN691E
FN517E ⁽⁴⁾	FN247E	FN407E	FN207E	FN367E	FN454E	FN701E	FN737E	FN697E	FN897E + 2 x FN691E
FN516E ⁽³⁾	FN246E	FN406E	FN206E	FN376E	FN459E	FN700E	FN736E	FN696E	FN896E + 2 x FN692E
FN517E ⁽⁴⁾	FN247E	FN407E	FN207E	FN377E	FN459E	FN701E	FN737E	FN697E	FN897E + 2 x FN692E

For enclosed distribution up to 1600A.
Height: 1900, 2100 mm
Depth: 400, 600, 800 mm

quadro+ are constituted of parts to assemble :
- Top and bottom frames

- 4 uprights
- cable gland plates
- plinth (height 100 mm)
- IP30 / IK08 without door
- IP55 / IK10 with door
RAL 9010 (structure), RAL 7042 (plinth)

quadro+ join horizontally with no limit to form a complete structure. To finish the unit, quadro+ can be equipped with :
- side panel
- back panel
- panel for busbar compartment
- plain or transparent doors



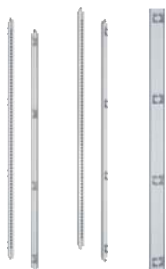
FN018E



FN438E

Designation	Characteristics		Cat. ref.	
	width	depth	Frames	Plinths
Top and bottom frames, plinths	450 mm	400 mm	FN018E	FN438E
	700 mm	400 mm	FN021E	FN441E
	900 mm	400 mm	FN023E	FN443E
	1000 mm	400 mm	FN024E	FN444E
	450 mm	600 mm	FN020E	FN440E
	700 mm	600 mm	FN029E	FN451E
	900 mm	600 mm	FN031E	FN453E
	1000 mm	600 mm	FN032E	FN454E
	450 mm	800 mm	FN022E	FN442E
	700 mm	800 mm	FN013E	FN433E
900 mm	800 mm	FN017E	FN437E	
1000 mm	800 mm	FN037E	FN459E	

Designation	Characteristics		Cat. ref.
Uprights	height : 1900 mm, set of 4		FN046E
	height : 2100 mm, set of 4		FN047E
Vertical dividing uprights for sheath in cells of width: 900 mm (700 + 200) or 1000 mm (700 + 300)	delivered with 1 upright and fixing accessories	height : 1900 mm	FN286E
		height : 2100 mm	FN287E
Functional uprights kits do not fit in 300 mm busbar compartment or cable sleeve	delivered with 4 squares, 2 uprights, fixing kit, 2 supports for front plate	height : 1800 mm	FN696E
		height : 2000 mm	FN697E
	for mounting without busbar on horizontal edge	height : 1600 mm	FN896E
	height : 1800 mm	FN897E	
Functional uprights partial height	to be equipped with (ordered separately): 4xFN690E for 400mm depth,	height : 150 mm	FN891E
	4xFN691E for 600mm depth,	height : 200 mm	FN892E
	4xFN692E for 800mm depth	height : 300 mm	FN893E
		height : 400 mm	FN894E
		height : 600 mm	FN895E
Profiles for front cover fixing	for h1900 enclosures	whole	FN696EP
		partial	FN896EP
	for h2100 enclosures	whole	FN697EP
		partial	FN897EP



FN046E

FN286E



FN696E

Cable gland plates
equipped with IP55 gasket

open cable gland plates:
adjustable thanks to a sliding
plate.

Doors for quadro+ cells

- reversible
- height: 1860 mm

- IP55 / IK10 protection class
transparent doors:
- with tempered glass, 3mm
thick
- distance between front plate
and door: 70 mm

plain doors:
- distance between front plate
and door: 75 mm



FN081E



FN101E

Designation	Characteristics		Cat. ref.	
	width	depth	full	open
Cable gland plates can be mounted on top and bottom	450 mm	400 mm	FN078E	FN098E
	700 mm	400 mm	FN081E	FN101E
	900 mm	400 mm	FN083E	FN103E
	1000 mm	400 mm	FN084E	FN104E
	450 mm	600 mm	FN080E	FN100E
	700 mm	600 mm	FN089E	FN109E
	900 mm	600 mm	FN091E	FN111E
	1000 mm	600 mm	FN092E	FN112E
	450 mm	800 mm	FN082E	FN102E
	700 mm	800 mm	FN073E	FN093E
	900 mm	800 mm	FN077E	FN097E
	1000 mm	800 mm	FN121E	FN117E



FN510E

Designation	Characteristics		Cat. ref.	
	width	depth	plain	transpar.
Plain and transparent doors delivered complete with hinges and with triangular key lock	450 mm	1900 mm	FN546E	FN510E
		2100 mm	FN547E	FN511E
	700 mm	1900 mm	FN506E	FN516E
		2100 mm	FN507E	FN517E
	900 mm	1900 mm	FN526E	FN536E
		2100 mm	FN527E	FN537E
	1000 mm	1000 mm	FN506E +	FN516E +
			FN206E	FN206E



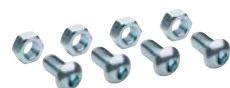
FN266E



FN276E



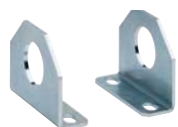
FN950



FN430E



FN767



FN760E



FN952



FN517 FN515

Designation	Characteristics		Cat. ref.
	width	height	
Screwed cable compartment panels to close sheath of 200 or 300 mm can be mounted on the front or on the back of the enclosures	900 mm (sheath 200 mm)	1900 mm	FN266E
		2100 mm	FN267E
	1000 mm (sheath 300 mm)	1900 mm	FN206E
		2100 mm	FN207E
Screwed back panels to be mounted on the back of the enclosures	450 mm	1900 mm	FN216E
		2100 mm	FN217E
	700 mm	1900 mm	FN276E
		2100 mm	FN277E
	900 mm	1900 mm	FN296E
		2100 mm	FN297E
	1000 mm	1900 mm	FN246E
		2100 mm	FN247E
Designation	Characteristics		Cat. ref.
	depth	height	
Screwed side panels fixing by screws on the sides	450 mm	1900 mm	FN356E
		2100 mm	FN357E
	600 mm	1900 mm	FN366E
		2100 mm	FN367E
	800 mm	1900 mm	FN376E
	2100 mm	FN377E	
Cover plates to close space between two associated enclosures	to be used for each association		FN942E
Side juxtaposition kits for all the enclosures	kit with 4 galvanized steel parts40/10e		FN950
Cells connection kits	seal 10 x 6 mm length 10 m		FN951
Plinth overlapping kits to superpose 2 plinths	seal 10 x 6 mm length 10 m		FN430E
Lifting brackets set of 2, delivered with M12 bolt	single		FZ767
	double		FZ760E
Door blocking at opening	for door width: 450 et 700 mm		FN952
Door handles	rotary handle lock cylinder, with key 1242E		FZ508
Inserts for locks replace the lock of the original door handle FZ508	triangle insert 8 mm		FZ515
	square insert 6 x 6 mm		FZ516
	square insert 8 x 8 mm		FZ517
	triangle key + square + double bar		FZ850



FZ795

Designation	Characteristics	Cat. ref.	
Rigid diagram holders delivered with adhesive for fixing inside doors	in sheet steel, A4 format	FZ795	
Ventilators	220 V - 20 W	FL212Z	
RAL 7035	220 V - 32 W	FL214Z	
Ventilation grids	150 x 150 mm	FL220Z	
IP 54	250 x 250 mm	FL224Z	
Painting kits in aerosol can for the final touch-up of quadro enclosures and base plates	1 set includes : - 1 can colour RAL 9010 for enclosures - 1 can colour RAL 7042 for base plates	FC671	



FN690E

Perforated crossbars with clamps to mount horizontally on enclosures sides	for enclosure depth : 400 mm	FN690E	
	600 mm	FN691E	
H = 50 mm step of 25 mm	800 mm	FN692E	



FN877E

Mounting rails perforated to mount directly on the uprights on the back of the enclosure	for enclosure width : 450 mm	FN873E	
	700 mm	FN875E	
H = 50 mm step of 25 mm	900 mm	FN877E	
	1000 mm	FN879E	



FN864E

Designation	Characteristics	Cat. ref.	
		H = 50 mm	H = 25 mm

Perforated brackets assembly in depth on crossbars FN690E to FN692E	for enclosure width : 450 mm	FN863E	FN862E
step of 25 mm	700 mm	FN865E	FN864E
	900 mm	FN867E	FN866E



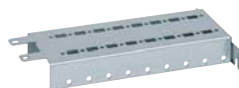
FN883E

DIN rails perforated to mount inside on brackets FN862E to FN867E	for enclosure depth : 450 mm	FN883E	FN882E
step of 25 mm	600 mm	FN885E	FN884E
	800 mm	FN887E	FN886E



FN737E

Designation	Characteristics		Cat. ref.
	width	height	
Finishing frames	700 / 1000 mm	1900 mm	FN406E
		2100 mm	FN407E
	900 mm	1900 mm	FN426E
		2100 mm	FN427E
Internal doors	700 mm	1900 mm	FN700E
		2100 mm	FN701E
	900 mm	1900 mm	FN706E
		2100 mm	FN711E
Mounting plates	450 mm	1900 mm	FN726E
		2100 mm	FN727E
	700 mm	1900 mm	FN736E
		2100 mm	FN737E
	900 mm	1900 mm	FN746E
		2100 mm	FN747E



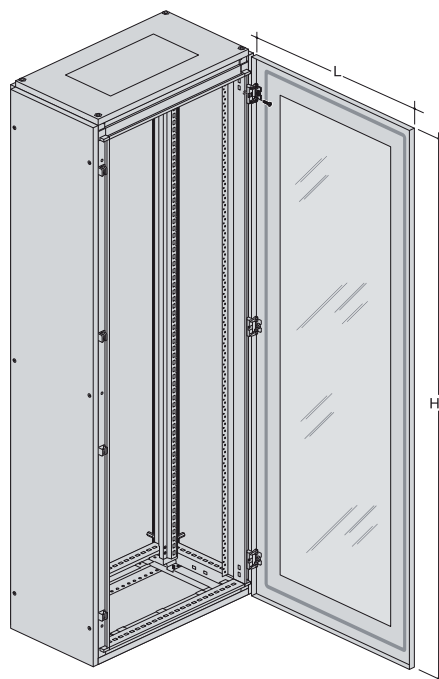
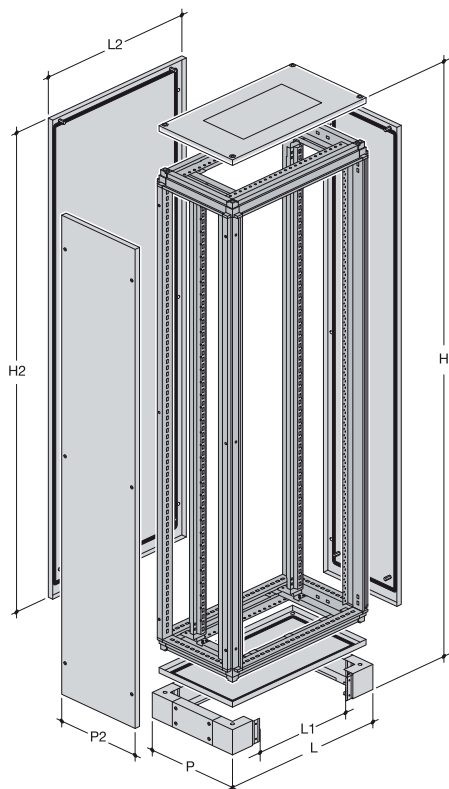
FN289E

Designation	Characteristics		Cat. ref.
	depth		
Horizontal partitioning uprights	400 mm		FN289E
	600 mm		FN291E
	800 mm		FN292E
Cover plates	400 mm		FN942E
	600 mm		FN943E
	800 mm		FN944E
Brackets for bars support	400 mm		FN970E
	600 mm		FN971E
	800 mm		FN972E
Perforated busbars copper	25 x 5 mm length 1750 mm		UT87E
Single brackets for copper busbars	for busbars 25 x 5 mm		UT88A
	for busbars 50 x 5 mm		UT88B
Double brackets for copper busbars	for busbars 25 x 5 mm		UT88C
	for busbars 50 x 5 mm		UT88D



UT88A

quadro+ enclosures



Doors height H1 : 1900 mm

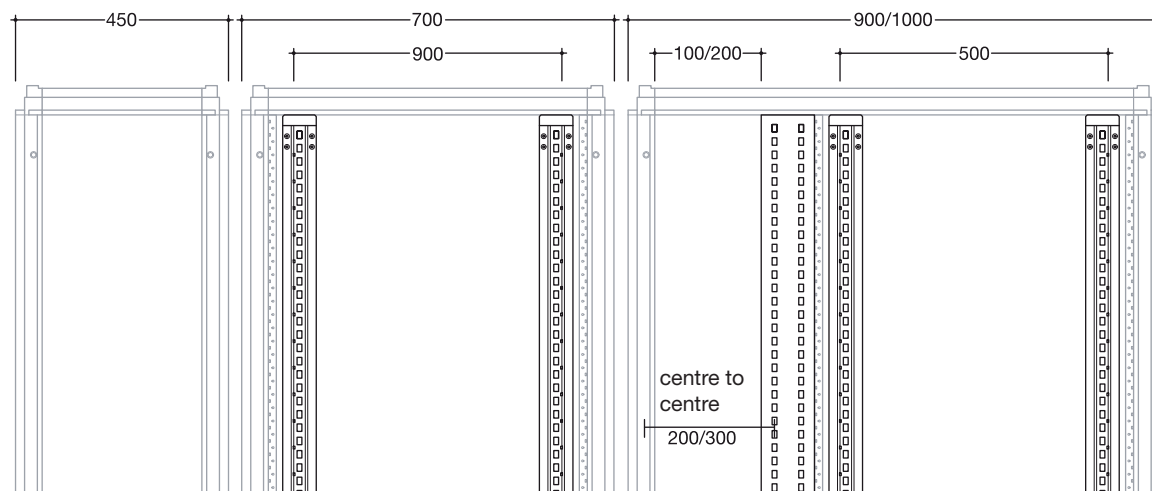
Main
switchboards

Dimensions in mm

	frame	plinth	side	back	H*	P	L1	H2	L2	P2
L = 450	FN018E	FN438E	FN356E	FN216E	2000	400	288	1900	448	365
L = 700	FN021E	FN441E	FN356E	FN276E	2000	400	538	1900	698	365
L = 900	FN023E	FN443E	FN356E	FN296E	2000	400	738	1900	898	365
L = 1000	FN024E	FN444E	FN356E	FN246E	2000	400	838	1900	998	365
L = 450	FN020E	FN440E	FN366E	FN216E	2000	600	288	1900	448	565
L = 700	FN029E	FN451E	FN366E	FN276E	2000	600	538	1900	698	565
L = 900	FN031E	FN453E	FN366E	FN296E	2000	600	738	1900	898	565
L = 1000	FN032E	FN454E	FN366E	FN246E	2000	600	838	1900	998	565
L = 450	FN022E	FN442E	FN376E	FN216E	2000	800	288	1900	448	765
L = 700	FN013E	FN433E	FN376E	FN276E	2000	800	538	1900	698	765
L = 900	FN017E	FN437E	FN376E	FN296E	2000	800	738	1900	898	765
L = 1000	FN037E	FN459E	FN376E	FN246E	2000	800	838	1900	998	765

* structure 1900 mm, plinth 100 mm

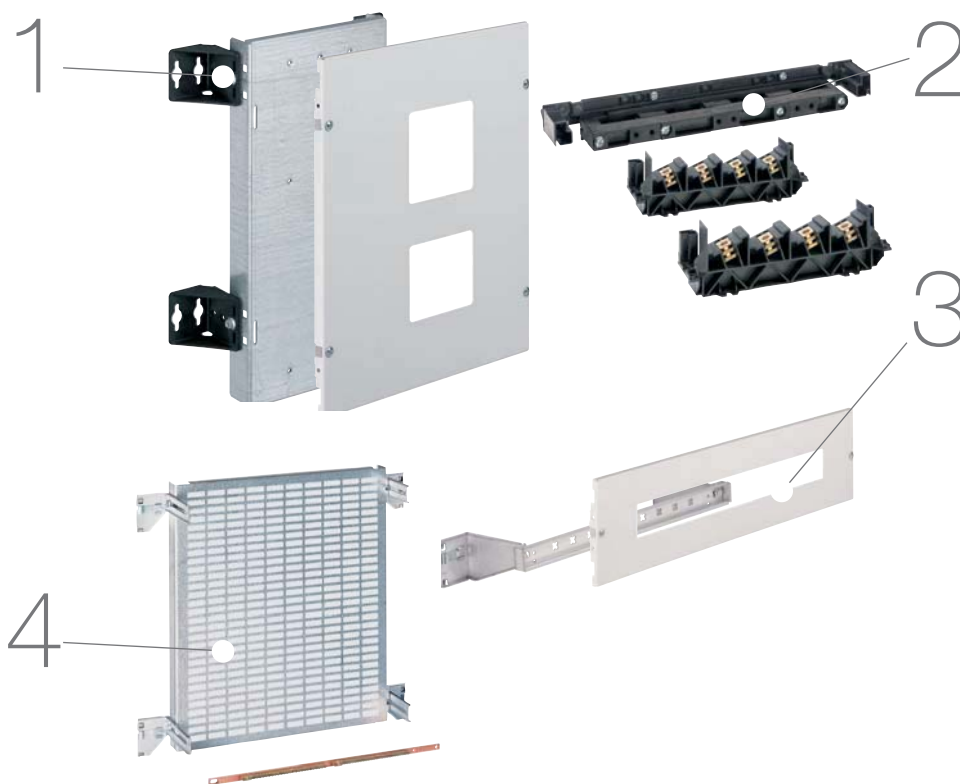
Back plates quadro+ evo



System of equipment quadro

Common to quadro4, quadro5 and quadro+ evo

The equipment kits allow the mounting in the quadro enclosures of the energy distribution. The system is common to quadro4, quadro5 and quadro+ evo.



Your benefits

- A common equipment system for quadro4, quadro5 and quadro+ evo.
- Easy to install: plates are available in widths 250, 500 and 700 mm.

Technical characteristics

- Metal plates with unloosable screws
- Class I or class II, depending on reference
- Fixing step : 25 mm.

Expert tips

1



Class II kits

Kits for modular devices and load break switches are equipped with insulated fixing legs. This insures Class II protection.

3



Modular kits

DIN rail to clip directly in the enclosure. Kits are delivered with a positioning gauge, to put on the pillar.

2



Busbars

Horizontal or vertical: possibility to mount behind DIN rails.


















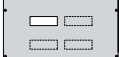



4



Complete range of accessories

front plates, adjustable rails, perforated plates, earth terminals...

Reference guide equipment kits for quadro range

Equipment kits width (mm)		MCCBs, trip-free switches 125 and 160A x160			MCCBs, trip-free switches 250A x250			MCCBs trip-free switches 250 A (electronic) h250	
		350	600	800	350	600	800	350	600
Equipment kits - height (mm)	for rotary handle	150							
		class I class II		UC013H UC313H	UC014H UC314H				
		200							
	class I class II				UC127H UC427H	UC128H UC428H		UC127H UC427H	
	300								
	class I class II	UC010H UC310H	UC011H UC311H	UC012H UC312H	UC020H UC320H	UC021H UC321H	UC022H UC322H	UC020H UC320H	UC021H UC321H
	400								
	class I class II				UC030H UC330H	UC023H UC323H	UC024H UC324H	UC030H UC330H	UC023H UC323H
	600								
	class I class II								
for motor operator	300								
	class II				UC321HM	UC322HM		UC321HM	
	400								
class II									
600									
class II									

	MCCBs, trip-free switches 400 and 630A h400-h630			MCCBs, 800 and 1000A h1000			MCCBs, 1250 and 1600A h1600		
	800	350	600	800	600	800	600	800	
	UC128H UC428H		UC147H UC447H	UC148H UC448H					
	UC022H UC322H								
	UC024H UC324H	UC140H UC440H	UC141H UC441H	UC142H UC442H	UC054H UC354H	UC055H UC355H			
		UC144H UC444H	UC145H UC445H	UC146H UC446H	UC050H UC350H	UC051H UC351H	UC060H UC360H	UC061H UC361H	
	UC322HM								
			UC441HM	UC442HM					
					UC350HM	UC351HM	UC360HM	UC361HM	

Equipment kits length (mm)	Load break switches with visible breaking 100 to 400A		HA switches, visual breaking 160 to 1600A		Modular devices: 10 I (w.350 mm) 24 I (w. 600 mm)		- full front plates + - grids for special devices - DIN rails for terminals width 600 mm UC951		
	350	600	350	600	350	600	350	600	600
50 mm									
75 mm									
100 mm									
150 mm									
200 mm									
300 mm	 UC310H + HY170	 UC311H + HY170	 UC008	 UC001 (160A)			 UC224	 UC234	 UC960
	 UC332		 UC009	 UC003 (250/400A)					
400 mm		 UC335					 UC225	 UC235	 UC692 (450 mm)
600 mm				 UC005 (160A)			 UC226	 UC236	 UC964
				 UC270 (1600A)					

**Equipment kits for h3 MCCBs
x160, x250, h250 LSI, h630 LSI**
Double classe II
For direct or rotary handle

Composition :
- 1 lowered symmetrical DIN rail,
fixed on a mounting plate with 4
class II insulated legs
- 1 sheet metal front plate

- fixing accessories

Capacity :
width 500 mm space for one more
device.

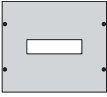

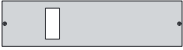
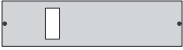
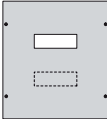
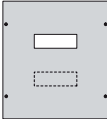


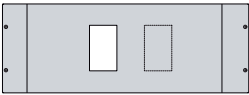
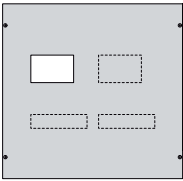
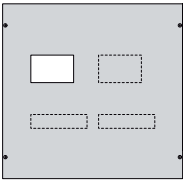
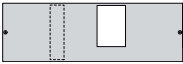
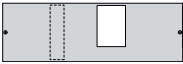




**Equipment kits for switches
with visible breaking 160 to
1600 A**

- For direct or rotary handle

Composition :

- 1 insulated mounting plate for
the main device
- 1 sheet metal front plate
- fixing accessories.

The mounting plate for versions
160 and 250/400 A in width 500
mm are fitted with a symmetrical
DIN rail to receive a set of
distribution blocks.

Designation	Characteristics	Height (mm)	Width (mm)	Cat. ref. class I	class II
 UC010H / UC310H	Equipment kits for MCCBs x160 - for direct or rotary handle:	vertical layout with or without add-on block	300 600 800	UC010H UC011H UC012H	UC310H UC311H UC312H
 UC012H / UC312H	Equipment kits for MCCBs x250 - for direct or rotary handle:	horizontal layout without add-on block	150 800	UC013H UC014H	UC313H UC314H
 UC013H / UC313H	Equipment kits for MCCBs x250 - for direct or rotary handle:	vertical layout without add-on block	300 600 800	UC020H UC021H UC022H	UC320H UC321H UC322H
 UC013H / UC313H	Equipment kits for MCCBs x250 - for direct or rotary handle:	vertical layout with add-on block	400 600 800	UC030H UC023H UC024H	UC330H UC323H UC324H
 UC030H / UC330H	Equipment kits for MCCBs x250 - for motor operator:	horizontal layout with or without add-on block	200 800	UC127H UC128H	UC427H UC428H
 UC030H / UC330H	Equipment kits for MCCBs x250 - for motor operator:	vertical layout without add-on block	300 800	- -	UC321HM UC322HM
 UC128H / UC428H	Equipment kits for MCCBs h250 LSI - for direct or rotary handle:	vertical layout	300 600	UC020H UC021H	UC320H UC321H
 UC128H / UC428H	Equipment kits for MCCBs h250 LSI - for direct or rotary handle:	horizontal layout	200 800	- -	UC427HL UC428HL
 UC322HM	Equipment kits for MCCBs h250 LSI - for motor operator:	vertical layout without add-on block	300 800	- -	UC321HM UC322HM
 UC145H / UC445H	Equipment kits for MCCBs h630 LSI - for direct or rotary handle:	vertical layout without add-on block	400 600 800	UC140H UC141H UC142H	UC440H UC441H UC442H
 UC145H / UC445H	Equipment kits for MCCBs h630 LSI - for direct or rotary handle:	vertical layout with add-on block	600 600 800	UC144H UC145H UC146H	UC444H UC445H UC446H
 UC147H / UC447H	Equipment kits for MCCBs h630 LSI - for motor operator:	horizontal layout with or without add-on block	200 800	UC147H UC148H	UC447H UC448H
 UC147H / UC447H	Equipment kits for MCCBs h630 LSI - for motor operator:	vertical layout without add-on block	400 800	- -	UC441HM UC442HM
 UC001	Equipment kits for switches with visible breaking 160 to 1600 A	kits for switches 160 A HA452	300 600	- -	UC008 UC001
 UC001	Equipment kits for switches with visible breaking 160 to 1600 A	kits for switches 250/400 A HA454, HA457	250 600	- -	UC009 UC003
 UC001	Equipment kits for switches with visible breaking 160 to 1600 A	kits for switches 630 A HA458	600 600	- -	UC005
 UC001	Equipment kits for switches with visible breaking 160 to 1600 A	kits for switches 800 à 1600 A	600 600	- -	UC270

**Equipment kits for h3 MCCBs
h1000 LSI and h1600 LSI
Class I version**

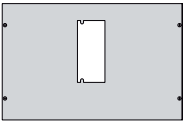
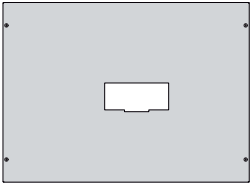
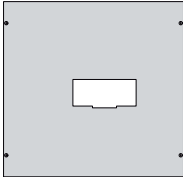
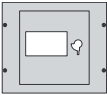
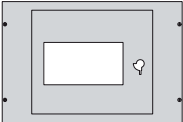

- Composition :
- 1 metal mounting plate
- 1 sheet metal front plate
- fixing accessories

**class II double insulation
version**

- Composition :
- 1 mounting plate with 4 class II
insulated fixing legs
- 1 sheet metal front plate
- fixing accessories

**Equipment kits for switches
with visible breaking
100 à 400 A
double isolation class II**

- Composition :
- 1 mounting plate with 4 class II
insulated fixing legs
- 1 sheet metal front plate
- various accessories

Designation	Characteristics	Height (mm)	Width (mm)	Cat. ref. class I	class II	
Equipment kits for MCCBs h1000 LSI						
	- for direct or rotary handle:	horizontal layout	400	600 800	UC054H UC055H	UC354H UC355H
		vertical layout	600	600 800	UC050H UC051H	UC350H UC351H
	- for motor operator:	vertical layout	600	600 800	- -	UC350HM UC351HM
	Equipment kits for MCCBs h1600 LSI					
	- for direct or rotary handle:	vertical layout	600	600 800	UC060H UC061H	UC360H UC361H
	- for motor operator:	vertical layout	600	600 800	- -	UC360HM UC361HM
	Equipment kits for switches with visible breaking 100 to 400 A double isolation class II		300	350 600	- -	UC310H UC311H
		kits for switches HA 100 to 200 A				
			300	350	-	UC332
		kits for switches 250 A HA964N with direct control				
			400	600	-	UC335
		kits for switches 400 A HA966N with direct control				


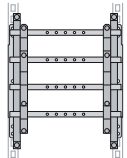
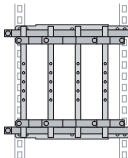
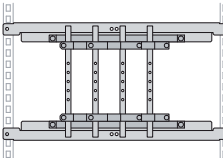
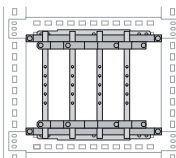

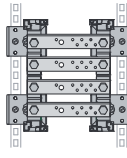
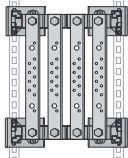
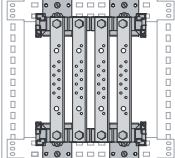

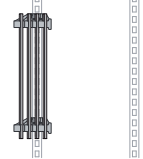

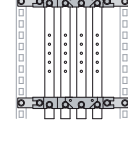
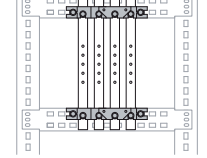

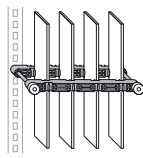
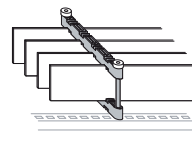
Several systems allow to ensure the electric distribution in the enclosures quadro4, quadro5 and quadro+ evo :

- flat busbars,
- inclined busbars,
- side busbars,
- staged bars,
- 4 poles supports

Distribution systems complete the offer:

- single pole distribution blocks
- multi-plug repartitors
- 80 to 160A modular distribution blocks

A range of connectors allow to ensure the electrical link among some incoming devices and the distribution systems.

Busbar supports	In	Copper bars	Application and accessories (crossbars, brackets, protective screen)			
 UC820	160 A	12 x 5 mm KS72B, KS72C	horizontal in bottom 250 and 500 mm	vertical in bottom 250 mm	vertical in bottom 500 mm	vertical on crossbars (quadro+ evo)
	250 A	20 x 5 mm UC832				
	400 A	30 x 5 mm UM30A1, UM30A2 UM30A5				
	630 A	30 x 10 mm UM30A4	UC811 UC827	UC811 UC827	UC812 UC827	UT89B, UT89C UC827
 UC826	250 A	20 x 5 mm UC832	horizontal in bottom 250 and 500 mm	vertical in bottom 250 and 500 mm	vertical on crossbars (quadro+ evo)	
	400 A	32 x 5 mm UC842				
	630 A	30 x 10 mm UM30A4, UM30A5	UC828	UC828	UT89C, UT89B	
 UC830	250 A	20 x 5 mm UC832	on pillars in bottom			
						
			UC834			
 UC815	250 A	20 x 5 mm UC832	horizontal in bottom 250 and 500 mm	vertical in bottom 250 mm	vertical on crossbars (quadro5, quadro+ evo)	
	400 A	32 x 5 mm UC842				
			UC816	UC816 - UC988	UC288 (sheath 200 mm), UT89A (sheath 300 mm), UT89B - UT89C	
 UC824 UC823	500 A	50 x 5 mm UC844	horizontal	vertical		
	630 A	63 x 5 mm UC922				
	800 A	80 x 5 mm UC 966				
	1000 A	100 x 5 mm UC967	UT81H, UC821, FN690 or FN690E, FN896 or FN896E, mount with supports UC825 or UC822	UC821, UC825 UT89A or FN873E (sheath 300 mm), UT89B or FN875E		
	1250 A	2 x 80 x 5 mm 2 x UC967				
1600 A	2 x 100 x 5 mm 2 x UC967					

Flat busbars to compose from 160 to 630A

To mount on bottoms of quadro4, quadro5 enclosures and on quadro+ evo crossbars:
- rear vertical mounting especially adapted to carry out busbars behind the modular devices
- vertical mounting in bottom
- horizontal mounting.

Inclined busbars to compose from 250 A to 630A

To mount behind the front plate.
Horizontal mounting possible on 250 and 500 mm bottom widths, vertical mounting possible on 250 mm bottom widths.

Busbars supports to compose 500 to 1600 A

To mount vertical and horizontal distribution busbars in quadro+ evo cells.
Up to 2 copper bars per pole.
For copper bars :
- 400 A, 50 x 5 mm
- 630 A, 63 x 10 mm
- 800 A, 80 x 5 mm
- 1000 A, 100 x 5 mm



UC820

Designation	Characteristics	Cat. ref.
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Flat busbars to compose from 160 to 630A includes: 1 support 3 M6 screws 2 pillars for protective screen	for copper bars : - 160 A, 12 x 5 mm - 250 A, 20 x 5 mm - 400 A, 32 x 5 mm - 630 A, 30 x 10 mm	UC820
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Rear vertical busbars delivered with 2 cage nut and 2 M6 screws	for bottom width 250 mm	UC812
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Vertical busbar in bottom delivered with 2 cage nut and 2 M6 screws	mounting on 250 mm width bottom horizontal mounting on 250 mm and 500 mm width bottoms	UC811
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Protective screen to cut to the right dimensions	- width : 294 mm - height : 990 mm	UC827
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Inclined busbars to compose from 250 A to 630A, behind the front plate

4P support 2 supports delivered with : - 4 fixing parts - 8 cage nut - 16 M6 screws and 8 M8 screws - 4 pillars for protective screen	for copper bars : - 250 A, 20 x 5 mm - 400 A, 32 x 5 mm - 630 A, 30 x 10 mm	UC826
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Protective screen To be adapted in length	- length : 212 mm - height : 990 mm	UC828
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UC824

Busbars supports to compose 500 to 1600 A

3 poles support		UC823
------------------------	--	--------------

4 poles support for copper bars 1 support delivered with screws and fixing parts		UC824
--	--	--------------



UC821

Mounting brackets	to mount on supports: UC824 and UC823	UC821
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Busbars bearing for vertical mounted copper bars	for 3P distribution	UC822
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	for 4P distribution	UC825
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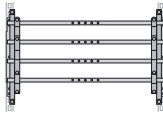
includes:
- 1 support
- screw and fixing parts for the mounting on crossbars

Busbars short-circuits withstand capacity

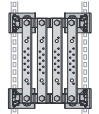
Vertical mounting

Busbars fixing	nominal current	bars sections (mm)	bars supports max. distance depending on short-circuit current (mm)					
			10 kA	15 kA	20 kA	25 kA	30 kA	35 kA
 UC820 $I_n \leq 630 \text{ A}$ $I_{cc} \leq 35 \text{ kA}$	160 A	12 x 5	1000	475	250	650	425	300
	250 A	20 x 5	1000	1000	950			
	400 A	30 x 5	1000	1000	1000	850	550	375
	630 A	30 x 10	1000	1000	1000	1000	900	625


Horizontal mounting

Busbars fixing	nominal current	bars sections (mm)	short-circuit current depending on bottom width for quadro4, quadro5 et quadro+ evo	
			250 mm	500 mm
 UC820 $I_n \leq 630 \text{ A}$ $I_{cc} \leq 35 \text{ kA}$	160 A	12 x 5	20 kA	15 kA
	250 A	20 x 5	35 kA	30 kA
	400 A	30 x 5	45 kA	34 kA
	630 A	30 x 10	55 kA	45 kA

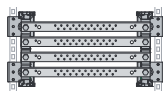
Inclined busbars

Busbars fixing	nominal current	bars sections (mm)	short-circuit current depending on bottom width for quadro4, quadro5 et quadro+ evo					
			10 kA	15 kA	20 kA	25 kA	30 kA	35 kA
 UC826 $I_n \leq 630 \text{ A}$ $I_{cc} \leq 35 \text{ kA}$	250 A	20 x 5	1000	1000	1000	825	650	425
	400 A	32 x 5	1000	1000	1000	1000	925	625
	630 A	30 x 10	1000	1000	1000	1000	925	650

Busbars supports (only for quadro+ evo)

Busbars fixing	nominal current	bars sections (mm)	bars supports max. distance "d" depending on short-circuit current (mm)											
			12 kA		23 kA		30 kA		39 kA		52 kA		70 kA	
 UC824 UC823 $I_n \leq 1600 \text{ A}$ $I_{cc} \leq 70 \text{ kA}$			3P	4P	3P	4P	3P	4P	3P	4P	3P	4P	3P	4P
	500 A	50 x 5	1475	1350	800	725	625	575	450	425	350	325	250	225
	630 A	63 x 5	1600	1600	925	850	725	650	525	475	400	375	300	275
	800 A	80 x 5	1600	1600	1075	957	825	775	600	550	450	425	350	325
	1000 A	100 x 5	1600	1600	1225	1125	950	900	700	550	252	500	400	325
	1250 A	80 x 5 x 2	1600	1600	1050	1025	825	800	600	575	450	450	350	325
	1600 A	100 x 5 x 2	1600	1600	1250	1200	975	950	725	700	550	525	400	400

Inclined horizontal bars mounting

Busbars fixing	nominal current	bars sections (mm)	short-circuit current depending on bottom width for quadro4, quadro5 et quadro+ evo	
			250 mm	500 mm
 UC826 $I_n \leq 630 \text{ A}$ $I_{cc} \leq 35 \text{ kA}$	250 A	20 x 5	35 kA	35 kA
	400 A	32 x 5	45 kA	35 kA
	630 A	30 x 10	45 kA	35 kA

Sets of side bars quadro 250 A to be composed

To mount in the sides of quadro enclosures.
Icc peak: 36 kA
Fixing centers of the supports: 225 mm

Sets of staged bars In 250 and 400 A - to be composed

For vertical installation in the cable sheaths of the quadro4, quadro5 and quadro+ evo enclosures.

Possibility to install them directly on the bottoms of the quadro4, quadro5 and quadro+ evo enclosures, without using the crossbars.



UC830



UC815

Designation	Characteristics	Sheath length	Cat. ref.
Sets of side bars quadro 250 A to be composed			
4 pole supports 2 supports delivered	for copper bars : - 250 A, 20 x 5 mm		UC830
Protective screen	length: 1000 mm		UC834
Sets of staged bars In 250 and 400 A to be composed			
4 pole supports 1 support delivered with 6 M6 screws and 2 cage nuts	for copper bars : - 250 A, 20 x 5 mm - 400 A, 32 x 5 mm		UC815
Universal crossbars	for quadro5, quadro+ evo cable sleeve	200 mm	UC288
	for quadro4 width 370 for quadro5 width 450 for quadro+ evo width 400, 450	250 mm	UC988
Protective screen kit delivered with screw	length: 620 mm		UC816

Bars short-circuit withstand capacity

Vertical mounting

busbars fixing	nominal current	bars section (mm)	bars supports max. distance depending on short-circuit current (mm)					
			10 kA	15 kA	20 kA	25 kA	30 kA	35 kA
 In ≤ 250 A Icc ≤ 25 kA UC830	250 A	20 x 5			300	200		
 In ≤ 400 A Icc ≤ 35 kA UC815	250 A	20 x 5	1000	1000	925	745	580	435
	400 A	32 x 5	1000	1000	895	655	510	385

Horizontal mounting

busbars fixing	nominal current	bars section (mm)	short-circuit current depending on bottom width for quadro4, quadro5 et quadro+ evo	
			250 mm	500 mm
 In ≤ 630 A Icc ≤ 35 kA UC815	250 A	20 x 5	35 kA	35 kA
	400 A	32 x 5	40 kA	34 kA

Copper bars and screws

The copper bars are mounted on the supports, according to :
- the section to use, thus intensity
- length on demand

The connection screws must be ordered separately for the bars from 250 to 1000A.

Designation	Characteristics In	Length	Cat. ref.
Copper bars	160 A : 12 x 5 mm copper bar, M5 tapped, delivered with screw	245 mm	KS72B
		1000 mm	KS72C
	250 A : 20 x 5 mm copper bar, M6 tapped	1000 mm	UC832
		1750 mm	UT87E
	400 A : 32 x 5 mm copper bar, M6 tapped	1000 mm	UC842
		280 mm	UM30A3
	30 x 5 mm copper bar, M6 tapped	430 mm	UM30A1
		880 mm	UM30A2
		1750 mm	UC844
	630 A : 30 x 10 mm copper bar, M6 tapped	430 mm	UM30A4
		880 mm	UM30A5
	63 x 5 mm copper bar, M10 tapped	1750 mm	UC922
	800 A : 80 x 5 mm copper bar, M10 tapped	1750 mm	UC966
		1750 mm	UC967
Screws	self thread forming screws M6 x 10		UC856E
	connection screws M6 x 12 with washers		UC851
	connection screws M8 x 30 with washers		UC853
	connection screws M10 x 30 with washers		UC855

Main
switchboards

Single pole distribution blocks

- monoblocs, insulated, grey colour,
- clip fixing on mounting plate DIN rail of the main devices kit, lcc peak : 36 kA




- facilitate phases balancing
- incoming connection by 4 screw ranges
- outgoing connection by insulated flexible connectors with automatic lock.

- 12 black insulated wire connectors H07 V-K : 6 x 6mm² (blue) and 12 x 6mm² (black)
- 2 quadro mounting legs
- 2 univers fixing brackets.

Multi-plug 4P repartitors 250 A

- bridging of all types of equipments 2, 3 and 4 poles placed on the same DIN rail

- Delivered with:
- 6 blue insulated wire connectors H07 V-K, 6 x 6mm² (blue) and 12 x 6mm² (black)







	Designation	Characteristics	Length	Cat. ref.
 KJ02A	Single pole distribution blocks for copper conductors	125 A : incoming : 1 x 70 mm ² outgoing : 6 x 16 mm ²	27 mm	KJ02D
		160 A : incoming : 1 x 70 mm ² outgoing : 6 x 16 mm ²	35 mm	KJ02C
		250 A : incoming : 1 x 95 mm ² outgoing : 2 x 25 mm ² , 5 x 16 mm ² , 4 x 10 mm ²	45 mm	KJ02A
		400 A : incoming : 1 x 150 mm ² outgoing : 2 x 25 mm ² , 5 x 16 mm ² , 4 x 10 mm ²	46 mm	KJ02B
 KJ03A	Multi-plug 4P repartitors Implementation in 620 or 700 mm width quadro enclosures.	60 connection points per pole sections: 6 mm ² and 10 mm ² Acceptable In under 40 °C : - per pole : 250 A, - 40 A with connector 6 mm ² - 63 A with connector 10 mm ² lcc peak : 60 kA Un : 500 V ~ - 50 Hz	without connectors	KJ03A
			with connectors	KJ03B
 KZ007	Connectors (end) to crimp for 6 mm ² flexible wire			KZ007

Designation	In	Section	Cat. ref.	
			blue	black
Connectors for multi-plug repartitors 250 A	40 A	6 mm ²	KZ001	KZ002
flexible connectors insulated wire serial H07 V-K length : 120 mm	40 A	6 mm ²	KZ051	KZ052
	63 A	10 mm ²	KZ004	KZ005
	63 A	10 mm ²	KZ074	KZ075

Connectors




To carry out connections between incoming devices and distribution system (set of busbars, distribution blocks).

- h3 MCCBs :
x250, h250 LSI, h630 LSI

	Designation	Characteristics	Cat. ref.
 UC877	<p>Connectors to connect x250 and h250 LSI MCCBs to the inclined bars set UC826 mounted in 250 mm width</p>	<p>includes : - 4 cable with lugs, 20 x 3 mm²</p> <p>possible mounting : quadro4 - quadro5</p>	<p>UC877</p>
 UC868	<p>to connect h630 LSI MCCBs to inclined bars set UC826 mounted in 250 mm width</p>	<p>includes : - 4 cables, 25 x 6 mm²</p> <p>possible mounting : quadro4 - quadro5</p>	<p>UC868</p>
 UC875	<p>to connect the horizontal mounted x250 and h250 LSI MCCBs in 500 mm width to bars set UC820 mounted behind modular devices in 500 mm width</p>	<p>includes : - 4 cables, 25 x 6 mm²</p> <p>possible mounting : quadro4 - quadro5</p>	<p>UC875</p>
 UC871	<p>Incoming kits to supply the horizontal mounted x250 and h250 LSI MCCBs in 500 mm width</p>	<p>includes : - 1 support for cable incoming (maxi 70 mm²) - 4 cables 70 mm² with lugs</p> <p>possible mounting : quadro4 - quadro5 - quadro+ evo</p>	<p>UC871</p>
 UC869	<p>to connect the horizontal mounted x250 and h250 LSI MCCBs in 500 mm width to inclined bars set UC826 horizontal mounted</p>	<p>includes : - 4 cables 70 mm² with lugs</p> <p>possible mounting : quadro4 - quadro5 - quadro+ evo</p>	<p>UC869</p>
 UC879	<p>Link connection to connect x250 et h250 LSI MCCBs to bars set UC826 mounted behind the modular devices in 500 mm width</p>	<p>- 4 cables 70 mm² with lugs</p> <p>possible mounting : quadro4 - quadro5 - quadro+ evo</p>	<p>UC879</p>

Link connectors and bars

To carry out connections between incoming devices and distribution system (set of busbars, repartitor blocks).




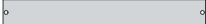
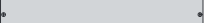

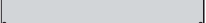


	Designation	Characteristics	Length	Cat. ref.
 <p>UC870</p>	<p>Link connectors to connect the switches HA406N, HA407, HA408 to distribution blocks KJ02 fixed on the same line</p>	<p>includes : - 4 cables H 07-V-K black 50 mm² length 450 mm with lugs</p>		UC870
	<p>Link connectors to connect the switches HA452 / HA454 to distribution blocks KJ02 fixed beside the switch</p>	<p>includes : - 4 flexible connectors 20 x 3 mm</p>		UC874
 <p>UC876</p>	<p>Link connectors to connect the switches HA452/ HA454 to the side busbars</p>	<p>1 set includes : - 4 flexible connectors 20 x 3 mm</p>		UC876
	 <p>UM92Y</p>	<p>Flexible copper bars to connect the switches HA452/ HA454 to the side busbars</p>	<p>160 A section 20 x 2 mm</p>	2 m
<p>250 A section 20 x 3 mm</p>		2 m	UM92Y	
<p>400 A section 32 x 4 mm</p>		2 m	UM92Z	
<p>630 A section 32 x 6 mm</p>		2 m	UM92W	
<p>800 A section 40 x 6 mm</p>		2 m	UM92V	

Equipment kits for modular devices

Available in height 150 mm and 200 mm, their positioning is facilitated by gauges delivered with each kit.

The DIN rail supports allow a fast fixing by clipping on the bottom of the enclosure. Front plates are mounted with screws included in the kit.

Equipment kits for terminals
Available in height 150 mm, DIN rail adjustable in depth, 20° inclinable.

	Designation	Characteristics	Cat. ref.	
	Equipment kits for modular devices delivered with : - modular DIN rail for shoulder devices 45 mm - sheet metal front plate	length 250 mm equipment 1 row 10	150 mm	UC200
UC200		length 500 mm equipment 1 row 24	150 mm	UC201
		equipment 1 row 24	200 mm	UC205
	Equipment kits for terminals delivered with DIN rail and front plate	length 500 mm equipment 1 row 22	150 mm	UC209
	Full front plates		250 mm	500 mm
		50 mm	UC221	UC231
UC231		75 mm	UC220	UC230
		100 mm	-	UC239
UC230		150 mm	UC222	UC232
		200 mm	UC223	UC233
UC239		300 mm	UC224	UC234
		400 mm	UC225	UC235
UC232		600 mm	UC226	UC236
				
UC235	Adjustable DIN rails in depth for terminals, 20° inclinable	for width 500 mm length 400 mm, 22°		UC951
	Perforated mounting plates for special devices	length : 500 mm height: 300 mm		UC960
	delivered with fixing supports	450 mm		UC962
UC962		600 mm		UC964
	Clips nuts and M5 screws for perforated mounting plates	1 set = 25 nuts		UC969
	Hinges for front plates	set of 2 hinges to mount on the left or the right side of the front plate		UC268
UC268				

Cable management accessories

Several systems allow to manage the cable trunking, as well as the connections in quadro enclosures:

- vertical slotted trunking
- horizontal slotted trunking
- cable guides.

Universal crossbars




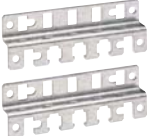





Allow :

- either to maintain the cables using a clamp
- or to mount a vertical DIN rail to create a terminal block

Cable spreader box

insulating material, RAL 9010

Fixed on the top or the bottom part of the enclosures, these trunkings allow the enlargement and the arrangement of the incoming and outgoing cables and ensure the junction between the enclosures and the vertical trunking.

	Designation	Characteristics	Length	Cat. ref.
	Vertical slotted trunking delivered with cover	length 60 mm, height 80 mm	2000 mm	UC916
	Horizontal slotted trunking delivered with cover	length 30 mm, height 80 mm	250 mm	UC911
			500 mm	UC912
	Fixing supports vertical and horizontal sheaths on the bottom of the quadro enclosures			UC915
	Cable straps (1 set = 20 pieces)	large volume		UZ25V1
		small volume		UZ25V2
	Cable guides (1 set = 20 pieces)	fixing centres 150 mm		UZ01V1
	Universal crossbars	for 200 mm cable sheaths in 900 mm width quadro5	width : 185 mm	UC288
			width : 250 mm	UC988
			width : 500 mm	UC289
	Blanking strips	24 modules length		JP024
	Marking strips for modular front plates	includes : - adhesive transparent label holder - marking strip	length : 10 ■	JE001
			length : 24 ■	JE003
	Horizontal separations	metal partitions for quadro4 and quadro5	length : 620 mm	FC664
	Cable spreader boxes	height : 195 mm depth : 155 mm	length : 300 mm	FZ441
	includes : - 2 fixing brackets		length : 550 mm	FZ442
	- 1 bottom plate		length : 800 mm	FZ443
	- 1 cover		length : 1050 mm	FZ444
	- 2 side cover plates			
				FZ442

Incoming earth terminal blocks

To mount on supplied 80mm spacers.

Outgoing connectors for PE conductors

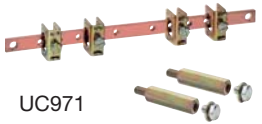

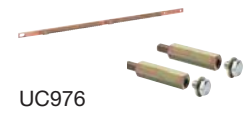


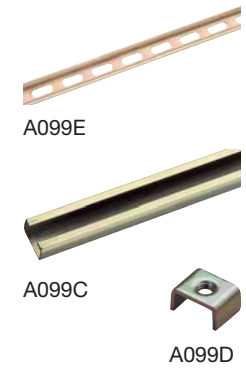





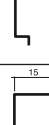






To mount on supplied 80mm spacers, possibility to add

Quick Connect terminals.

Caution : connectors UC975S and UC976S have no equipotential connection with the structures of the enclosure.

Mounting rail

For terminals blocks vertical or horizontal mounting.
Length: 2 m.

Designation	Characteristics	Cat. ref.		
 UC971	Incoming earth terminal blocks can be completed with the staples below	width : 250 mm	UC971	
		width : 500 mm	UC972	
 K070 K074	Staples for above terminal blocks	16 mm ²	K070	
		35 mm ²	K071	
		70 mm ²	K073	
		95 mm ²	K074	
 UC976	Outgoing connectors for PE conductors connection	width : 250 mm	UC975	
		width : 500 mm	UC976	
 UC992	Outgoing connectors quickconnect pour le raccordement des conducteurs PE	width : 250 mm	UC975S	
		width : 500 mm	UC976S	
 A099	Metal spacers height : 80 mm M6 screw		UC992	
 A099E A099C A099D	Symmetrical DIN rails DIN 46277/3 width: 35 mm	 7,5 A088	depth : 7,5 mm	A088
		 10 A098	depth : 10 mm	A098
		 15 A099	depth : 15 mm	A099
 A099E	Symmetrical DIN rails perforated	 5 width 15 mm DIN 46277/2	depth : 5 mm	A099E
		 width 35 mm DIN 46277/3	depth : 5 mm	A099B
 A099C	DIN rail for structure	 15 width 250 mm	depth : 15 mm	A099C
 A050	Special screws M6	for rail A099C		A099D
 UC990	Asymmetrical DIN rails DIN 46277/1			A050
		Cage nuts M6		UC990
 UC991	M6 x 12 screws			UC991

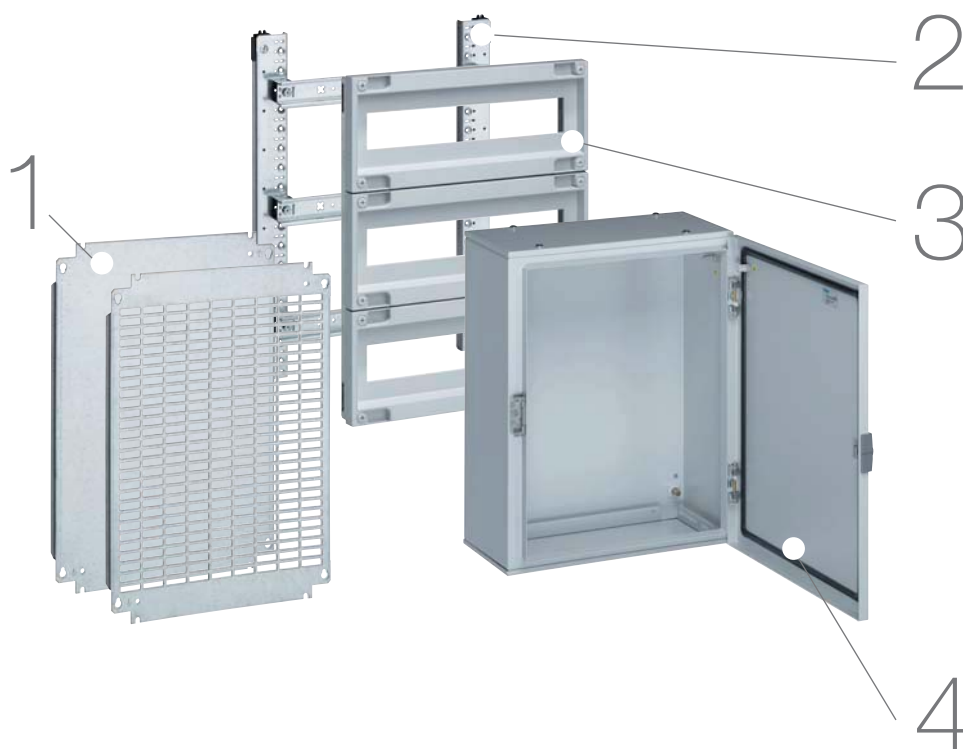
Main switchboards

IP65 enclosures orion plus

One system for indoor and outdoor application

Sheet steel or glass reinforced polyester - the orion plus enclosures are suited for the harshest conditions and can be applied for wet and mechanical use. Even under chemical use, orion plus offers the ideal solution with glass reinforced polyester.

The interior equipment can be realized flexibly via mounting plate or DIN rail (in 2 different versions) and thus offers the suitable interior equipment system - both for the application in automation and for classical current distribution.



Your benefits

- High protection class (IP65/IK10) and nice design.
- Size and depth adapted according to your need.

Technical characteristics

- IP 65 door closed, RAL 7035.
- Sheet steel - class I or polyester - class II.
- Height : 300 to 1250 mm.
- Height (polyester enclosures) : 1200 to 2050 mm.
- Depth : 160 to 300 mm.

Expert tips

1



Front plates adjustable in depth

Thanks to slides.

2



Modular kits on pillars

Screws integrated in the pillars for fast mounting in the enclosure.

3



Easy fixing

Fast fixing screws to fix the plates.

4



Reversible door

Doors can be mounted on the right side or on the left side.

5



Easy mounting and cabling

Modular devices are mounted on the chassis, outside or inside the enclosure.

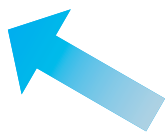
6



Association

Metal enclosures can be fixed on a base or vertically associated using a seal kit.

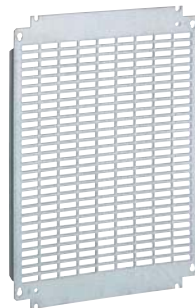
orion plus IP 65 metal enclosures



Choice of equipments :



Plain metal mounting plates for automation or non modular products



Perforated metal mounting plates for automation or non modular products



Insulated metal mounting plates for automation of non modular products



Equipment kits for modular products

The IP65 orion plus enclosures

These enclosures are of monobloc construction available in metal, glass reinforced polyester (GRP) with plain or transparent doors. They constitute a large range of enclosures with heights from 300 up to 2050mm and width up to 800mm (metal) and 1100mm (polyester). These enclosures are flexible and can be used with different types of equipments :

- plain, perforated or insulated metal mounting plates

These enclosures allow :

- installation of automation products for the control of machines or small processes
- installation of non modular products such as contactors, transformers, etc....
- cable termination and distribution

Metal mounting plates :

- available in various sizes, plain, perforated, insulated for the installation of non modular equipment.
- fixed directly on the back of the enclosure or on depth adjustable guides depending on the size of the equipment.

Chassis kits

for modular products

designed for easy mounting of modular equipment. The chassis can be removed and tilted. Supplied complete with front cover, DIN rails and uprights.

orion plus IP 65 polyester enclosures



orion plus metal enclosures		modular kit on chassis
		
with plain door	with transparent door	
FL102A	FL152A	-
FL104A	FL154A	FL980A
FL105A	FL155A	FL980A
FL109A	FL159A	FL981A
FL110A	FL160A	FL981A
FL111A	FL161A	FL982A
FL112A	FL162A	FL982A
FL117A	FL167A	FL983A
FL118A	FL168A	FL983A
FL119A	FL169A	-
FL120A	FL170A	-
FL121A	FL171A	-
FL122A	FL172A	-
FL123A	FL173A	-
FL124A	FL174A	-
FL125A	FL175A	-
FL126A	FL176A	-
FL127A	FL177A	-
FL128A	FL178A	-
FL129A	FL179A	-
FL130A	FL180A	-

orion plus IP65 metal enclosures selection chart

orion plus enclosures sheet steel



mounting plates plain or perforated



Equipment kits for modular chassis



Enclosures dimensions in mm			modular height	qty of modules per row	max. capacity (modules)	enclosures		plinth h. 150	mounting plates			internal doors	
height	width	depth				with plain door	with transp. door		metal plain	metal perforated	insulated	metal	insulated
250*	200*	160*	-	-	-	FL101A*	FL151A*	-	FL401A	-	-	FL541A	-
300*	250*	160*	-	-	-	FL102A*	FL152A*	-	FL402A	FL472A	FL422A	FL542A	-
300*	300*	160*	-	-	-	FL103A*	FL153A*	-	FL403A	-	-	FL543A	-
350	300	160	300	10	20	FL104A	FL154A	-	FL404A	FL473A	FL423A	FL544A	FL643A
350	300	200	300	10	20	FL105A	FL155A	-	FL404A	FL473A	FL423A	FL544A	FL643A
400*	300*	160*	-	-	-	FL106A*	FL156A*	-	FL405A	-	-	FL545A	-
400*	300*	200*	-	-	-	FL107A*	FL157A*	-	FL405A	-	-	FL545A	-
400*	400*	200*	-	-	-	FL108A*	FL158A*	-	FL406A	-	-	FL546A	-
500	300	160	450	10	30	FL109A	FL159A	-	FL407A	FL474A	FL424A	FL547A	FL644A
500	300	200	450	10	30	FL110A	FL160A	-	FL407A	FL474A	FL424A	FL547A	FL644A
500	400	160	450	16	48	FL111A	FL161A	-	FL408A	FL475A	FL425A	FL548A	FL645A
500	400	200	450	16	48	FL112A	FL162A	-	FL408A	FL475A	FL425A	FL548A	FL645A
500*	500*	200*	-	-	-	FL113A*	FL163A*	-	FL409A	-	-	FL549A	-
600*	400*	200*	-	-	-	FL114A*	FL164A*	-	FL410A	-	-	FL550A	-
600*	400*	250*	-	-	-	FL115A*	FL165A*	-	FL410A	-	-	FL550A	-
600*	600*	250*	-	-	-	FL116A*	FL166A*	-	FL411A	-	-	FL553A	-
650	400	200	600	16	64	FL117A	FL167A	-	FL412A	FL476A	FL426A	FL551A	-
650	400	250	600	16	64	FL118A	FL168A	-	FL412A	FL476A	FL426A	FL551A	-
650	500	200	600	22	88	FL119A	FL169A	FL957A	FL413A	FL477A	FL427A	FL552A	-
650	500	250	600	22	88	FL120A	FL170A	FL958A	FL413A	FL477A	FL427A	FL552A	-
800	500	200	750	22	110	FL121A	FL171A	FL957A	FL414A	FL478A	FL428A	FL554A	-
800	500	250	750	22	110	FL122A	FL172A	FL958A	FL414A	FL478A	FL428A	FL554A	-
800	600	250	750	26	130	FL123A	FL173A	FL959A	FL415A	FL479A	FL429A	FL555A	FL649A
800	600	300	750	26	130	FL124A	FL174A	FL960A	FL415A	FL479A	FL429A	FL555A	FL649A
950	600	250	900	26	156	FL125A	FL175A	FL959A	FL416A	FL480A	FL430A	FL556A	-
950	600	300	900	26	156	FL126A	FL176A	FL960A	FL416A	FL480A	FL430A	FL556A	-
950	800	250	900	37	222	FL127A	FL177A	FL961A	FL417A	FL481A	FL431	FL557A	-
950	800	300	900	37	222	FL128A	FL178A	FL962A	FL417A	FL481A	FL431A	FL557A	-
1250	600	250	1200	26	208	FL129A	FL179A	FL959A	FL418A	FL482A	FL432A	FL558A	-
1250	800	300	1200	37	296	FL130A	FL180A	FL962A	FL419A	FL483A	FL433A	FL559A	-

plain front plates



partial metal mounting plates
fixed or adjustable



DIN rails for
terminals



Main
switchboards

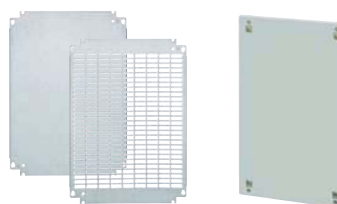
	modular equipment kits	plain front plates				partial metal plates fixed				partial metal plates adjustable				DIN rails for terminals
		h. 50	h. 150	h. 200	h. 300	h. 150	h. 200	h. 300	h. 400	h. 150	h. 200	h. 300	h. 400	
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FL990A	-	FL711E	-	-	FL311A	-	-	-	-	-	-	-	-
	FL990A	-	FL711E	-	-	FL311A	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	FL991A	-	FL711E	-	-	FL311A	-	-	-	-	-	-	-	-
	FL991A	-	FL711E	-	-	FL311A	-	-	-	-	-	-	-	-
	FL992A	FL702E	FL712E	FL722E	-	FL312A	FL322A	-	-	-	-	-	-	FL500A
	FL992A	FL702E	FL712E	FL722E	-	FL312A	FL322A	-	-	-	-	-	-	FL500A
	-	-	-	-	-	-	-	-	-	-	-	-	-	FL500A
	-	-	-	-	-	-	-	-	-	-	-	-	-	FL500A
	-	-	-	-	-	-	-	-	-	-	-	-	-	FL500A
	-	-	-	-	-	-	-	-	-	-	-	-	-	FL500A
	FL993A	FL702E	FL712E	FL722E	-	FL312A	FL322A	-	-	-	-	-	-	FL500A
	FL993A	FL702E	FL712E	FL722E	-	FL312A	FL322A	-	-	FL314A	FL324A	-	-	FL500A
	FL994A	FL703E	FL713E	FL723E	FL733E	FL313A	FL323A	FL333A	FL343A	-	-	-	-	FL501A
	FL994A	FL703E	FL713E	FL723E	FL733E	FL313A	FL323A	FL333A	FL343A	FL315A	FL325A	FL335A	FL345A	FL501A
	FL995A	FL703E	FL713E	FL723E	FL733E	FL313A	FL323A	FL333A	FL343A	-	-	-	-	FL501A
	FL995A	FL703E	FL713E	FL723E	FL733E	FL313A	FL323A	FL333A	FL343A	FL315A	FL325A	FL335A	FL345A	FL501A
	FL996A	FL704E	FL714E	FL724E	FL734E	-	-	-	-	FL316A	FL326A	FL336A	FL346A	FL502A
	FL996A	FL704E	FL714E	FL724E	FL734E	-	-	-	-	FL316A	FL326A	FL336A	FL346A	FL502A
	FL997A	FL704E	FL714E	FL724E	FL734E	-	-	-	-	FL316A	FL326A	FL336A	FL346A	FL502A
	FL997A	FL704E	FL714E	FL724E	FL734E	-	-	-	-	FL316A	FL326A	FL336A	FL346A	FL502A
	FL998A	FL705E	FL715E	FL725E	FL735E	-	-	-	-	FL317A	FL327A	FL337A	FL347A	FL503A
	FL998A	FL705E	FL715E	FL725E	FL735E	-	-	-	-	FL317A	FL327A	FL337A	FL347A	FL503A
	FL999A	FL704E	FL714E	FL724E	FL734E	-	-	-	-	FL316A	FL326A	FL336A	FL346A	FL502A
	FL000A	FL705E	FL715E	FL725E	FL735E	-	-	-	-	FL317A	FL327A	FL337A	FL347A	FL503A

orion plus IP65 polyester enclosures selection chart

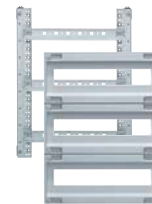
orion plus polyester enclosures



metal mounting plate internal doors



modular chassis functional uprights



Enclosures dimensions in mm			modular height	qty of modules per row	max. capacity (modules)	enclosures		mounting plates			internal doors		modular equipment kits
height	width	depth				with plain door	with transp. door	metal plain	metal perforated	insulated	metal plain	insulated	
350	300	160	300	10	20	FL204B	FL254B	FL404A	FL473A	FL423A	FL544A	FL643A	FL990A
500	300	200	450	10	30	FL209B	FL259B	FL407A	FL474A	FL424A	FL547A	FL644A	FL991A
500	400	200	450	16	48	FL213B	FL263B	FL408A	FL475A	FL425A	FL548A	FL645A	FL992A
650	400	200	600	16	64	FL216B	FL266B	FL412A	FL476A	FL426A	FL551A	FL646A	FL993A
650	500	250	600	22	88	FL221B	FL271B	FL413A	FL477A	FL427A	FL552A	FL647A	FL994A
800	600	300	750	26	130	FL229B	FL279B	FL415A	FL479A	FL429A	FL555A	FL649A	FL996A

Enclosures

with plain door	with transparent door	modular kit on chassis
FL204A	FL254B	FL980A
FL209B	FL259B	FL981A
FL213B	FL263B	FL982A
FL216B	FL266B	FL983A
FL221B	FL271B	-
FL229B	FL279B	-

plain front plates



partial metal mounting plates



DIN rail for terminal



Main
switchboards

plain front plates				partial metal plates fixed				partial metal plates adjustable				DIN rails for terminals
h. 50	h. 150	h. 200	h. 300	h. 150	h. 200	h. 300	h. 400	h. 150	h. 200	h. 300	h. 400	
-	FL711E	-	-	FL311A	-	-	-	-	-	-	-	-
-	FL711E	-	-	FL311A	-	-	-	-	-	-	-	-
FL702E	FL712E	FL722E	-	FL312A	FL322A	-	-	-	-	-	-	FL500A
FL702E	FL712E	FL722E	-	FL312A	FL322A	-	-	-	-	-	-	FL500A
FL703E	FL713E	FL723E	FL733E	FL313A	FL323A	FL333A	FL343A	-	-	-	-	FL501A
FL704E	FL714E	FL724E	FL734E	-	-	-	-	FL316A	FL326A	FL336A	FL346A	FL502A

orion plus IP65 polyester enclosures selection chart

polyester enclosures
depth 300 mm

Transparent doors

Metal mounting
plates



	Enclosures dimensions in mm					upper section		lower section		enclosures		transparent doors		metal mounting plates		insulated mounting plates
	height	width	modular width	modular height upper	modular height lower	qty of mod. p/row	max. capacity in mod.	qty of mod. p/row	max. capacity (mod.)	with plain door	with transparent door	upper part	lower part	plain upper section	lower section	upper section
enclosures	550	600	500	450	-	23	69	-	-	FL300B	FL500B	-	-	FL510E	-	FL550E
	850	600	500	750	-	23	115	-	-	FL301B	FL501B	-	-	FL511E	-	FL551E
	1150	600	500	1050	-	23	161	-	-	FL302B	FL502B	-	-	FL512E	-	FL552E
	550	850	750	450	-	37	111	-	-	FL305B	FL505B	-	-	FL520E	-	FL560E
	850	850	750	750	-	37	185	-	-	FL306B	FL506B	-	-	FL521E	-	FL561E
	1150	850	750	1050	-	37	259	-	-	FL307B	FL507B	-	-	FL522E	-	FL562E
	550*	1100	500+500	450	-	46	138	-	-	FL310B*	FL510B*	-	-	FL530E	-	FL570E
	850*	1100	500+500	750	-	46	230	-	-	FL311B*	FL511B*	-	-	FL531E	-	FL571E
	1150*	1100	500+500	1050	-	46	322	-	-	FL312B*	FL512B*	-	-	FL532E	-	FL572E
	600	600	500	450	-	23	69	-	-	FL320B	FL520B	-	-	FL510E	-	FL550E
	900	600	500	750	-	23	115	-	-	FL321B	FL521B	-	-	FL511E	-	FL551E
	1200	600	500	1050	-	23	161	-	-	FL322B	FL522B	-	-	FL512E	-	FL552E
	600	850	750	450	-	37	111	-	-	FL325B	FL525B	-	-	FL520E	-	FL560E
	900	850	750	750	-	37	185	-	-	FL326B	FL526B	-	-	FL521E	-	FL561E
	1200	850	750	1050	-	37	259	-	-	FL327B	FL527B	-	-	FL522E	-	FL562E
	600*	1100	500+500	450	-	46	138	-	-	FL330B*	FL530B*	-	-	FL530E	-	FL570E
900*	1100	500+500	750	-	46	230	-	-	FL331B*	FL531B*	-	-	FL531E	-	FL571E	
1200*	1100	500+500	1050	-	46	322	-	-	FL332B*	FL532B*	-	-	FL532E	-	FL572E	
enclosures with 2 sections	1150	600	500	450	450	23	69	23	69	FL340B	-	FL400B	FL400B	FL510E	FL510E	FL550E
	1450	600	500	450	750	23	69	23	115	FL342B	-	FL400B	FL401B	FL510E	FL511E	FL550E
	1750	600	500	450	1050	23	69	23	161	FL344B	-	FL400B	FL402B	FL510E	FL512E	FL550E
	1750	600	500	750	750	23	115	23	115	FL346B	-	FL401B	FL401B	FL511E	FL511E	FL551E
	2050	600	500	750	1050	23	115	23	161	FL348B	-	FL401B	FL402B	FL511E	FL512E	FL551E
	1150	850	750	450	450	37	111	37	111	FL350B	-	FL405B	FL405B	FL520E	FL520E	FL560E
	1450	850	750	450	750	37	111	37	185	FL352B	-	FL405B	FL406B	FL520E	FL521E	FL560E
	1750	850	750	450	1050	37	111	37	259	FL354B	-	FL405B	FL407B	FL520E	FL522E	FL560E
	1750	850	750	750	750	37	185	37	185	FL356B	-	FL406B	FL406B	FL521E	FL521E	FL561E
	2050	850	750	750	1050	37	185	37	259	FL358B	-	FL406B	FL407B	FL521E	FL522E	FL561E
	1150	1100	500+500	450	450	46	138	46	138	FL360B*	-	FL410B	FL410B	FL530E	FL530E	FL570E
	1450	1100	500+500	450	750	46	138	46	230	FL362B*	-	FL410B	FL411B	FL530E	FL531E	FL570E
	1750	1100	500+500	450	1050	46	138	46	322	FL364B*	-	FL410B	FL412B	FL530E	FL532E	FL570E
	1750	1100	500+500	750	750	46	230	46	230	FL366B*	-	FL411B	FL411B	FL531E	FL531E	FL571E
2050	1100	500+500	750	1050	46	230	46	322	FL368B*	-	FL411B	FL412B	FL531E	FL532E	FL571E	

internal door
metal



modular chassis
functional uprights



plain front plates



partial metal
mounting plates



DIN rail



		internal door		modular kits		plain front plates				partial metal plates adjustable				DIN rails for terminals
	lower section	metal upper section	lower section	upper section	lower section	h.50	h.150	h.200	h.300	h.150	h.200	h.300	h.400	
	-	FL590E	-	FL990B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	FL591E	-	FL992B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	FL592E	-	FL994B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	FL600E	-	FL991B	-	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	-	FL601E	-	FL993B	-	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	-	FL602E	-	FL995B	-	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	-	2xFL590E	-	2xFL990B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	2xFL591E	-	2xFL992B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	2xFL592E	-	2xFL994B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	FL590E	-	FL990B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	FL591E	-	FL992B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	FL592E	-	FL994B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	FL600E	-	FL991B	-	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	-	FL601E	-	FL993B	-	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	-	FL602E	-	FL995B	-	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	-	2xFL590E	-	2xFL990B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	2xFL591E	-	2xFL992B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	-	2xFL592E	-	2xFL994B	-	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL550E	FL590E	FL590E	FL990B	FL990B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL551E	FL590E	FL591E	FL990B	FL992B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL552E	FL590E	FL592E	FL990B	FL994B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL551E	FL591E	FL591E	FL992B	FL992B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL552E	FL591E	FL592E	FL992B	FL994B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL560E	FL600E	FL600E	FL991B	FL991B	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	FL561E	FL600E	FL601E	FL991B	FL993B	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	FL562E	FL600E	FL602E	FL991B	FL995B	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	FL561E	FL601E	FL601E	FL993B	FL993B	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	FL562E	FL601E	FL602E	FL993B	FL995B	FL705E	FL715E	FL725E	FL735E	FL317A	FL327A	FL337A	FL347A	FL503E
	FL570E	2xFL590E	2xFL590E	2xFL990B	2xFL990B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL571E	2xFL590E	2xFL591E	2xFL990B	2xFL992B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL572E	2xFL590E	2xFL592E	2xFL990B	2xFL994B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL571E	2xFL591E	2xFL591E	2xFL992B	2xFL992B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E
	FL572E	2xFL591E	2xFL592E	2xFL992B	2xFL994B	-	FL710E	-	-	FL610E	FL620E	FL630A	FL640E	FL500E



FL113A

Sheet metal enclosures with plain or transparent door

color RAL 7035

IP 65 / IK 10 with door closed

IP 30 with door open

insulation class: I_{II}

compliance to IEC 529

Enclosures delivered with :

- 2 removable cable entry plates top/bottom,
- earthings studs on enclosure body and door,
- easy dismantlable hinges to reverse the door,

- plain or transparent door with 1 or 2 locks with triangular centre 8mm located on the non weatherproof part,
- mounting slides,
- gasket moulded on the door,

Accessories

- locks,
- wall fixing brackets,
- metallic or insulated internal doors
- plain or perforated metallic mounting plates
- kits for modular equipment

Designation	Dimensions	Pack qty.	Cat. ref.	
			plain door	transpar. door



FL113A

Metal enclosures orion plus

dimensions in mm:
H x W x D

250 x 200 x 160	1	FL101A	FL151A
300 x 250 x 160	1	FL102A	FL152A
300 x 300 x 160	1	FL103A	FL153A
350 x 300 x 160	1	FL104A	FL154A
350 x 300 x 200	1	FL105A	FL155A
400 x 300 x 160	1	FL106A	FL156A
400 x 300 x 200	1	FL107A	FL157A
400 x 400 x 200	1	FL108A	FL158A
500 x 300 x 160	1	FL109A	FL159A
500 x 300 x 200	1	FL110A	FL160A
500 x 400 x 160	1	FL111A	FL161A
500 x 400 x 200	1	FL112A	FL162A
500 x 500 x 200	1	FL113A	FL163A
600 x 400 x 200	1	FL114A	FL164A
600 x 400 x 250	1	FL115A	FL165A
600 x 600 x 250	1	FL116A	FL166A
650 x 400 x 200	1	FL117A	FL167A
650 x 400 x 250	1	FL118A	FL168A
650 x 500 x 200	1	FL119A	FL169A
650 x 500 x 250	1	FL120A	FL170A
800 x 500 x 200	1	FL121A	FL171A
800 x 500 x 250	1	FL122A	FL172A
800 x 600 x 250	1	FL123A	FL173A
800 x 600 x 300	1	FL124A	FL174A
950 x 600 x 250	1	FL125A	FL175A
950 x 600 x 300	1	FL126A	FL176A
950 x 800 x 250	1	FL127A	FL177A
950 x 800 x 300	1	FL128A	FL178A
1250 x 600 x 250	1	FL129A	FL179A
1250 x 800 x 300	1	FL130A	FL180A




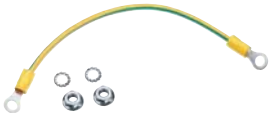

Designation	Characteristics	Pack qty.	Cat. ref.
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FL958A

Plinth
height 50 mm

for enclosures : FL113A, FL119A, FL121A, FL163A, FL169A, FL171A	1	FL957A
FL120A, FL122A, FL170A, FL172A	1	FL958A
FL116A, FL123A, FL125A, FL129A, FL166A, FL173A, FL175A, FL179A	1	FL959A
FL124A, FL126A, FL174A, FL176A	1	FL960A
FL127A, FL177A	1	FL961A
FL128A, FL130A, FL178A, FL180A	1	FL962A

	Designation	Characteristics	Pack qty.	Cat. ref.
	Lock with key to replace existing lock	supplied with 2 keys n°427	10	FL96Z
FL96Z				
	Locks	set of 2 locks square centre 8mm, 1 key	10	FL80Z
FL80Z		set of 2 locks square centre 6mm, 1 key	10	FL82Z
FL95Z		set of 2 locks triangular centre 8mm	10	FL93Z
	Set of wall fixing brackets metallic	set of 2 double bit 3m centre locks	10	FL95Z
FL85Z			1	FL85Z
	Earthing kit	for metal enclosures section : 4 mm ²	10	FL874A
FL874A				
	Vertical association kit (sealstrip + screws)		1	FL670A
FL670A				

Main
switchboards



FL216B

Enclosures with plain or transparent doors
glass reinforced polyester enclosures, color RAL 7035

IP 65 / IK 10 with door closed
IP30 with door open
insulation class : II compliance to IEC 536

Enclosures delivered with :
- plain or transparent door with 1 or 2 locks with triangular centre 8mm located on the non weatherproof part
- mounting slides
- gasket moulded on the door,

Accessories

- locks,
- wall fixing brackets,
- metallic or insulated internal doors
- plain or perforated metallic mounting plates,
- kits for modular equipment



Comply with IEC 60 695-2- 1/0 and 60 695-2-1/1

Designation	Characteristics	Pack qty.	Cat. ref. structure with:	
			plain door	transpar. door
 orion plus polyester boxes moulded monobloc structure	dimensions in mm: H x W x D			
	350 x 300 x 160	1	FL204B	FL254B
	500 x 300 x 200	1	FL209B	FL259B
	500 x 400 x 200	1	FL213B	FL263B
	650 x 400 x 200	1	FL216B	FL266B
	650 x 500 x 250	1	FL221B	FL271B
	800 x 600 x 300	1	FL229B	FL279B

FL216B

Designation	Characteristics	Pack qty.	Cat. ref.
Lock with key	supplied with 2 keys n.° 427	for enclosures h ≤ 800	FL96Z
Plastic key	RAL7046		FL99Z
Locks	set of 2 locks square centre 8mm		FL81Z
	set of 2 locks triangular centre 8mm		FL94Z
	set of 2 locks double bit centre 3mm		FL97Z



FL96Z



FL81Z



FL97Z



FL305B



FL320B

Designation	Characteristics	height upper + lower section	Pack qty.	Cat. ref. plain door	transp. door
Polyester enclosures	dimensions in mm: H x W x D				
	550 x 600 x 300		1	FL300B	FL500B
	550 x 850 x 300		1	FL305B	FL505B
	550 x 1100 x 300		1	FL310B	FL510B
	850 x 600 x 300		1	FL301B	FL501B
	850 x 850 x 300		1	FL306B	FL506B
	850 x 1100 x 300		1	FL311B	FL511B
	1150 x 600 x 300		1	FL302B	FL502B
	1150 x 850 x 300		1	FL307B	FL507B
	1150 x 1100 x 300		1	FL312B	FL512B
Polyester enclosures delivered with a 70mm plinth	600 x 600 x 300		1	FL320B	FL520B
	600 x 850 x 300		1	FL325B	FL525B
	600 x 1100 x 300		1	FL330B	FL530B
	900 x 600 x 300		1	FL321B	FL521B
	900 x 850 x 300		1	FL326B	FL526B
	900 x 1100 x 300		1	FL331B	FL531B
	1200 x 600 x 300		1	FL322B	FL522B
	1200 x 850 x 300		1	FL327B	FL527B
	1200 x 1100 x 300		1	FL332B	FL532B
made of :	1150 x 600 x 300	550+550	1	FL340B	-
- 2 enclosures with plain doors on top of each other	1150 x 850 x 300	550+550	1	FL350B	-
	1150 x 1100 x 300	550+550	1	FL360B	-
	1450 x 600 x 300	550+850	1	FL342B	-
	1450 x 850 x 300	550+850	1	FL352B	-
	1450 x 1100 x 300	550+850	1	FL362B	-
	1750 x 600 x 300	550+1150	1	FL344B	-
	1750 x 600 x 300	850+850	1	FL346B	-
	2050 x 600 x 300	850+1150	1	FL348B	-
	1750 x 850 x 300	550+1150	1	FL354B	-
	1750 x 850 x 300	850+850	1	FL356B	-
	2050 x 850 x 300	850+1150	1	FL358B	-
	1750 x 1100 x 300	550+1150	1	FL364B	-
	1750 x 1100 x 300	850+850	1	FL366B	-
	2050 x 1100 x 300	850+1150	1	FL368B	-
Doors to replace standard plain doors	500 x 600		1	FL380B	FL400B
	550 x 850		1	FL385B	FL405B
	550 x 1100		1	FL390B	FL410B
	850 x 600		1	FL381B	FL401B
	850 x 850		1	FL386B	FL406B
	850 x 1100		1	FL391B	FL411B
	1150 x 600		1	FL382B	FL402B
	1150 x 850		1	FL387B	FL407B
	1150 x 1100		1	FL392B	FL412B

Designation	Characteristics	Pack qty.	Cat. ref.
Cylindrical barrel	triangular male 8mm	5	FL74Z
	double bar 3mm	5	FL75Z
	square male 8 x 8mm	5	FL76Z
	square male 6 x 6 mm	5	FL77Z
Lock with key	supplied with 2 keys n.° 427	10	FL98Z
Set of M6 nuts to fix equipment directly on back		100	FZ801
Euro handle watertight			FZ680
Set of wall fixing brackets in insulated material	delivered with fixing screws M6x12		FL863Z



FL98Z

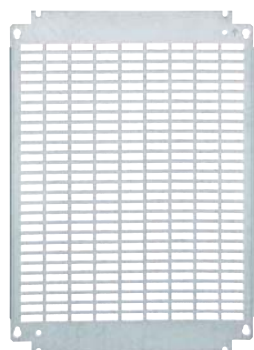


FL863Z



FL408A

Designation	Characteristics	Dimensions h. x w. in mm	Pack qty.	Cat. ref.
Plain mounting plates sheet metal thickness 2mm, delivered with fixing screws mounting: - either directly on the back of the enclosures, - either on the integrated slides with brackets FL450A to adjust depth	FL101A, FL151A	230 x 143	1	FL401A
	FL102A, FL152A	280 x 193	1	FL402A
	FL103A, FL153A	280 x 243	1	FL403A
	FL104A, FL105A, FL154A, FL155A, FL204B, FL254B	330 x 243	1	FL404A
	FL106A, FL107A, FL156A, FL157A	380 x 243	1	FL405A
	FL108A, FL158A	380 x 343	1	FL406A
	FL109A, FL110A, FL159A, FL160A, FL209B, FL259B	480 x 243	1	FL407A
	FL111A, FL112A, FL161A, FL162A, FL213B, FL263B	480 x 343	1	FL408A
	FL300B, FL500B, FL320B, FL520B	480 x 493	1	FL510E
	FL305B, FL505B, FL325B, FL525B	480 x 743	1	FL520E
	FL310B, FL510B, FL330B, FL530B	480 x 993	1	FL530E
	FL113A, FL163A	480 x 443	1	FL409A
	FL114A, FL115A, FL164A, FL165A	580 x 343	1	FL410A
	FL116A, FL166A	580 x 543	1	FL411A
	FL117A, FL118A, FL167A, FL168A, FL216B, FL266B	630 x 343	1	FL412A
	FL119A, FL120A, FL169A, FL170A, FL221B, FL271B	630 x 443	1	FL413A
	FL121A, FL122A, FL171A, FL172A	780 x 443	1	FL414A
	FL123A, FL124A, FL173A, FL174A, FL229B, FL279B	780 x 543	1	FL415A
	FL501E could be installed in all the enclosures	780 x 243	1	FL501E
	FL502E could be installed in all the enclosures	1080 x 243	1	FL502E
	FL300B, FL500B, FL320B, FL520B	480 x 493	1	FL510E
	FL301B, FL501B, FL321B, FL521B	780 x 493	1	FL511E
	FL306B, FL506B, FL326B, FL526B	780 x 743	1	FL521E
	FL311B, FL511B, FL331B, FL531B	780 x 993	1	FL531E
	FL302B, FL502B, FL322B, FL522B	1080 x 493	1	FL512E
	FL307B, FL507B, FL327B, FL527B	1080 x 793	1	FL522E
	FL312B, FL512B, FL332B, FL532B	1080 x 993	1	FL532E
FL125A, FL126A, FL175A, FL176A	930 x 543	1	FL416A	
FL127A, FL128A, FL177A, FL178A	930 x 743	1	FL417A	
FL129A, FL179A	1230 x 543	1	FL418A	
FL130A, FL180A	1230 x 743	1	FL419A	



FL475A

Designation	Characteristics	Dimensions h. x w. in mm	Pack qty.	Cat. ref.
Perforated mounting plates, sheet metal thickness 2mm, delivered with fixing screws mounting: - either directly on the back of the enclosures - either on the integrated slides with brackets FL450A to adjust depth - use clip with screw UC969 to fix equipment on the mounting plate.	FL102A, FL152A	280 x 193	1	FL472A
	FL104A, FL105A, FL154A, FL155A, FL204B, FL254B	330 x 243	1	FL473A
	FL109A, FL110A, FL159A, FL160A, FL209B, FL259B	480 x 243	1	FL474A
	FL111A, FL112A, FL161A, FL162A, FL213B, FL263B	480 x 343	1	FL475A
	FL117A, FL118A, FL167A, FL168A, FL216B, FL266B	630 x 343	1	FL476A
	FL119A, FL120A, FL169A, FL170A, FL221B, FL271B	630 x 443	1	FL477A
	FL121A, FL122A, FL171A, FL172A	780 x 443	1	FL478A
	FL123A, FL124A, FL173A, FL174A, FL229B, FL279B	780 x 543	1	FL479A
	FL125A, FL126A, FL175A, FL176A	930 x 543	1	FL480A
	FL127A, FL128A, FL177A, FL178A	930 x 743	1	FL481A
	FL129A, FL179A	1230 x 543	1	FL482A
	FL130A, FL180A	1230 x 743	1	FL483A



FL427A

Designation	Characteristics	Dimensions h. x w. in mm	Pack qty.	Cat. ref.
Insulated mounting plates insulating material, delivered with fixing screws mounting : - either directly on the back on the enclosures, - either on the integrated slides with brackets FL450A to adjust depth	FL102A, FL152A	235 x 195	1	FL422A
	FL104A, FL105A, FL154A, FL155A, FL204B, FL254B	285 x 245	1	FL423A
	FL109A, FL110A, FL159A, FL160A, FL209B, FL259B	435 x 245	1	FL424A
	FL111A, FL112A, FL161A, FL162A, FL213B, FL263B	435 x 345	1	FL425A
	FL541E could be installed in all the enclosures	735 x 245	1	FL541E
	FL542E could be installed in all the enclosures	1035 x 245	1	FL542E
	FL300B, FL500B, FL320B, FL520B	435 x 495	1	FL550E
	FL305B, FL505B, FL325B, FL525B	435 x 745	1	FL560E
	FL310B, FL510B, FL330B, FL530B	435 x 995	1	FL570E
	FL117A, FL118A, FL167A, FL168A, FL216B, FL266B	585 x 345	1	FL426A
	FL119A, FL120A, FL169A, FL170A, FL221B, FL271B	585 x 345	1	FL427A
	FL121A, FL122A, FL171A, FL172A	735 x 445	1	FL428A
	FL123A, FL124A, FL173A, FL174A, FL229B, FL279B	735 x 545	1	FL429A
	FL301B, FL501B, FL312B, FL512B	735 x 495	1	FL551E
	FL306B, FL506B, FL326B, FL526B	735 x 745	1	FL561E
	FL311B, FL511B, FL331B, FL531B	735 x 995	1	FL571E
	FL302B, FL502B, FL322B, FL522B	1035 x 745	1	FL552E
	FL307B, FL507B, FL327B, FL527B	1035 x 745	1	FL562E
	FL312B, FL512B, FL332B, FL532B	1035 x 995	1	FL572E
	FL125A, FL126A, FL175A, FL176A	885 x 545	1	FL430A
FL127A, FL128A, FL177A, FL178A	885 x 745	1	FL431A	
FL129A, FL179A	1185 x 545	1	FL432A	
FL130A, FL180A	1185 x 745	1	FL433A	
Clip nut screw M5 for perforated mounting plates	1 set = 25 pieces		1	UC969



UC969



FL552A

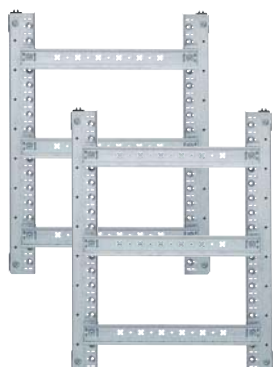
Designation	Characteristics	Pack qty.	Cat. ref.
Internal doors, sheet metal reversible delivered with fixing accessories mounting on slides with delivered fixing frame	FL101A, FL151A	1	FL541A
	FL102A, FL152A	1	FL542A
	FL103A, FL153A	1	FL543A
	FL104A, FL105A, FL154A, FL155A, FL204B, FL254B	1	FL544A
	FL106A, FL107A, FL156A, FL157A	1	FL545A
	FL108A, FL158A	1	FL546A
	FL109A, FL110A, FL159A, FL160A, FL209B, FL259B	1	FL547A
	FL111A, FL112A, FL161A, FL162A, FL213B, FL263B	1	FL548A
	FL300B, FL500B, FL310B, FL510B, FL320B, FL520B, FL330B, FL530B	1	FL590E
	FL305B, FL505B, FL325B, FL525B	1	FL600E
	FL113A, FL163A	1	FL549A
	FL114A, FL115A, FL164A, FL165A	1	FL550A
	FL117A, FL118A, FL167A, FL168A, FL216B, FL266B	1	FL551A
	FL119A, FL120A, FL169A, FL170A, FL221B, FL271B	1	FL552A
	FL116A, FL166A	1	FL553A
	FL121A, FL122A, FL171A, FL172A	1	FL554A
	FL123A, FL124A, FL173A, FL174A, FL229B, FL279B	1	FL555A
	FL580E could be installed in all the enclosures	1	FL580E
	FL581E could be installed in all the enclosures	1	FL581E
	FL582E could be installed in all the enclosures	1	FL582E
FL301B, FL501B, FL311B, FL511B, FL321B, FL521B, FL331B, FL531B	1	FL591E	
FL306B, FL506B, FL326B, FL526B	1	FL601E	
FL302B, FL502B, FL312B, FL512B, FL322B, FL522B, FL332B, FL532B	1	FL592E	
FL307B, FL507B, FL327B, FL527B	1	FL602E	
FL125A, FL126A, FL175A, FL176A	1	FL556A	
FL127A, FL128A, FL177A, FL178A	1	FL557A	
FL129A, FL179A	1	FL558A	
FL130A, FL180A	1	FL559A	

Main switchboards



FL647A

Designation	Characteristics	Pack qty.	Cat. ref.
Internal doors, polyester reversible delivered with fixing accessories mounting on slides with delivered fixing frame	FL104A, FL105A, FL154A, FL155A, FL204B, FL254B	1	FL643A
	FL109A, FL110A, FL159A, FL160A, FL209B, FL259B	1	FL644A
	FL111A, FL112A, FL161A, FL162A, FL213B, FL263B	1	FL645A
	FL117A, FL118A, FL167A, FL168A, FL216B, FL266B	1	FL646A
	FL119A, FL120A, FL169A, FL170A, FL221B, FL271B	1	FL647A
	FL123A, FL124A, FL173A, FL174A, FL229B, FL279B	1	FL649A
Functional uprights for the assembly of: - kit for modular equipment - kit for box section - solid panels - partial internal panels	for panel height x width: 350 x ⁽¹⁾ 300 mm - H mod. 300 mm 500 x ⁽¹⁾ 300 mm - H mod. 450 mm 500 x ⁽¹⁾ 400 mm - H mod. 450 mm 650 x ⁽¹⁾ 400 mm - H mod. 600 mm 650 x ⁽¹⁾ 500 mm - H mod. 600 mm	1 1 1 1 1	FL461A FL462A FL462A FL463A FL463A
fixed to the guide runners by means of brackets provided	800 x ⁽¹⁾ 500 mm - H mod. 750 mm 800 x ⁽²⁾ 600 mm - H mod. 750 mm 950 x ⁽²⁾ 600 mm - H mod. 900 mm	1 1 1	FL465A FL466A FL467A
prepared for vertical conduits: ⁽¹⁾ section 25 x 60 ⁽²⁾ section 40 x 60	950 x ⁽²⁾ 800 mm - H mod. 900 mm 1250 x ⁽²⁾ 600 mm - H mod. 1200 mm 1250 x ⁽²⁾ 800 mm - H mod. 1200 mm	1 1 1	FL467A FL468A FL468A
Functional chassis for modular equipment pre-assembled made up of: - 2 uprights - DIN guides - modular panels in resin - 4 fixing brackets are fixed to the guide runners by means of the brackets provided.	for panel height x width: 350 x 300 mm 24 ■, 2 rows of 12 ■, for steel enclosures only 350 x 300 mm 24 ■, 2 rows of 12 ■, for polyester boxes only 500 x 300 mm 36 ■, 3 rows of 12 ■ 500 x 400 mm 54 ■, 3 rows of 18 ■ 650 x 400 mm 72 ■, 4 rows of 18 ■	1 1 1 1 1	FL979A FL980A FL981A FL982A FL983A
Sliding guides	for polyester enclosures		FL672E



FL992A

Designation	Characteristics	Pack qty.	Cat. ref.
Equipment kits for modular products	FL204B, FL254B	1	FL990C
mounting on functional uprights made of :	FL104A, FL105A, FL154A, FL155A	2 rows (20 ■)	1 FL990A
- fixing frame	FL109A, FL110A, FL159A, FL160A, FL209B, FL259B	3 rows (30 ■)	1 FL991A
- 2 functional uprights for DIN rails	FL111A, FL112A, FL161A, FL162A, FL213B, FL263B	3 rows (48 ■)	1 FL992A
- 2 uprights to fix DIN rails	FL300B, FL500B, FL320B, FL520B	3 rows (69 ■)	1 FL990B
- DIN rails	FL305B, FL505B, FL325B, FL525B	3 rows (111 ■)	1 FL991B
- front plates with modular cut out h.150mm	FL117A, FL118A, FL167A, FL168A, FL216B, FL266B	4 rows (64 ■)	1 FL993A
	FL119A, FL120A, FL169A, FL170A, FL221B, FL271B	4 rows (88 ■)	1 FL994A
	FL121A, FL122A, FL171A, FL172A	5 rows (110 ■)	1 FL995A
	FL123A, FL124A, FL173A, FL174A, FL229B, FL279B	5 rows (130 ■)	1 FL996A
	FL301B, FL501B, FL321B, FL521B	5 rows (115 ■)	1 FL992B
	FL306B, FL506B, FL326B, FL526B	5 rows (185 ■)	1 FL993B
	FL125A, FL126A, FL175A, FL176A	6 rows (156 ■)	1 FL997A
	FL127A, FL128A, FL177A, FL178A	6 rows (222 ■)	1 FL998A
	FL302B, FL502B, FL322B, FL522B	7 rows (161 ■)	1 FL994B
	FL307B, FL507B, FL327B, FL527B	7 rows (259 ■)	1 FL995B
	FL129A, FL179A	8 rows (208 ■)	1 FL999A
	FL130A, FL180A	8 rows (296 ■)	1 FL000A
Kit for modular devices H150	for kits:	width:	
		300	1 FL361A
		400	1 FL362A
		500	1 FL363A
		600	1 FL364A
		800	1 FL365A
Kit for modular devices H200	for kits:	width:	
	FL992A, FL993A	400	1 FL366A
	FL994A, FL995A	500	1 FL367A
	FL996A, FL997A, FL 999A	600	1 FL368A
	FL991A, FL993A, FL995A, FL998A, FL000A	800	1 FL369A
Kit for main incomer 125/160A (modular)	width x height:		
	400 x 300 mm		1 FL371A
	500 x 300 mm		1 FL372A
	600 x 300 mm		1 FL373A
	800 x 300 mm		1 FL374A
Kit for main incomer 250A	width x height:		
	600 x 200 mm		1 FL380AH
	800 x 200 mm		1 FL381AH
	300 x 500 mm		1 FL391AH
	400 x 500 mm		1 FL392AH
	400 x 650 mm		1 FL393AH
Kit for main incomer 400/630A	width x height:		
	400 x 650 mm		1 FL399AH



FL323A

Designation	Characteristics	Pack qty.	Cat. ref.
Fixed partial mounting plates mounting on functional uprights	for kits:	width x height:	
	FL990A, FL991A	300 x 150 mm	1 FL311A
	FL992A, FL993A	400 x 150 mm	1 FL312A
		400 x 200 mm	1 FL322A
	FL994A, FL995A	500 x 150 mm	1 FL313A
		500 x 200 mm	1 FL323A
		500 x 300 mm	1 FL333A
	500 x 400 mm	1 FL343A	



FL325A

Adjustable partial mounting plates mounting on functional uprights for enclosures with a depth of 250 and 300mm	for kits:	width x height		
	FL993A	400 x 150 mm	1 FL314A	
		400 x 200 mm	1 FL324A	
	FL994A, FL995A	500 x 150 mm	1 FL315A	
		500 x 200 mm	1 FL325A	
		500 x 300 mm	1 FL335A	
		500 x 400 mm	1 FL345A	
	FL996A, FL997A,	600 x 150 mm	1 FL316A	
		FL999A	600 x 200 mm	1 FL326A
	600 x 300 mm		1 FL336A	
	600 x 400 mm		1 FL346A	
	FL990B, FL992B,		600 x 150 mm	1 FL610E
		FL994B	600 x 200 mm	1 FL620E
			600 x 300 mm	1 FL630E
	600 x 400 mm		1 FL640E	
	FL998A, FL000A,	800/850 x 150 mm	1 FL317A	
	FL991B, FL993B,	800/850 x 200 mm	1 FL327A	
	FL995B	800/850 x 300 mm	1 FL337A	
		800/850 x 400 mm	1 FL347A	



FL712E

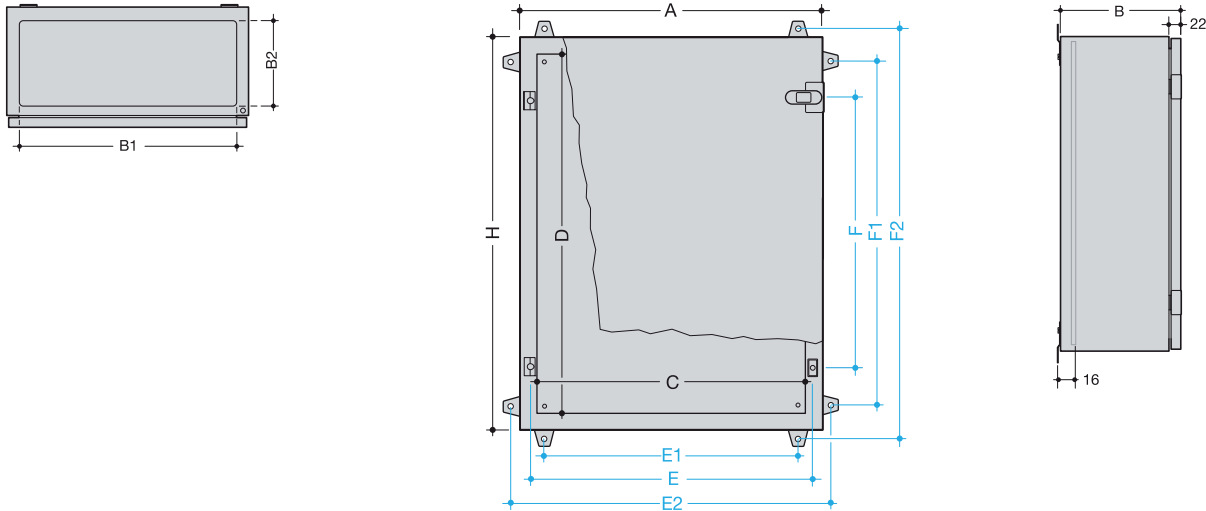
Designation	Characteristics	Pack qty.	Cat. ref.
Plain front plate fixed by screws of 1/4 turn to replace modular covers	height 50 mm for kits :		
	FL992A, FL993A	1	FL702E
	FL994A, FL995A	1	FL703E
	FL996A, FL997A, FL999A	1	FL704E
	FL998A, FL000A, FL991B, FL993B, FL995B	1	FL705E
	height 150 mm		
	FL990B, FL992B, FL994B	1	FL710E
	FL990A, FL991A, FL990C	1	FL711E
	FL992A, FL993A	1	FL712E
	FL994A, FL995A	1	FL713E
	FL996A, FL997A, FL999A	1	FL714E
	FL998A, FL000A, FL991B, FL 993B, FL 995B	1	FL715E
	height 200 mm		
FL992A, FL993A	1	FL722E	
FL 994A, FL995A	1	FL723E	
FL996A, FL997A, FL999A	1	FL724E	
FL998A, FL000A, FL991B, FL993B, FL995A	1	FL725E	
height 300 mm			
FL994A, FL995A	1	FL733E	
FL996A, FL997A, FL999A	1	FL734E	
FL998A, FL000A, FL991B, FL993B, FL995B	1	FL735E	
DIN rail for terminals adjustable inclination : 30° mounting on functional uprights	for kits:		
	FL992A, FL993A	1	FL500A
	FL994A, FL995A	1	FL501A
	FL996A, FL997A, FL999A	1	FL502A
	FL998A, FL000A, FL991B, FL993B, FL995B	1	FL503A
	FL990B, FL992B, FL994B	1	FL500E
Support for earth and neutral terminals	for enclosures	width:	
		300 mm	FL492A
		400 mm	FL493A
		500 mm	FL494A
		600 mm	FL495A
	800 mm	FL496A	



FL 500A

	Designation	Characteristics	Pack qty.	Cat. ref.	
	Mounting plate brackets	4 brackets delivered with fixing screws	1	FL450A	
FL450A					
	Slotted cable duct horizontal and vertical	width x depth 25 x 60 mm 40 x 60 mm	length 2m length 2m	2 2	FL70Z FL71Z
FL70Z					
	Cable guide fixing with UZ01V1	section 2200 mm ² section 1600 mm ²	1 set 1 set	UZ25V1 UZ25V2	
		1 set = 20 pieces			
	Fixing bracket for cable guide	clips on rail 1 set = 20 pieces	1 set	UZ01V1	
	Cable retainer plastic cover	length 2m		UT50C	
	Blanking clip	pre-cut to 1/2 ■ RAL 7035	width. 4 ■ 6	FL871Z	
	Label holder for front plates	- label holder - label	width. 24 ■	JE003	
	Ventilating fan for enclosures reinforced polyamide colour RAL 7035 / IP54 supply 230V	20W rotation/mín. 2650/3000 airflow 57m ³ /h w. 150 x h. 150 x d. 71 mm	1	FL210Z	
FL212Z		20W rotation/mín. 2650/3000 airflow 115m ³ /h w. 250 x h. 250 x d. 113 mm	1	FL212Z	
		29W rotation/mín. 2500 airflow 240m ³ /h w. 250 x h. 250 x d. 121 mm	1	FL214Z	
	Air vent with filter IP54 colour RAL7035	67W rotation/mín. 2480/2650 airflow 520m ³ /h w. 325 x h. 325 x d. 161 mm	1	FL216Z	
FL220Z		dimensions: w. 150 x h. 150 x d. 28 mm	1	FL220Z	
		w. 250 x h. 250 x d. 31 mm	1	FL224Z	
		w. 325 x h. 325 x d. 161 mm	1	FL226Z	
	Filter	for FL220Z for FL224Z for FL226Z	2 2 2	FL230Z FL234Z FL236Z	
	Heater supply	15W 30W 45W 80W 150W	1 1 1 1 1	FL252Z FL253Z FL254Z FL255Z FL256Z	
FL258Z					
FL259Z					
	Thermostat to control temperature in the enclosure, changeover contact	fixing on DIN rail settings -10° to 80° C w. 29 x h. 68 x d. 45 mm			
		to control condensation contact NC	1	FL258Z	
		to control fan-contact NO	1	FL259Z	
	Spray paint	colour RAL 7035	1	FL672Z	
FL672Z					

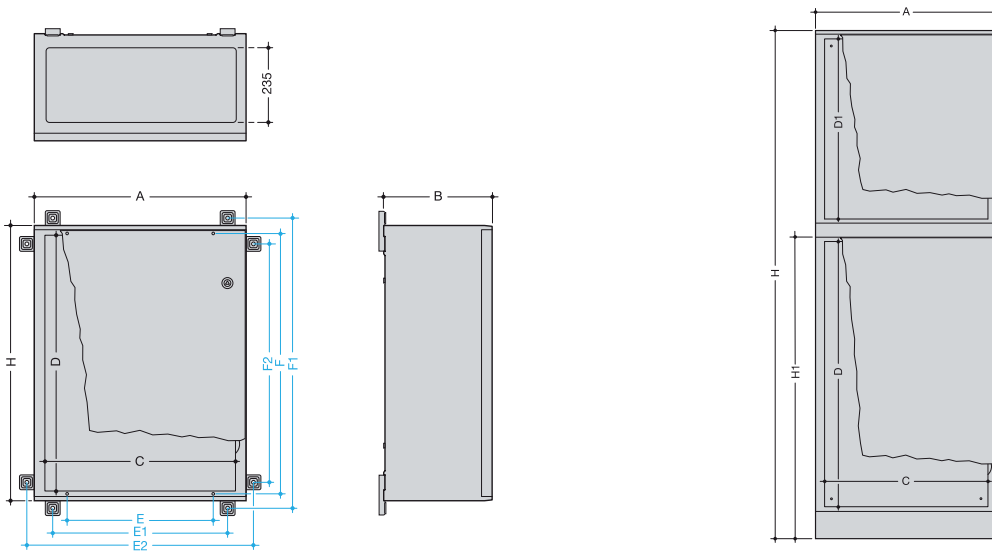
Metal enclosure Orion Plus



Dimensions

references		number of rows	enclosure								external fixing			
plain door	transp.door		L	A	B	B1	B2	C	D	E1	E2	F1	F2	
FL101A	FL151A	-	200	250	160	145	80	150	200	160	270	170	282	
FL102A	FL152A	-	250	300	160	195	80	200	250	210	320	220	332	
FL103A	FL153A	-	300	300	160	245	80	250	250	260	370	220	332	
FL104A	FL154A	2	300	350	160	245	80	250	300	260	370	270	382	
FL105A	FL155A	2	300	350	200	245	120	250	300	260	370	270	382	
FL106A	FL156A	-	300	400	160	245	80	250	350	260	370	320	432	
FL107A	FL157A	-	300	400	200	245	120	250	350	260	370	320	432	
FL108A	FL158A	-	400	400	200	345	120	350	350	360	470	320	432	
FL109A	FL159A	3	300	500	160	245	80	250	450	260	370	420	532	
FL110A	FL160A	3	300	500	200	245	120	250	450	260	370	420	532	
FL111A	FL161A	3	400	500	160	345	80	350	450	360	470	420	532	
FL112A	FL162A	3	400	500	200	345	120	350	450	360	470	420	532	
FL113A	FL163A	-	500	500	200	445	120	450	450	460	570	420	532	
FL114A	FL164A	-	400	600	200	345	120	350	550	360	470	520	632	
FL115A	FL165A	-	400	600	250	345	170	350	550	360	470	520	632	
FL116A	FL166A	-	600	600	250	545	170	550	550	560	670	520	632	
FL117A	FL167A	4	400	650	200	345	120	350	600	360	470	570	682	
FL118A	FL168A	4	400	650	250	345	170	350	600	360	470	570	682	
FL119A	FL169A	4	500	650	200	445	120	450	600	460	570	570	682	
FL120A	FL170A	4	500	650	250	445	170	450	600	460	570	570	682	
FL121A	FL171A	5	500	800	200	445	120	450	750	460	570	720	832	
FL122A	FL172A	5	500	800	250	445	170	450	750	460	570	720	832	
FL123A	FL173A	5	600	800	250	545	170	550	750	560	670	720	832	
FL124A	FL174A	5	600	800	300	545	220	550	750	560	670	720	832	
FL125A	FL175A	6	600	950	250	545	170	550	900	560	670	870	982	
FL126A	FL176A	6	600	950	300	545	220	550	900	560	670	870	982	
FL127A	FL177A	6	800	950	250	745	170	750	900	760	870	870	982	
FL128A	FL178A	6	800	950	300	745	220	750	900	760	870	870	982	
FL129A	FL179A	8	600	1250	250	545	170	550	1200	560	670	1170	1282	
FL130A	FL180A	8	800	1250	300	745	220	750	1200	760	870	1170	1282	

orion plus polyester enclosures

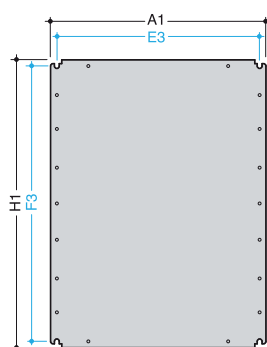


note: plan for "A + 25 mm"
for door opening

Dimensions

References		nr of rows	enclosures										in.fixing		external fixing			
plain door	transp. door		L	A	A1	A2	B	C	D	D1	E	F	E1	E2	F1	F2		
FL204B	FL254B	2	300	500	-	-	160	250	300	-	219	258	339	339	269	389		
FL209B	FL259B	3	300	500	-	-	200	250	450	-	219	408	339	339	419	539		
FL213B	FL263B	3	400	500	-	-	200	350	450	-	319	408	439	439	419	539		
FL216B	FL266B	4	400	650	-	-	200	350	600	-	319	558	439	439	569	689		
FL221B	FL271B	4	500	650	-	-	250	450	600	-	419	558	539	539	569	689		
FL229B	FL279B	5	600	800	-	-	300	550	750	-	519	708	639	639	719	839		
FL300B	FL500B	3	600	550	-	-	300	500	450	-	-	-	-	-	-	-		
FL301B	FL501B	5	600	850	-	-	300	500	750	-	-	-	-	-	-	-		
FL302B	FL502B	7	600	1150	-	-	300	500	1050	-	-	-	-	-	-	-		
FL305B	FL505B	3	850	550	-	-	300	750	450	-	-	-	-	-	-	-		
FL306B	FL506B	5	850	850	-	-	300	750	750	-	-	-	-	-	-	-		
FL307B	FL507B	7	850	1150	-	-	300	750	1050	-	-	-	-	-	-	-		
FL310B	FL510B	3	1100	550	-	-	300	1000	450	-	-	-	-	-	-	-		
FL311B	FL511B	5	1100	850	-	-	300	1000	750	-	-	-	-	-	-	-		
FL312B	FL512B	7	1100	1150	-	-	300	1000	1050	-	-	-	-	-	-	-		
FL320B	FL520B	3	600	600	-	-	300	500	450	-	-	-	-	-	-	-		
FL321B	FL521B	5	600	900	-	-	300	500	750	-	-	-	-	-	-	-		
FL322B	FL522B	7	600	1200	-	-	300	500	1050	-	-	-	-	-	-	-		
FL325B	FL525B	3	850	600	-	-	300	750	450	-	-	-	-	-	-	-		
FL326B	FL526B	5	850	900	-	-	300	750	750	-	-	-	-	-	-	-		
FL327B	FL527B	7	850	1200	-	-	300	750	1050	-	-	-	-	-	-	-		
FL330B	FL530B	3	1100	600	-	-	300	1000	450	-	-	-	-	-	-	-		
FL331B	FL531B	5	1100	900	-	-	300	1000	750	-	-	-	-	-	-	-		
FL332B	FL532B	7	1100	1200	-	-	300	1000	1050	-	-	-	-	-	-	-		
FL340B	-	3+3	600	1150	550	550	300	500	450	-	-	-	-	-	-	-		
FL342B	-	5+3	600	1450	850	550	300	500	750	450	-	-	-	-	-	-		
FL344B	-	7+3	600	1750	1150	550	300	500	1050	450	-	-	-	-	-	-		
FL346B	-	5+5	600	1750	850	850	300	500	750	750	-	-	-	-	-	-		
FL348B	-	7+5	600	2050	1150	850	300	500	1050	750	-	-	-	-	-	-		
FL350B	-	3+3	850	1150	550	550	300	750	450	450	-	-	-	-	-	-		
FL352B	-	5+3	850	1450	850	550	300	750	750	450	-	-	-	-	-	-		
FL354B	-	7+3	850	1750	1150	550	300	750	1050	450	-	-	-	-	-	-		
FL356B	-	5+5	850	1750	850	850	300	750	750	750	-	-	-	-	-	-		
FL358B	-	7+5	850	2050	1150	850	300	750	1050	750	-	-	-	-	-	-		
FL360B	-	3+3	1100	1500	550	550	300	1000	450	450	-	-	-	-	-	-		
FL362B	-	5+3	1100	1450	850	550	300	1000	750	450	-	-	-	-	-	-		
FL364B	-	7+3	1100	1750	1150	550	300	1000	1050	450	-	-	-	-	-	-		
FL366B	-	5+5	1100	1750	850	850	300	1000	750	750	-	-	-	-	-	-		
FL368B	-	7+5	1100	2050	1150	550	300	1000	1050	750	-	-	-	-	-	-		

Mounting plate



Dimensions

plain plate	perforated plate	size		for enclosures	insulated	size	
		L1	A1			L1	A1
FL401A	-	143	230	FL101A, FL151A	-	-	-
FL402A	FL472A	193	280	FL102A, FL152A	FL422A	195	235
FL403A	-	243	280	FL103A, FL153A	-	-	-
FL404A	FL473A	243	330	FL104A, FL105A, FL154A, FL155A, FL204B, FL254B	FL423A	245	285
FL405A	-	243	380	FL106A, FL107A, FL156A, FL157A	-	-	-
FL406A	-	343	380	FL108A, FL158A	-	-	-
FL407A	FL474A	243	480	FL109A, FL110A, FL159A, FL160A, FL209B, FL259B	FL424A	245	285
FL408A	FL475A	343	480	FL111A, FL112A, FL161A, FL162A, FL213B, FL263B	FL425A	245	435
FL510E	-	493	480	FL300B, FL500B, FL320B, FL520B	FL550E	495	435
FL520E	-	743	480	FL305B, FL505B, FL325B, FL525B	FL560E	745	435
FL530E	-	993	480	FL310B, FL510B, FL330B, FL530B	FL570E	995	435
FL409A	-	443	480	FL113A, FL163A	-	-	-
FL410A	-	343	580	FL114A, FL115A, FL164A, FL165A	-	-	-
FL411A	-	543	580	FL116A, FL166A	-	-	-
FL412A	FL476A	343	630	FL117A, FL118A, FL167A, FL168A, FL216B, FL266B	FL426A	345	585
FL413A	FL477A	443	630	FL119A, FL120A, FL169A, FL170A, FL221B, FL271B	FL427A	445	585
FL414A	FL478A	443	780	FL121A, FL122A, FL171A, FL172A	FL428A	445	735
FL415A	FL479A	543	780	FL123A, FL124A, FL173A, FL174A, FL229B, FL279B	FL429A	545	735
FL511E	-	493	780	FL301B, FL501B, FL321B, FL521B	FL551E	495	735
FL521E	-	743	780	FL306B, FL506B, FL326B, FL526B	FL561E	745	735
FL531E	-	993	780	FL311B, FL511B, FL331B, FL531B	FL571E	995	735
FL512E	-	493	1080	FL302B, FL502B, FL322B, FL522B	FL552E	495	1035
FL522E	-	693	1080	FL307B, FL507B, FL327B, FL527B	FL562E	745	1035
FL 532E	-	993	1080	FL312B, FL512B, FL332B, FL532B	FL572E	995	1035
FL416A	FL480A	543	930	FL125A, FL126A, FL175A, FL176A	FL430A	545	885
FL417A	FL481A	743	930	FL127A, FL128A, FL177A, FL178A	FL431A	745	885
FL418A	FL482A	543	1230	FL129A, FL179A	FL432A	545	1185
FL419A	FL483A	743	1230	FL130A, FL180A	FL433A	745	1185

Power dissipated

IEC standard EN 60439-1 (IEC 17-13/1) standard in Table 7 shows the list of checks and tests to be carried out on BT panel types AS (series equipment subject to type testing) and ANS (series equipment partially subject to type testing).

One of the characteristics to be monitored is the overtemperature limit check to ensure that the temperatures specified in Table 3 of the standard are not exceeded for the various parts of the panel.

IEC standard EN 60439-1 requires that for ANS type panels the overtemperature limit check can be carried out by means of extrapolation of the series panels (AS) that have passed the type testing.

The extrapolation method laid down by the standard is set out in the IEC 890 publication corresponding to IEC standard 17-43 "Overtemperature determination method, by extrapolation, for non-standard (ANS) protection and control equipment assemblies for low tension (BT panels)".

To make the overtemperature limit check easier, Hager Lume have drawn up a series of tables where the maximum power values that can be dissipated P.Max (W) are shown for all the Lume panels.

These values have been determined so as to obtain the overtemperature values specified in Table 3 of IEC standard EN 60439-1 for accessible external envelopes and coverings (30K for metal surfaces and 40K for insulating surfaces) for the upper part of the panel.

The maximum power values shown in the tables that can be dissipated by the metalwork are valid for the mounting conditions of the panel considered and for the overtemperature values halfway up \varnothing t 0.5 and in the upper part \varnothing t 1.0 indicated.

IP 65 standard metal panels

Article		Dimensional data (mm)	Laid	\varnothing T 0,5 (K)	\varnothing T 1,0 (K)	P. max (W)
FL102A	FL152A	300 x 250 x 160	Walls	25,0	30	28
FL104A	FL154A	350 x 300 x 160	Walls	25,0	30	35
FL105A	FL155A	350 x 300 x 200	Walls	24,9	30	39
FL109A	FL159A	500 x 300 x 160	Walls	24,3	30	44
FL110A	FL160A	500 x 300 x 200	Walls	24,3	30	49
FL111A	FL161A	500 x 400 x 160	Walls	24,7	30	54
FL112A	FL162A	500 x 400 x 200	Walls	24,9	30	60
FL117A	FL167A	650 x 400 x 200	Walls	24,3	30	71
FL118A	FL168A	650 x 400 x 250	Walls	24,5	30	80
FL119A	FL169A	650 x 500 x 200	Walls	24,8	30	84
FL120A	FL170A	650 x 500 x 250	Walls	24,9	30	93
FL121A	FL171A	800 x 500 x 200	Walls	24,4	30	97
FL122A	FL172A	800 x 500 x 250	Walls	24,5	30	107
FL123A	FL173A	800 x 600 x 250	Walls	22,0	30	100
FL124A	FL174A	800 x 600 x 300	Walls	22,7	30	114
FL125A	FL175A	950 x 600 x 250	Walls	21,4	30	113
FL126A	FL176A	950 x 600 x 300	Walls	21,8	30	127
FL127A	FL177A	950 x 800 x 250	Walls	22,1	30	148
FL128A	FL178A	950 x 800 x 300	Walls	22,8	30	170
FL129A	FL179A	1250 x 600 x 250	Walls	20,0	30	134,5
FL130A	FL180A	1250 x 800 x 300	Walls	21,3	30	211



Description

Complete desk with fixed back and sides:

- structure in 15/10 sheet steel,
- plain doors, plates and cable entry with continuous polyester seals,
- reversible plain door in 15/10 sheet steel with rigid profile and interchangeable lock with triangular inserts,
- Rotary handle as accessory,
- Double plain doors for L1200

- enclosures are reversible and lock in mounted on the left door,
- enclosure is in 15/10 sheet steel equipped with 2 pneumatic shock absorbers for the opening and 2 lever locks with triangular inserts, rotary handle as accessory,
- fixed internal panel to be installed from the front in 20/10 zinc covered sheet steel,
- Integrated plinth h100mm with lateral locks and holes for floor

- mounting,
- plain cable entry plate in 15/10 sheet steel,
- epoxy polyester powder coating, RAL 7035,
- Protection class: IP55 - IK10,
- Nominal current of use: 400V,
- short-circuit current rating : 10kA,
- for indoor installation,
- max. operating temperature: +40°C.

Main switchboards

Designation	Characteristics	Cat. ref.
-------------	-----------------	-----------



FL652CD

Monobloc control desks

- total height: 1000mm
- control desk height: 200mm
- body height: 700mm
- plinth height: 100mm
- completed with fixed internal panels
- base completely closed
- lockable door and desk panel with triangular insert
- 1 door for width 600, 800 and 1000mm
- double door for width 1200mm

w.600 x d.400 mm	FL650CD
w.800 x d.400 mm	FL652CD
w.1000 x d.400 mm	FL654CD
w.1200 x d.400 mm	FL656CD

Ref.	height (mm)	width (mm)	depth (mm)	mounting	ΔT 0,5 (K)	ΔT 1,0 (K)	P. max (W)
FL650CD	1000	600	400	floor - wall	22,9	30	150
FL652CD	1000	800	400	floor - wall	23,7	30	200
FL654CD	1000	1000	400	floor - wall	23,7	30	250
FL656CD	1000	800	400	floor - wall	23,7	30	200

Main incomers

from 16 to 1600 A

Allow the connection, protection, breaking and switching in the low voltage distribution boards. The range includes circuit breakers, main switches and changeover switches from 16 to 1600 A. The offer is completed by earth leakage relays and torroids to build a main protection with adjustable setting for your installation.



MCCBs and trip-free switches

- x160	C.12
- x250	C.25
- h250	C.38
- h400-h630	C.51
- h1000	C.68
- h1600	C.80

load break switches	C.100
---------------------	-------

earth leakage relays and torroids	C.107
-----------------------------------	-------

changeover switches

- manual	C.111
- motorized	C.116



h3 MCCBs and trip-free switches 16 to 1600 A

Easy mounting and safety

The new **h3** range of MCCBs provides safe and easy solutions for low voltage electrical circuits protection. The state of the art circuit breakers offers both designers and installers wide range of features and benefits.

Special attention has been given to ergonomics, especially with the integration of these devices in the TP&N and panelboard.



Your benefits:

- Easy to install
- Quick, easy and safety mounting of accessories
- Wide range of rated current ratings and breaking capacities
- Calibrated at 50 Deg centigrade
- Trip-free switches

Technical data :

- Comply with IEC 60947-2
- 6 frame sizes: x160, x250, h250, h630, h1000, h1600
- Breaking capacity: 18, 25, 40, 50, 65, 70 kA
- Thermal magnetic and electronic trip units
- 1 pole to 4 poles
- Current limiting type
- Complete range of accessories
- International certification and approvals

Expert tips

1



Design by Hager
In harmony with Hager enclosures and modular products.

5



Visibility of auxiliaries fitted
Indicates type of auxiliary mounted in breaker.

2



Electronic trip unit (LSI)
Is permitting total selectivity and generator protection.

6



Integrated padlocking facility
Nice solution for maintenance.

3



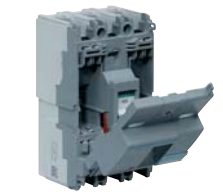
Breaking capacity
18 to 70kA, Icu 415V AC, covers all applications.

7



Complete range of accessories
Rotary handles, padlocks, motors, terminal covers.

4



Easy mounting of auxiliaries
Easy opening of secondary cover, clip-on type auxiliaries.

8



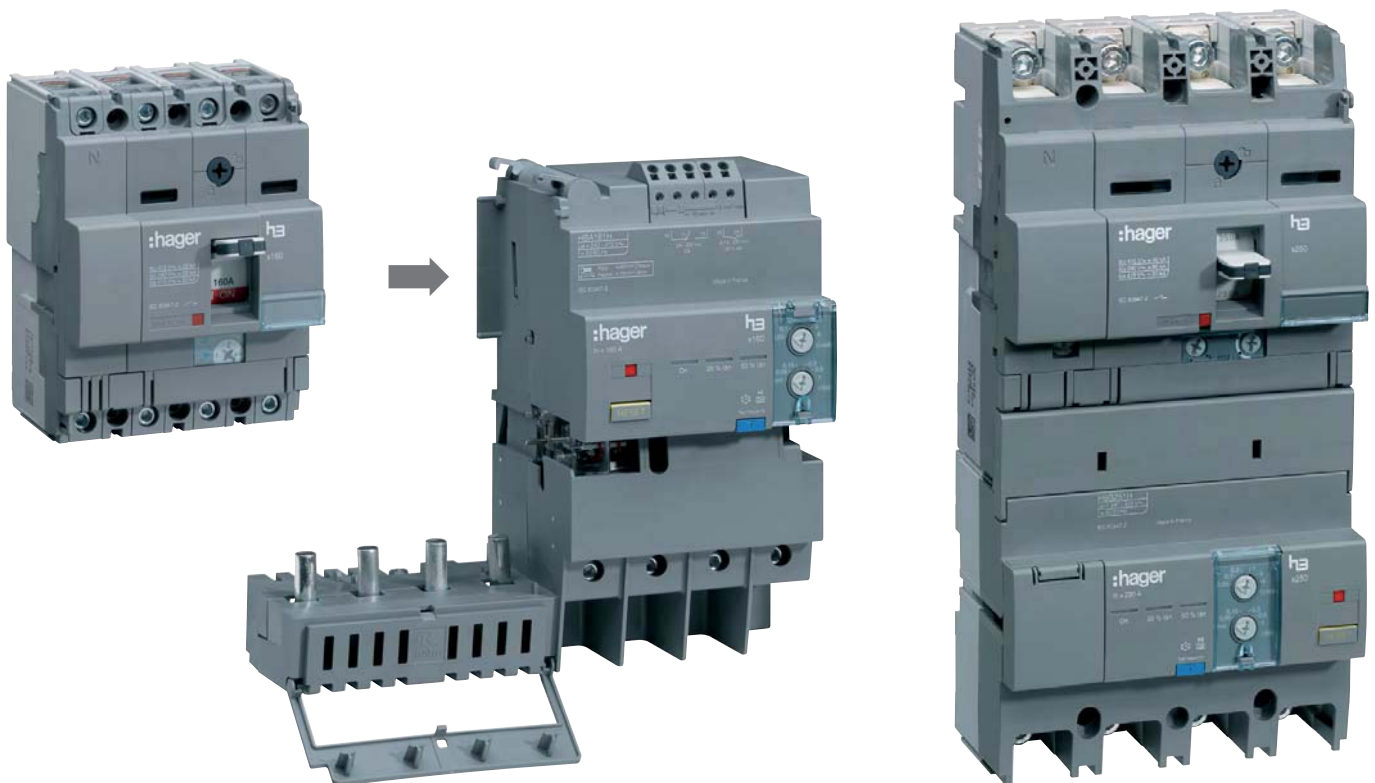
Flexible connection
Collar terminals, front and rear connections, straight connections, spreaders ...

h3 add-on blocks 16 to 1600 A

Easy mounting and safety

Designed to complete the MCCBs and trip-free switches range, the h3 residual current add-on blocks feature:

- performance: high immunity A type for standard versions, adjustable product...
- Safety: default current gradually displayed, class II...
- Ease of use: drawer system, system avoids the omission of terminal tightening, Quick Connect...



Your benefits:

- Easy to install
- Safety to use
- Time saving
- Design matches with modular protection devices

Technical data :

- 3 frame sizes: x160, x250, h630
- Double isolation class II
- Type A reinforced immunity
- Fixed 300mA version for x160
- Sensitivity and time delay settings

Expert tips

1



Drawer system for mounting on x160

Quick and safe to mount, thanks to the system avoiding the terminal tightening omission.

4



High performance

Gradual display of the default current allows preventive action before tripping.

2



Connections

for the information report via Quick Connect terminals: fast and long term quality connections.

5



Safe connection MCCB / add-on block

- Class II: terminal cover avoid direct contacts.

3



A and HI type are standard

High detection performance product:
- detects sinusoidal alternating currents and residual pulsating currents
- is protected against nuisance tripping caused by transient voltages

6



Pre-mounted connection screws

Simplified implementation of the add-on blocks:
- time saving
- avoid part loosening.

Frame	x160				x250			h250 TM	
Product	Switch	MCCB			Switch	MCCB		MCCB	
Reference	HCA	HDA	HHA	HNA	HCB	HHB	HNB	HHG	
Number of poles	[No.]	3-4	1-2-3-4	1-2-3-4	3-4			3-4	
Electrical characteristics									
Rated current	In [A]	160				250		250	
Current rated range	[A]	125-160				16-125 (1P), 16-160 (2,3,4P)	250		100-250
Rated service voltage, (AC)	Ue [V]	220-440				220-440		220-690	
Frequency	f [Hz]	50/60				50/60		50/60	
Rated insulation voltage	Ui [V]	800				800		800	
Rated impulse withstand voltage	Uimp [kV]	8				8		8	
Rated ultimate short-circuit breaking capacity, (Icu)									
(AC) 50-60 Hz 220/230 V	Icu [kA]	-	25	35	85	-	35	85	
(AC) 50-60 Hz 380/415 V	Icu [kA]	-	18	25	40	-	25	40	
(AC) 50-60 Hz 480/500/525 V	Icu [kA]	-	-	-	-	-	-	10	
(AC) 50-60 Hz 660/690 V	Icu [kA]	-	-	-	-	-	-	-	
(DC) 250 V - 2 poles in series	Icu [kA]	-	10	10	10	-	9	9	
Rated service short-circuit breaking capacity, (Ics)									
(AC) 50-60 Hz 220/230 V	Ics [kA]	-	25	25	40	-	25	40	
(AC) 50-60 Hz 380/415 V	Ics [kA]	-	18	20	20	-	20	20	
(AC) 50-60 Hz 480/500/525 V	Ics [kA]	-	-	-	-	-	-	7,5	
(AC) 50-60 Hz 660/690 V	Ics [kA]	-	-	-	-	-	-	-	
(DC) 250 V - 2 poles in series	Ics [kA]	-	5	5	5	-	5	5	
Rated short-circuit making capacity	Icm [kA]	2,8	-	-	-	9	-	-	
Rated short-time withstand current for 1s	Icw [kA]	2	-	-	-	3	-	-	
Category of use (EN 60947-2)		-	A	-	-	-	A	A	
Calibration temperature		-	50°C	-	-	-	50°C	50°C	
Derating	40°C	-	100%	-	-	-	100%	100%	
	50°C	-	100%	-	-	-	100%	100%	
	55°C	-	95%	-	-	-	94%	94%	
	60°C	-	93%	-	-	-	91%	91%	
	65°C	-	90%	-	-	-	88%	88%	
Suitability for isolation		ok				ok		ok	
Electric endurance in number of cycles		10000				10000		10000	
Mechanical endurance in number of operations		20000				20000		30000	
Operating temperature		-25 to +70°C				-25 to +70°C		-25 to +70°C	
Storage temperature		-35 to +70°C				-35 to +70°C		-35 to +70°C	
Power loss (at In for 3P)	[W]	39				60		65	
Reference standard		IEC 60947-3		IEC 60947-2		IEC 60947-3	IEC 60947-2		
Releases: switch		ok				ok		-	
Releases: TM (thermomagnetic)		-	ok		-	ok		ok	
T fixed, M fixed		-	ok		-	ok		-	
T adjustable, M fixed		-	ok		-	-		-	
T adjustable, M adjustable		-	-		-	ok		ok	
Thermal adjustment value		-	0,63 to 1 x In		-	0,63 to 1 x In		0,63 to 1 x In	
Magnetic adjustment value		-	-		-	6-8-10-13 x In (200A) 5-7-9-11 In (250A)		6-8-10-13 x In	
Releases: LSI (electronic)		-	-		-	-		-	
Long delay		-	-		-	-		-	
Short delay		-	-		-	-		-	
Time delay		-	-		-	-		-	
Terminations									
Standard terminal type		cage				lugs		lugs	
Maximum terminal capacity		95 mm ²				185 mm ² (cage)		120 mm ² (cage)	
Terminal width	mm	-				25		25	
Terminal shields		ok				ok		ok	
Cage terminal		integrated				ok		ok	
Extended connections		ok				ok		ok	
Rear connections		no				ok		ok	
Dimensions									
Height	mm	130				165		165	
Width	1P mm	-	25	-	-	-		-	
	2P mm	-	50	-	-	-		-	
	3P mm	75				105		105	
	4P mm	100				140		140	
Depth	mm	68				68		68	
Weight	1P kg	-	0,29	-	-	-		-	
	2P kg	-	0,48	-	-	-		-	
	3P kg	0,715				1,3		1,5	
	4P kg	0,95				1,6		1,9	

		h250 LSI		h400		h630			h1000			h1600		
		MCCB		MCCB		Switch	MCCB		Switch	MCCB		Switch	MCCB	
HNG	HEG	HNC	HEC	HHD	HND	HCD	HND	HED	HCE	HNE	HEE	HCF	HNF	HEF
		3-4		3-4		3-4			3-4			3-4		
		250		400		630			1000			1600		
		40-125-250		250-400		400-630	250-400-630		630-800-1000			1250-1600		
		220-690		220-690		220-690			220-690			220-690		
		50/60		50/60		50/60			50/60			50/60		
		800		800		800			800			800		
		8		8		8			8			8		
85	85	85	100	35	85	-	85	100	-	85 (800A) 75 (1000A)	100	-	100	100
50	65	50	70	25	50	-	50	70	-	50	70	-	50	70
25	25	25	45	10	30	-	30	30	-	30	30	-	45	65
7,5	7,5	7,5	20	7,5	20	-	20	20	-	20	20	-	25	45
40	40	-	-	25	40	-			-	-	-	-	-	-
65	85	85	100	35	85	-	85	85	-	85 (800A) 75 (1000A)	100 (800A) 75 (1000A)	-	75	75
25	36	25	70	25	50	-	50	50	-	50	50	-	50	50
25	25	10	45	10	30	-	30	30	-	30	30	-	45	50
7,5	7,5	7,5	15	7,5	15	-	15	15	-	20	20	-	25	34
40	40	-	-	25	40	-			-	-	-	-	-	-
		-	-	-	-	9	-	-	20	-	-	45	-	-
		-	-	-	-	5 (0,3s)	-	-	10 (0,3s)	-	-	20 (0,3s)	-	-
		A		A		-	B(250-400A) - A(630A)		-	B(800A) - A(1000A)		-	B	
		40°C		50°C		-	40°C		-	40°C		-	40°C	
		100%		100%		-	100%		-	100%		-	100%	
		95%		100%		-	100%		-	100%		-	100%	
		90%		95%		-	95%		-	95%		-	95%	
		80%		92%		-	90%		-	90%		-	90%	
		80%		89%		-	80%		-	80%		-	80%	
		ok		ok		ok			ok			ok		
		10000		4500		4500			4500			4500		
		30000		15000		15000			15000			15000		
		-25 to +70°C		-25 to +70°C		-25 to +70°C			-25 to +70°C			-25 to +70°C		
		-35 to +70°C		-35 to +70°C		-35 to +70°C			-35 to +70°C			-35 to +70°C		
		75		75		150			150			170		
		IEC 60947-2		IEC 60947-2		IEC 60947-3	IEC 60947-2		IEC 60947-3	IEC 60947-2		IEC 60947-3	IEC 60947-2	
		-		-		ok	-		ok	-		ok	-	
		-		ok		-			-			-		
		-		-		-			-			-		
		-		-		-			-			-		
		-		ok		-			-			-		
		-		0,63 to 1 x In		-			-			-		
		-		6-8-10-12 x In		-			-			-		
		-		-		-	ok		-	ok		-	ok	
		0,4 to 1 x Ir		-		-	0,4 to 1 x Ir		-	0,4 to 1 x Ir		-	0,4 to 1 x In	
		2,5 to 10 x Ir		-		-	2,5 to 10 x Ir (250-400A) 2,5 to 8 x Ir (630A)		-	2,5 to 10 x Ir (800A) 2,5 to 8 x Ir (1000A)		-	2,5 to 10 x Ir	
		0,1 - 0,2s		-		-	0,1 - 0,2s		-	0,1 - 0,2s		-	0,1 - 0,2s	
		lugs		lugs		lugs			lugs			lugs		
		120 mm ² (cage)		240 mm ² (cage)		-			-			-		
		25		30		30			45			45		
		ok		ok		ok			ok			ok		
		ok		ok		-			-			-		
		ok		ok		integrated			integrated			integrated		
		ok		ok		ok			ok			ok		
		165		260		260			273/433			370/570		
		-		-		-			-			-		
		-		-		-			-			-		
		105		140		140			210			210		
		140		185		185			280			280		
		97		97		97			99,5			140		
		-		-		-			-			-		
		-		-		-			-			-		
		2,5		4,2		4,3			11			27		
		3,3		5,6		5,7			14,8			31		

Main incomers

Product Frame		Add-on blocks h3			
		x160	x160	x250	h630
Number of poles		3, 4	3, 4	4	4
Tripping access		mechanical	mechanical	mechanical	mechanical
Standards CEI/EN 60947-2 appendix B		ok	ok	ok	ok
Electrical characteristics					
Max rated current (40°) In A	In	125A	125 - 160A	160 - 250A	400A - 500A
Rated service voltage Ue V AC (50/60Hz)	Ue	240-415V	240-415V	240-415V	240-415V
Mechanical characteristics					
Top and bottom supply		ok	ok	ok	ok
For tripping, no additional external electrical sources		ok	ok	ok	ok
Possible operating with 2 active phases		ok	ok	ok	ok
Settings					
Sensitivity I Δ n	I Δ n (A)	300mA	0.03, 0.1, 0.3, 1, 3, 6A	0.03, 0.1, 0.3, 1, 3, 6A	0.03, 0.1, 0.3, 1, 3, 6A
Time delay Δ t	Δ t (s)	inst.	inst., 0.06, 0.15, 0.3, 0.5, 1	inst., 0.06, 0.15, 0.3, 0.5, 1	inst., 0.06, 0.15, 0.3, 0.5, 1
Max. opening time	ms	10	10	10	10
Delay add-on block is not possible if I Δ n = 30mA		/	ok	ok	ok
Selective product		no	ok	ok	ok
Mechanical test button		ok	ok	ok	ok
Isolating test without cable removal		ok	ok	ok	ok
Electrical test button		ok	ok	ok	ok
Reset button		ok	ok	ok	ok
Sealable setting button		no	ok	ok	ok
Isolation level signaling by led 25 and 50%		no	ok	ok	ok
In running signalisation by led		no	ok	ok	ok
Residual default signaling contact		ok	ok	ok	ok
Signaling contact 50% I Δ n		no	ok	ok	ok
Anti-transient	type AC	ok	ok	ok	ok
Pulsating current	type A	ok	ok	ok	ok
High immunity	type HI	yes	yes	yes	yes
-25°C		ok	ok	ok	ok
Accessories and connection					
Steel terminal cage (x3/x4)		ok (included)	ok (included)	accessories	accessories
Connection by lugs		no	no	ok	ok
Extended connections (x4)		ok	ok	ok	ok
Spreaders (x4)		ok	ok	ok	ok
Terminal covers (3P/4P)		no	no	ok	ok
Interphase barriers (x3)		ok	ok	ok	ok
Rigid cables connection capacity mm ²		4 - 95	4 - 95	35-185	35-240
Flexible cables connection capacity mm ² (with terminal)		4 - 70	4 - 70	35-150	35-185
Tightening torque Nm		6	6	12	22
Copper bar (width) in mm		no	no	25	30
Mounting					
Clips on DIN rail		ok	ok	no	no
Fixed on mounting plate		no	no	ok	ok
Fixation type		side	side	bottom	bottom
Mounting by customer		ok	ok	ok	ok
Dimensions and weight					
Dimensions (LxHxD) in mm	L	100	100	140	184
Side mounted 4P	H	165	165	107,5	133
	D	95	95	85	110
Weight	3P	1,4	1,4	/	/
	4P	1,55	1,55	1,2	2,4

	Pole	Trip unit	Serie In A	HDx 18kA	HHx 25kA	HNx 40kA	HNx 50kA	HEx 65kA* - 70kA	
x160	1P	TM fix/fix	16	HDA014Z	HHA014Z				
			20	HDA018Z	HHA018Z				
			25	HDA023Z	HHA023Z				
			32	HDA030Z	HHA030Z				
			40	HDA038Z	HHA038Z				
			50	HDA048Z	HHA048Z				
			63	HDA061Z	HHA061Z				
			80	HDA078Z	HHA078Z				
			100	HDA098Z	HHA098Z				
	2P	TM fix/fix	16	HDA015Z	HHA015Z				
			20	HDA019Z	HHA019Z				
			25	HDA024Z	HHA024Z				
			32	HDA031Z	HHA031Z				
			40	HDA039Z	HHA039Z				
			50	HDA049Z	HHA049Z				
			63	HDA062Z	HHA062Z				
			80	HDA079Z	HHA079Z				
			100	HDA099Z	HHA099Z				
	3P	TM fix/fix	16	HDA016Z	HHA016Z	HNA016Z			
			20	HDA020Z	HHA020Z	HNA020Z			
			25	HDA025Z	HHA025Z	HNA025Z			
			32	HDA032Z	HHA032Z	HNA032Z			
			40	HDA040Z	HHA040Z	HNA040Z			
			50	HDA050Z	HHA050Z	HNA050Z			
			63	HDA063Z	HHA063Z	HNA063Z			
			80	HDA080Z	HHA080Z	HNA080Z			
			100	HDA100Z	HHA100Z	HNA100Z			
		TM adj/fix	125	HDA124Z	HHA124Z				
			160	HDA159Z	HHA159Z				
			16-20-25	HDA025U	HHA025U	HNA025U			
			25-32-40	HDA040U	HHA040U	HNA040U			
			40-50-63	HDA063U	HHA063U	HNA063U			
			50-63-80	HDA080U	HHA080U	HNA080U			
			63-80-100	HDA100U	HHA100U	HNA100U			
			80-100-125	HDA125U	HHA125U	HNA125U			
			100-125-160	HDA160U	HHA160U	HNA160U			
	4P 100%	TM fix/fix	16	HDA017Z	HHA017Z	HNA017Z			
			20	HDA021Z	HHA021Z	HNA021Z			
			25	HDA026Z	HHA026Z	HNA026Z			
			32	HDA033Z	HHA033Z	HNA033Z			
			40	HDA041Z	HHA041Z	HNA041Z			
			50	HDA051Z	HHA051Z	HNA051Z			
			63	HDA064Z	HHA064Z	HNA064Z			
			80	HDA081Z	HHA081Z	HNA081Z			
			100	HDA101Z	HHA101Z	HNA101Z			
		TM adj/fix	125	HDA126Z	HHA126Z	HNA126Z			
			160	HDA161Z	HHA161Z	HNA161Z			
			16-20-25	HDA026U	HHA026U	HNA026U			
25-32-40			HDA041U	HHA041U	HNA041U				
40-50-63			HDA064U	HHA064U	HNA064U				
50-63-80			HDA081U	HHA081U	HNA081U				
63-80-100			HDA101U	HHA101U	HNA101U				
80-100-125			HDA126U	HHA126U	HNA126U				
100-125-160			HDA161U	HHA161U	HNA161U				
x250	3P	TM fix/fix	100		HHB100Z	HNB100Z			
			125		HHB125Z	HNB125Z			
			160		HHB160Z	HNB160Z			
		TM adj/adj	200		HHB200Z	HNB200Z			
			250		HHB250Z	HNB250Z			
			63-80-100			HNB100U			
	4P 0% - 4P 100%	TM fix/fix	100		HHB101Z	HNB101Z			
			125		HHB126Z	HNB126Z			
			160		HHB161Z	HNB161Z			
		TM adj/adj	200		HHB201Z	HNB201Z			
			250		HHB251Z	HNB251Z			
			63-80-100			HNB101U			
	h250	3P	TM adj/adj	12,5-16-20				HNG020U	
				20-25-32				HNG032U	
				25-32-40		HHG032U			
				32-40-50					HEG050U*
				40-50-63		HHG063U		HNG063U	HEG063U*
				63-80-100		HHG100U		HNG100U	HEG100U*
80-100-125					HHG125U		HNG125U	HEG125U*	
100-125-160					HHG160U		HNG160U	HEG160U*	
125-160-200					HHG200U		HNG200U	HEG200U*	
LSI		160-200-250		HHG250U		HNG250U	HEG250U*		
		16-40				HNC040U	HEC040U		
		50-125				HNC125U	HEC125U		
4P 0%		LSI	100-250				HNC250U	HEC250U	
			16-40				HNC041U	HEC041U	
			50-125				HNC126U	HEC126U	
h400 - h630		3P	TM adj/adj	160-200-250		HHD250U			
				250-320-400		HHD400U			
				160-400				HND250U	HED400U
	4P 0% - 50% - 100%	LSI	250-630				HND400U	HED630U	
			160-400				HND630U	HED630U	
			160-200-250				HND251U		
h1000	3P	LSI	160-200-250						
			250-320-400						
			160-400				HND401U		
h1600	3P	LSI	160-400						
			250-630				HND401H	HED401U	
			160-200-250				HND631U	HED631U	
h1000	4P 0% - 50% - 100%	LSI	630						
			800				HNE630U	HEE630U	
			1000				HNE800U	HEE800U	
h1600	4P 0% - 50% - 100%	LSI	630						
			800				HNE970U	HEE970U	
			1000				HNE631U	HEE631U	
h1600	3P	LSI	1250						
			1600				HNF980U	HEF980U	
			1250				HNF990U	HEF990U	
h1600	4P 0% - 50% - 100%	LSI	1250						
			1600				HNF981U	HEF981U	
			1600				HNF991U	HEF991U	

Main incomers

Serie				x160	x250	h630	h1000	h1600
Product	Version	Poles	In A					
Trip-free switches		3 poles	125	HCA125Z				
			160	HCA160Z				
		4 poles	125	HCA126Z				
			160	HCA161Z				
		3 poles	250		HCB250Z			
		4 poles	250		HCB251Z			
	3 poles	400	630				HCD400U	
			630				HCD630U	
		4 poles	400				HCD401U	
			630				HCD631U	
	3 poles	800					HCE800U	
		1000					HCE970U	
	4 poles	800					HCE801U	
		1000					HCE971U	
	3 poles	1250						HCF980U
		1600						HCF990U
4 poles	1250						HCF981U	
	1600						HCF991U	
Add-on blocks	Side mounted	3 poles	125 fixed	HBA127H				
			125 adjustable	HBA125H				
			160 adjustable	HBA160H				
		4 poles	125 fixed	HBA128H				
			125 adjustable	HBA126H				
			160 adjustable	HBA161H				
	Bottom mounted	4 poles	160 adjustable		HBB161H			
			250 adjustable		HBB251H			
			400 adjustable			HBD401H		
500 adjustable				HBD631H				

Products	Version	pole	In A / Ue V	Switches and accessories					
				x160	x250	h250	h400-h630	h1000	h1600
Auxiliaries	Shunt trip release	3/4P	24V DC	HXA001H		HXC001H			
			48V DC	HXA002H		HXC002H			
			100-120V AC	HXA003H		HXC003H			
			200-240V AC	HXA004H		HXC004H			
			380-450V AC	HXA005H		HXC005H			
	Undervoltage release	3/4P	24V DC	HXA011H		HXC011H		HXE011H	
			100-120V AC	HXA013H		HXC013H		HXE013H	
			200-240V AC	HXA014H		HXC014H		HXE014H	
			380-450V AC	HXA015H		HXC015H		HXE015H	
	Delayed undervoltage release	3/4P	24V DC	HXA051H		HXC051H	HXD051H	HXE051H	HXF051H
			110-120V AC	HXA053H		HXC053H	HXD053H	HXE053H	HXF053H
			220-240V AC	HXA054H		HXC054H	HXD054H	HXE054H	HXF054H
			380-415V AC	HXA055H		HXC055H	HXD055H	HXE055H	HXF055H
	Auxiliary contact	3/4P	1NO+1NC	HXA021H		HXC021H			
	Alarm contact	3/4P	1NO+1NC	HXA024H		HXC024H			
	Auxiliary contact - low level	3/4P	1NO+1NC	HXA025H		HXC025H			
	Alarm contact - low level	3/4P	1NO+1NC	HXA026H		HXC026H			
	Direct rotary handle			HXA030H	HXB030H	HXC030H	HXD030H	HXE030H	HXF030H
	Extended rotary handle			HXA031H	HXB031H	HXC031H	HXD031H	HXE031H	HXF031H
	Padlock			HXA039H		HXC039H	HXD039H		HXF039H
Motor operator	3/4P	24-48V DC	-	HXB040H	HXC040H	HXD040H	HXE040H	HXF040H	
		200-240V AC	-	HXB042H	HXC042H	HXD042H	HXE042H	HXF042H	
Interlocking wire type	3/4P	-	-	HXB065H	HXC065H	HXD065H	HXE065H	-	
Collar terminal - copper	3P	included	-	-	HYC003H	HYD003H (250-400A)	-	-	
	4P	included	-	-	HYC004H	HYD004H (250-400A)	-	-	
Collar terminal - aluminium / copper	3P		HYA005H	HYB001H	-	HYD005H	-	-	
	4P		HYA006H	HYB002H	-	HYD006H	-	-	
Collar terminal multiple - aluminium / copper	3P	-	-	-	-	HYD007H	HYE007H (to 800)	-	
	4P	-	-	-	-	HYD008H	HYE008H (to 800)	-	
Extended straight connection	3/4P		HYA013H	HYB010H	HYC010H	HYD010H (250-400A) HYD013H (630A integrated)	included (except 630A LSI)	included	
Extended spreader connection	3P		HYA014H	HYB011H	HYC011H	HYD011H (250-400A) HYD014H (630A)	-	-	
	4P		HYA015H	HYB012H	-	HYD012H (250-400A) HYD015H (630A)	-	-	
Interphase barrier	3/4P	short	HYA019H		-	-	-	-	
		long	HYB019H		included	included	included	included	
Terminal cover for extended straight connections	3P		HYA021H	HYB021H	HYC021H (LSI) HYG021H (TM)	HYD021H	HYE021H	-	
	4P		HYA022H	HYB022H	HYC022H (LSI) HYG022H (TM)	HYD022H	HYE022H	-	
Terminal cover large for spreader connection	3P		HYA023H	HYB023H	-	HYD023H	-	-	
	4P		HYA024H	HYB024H	-	HYD024H	-	-	
Terminal cover short for rear connections	3P		HYA025H	HYB025H	HYC025H (LSI)	HYD025H	HYE025H	-	
	4P		HYA026H	HYB026H	HYC026H (LSI)	HYD026H	HYE026H	-	
Terminal cover for collar terminal	3P		HYA027H	HYB027H	HYC027H	HYD027H	-	-	
	4P		HYA028H	HYB028H	HYC028H	HYD028H	-	-	
Rear connections	3P		-	HYB031H	HYC031H (LSI)	HYD031H (250-400A) HYD033H (630A)	HYE031H (630-800A) HYE033H (1000A)	-	
	4P		-	HYB032H	HYC032H (LSI)	HYD032H (250-400A) HYD034H (630A)	HYE032H (630-800A) HYE034H (1000A)	-	
DIN rail adaptor	3/4P		HYA033H	-	-	-	-	-	
Connecting kit (0,75mm²)	3/4P		HYA035H						
Rail Din raiser	3/4P		HYA036H	-	-	-	-	-	
Compact lugs 16mm² D:8,5	3/4P		HYA086H	-	-	-	-	-	
Compact lugs 25mm² D:8,5	3/4P		HYA087H	-	-	-	-	-	
Compact lugs 35mm² D:8,5	3/4P		HYA088H						
Compact lugs 50mm² D:8,5	3/4P		HYA089H						
Compact lugs 70mm² D:8,5	3/4P		HYA090H						
Compact lugs 95mm² D:8,5	3/4P		HYA091H						
Compact lugs 120mm² D:8,5	3/4P		-	HYB092H	-	-	-	-	
Compact lugs 120mm² D:10	3/4P		-	-	-	HYD093H	-	-	
Compact lugs 150mm² D:8,5	3/4P		-	HYB094H	-	-	-	-	
Compact lugs 150mm² D:10,5	3/4P		-	-	-	HYD095H	-	-	
Compact lugs 185mm² D:10,5	3/4P		-	-	-	HYD096H	-	-	
Compact lugs 185mm² D:12,8	3/4P		-	-	-	HYD097H*	-	-	
Compact lugs 240mm² D:12,8	3/4P		-	-	-	HYD098H*	-	-	

Main incomers

* with spreaders

Moulded case circuit breakers x160

Thermal magnetic trip unit, 2 versions:
 - Z version: fixed thermal and fixed magnetic
 - U version: adjustable thermal and fixed magnetic

1P, 2P, 3P and 4P
 Mechanical test button, lockable settings,

integrated padlocking handle Ø 4mm, needs accessory for DIN rail mounting.

Connection capacity

95 mm² rigid cables
 70 mm² flexible cables
 collar terminals

Comply with IEC 60 947-2.

Trip-free switches

Allows tripping at distance using a voltmetrical trip unit (optional) AC 22/23A.

Comply with IEC 60 947-3.



HDA125Z



HDA161U

Designation	In	Cat. ref.			
		1P	2P	3P	4P
MCCBs x160 18kA	16A	HDA014Z	HDA015Z	HDA016Z	HDA017Z
breaking capacity	20A	HDA018Z	HDA019Z	HDA020Z	HDA021Z
ics : 18 kA	25A	HDA023Z	HDA024Z	HDA025Z	HDA026Z
(400/415 V AC)	32A	HDA030Z	HDA031Z	HDA032Z	HDA033Z
	40A	HDA038Z	HDA039Z	HDA040Z	HDA041Z
fixed thermal	50A	HDA048Z	HDA049Z	HDA050Z	HDA051Z
1x In	63A	HDA061Z	HDA062Z	HDA063Z	HDA064Z
fixed magnetic	80A	HDA078Z	HDA079Z	HDA080Z	HDA081Z
> 10 x In	100A	HDA098Z	HDA099Z	HDA100Z	HDA101Z
	125A	HDA123Z	HDA124Z	HDA125Z	HDA126Z
	160A	-	HDA159Z	HDA160Z	HDA161Z
adjustable thermal	25A	-	-	HDA025U	HDA026U
0,63 - 0,8 - 1 x In	40A	-	-	HDA040U	HDA041U
fixed magnetic	63A	-	-	HDA063U	HDA064U
> 10 x In	80A	-	-	HDA080U	HDA081U
	100A	-	-	HDA100U	HDA101U
	125A	-	-	HDA125U	HDA126U
	160A	-	-	HDA160U	HDA161U
MCCBs x160 25kA	16A	HHA014Z	HHA015Z	HHA016Z	HHA017Z
breaking capacity	20A	HHA018Z	HHA019Z	HHA020Z	HHA021Z
ics : 20 kA	25A	HHA023Z	HHA024Z	HHA025Z	HHA026Z
(400/415 V AC)	32A	HHA030Z	HHA031Z	HHA032Z	HHA033Z
	40A	HHA038Z	HHA039Z	HHA040Z	HHA041Z
fixed thermal	50A	HHA048Z	HHA049Z	HHA050Z	HHA051Z
1x In	63A	HHA061Z	HHA062Z	HHA063Z	HHA064Z
fixed magnetic	80A	HHA078Z	HHA079Z	HHA080Z	HHA081Z
> 10 x In	100A	HHA098Z	HHA099Z	HHA100Z	HHA101Z
	125A	HHA123Z	HHA124Z	HHA125Z	HHA126Z
	160A	-	HHA159Z	HHA160Z	HHA161Z
adjustable thermal	25A	-	-	HHA025U	HHA026U
0,63 - 0,8 - 1 x In	40A	-	-	HHA040U	HHA041U
fixed magnetic	63A	-	-	HHA063U	HHA064U
> 10 x In	80A	-	-	HHA080U	HHA081U
	100A	-	-	HHA100U	HHA101U
	125A	-	-	HHA125U	HHA126U
	160A	-	-	HHA160U	HHA161U

Add-on blocks for x160 devices

These devices are intended to be fixed on the right side of the devices.

Type A and HI

For fault component pulsating current.

HI (High Immunity): the products with "reinforced immunity" reduce the unexpected tripping when they protect equipment generating

disturbances (micro-processing, electronic ballast...)

Fixed version: 300 mA sensitivity and instantaneous tripping

Adjustable version: adjustable sensitivity and tripping.

Test button for differential functioning check.

Mechanical test button

LED or at distance signal for tripping or advance warning

(25-50% I_{Δn}).

Assembly and disassembly facilitated by the drawer assembly system. The terminal cover is dependent of the add-on block.

Connection capacity

95 mm² rigid cables
70 mm² flexible cables

Comply with IEC 60 947-2 annexe B.



HNA125Z

Designation	In	Cat. ref.				
		1P	2P	3P	4P	
MCCBs x160 40kA breaking capacity Ics : 20 kA (400/415 V AC) fixed thermal 1 x I _n fixed magnetic > 10 x I _n	16A	-	-	HNA016Z	HNA017Z	
	20A	-	-	HNA020Z	HNA021Z	
	25A	-	-	HNA025Z	HNA026Z	
	32A	-	-	HNA032Z	HNA033Z	
	40A	-	-	HNA040Z	HNA041Z	
	50A	-	-	HNA050Z	HNA051Z	
	63A	-	-	HNA063Z	HNA064Z	
	80A	-	-	HNA080Z	HNA081Z	
	100A	-	-	HNA100Z	HNA101Z	
	125A	-	-	HNA125Z	HNA126Z	
	160A	-	-	HNA160Z	HNA161Z	
	adjustable thermal 0,63 - 0,8 - 1 x I _n fixed magnetic > 10 x I _n	25A	-	-	HNA025U	HNA026U
		40A	-	-	HNA040U	HNA041U
		63A	-	-	HNA063U	HNA064U
		80A	-	-	HNA080U	HNA081U
		100A	-	-	HNA100U	HNA101U
125A		-	-	HNA125U	HNA126U	
160A	-	-	HNA160U	HNA161U		
Trip-free switches x160 suitable for AC22A / AC 23A	125A	-	-	HCA125Z	HCA126Z	
	160A	-	-	HCA160Z	HCA161Z	
Ue: 415 V AC I _{cw} (1s): 2 kA						



HBA161H

Add-on blocks	I _{Δn} 300 mA	125 A	HBA127H	HBA128H
	fixed sensitivity instantaneous tripping			
	sensitivity I _{Δn}	125A	HBA125H	HBA126H
	adjustable: 0,03 - 0,1 - 0,3 - 1 - 3 - 6A	160A	HBA160H	HBA161H
	adjustable tripping:			
	- instantaneous			
	- time delay: 0,06 - 0,15 - 0,3 - 0,5 - 1s			

Main incomers

Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB is "open" or "close".
- 1 changeover alarm contact: indicates MCCB tripping.

Coil connection

Connection capacity:
0,75 mm² flexible or rigid cables
Optional connection cables.
The cable capacity of the terminals is 0,5 to 1,25 mm².

Shunt trip

Remotes tripping of MCCBs or trip-free switches.
Operating voltage: 0,7 to 1,1 x Un

Under voltage release

Allows the tripping of MCCBs or trip-free switches when voltage level drop between 35 and 70% of Un. Pick up voltage 0,85 x Un

Direct rotary handle

- padlockable
- equipped with front cover and handle
- fixing without any additional screw.

Extended rotary handle

- IP 55
- supplied complete with shaft and handle.

Designation	Characteristics	Cat. ref.
  HXA021H HXA024H	Auxiliary contacts AX AL	HXA021H 1 changeover contact (ON/OFF) 250 V AC / 3A 125 V DC / 0,4A 1 NO + 1 NC
		HXA024H 1 changeover alarm contact 250 V AC / 3A 125 V DC / 0,4A 1 NO + 1 NC
		HXA025H Low level contact (ON/OFF) 125 V AC 1 NO + 1 NC
		HXA026H Low level alarm contact 125 V AC 1 NO + 1 NC
 HXA014H	Shunt trips SH	HXA001H 24 V DC
		HXA002H 48 V DC
		HXA003H 100 - 120 V AC
		HXA004H 200 - 240 V AC
		HXA005H 380 - 450 V AC
Undervoltage releases UV	HXA011H 24 V DC	
	HXA013H 100 - 120 V AC	
	HXA014H 200 - 240 V AC	
	HXA015H 380 - 450 V AC	
Delayed undervoltage releases DUVR	HXA051H 24 V DC	
	HXA053H 110 - 120 V AC	
	HXA054H 220 - 240 V AC	
	HXA055H 380 - 415 V AC	



HXA030H



HXA031H



HYA015H



HYA021H



HYA023H

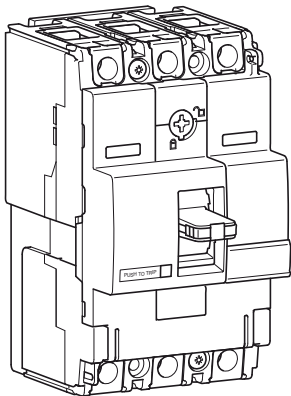


HYA027H

Designation	Characteristics	Cat. ref.	
		3P	4P
Direct rotary handle	padlockable handle max Ø 6 mm	HXA030H	HXA030H
Extended rotary handle	padlockable handle max Ø 8 mm	HXA031H	HXA031H
Padlock	to mount on MCCB for handle locking for 3 padlock max Ø 8 mm	HXA039H	HXA039H
Collar terminals	for aluminium / copper conductor up to 70 mm ²	HYA005H	HYA006H
Extended connections	set of 4 straight connections	HYA013H	HYA013H
	set of 3 or 4 spreader connections	HYA014H	HYA015H
Interphase barriers	set of 3, height: 50 mm	HYA019H	HYA019H
	set of 3, height: 97 mm	HYB019H	HYB019H
Terminal covers	for extended straight connections	HYA021H	HYA022H
	for extended spreader connections	HYA023H	HYA024H
	for collar terminal	HYA027H	HYA028H
Din rail adaptor		HYA033H	HYA033H
Connecting kit	0,75 mm ² set of 3 x 2 wires length: 1,30m	HYA035H	HYA035H
Rail Din raiser		HYA036H	HYA036H
Designation	Characteristics	Cat. ref.	
Ring lugs	compact lugs 16 mm ² Ø8,5	HYA086H	
	compact lugs 25 mm ² Ø8,5	HYA087H	
	compact lugs 35 mm ² Ø8,5	HYA088H	
	compact lugs 50 mm ² Ø8,5	HYA089H	
	compact lugs 70 mm ² Ø8,5	HYA090H	
	compact lugs 95 mm ² Ø8,5	HYA091H	

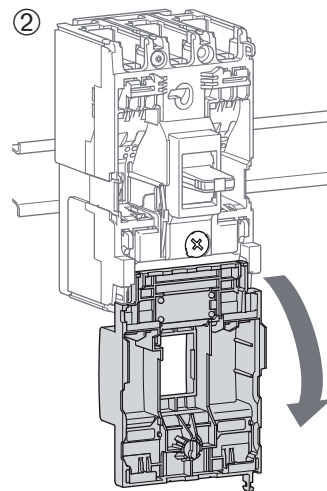
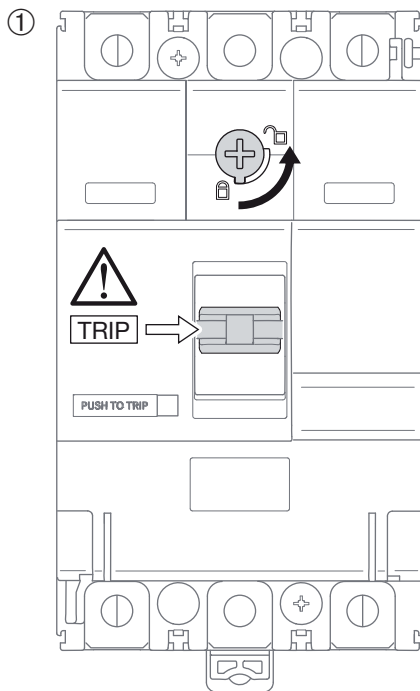
Main incomers

MCCBs

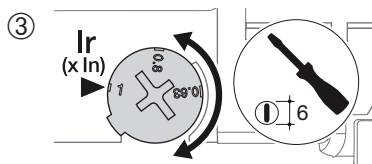


		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
HDA	Icu	25 kA	18 kA
	Ics	25 kA	18 kA
HHA	Icu	35 kA	25 kA
	Ics	25 kA	20 kA
HNA	Icu	85 kA	40 kA
	Ics	30 kA	20 kA
HCA	Icm	-	2,8 kA
	Icw	-	2 kA - 1s

Magnetic and thermal settings



For DIN rail mounting, use HYA033H.



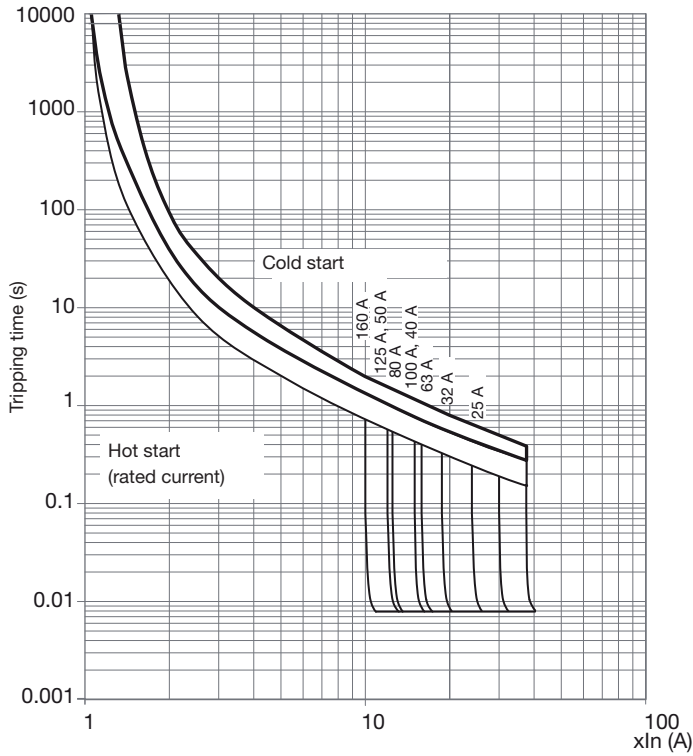
Thermal adjustment from 0,63 to 1 x In

Magnetic adjustment fixed > 10 x In

In	15 - 50 A	63 - 80 A	100 - 125 A	160 A
Imag	600 A	1000 A	1500 A	1600 A

Tripping curve

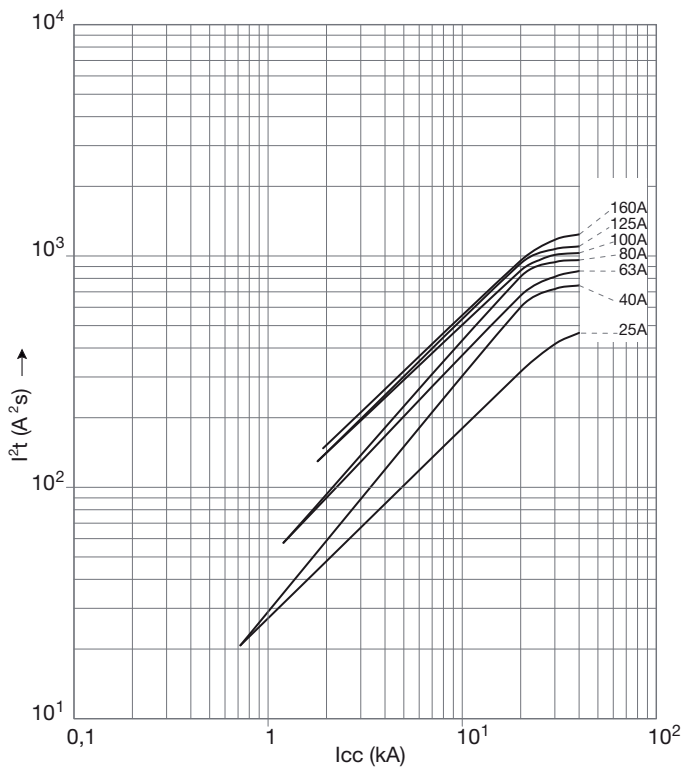
MCCB x160



Main incomers

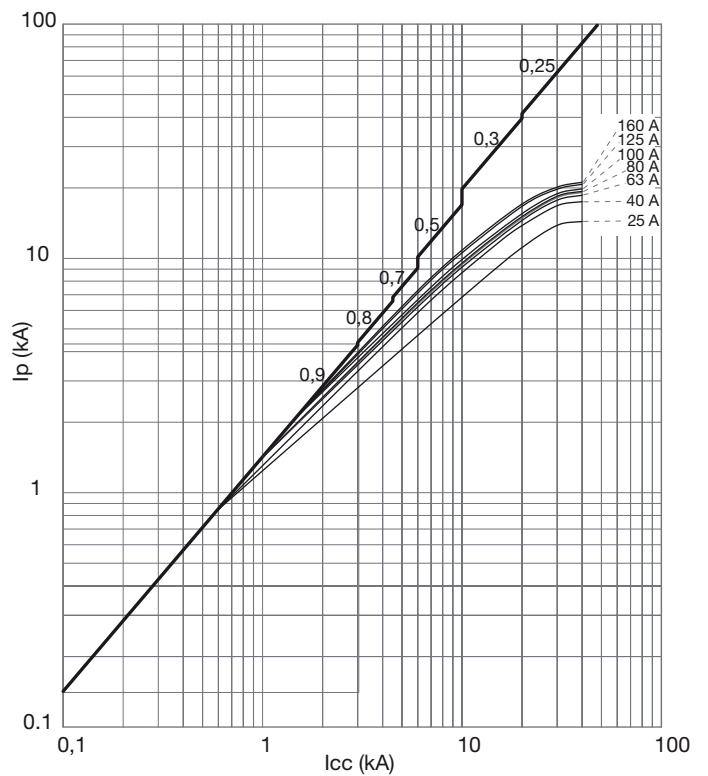
Thermal constraint curve at 400V (Let-through energy)

MCCB x160



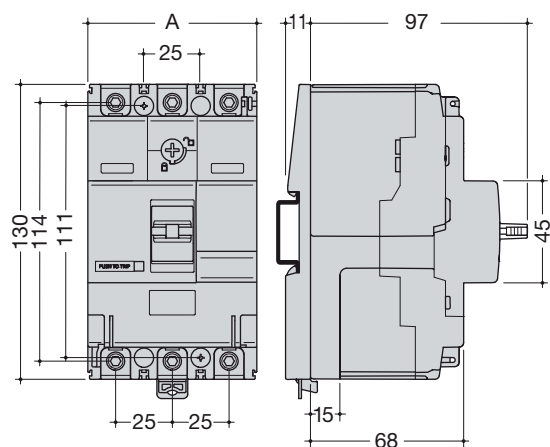
Current limiting curve at 400V (Let-through pick current)

MCCB x160



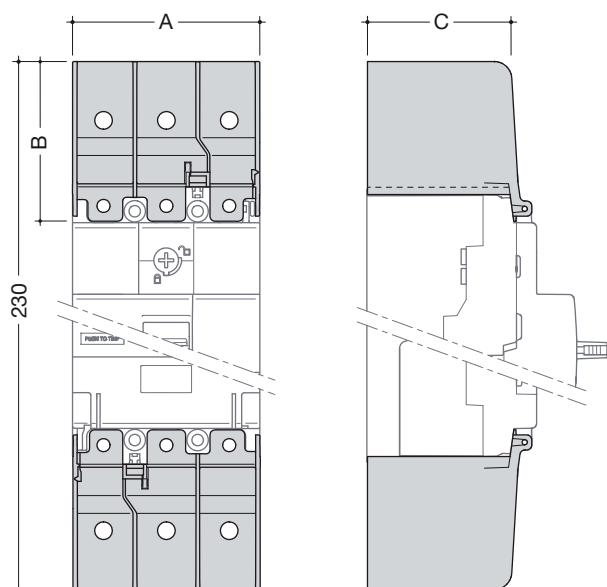
Dimensions

MCCB x160



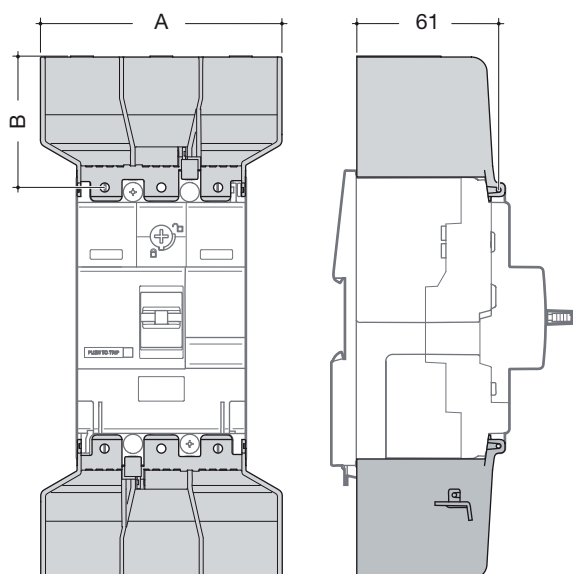
	A (mm)	B (mm)	C (mm)
1P	24,8	25	111
2P	49,5	25	111
3P	74,5	25	111
4P	99,5	25	111

Terminal covers for extended straight connections



	A (mm)	B (mm)	C (mm)
1P	24,4	50	60,5
2P	49,5	50	60,5
3P	74,5	50	60,5
4P	99,5	50	60,5

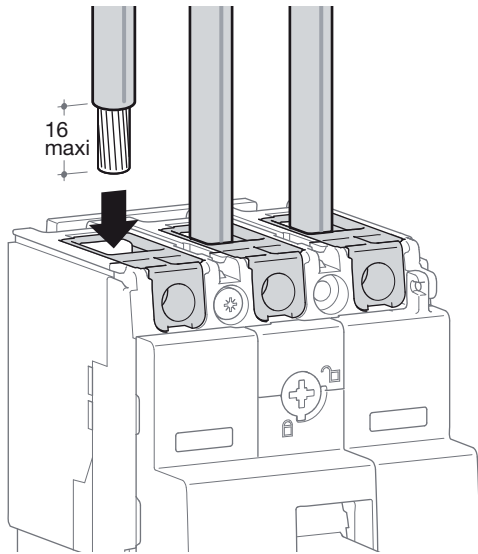
Terminal cover for extended spreader connections



	A (mm)	B (mm)	C (mm)
3P	106,5	50	60,5
4P	141,5	50	60,5

Connection

Connection with end lugs



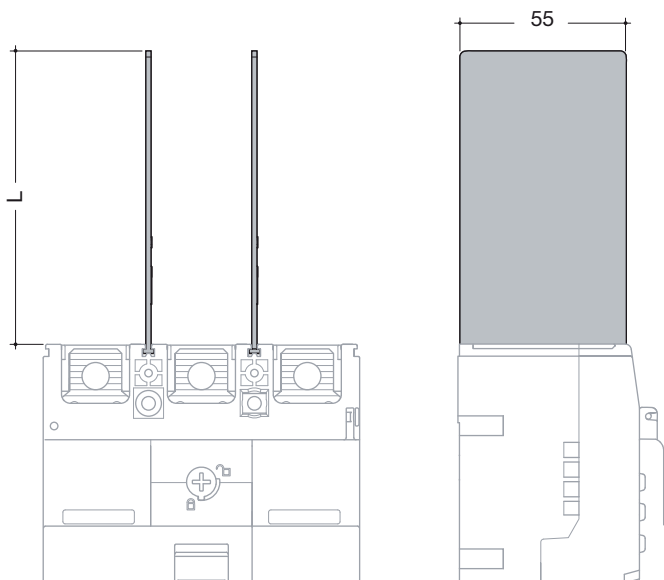
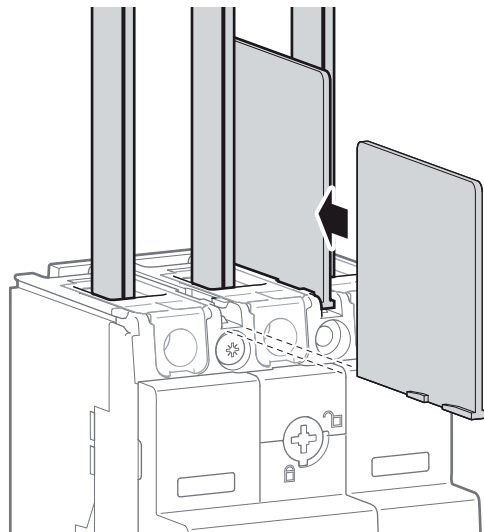
Terminals for copper conductors (standard)

	min. 6 mm ²	max. 70 mm ²
	min. 6 mm ²	max. 95 mm ²
4	6 Nm	

Terminals for aluminium / copper conductors (accessory)
HYA005H, HYA006H

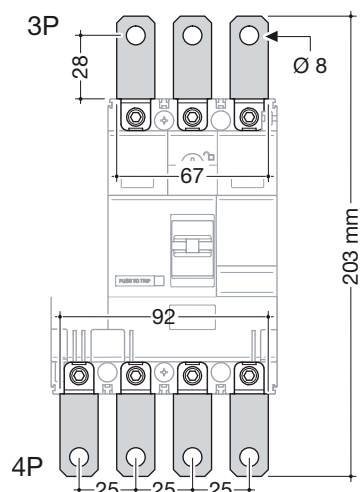
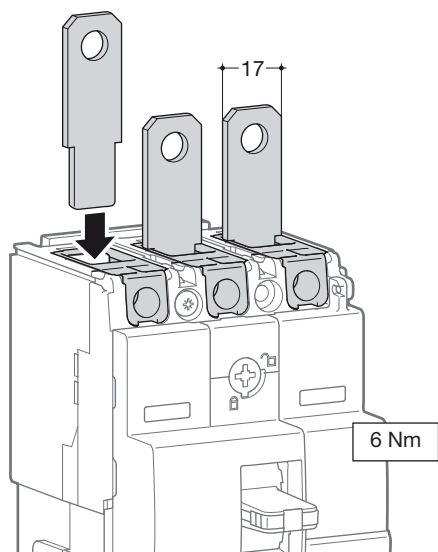
	min. 35 mm ²	max. 70 mm ²
5	10 Nm	

Interphase barriers

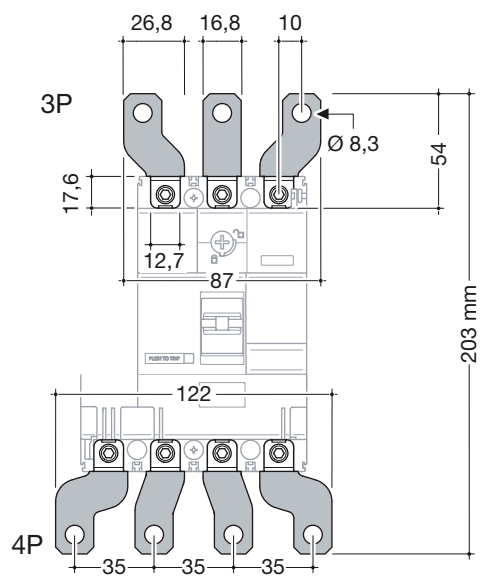
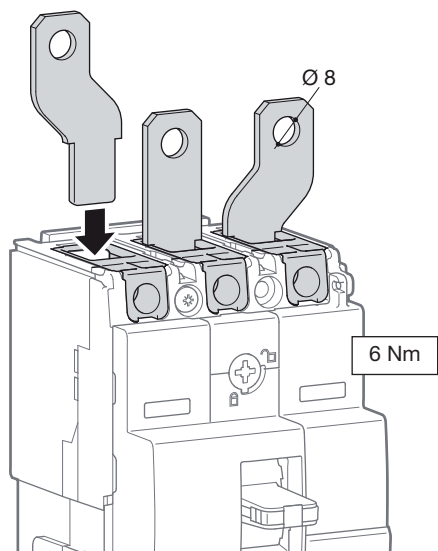


	L (mm)
HYA019H	50
HYB019H	97

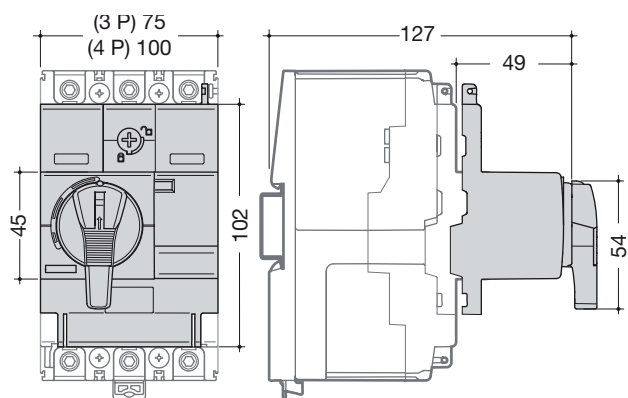
Extended straight connections



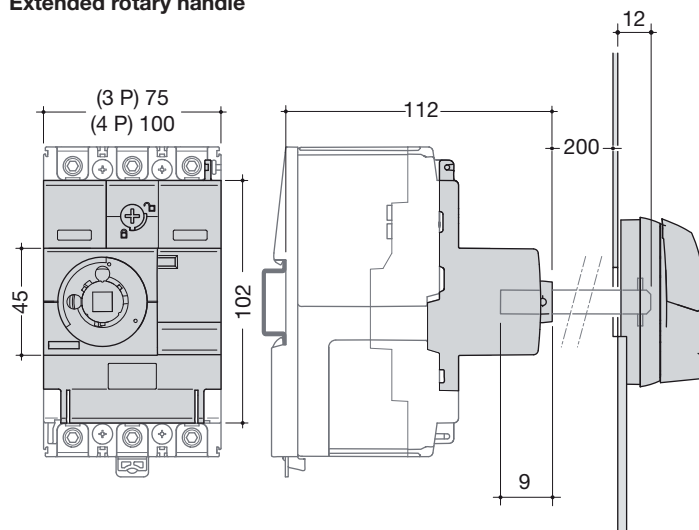
Extended spreader connections



Direct rotary handle

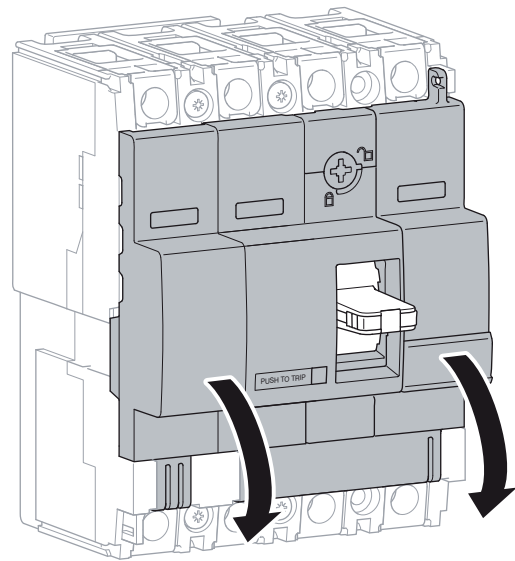
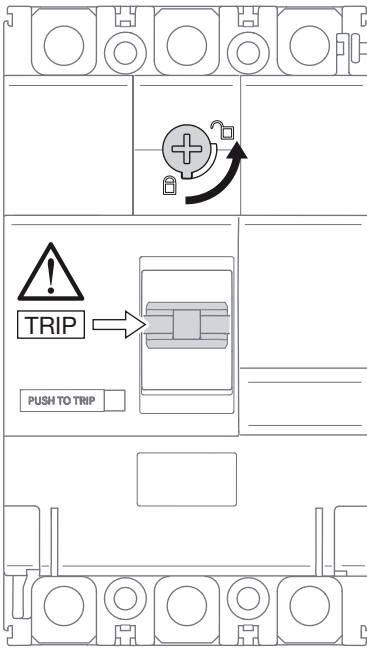


Extended rotary handle



Auxiliaries

Auxiliaries for MCCBs and trip-free switches

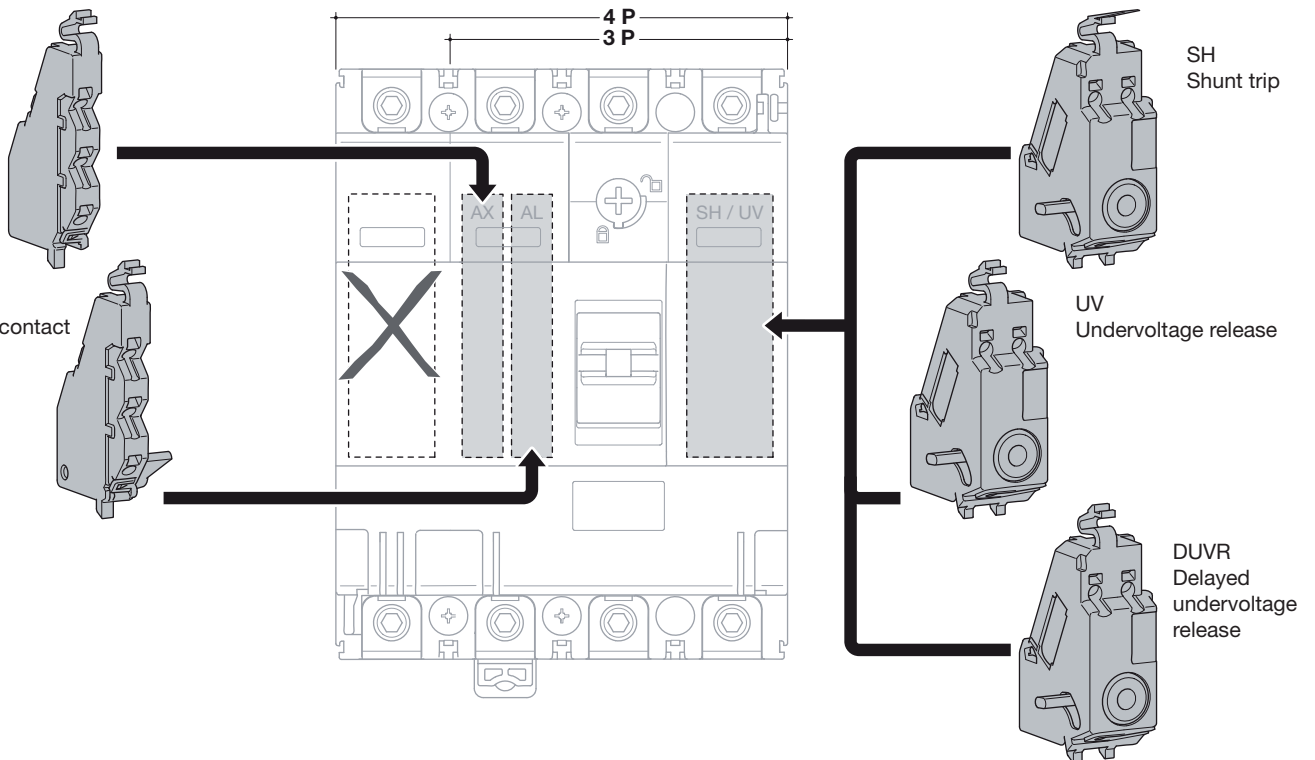


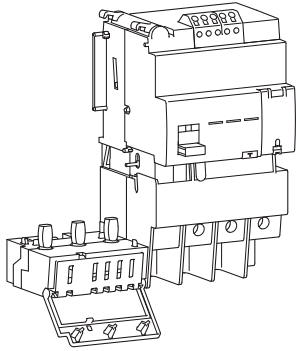
Main incomers

Mounting combination for auxiliaries and releases

AX
Auxiliary contact

AL
Alarm contact





When associated with MCCB, the add-on block provides an earth fault protection and protects against electrical shocks by direct or indirect contacts.

The add-on blocks are protected against nuisance tripping caused by transient voltages. It's able to detect sinusoidal alternating currents and residual pulsating direct currents (A type). It also avoids miss tripping (HI type - High Immunity).

Characteristics

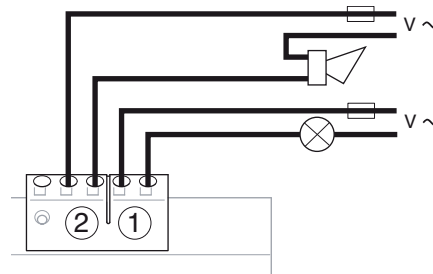
Reset button :
Signals add-on block tripping and must be acknowledged before switching on the installation.

Test button for differential functioning :
Allows to check the electrical operating of the MCCB / Add-on block association.

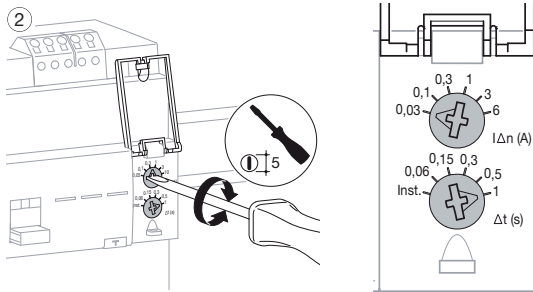
Mechanical test button :
Allows to check the mechanical operating of the MCCB / Add-on block association.

LED signaling default current level in the installation:
25% (orange) and 50% (red) $I_{\Delta n}$; green light to signal correct operating.

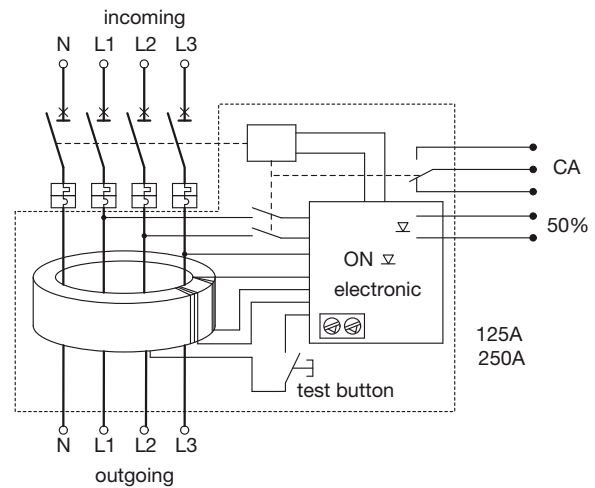
Remote tripping and advanced warning (50% $I_{\Delta n}$) signaling thanks to these contacts:



Earth leakage current ($I_{\Delta n}$) and delay (Δt) setting



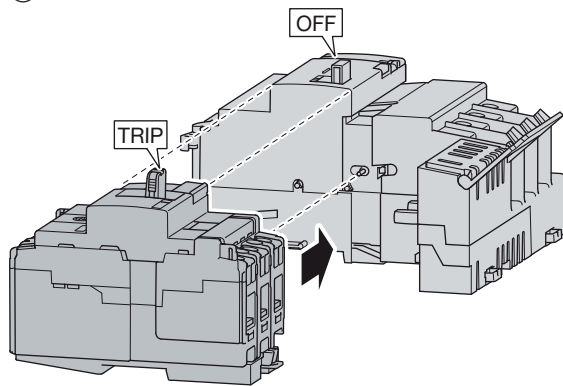
Add-on block operating



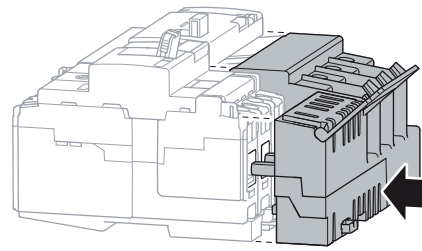
S (Δt)	A ($I_{\Delta n}$)						
	0,03	0,1	0,3	1	3	6	
Inst.	OK	OK	OK	OK	OK	OK	
0,06	no	OK	OK	OK	OK	OK	
0,15	no	OK	OK	OK	OK	OK	
0,3	no	OK	OK	OK	OK	OK	
0,5	no	OK	OK	OK	OK	OK	
1	no	OK	OK	OK	OK	OK	

Add-on block mounting

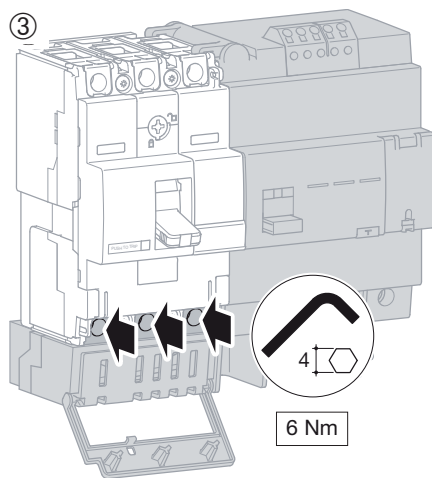
①



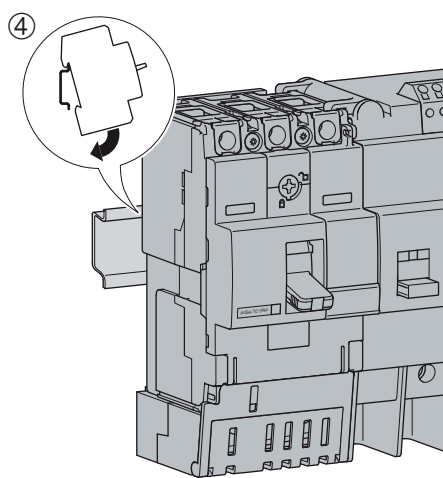
②



③



④

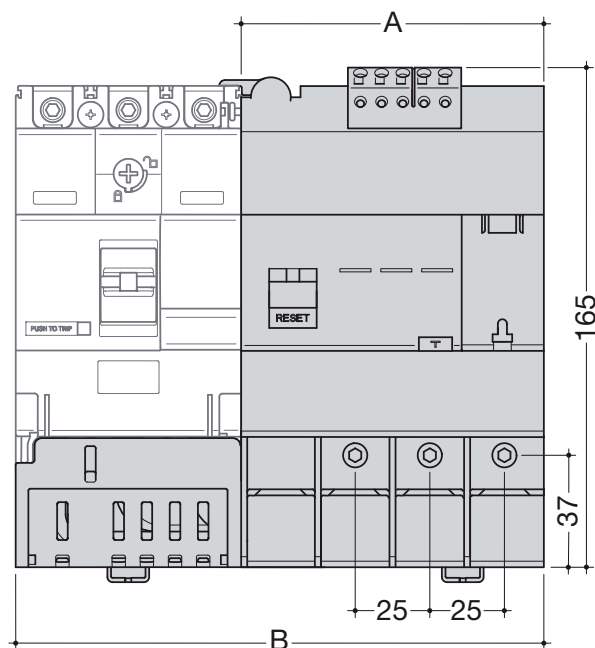


Exclusive drawer assembly system allows quick mounting and makes MCCB and add-on block association a complete monoblock unit.

Reinforced insulation connexion (class II)

System avoids the omission of terminal tightening

Dimensions



	3P	4P
A (mm)	100	100
B (mm)	174,5	199,5

Moulded case circuit breakers x250,
 2 versions of trip unit:
 - Z version: fixed thermal and magnetic
 - U version: adjustable thermal and magnetic

3P and 4P
 Mechanical test button, lockable settings, integrated padlocking handle Ø 4mm.
 Comply with IEC 60 947-2.

Connection:
 Directly on copper cable terminal,

with end lug max. width: 25 mm
 Connection capacity: 185 mm² rigid cables

Comply with IEC 60 947-2.
 Collar terminals

Trip-free switches
 Allows tripping at distance using a voltmeterical trip unit (optional)
 Complies with IEC 60 947-3
 AC 22/23A

Add-on blocks for x250 devices
 These devices are intended to be fixed at the bottom of the devices.

Type A and HI for fault component dc pulsating current and the products with "reinforced immunity".
 Adjustable sensitivity and tripping.
 Test button for differential functioning check.
 Mechanical test button LED or at distance signal for tripping or advance warning (25 - 50% I_{∆n}).

Comply with IEC 60 947-2 annexe B

Designation	Designation	In	Cat. ref.	
			3P	4P
MCCBs x250 25kA	breaking capacity	100A	HNB100Z	HNB101Z
	I _{cu} : 25 kA (400/415 V AC)	125A	HNB125Z	HNB126Z
	I _{cs} : 20kA	160A	HNB160Z	HNB161Z
	fixed thermal 1 x I _n	200A	HNB200Z	HNB201Z
	fixed magnetic ≥10 x I _n	250A	HNB250Z	HNB251Z
MCCBs x250 40kA	breaking capacity	100A	HNB100Z	HNB101Z
	I _{cu} : 40 kA (400/415 V AC)	125A	HNB125Z	HNB126Z
	I _{cs} : 20 kA	160A	HNB160Z	HNB161Z
	fixed thermal 1 x I _n	200A	HNB200Z	HNB201Z
	fixed magnetic ≥10 x I _n	250A	HNB250Z	HNB251Z
	adjustable thermal 0,63 - 0,8 - 1x I _n	100A	HNB100U	HNB101U
	adjustable magnetic 6 - 8 - 10 - 13 x I _n (100 - 200A)	125A	HNB125U	HNB126U
	5 - 7 - 9 - 11 x I _n (250A)	160A	HNB160U	HNB161U
	3P, 3 trip units	200A	HNB200U	HNB201U
	4P, neutral setting: 0 or 100%	250A	HNB250U	HNB251U
Trip-free switches x250	capacity suitable for AC 22/23A	250A	HCB250Z	HCB251Z
	I _{cw} (1s): 3 kA			
Add-on blocks	adjustable sensitivity I _{∆n} : 0,03 - 0,1 - 0,3 - 1 - 3 - 6A	160A	-	HBB161H
	adjustable tripping: - instantaneous - time delay: 0,06 - 0,15 - 0,3 - 0,5 - 1 sec	250A	-	HBB251H



HNB250Z



HNB100U



HBB251H

Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB is "open" or "closed".
- 1 changeover alarm contact: indicates MCCB tripping.

Coil connection

Connection capacity:
0,75 mm² flexible or rigid cables
Optional connection cables.
The cable capacity of the terminals is 0,5 to 1,25 mm².

Shunt trip

Remotes tripping of MCCBs or trip-free switches.
Operating voltage: 0,7 to 1,1 x Un

Under voltage release

Allows the tripping of MCCBs or trip-free switches when voltage level drop between 35 and 70% of Un. Pick up voltage 0,85 x Un

Direct rotary handle

- padlockable
- equipped with front cover and handle
- fixing without any additional screw.

Extended rotary handle

- IP 55
- supplied complete with shaft and handle.



HXA021H

HXA024H



HXA014H



HXB042H

Designation	Characteristics	Cat. ref.
Auxiliary contacts		
AX	1 changeover contact 250 V AC / 3A	HXA021H
AL	125 V DC / 0,4A 1 NO + 1 NC	
	1 changeover alarm contact 250 V AC / 3A	HXA024H
	125 V DC / 0,4A 1 NO + 1 NC	
	low level contact (ON/OFF) 125 V AC	HXA025H
	1 NO + 1 NC	
	low level alarm contact 125 V AC	HXA026H
	1 NO + 1 NC	
Shunt trips	24 V DC	HXA001H
SH	48 V DC	HXA002H
	100 - 120 V AC	HXA003H
	200 - 240 V AC	HXA004H
	380 - 450 V AC	HXA005H
Undervoltage releases UV	24 V DC	HXA011H
	100 - 120 V AC	HXA013H
	200 - 240 V AC	HXA014H
	380 - 450 V AC	HXA015H
Delayed undervoltage releases DUVR	24 V DC	HXA051H
	110 - 120 V AC	HXA053H
	200 - 240 V AC	HXA054H
	380 - 415 V AC	HXA055H
Direct rotary handles	padlockable handle max Ø 6 mm	HXB030H
Extended rotary handles	padlockable handle max Ø 8 mm	HXB031H
Padlocks	to mount on MCCBs for handle locking for 3 padlocks max Ø 8 mm	HXA039H
Motor operators	24 V DC	HXB040H
	230 - 240V AC	HXB042H



HYB010H



HYB002H



HYB012H



HYB022H



HYB024H

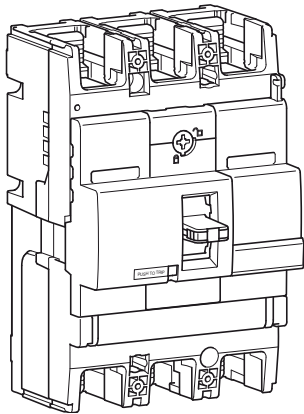


HYB031H

Designation	Characteristics	Cat. ref.	
		3P	4P
Interlocking	wire type	HXB065H	HXB065H
Collar terminals	4 aluminium / copper conductors 150 mm ² rigid cables 120 mm ² flexible cables	HYB001H	HYB002H
Extended connections	set of 4 pieces for straight connections	HYB010H	HYB010H
	spreader connections	HYB011H	HYB012H
Interphase barriers	set of 3, height: 97 mm	HYB019H	HYB019H
Terminal covers	for extended straight connections	HYB021H	HYB022H
	for extended spreader connections	HYB023H	HYB024H
	for rear connections	HYB025H	HYB026H
	for collar terminals	HYB027H	HYB028H
Rear connections	set of 3 or 4 pieces	HYB031H	HYB032H
Connecting kit	0,75 mm ² set of 3 x 2 wires length: 1,30m	HYA035H	HYA035H

Designation	Characteristics	Cat. ref.
Ring lugs	compact lugs 35 mm ² Ø8,5	HYA088H
	compact lugs 50 mm ² Ø8,5	HYA089H
	compact lugs 70 mm ² Ø8,5	HYA090H
	compact lugs 95 mm ² Ø8,5	HYA091H
	compact lugs 120 mm ² Ø8,5	HYB092H
	compact lugs 150 mm ² Ø8,5	HYB094H

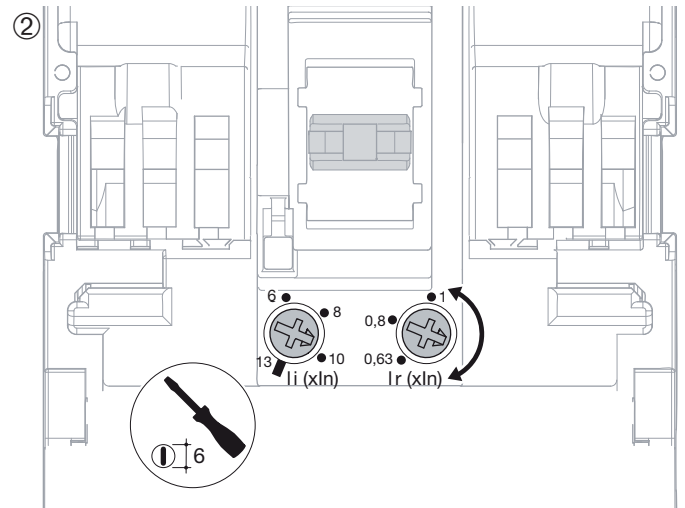
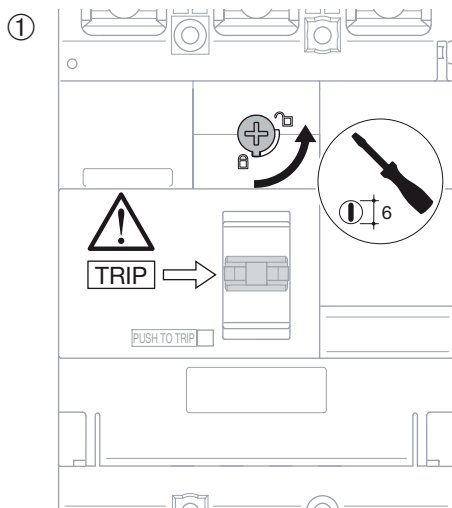
MCCBs



		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
HHB	Icu	35 kA	25 kA
	Ics	25 kA	40 kA
HNB	Icu	85 kA	40 kA
	Ics	40 kA	20 kA
HCB	Icm	-	9 kA
	Icw	-	3 kA - 1s

Main incomers

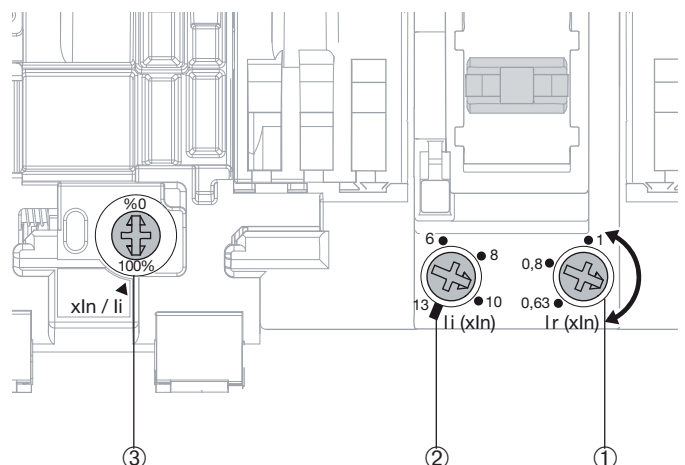
Magnetic and thermal settings



Thermal adjustment from 0,63 to 1 x In

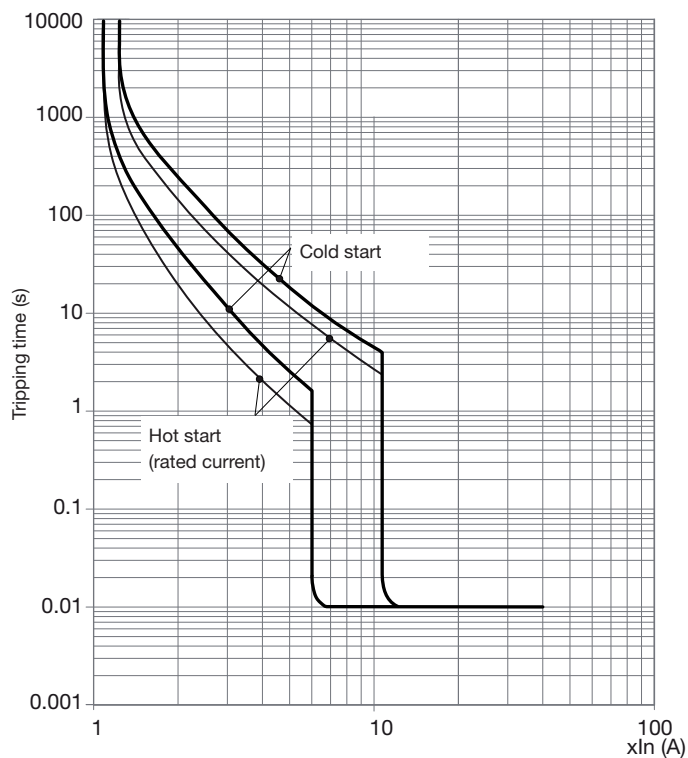
Magnetic adjustment from 6 to 13 x In (100 - 200A)
from 5 to 11 x In (250A)

	100 - 200A	250A
I _r (x I _n) ①	0,63 - 0,8 - 1 x I _n	
I _i (x I _n) ②	6 - 8 - 10 - 13 x I _n	5 - 7 - 9 - 11 x I _n
x I _n /I _i ③	0 - 100%	
	0 - 60%	



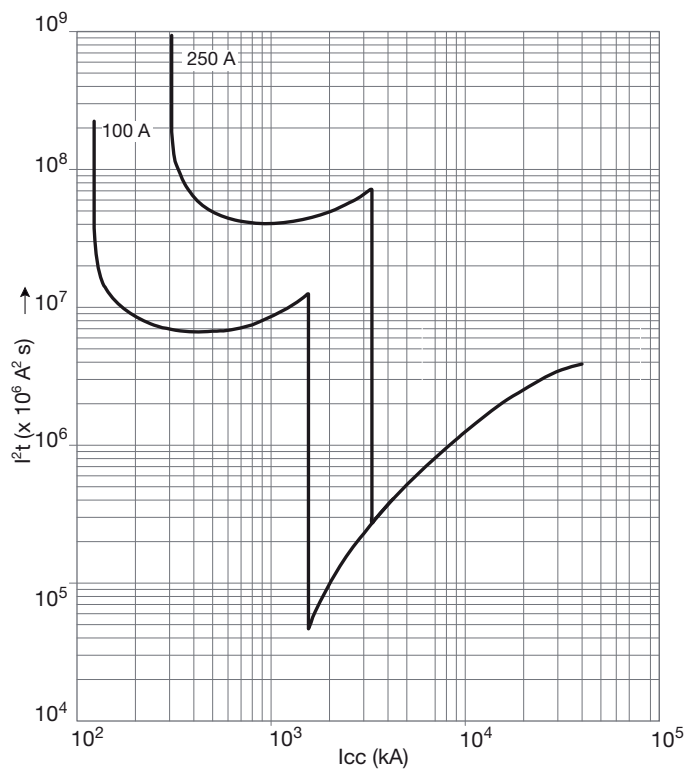
Tripping curve

MCCB x250



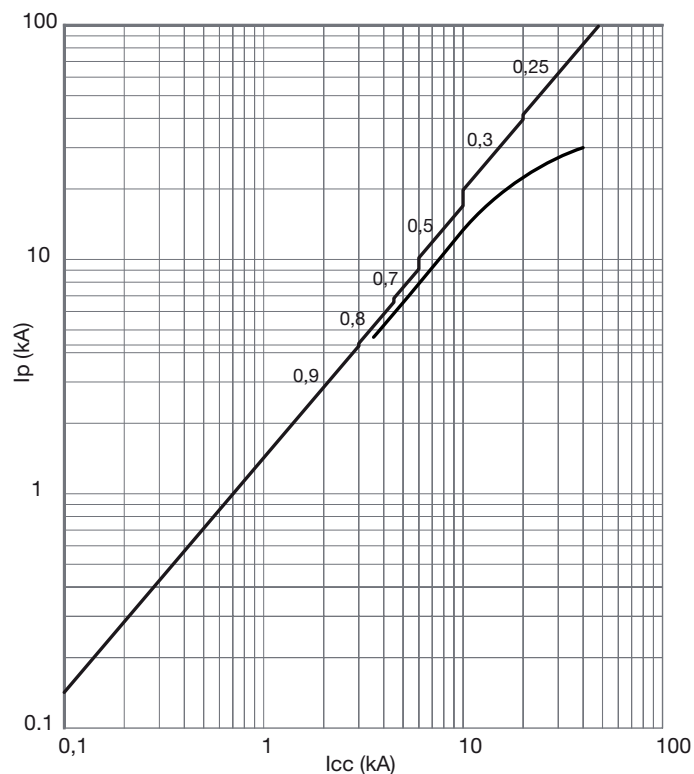
Thermal constraint curve at 400V (Let-through energy)

MCCB x250



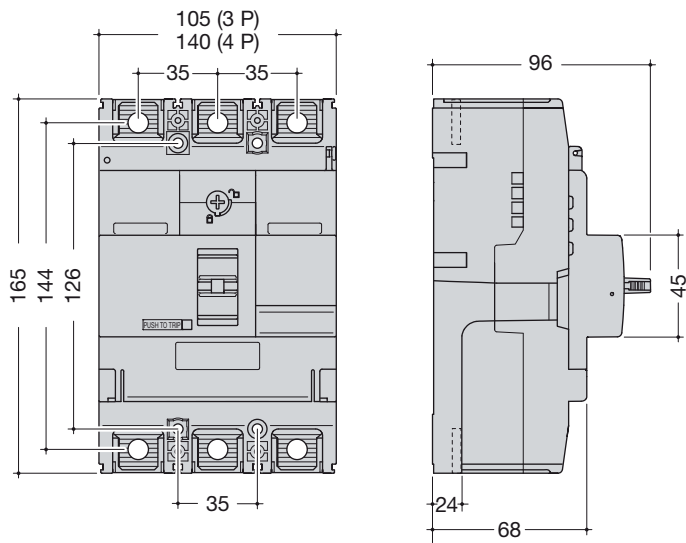
Current limiting curve at 400V (Let-through pick current)

MCCB x250



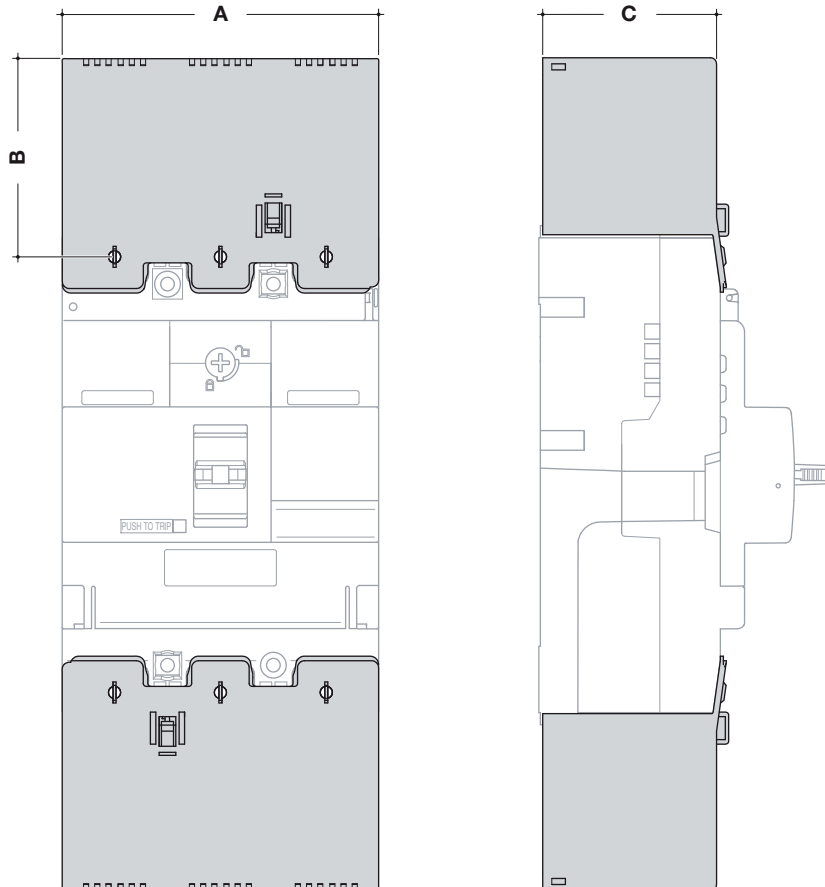
Dimensions

MCCB x250



Main incomers

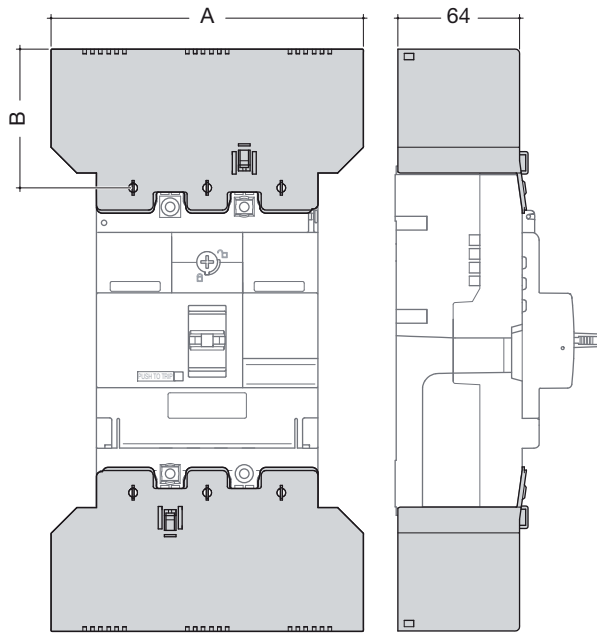
Terminal covers for extended straight connections



	A (mm)	B (mm)	C (mm)
3P	105	54,5	64
4P	140	54,5	64

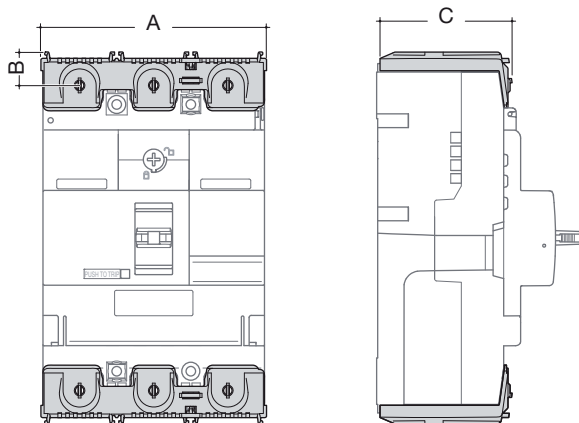
Accessories

Terminal cover for extended spreader connections



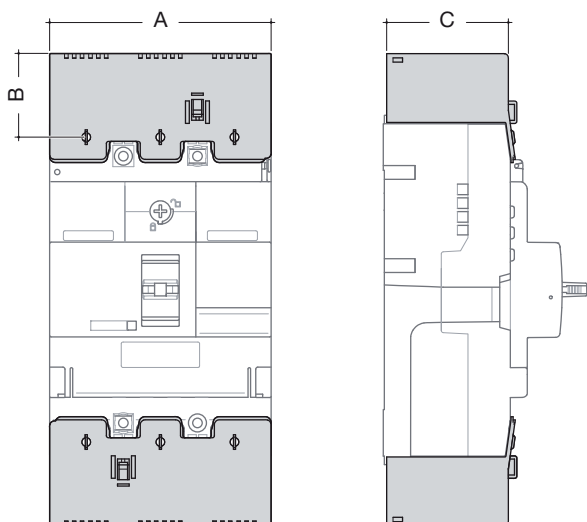
	A (mm)	B (mm)	C (mm)
3P	147,5	54,5	64
4P	196	54,5	64

Terminal cover for rear connections



	A (mm)	B (mm)	C (mm)
3P	105	5	64
4P	140	5	64

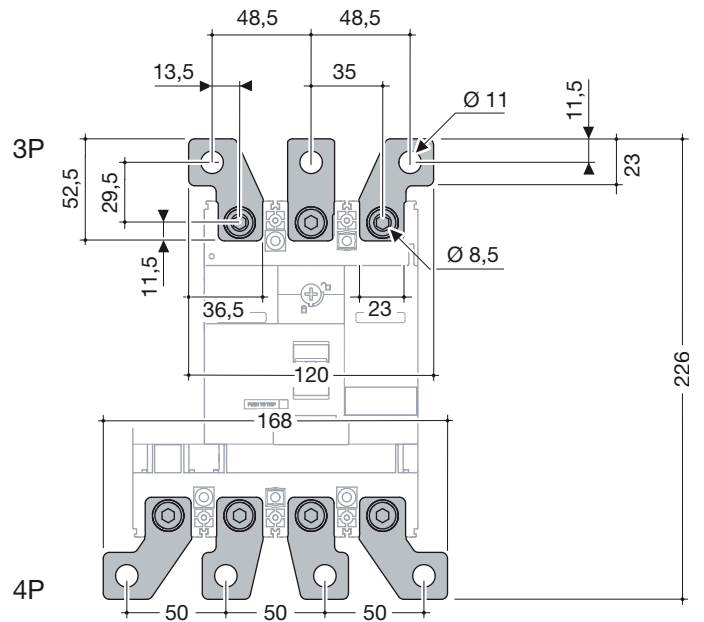
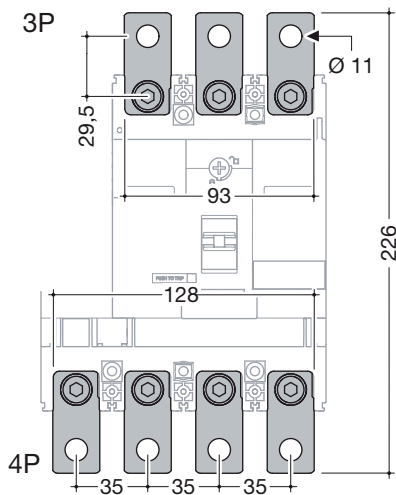
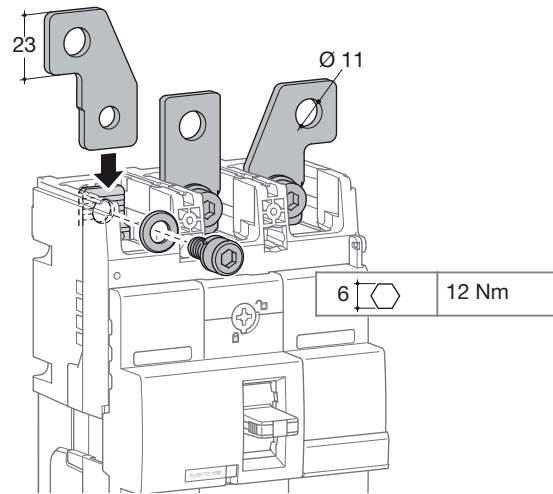
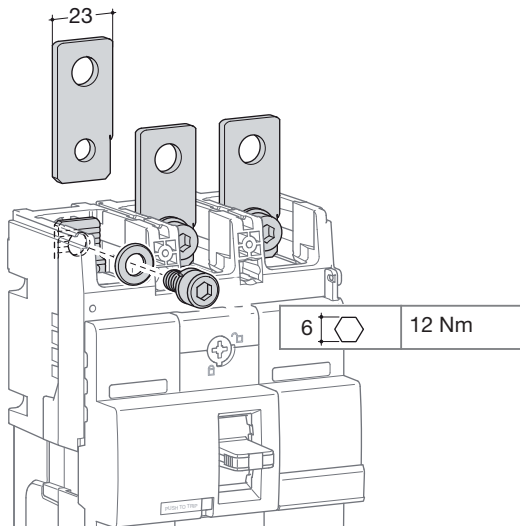
Terminal covers for collar terminals



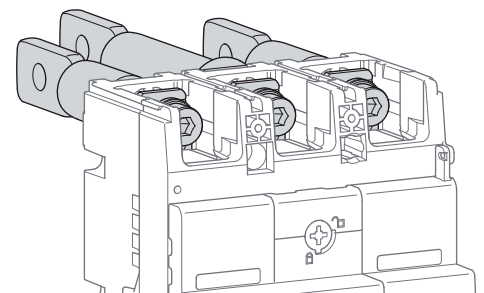
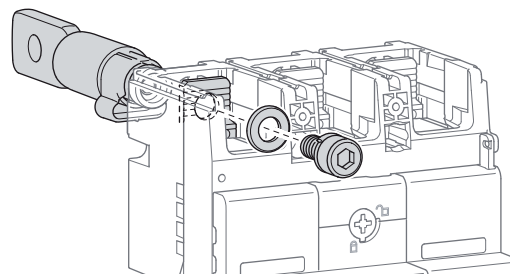
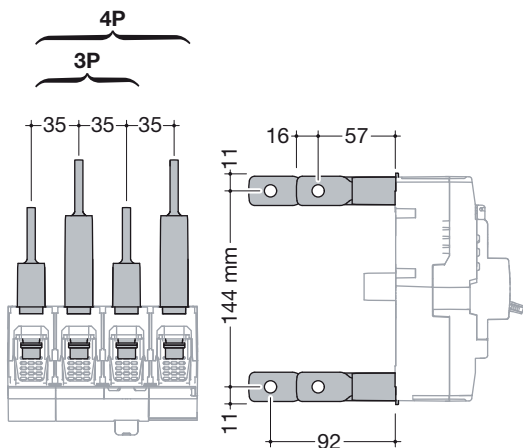
	A (mm)	B (mm)	C (mm)
3P	105	28,5	64
4P	140	28,5	64

Connection

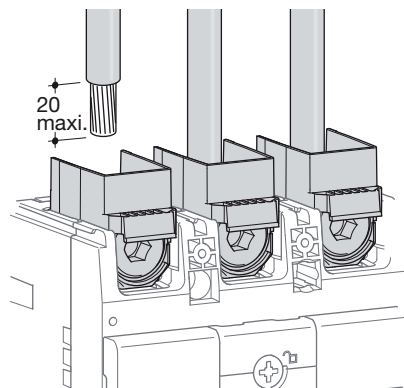
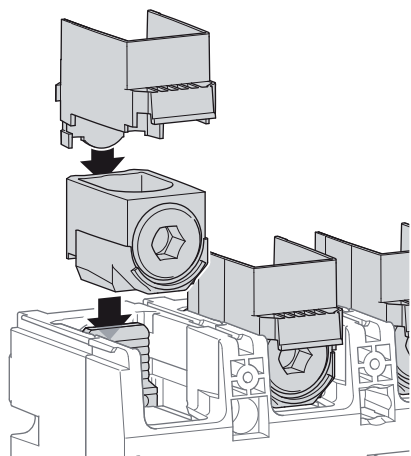
Extended straight and spreader connections



Rear connections



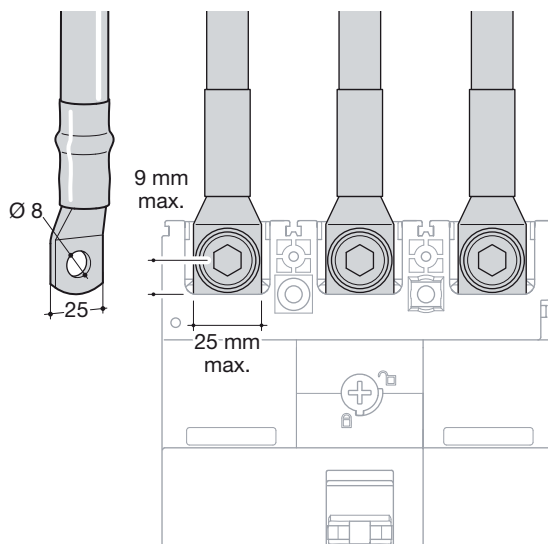
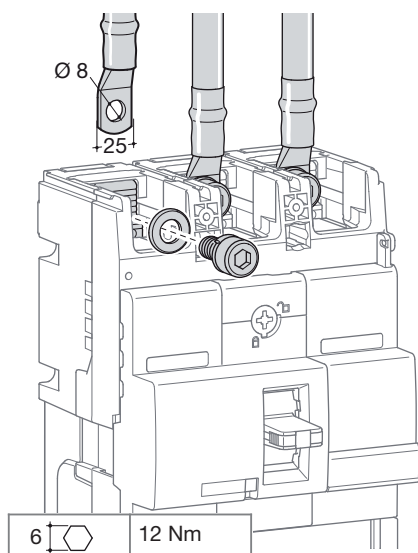
Connection by collar



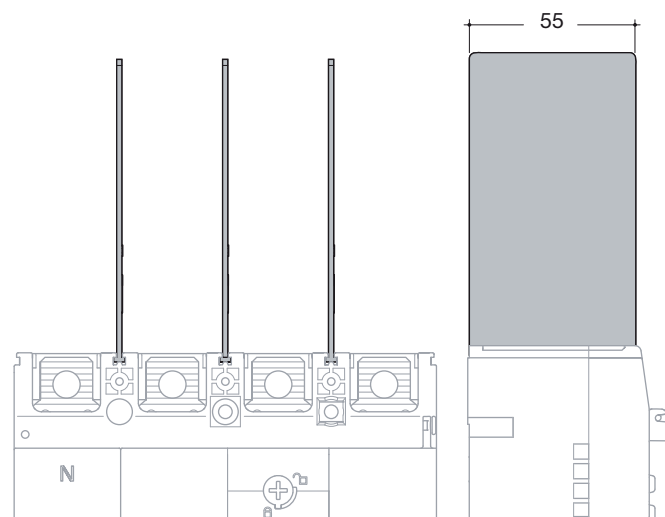
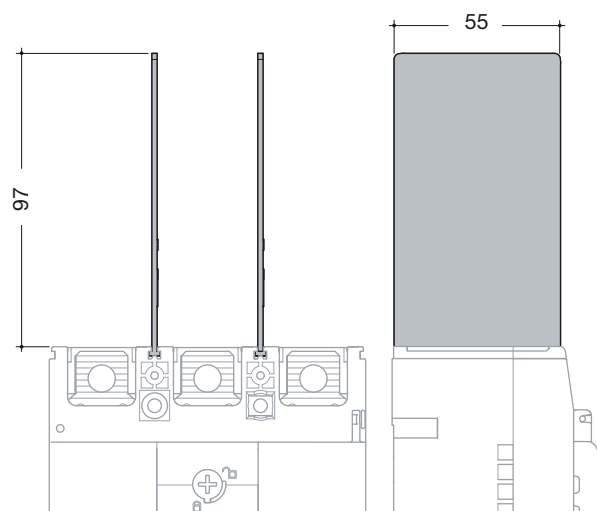
Terminals for aluminium / copper conductors (accessory)
HYB001H, HYB002H

	min. 35 mm ²	max. 150 mm ²
	min. 35 mm ²	max. 185 mm ²
	35 mm ² to 50 mm ² = 25 Nm 60 mm ² to 185 mm ² = 25 Nm	

Connection with end lugs

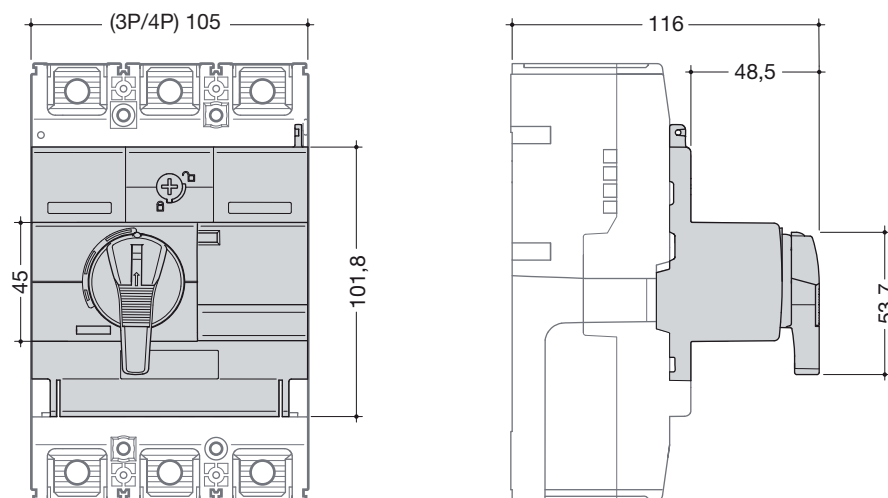


Interphase barriers

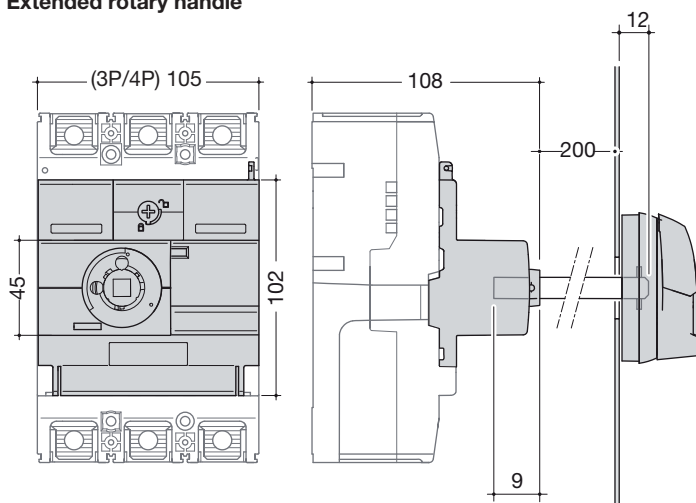


Accessories

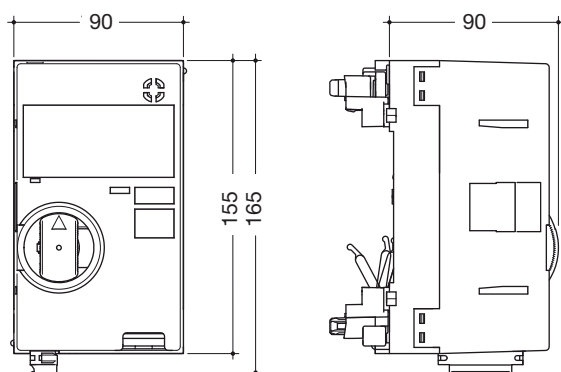
Rotary handle



Extended rotary handle



Motor operator

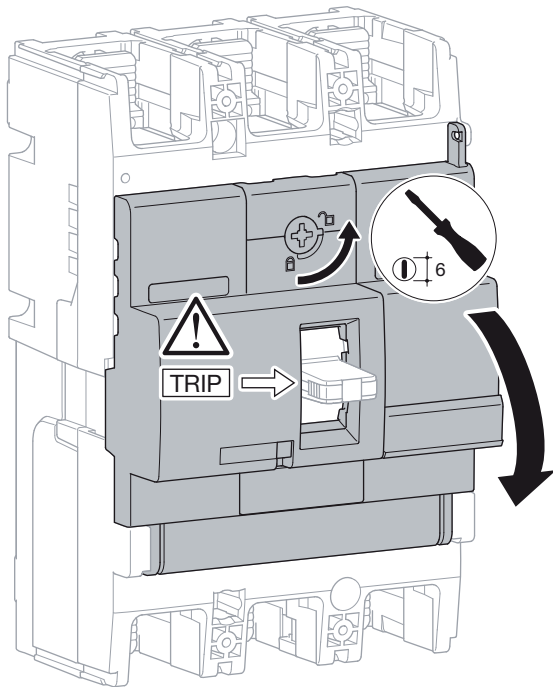


		HXB040H	HXB042H
Operating voltage		24V DC	230-240V AC
Operating current / starting current peak value (A)	24V DC	18/26	-
	230-240V AC	-	3,5/7
Operating time (s)	(ON)	0,1s	
	(OFF)	0,1s	
	(RESET)	0,1s	
Power supply required		300VA min.	
Dielectric properties (1 min)		1000V AC	1500V AC

Main incomers

Auxiliaries

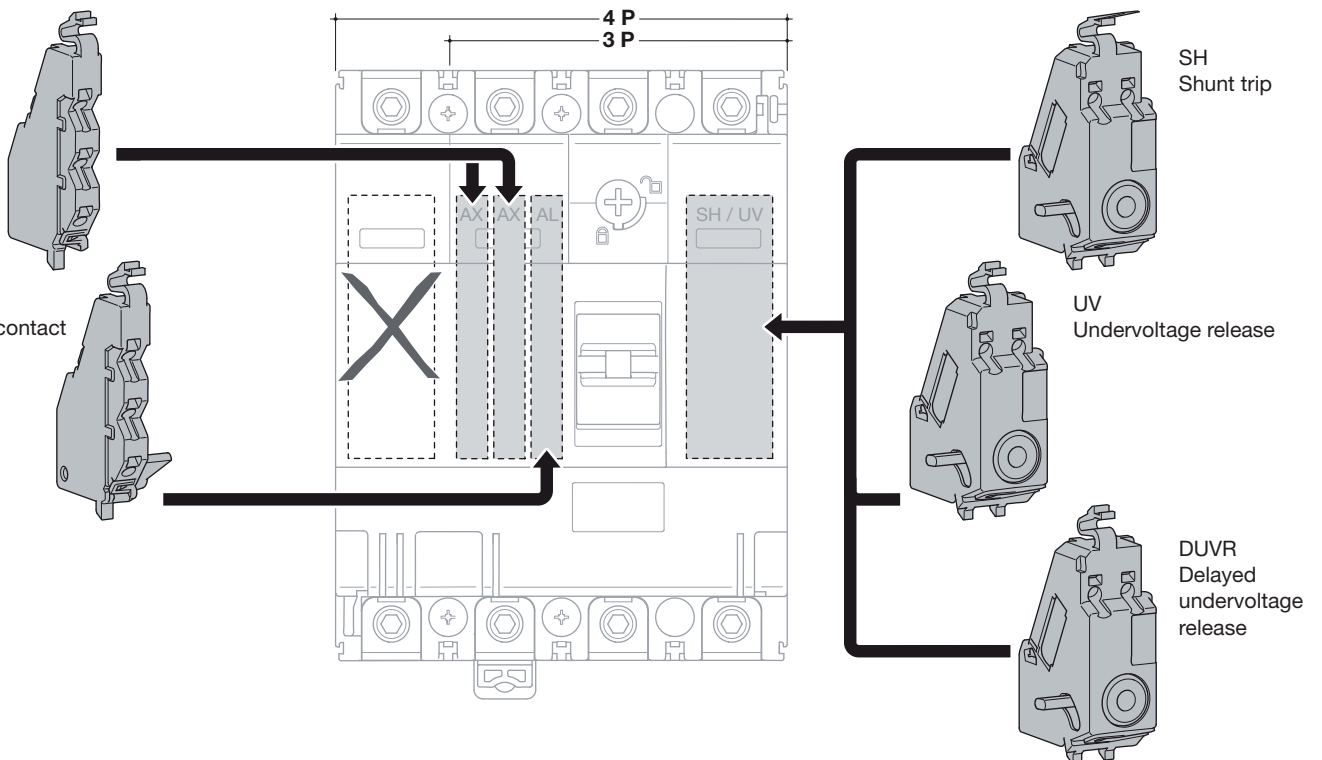
Auxiliaries for MCCBs and trip-free switches

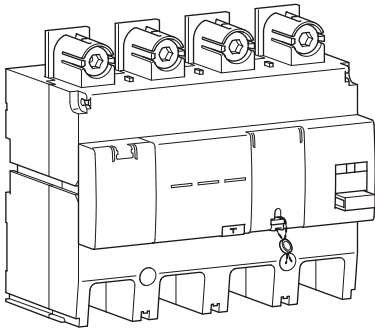


Mounting combination for auxiliaries and releases


AX
Auxiliary contact

AL
Alarm contact





When associated with MCCB, the add-on block provides an earth fault protection and protects against electrical shocks by direct or indirect contacts.

The add-on blocks are protected against nuisance tripping caused by transient voltages. It's able to detect sinusoidal alternating currents and residual pulsating direct currents (A type ). It also avoids miss tripping (HI type - High Immunity).

Characteristics

Reset button :

Signals add-on block tripping and must be acknowledged before switching on the installation.

Test button for differential operating :

Allows to check the electrical operating of the MCCB / Add-on block association.

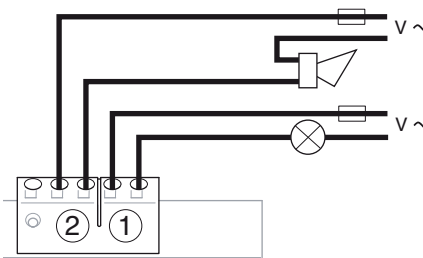
Mechanical test button :

Allows to check the mechanical operating of the MCCB / Add-on block association.

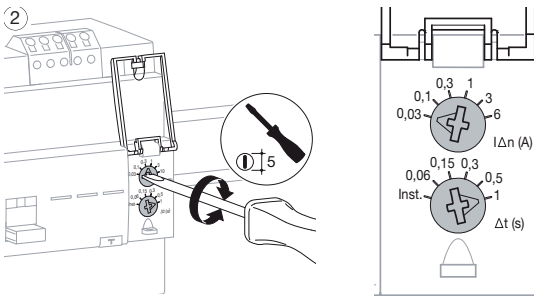
LED signaling default current level in the installation:

25% (orange) and 50% (red) $I_{\Delta n}$; green light to signal correct operating.

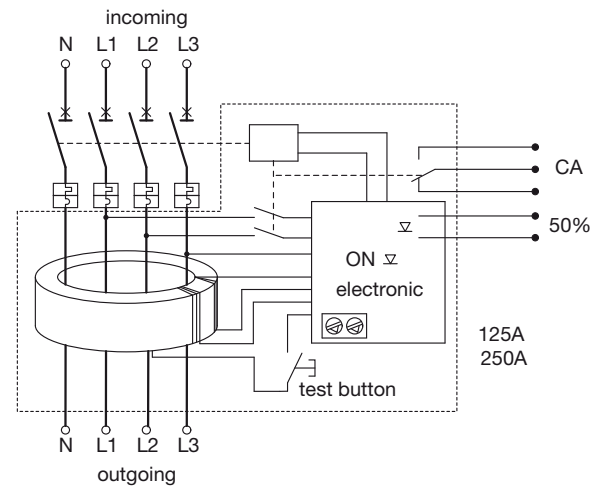
Remote tripping and advanced warning (50% $I_{\Delta n}$) signaling thanks to these contacts:



Earth leakage current ($I_{\Delta n}$) and delay (Δt) setting

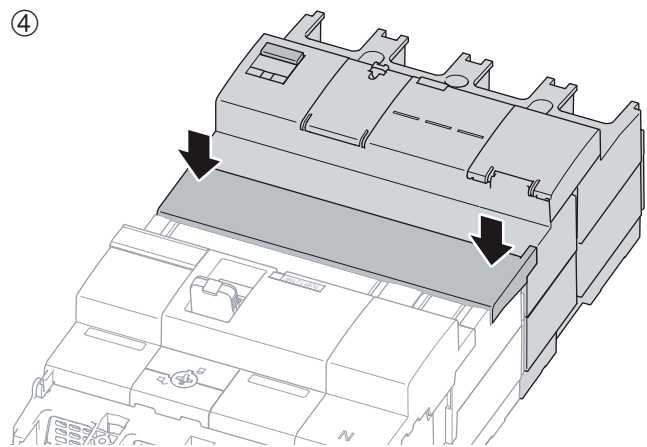
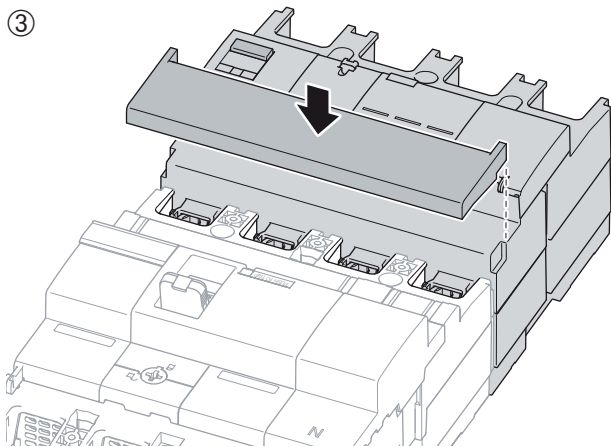
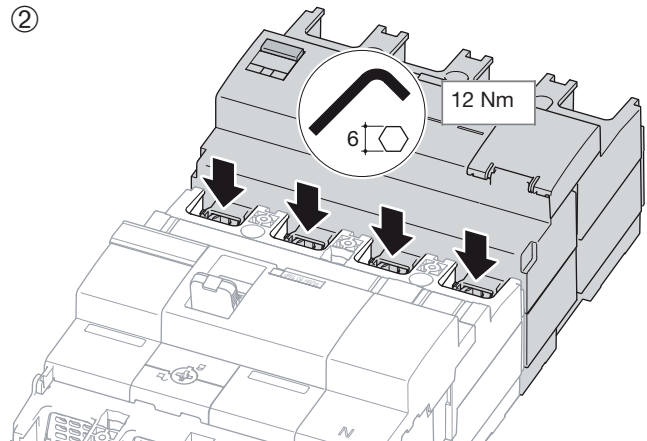
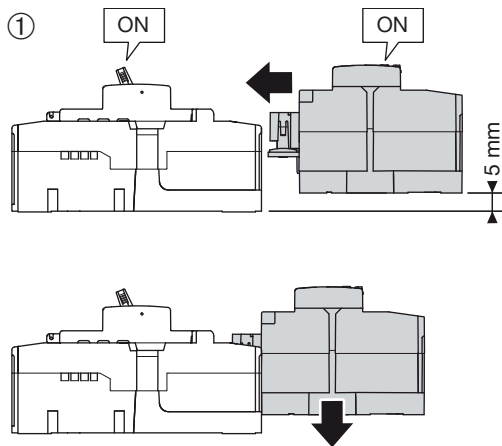


Add-on block operating

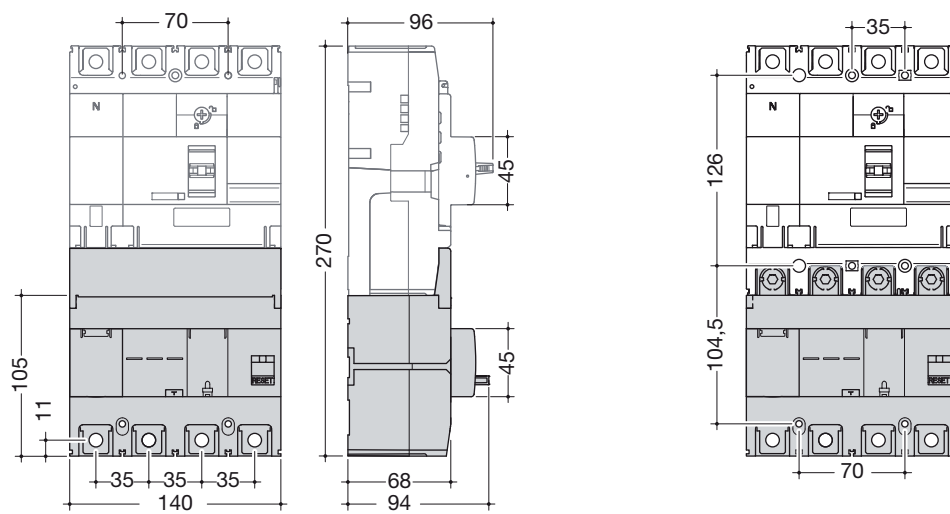


S (Δt)	A ($I_{\Delta n}$)						
	0,03	0,1	0,3	1	3	6	
Inst.	OK	OK	OK	OK	OK	OK	
0,06	no	OK	OK	OK	OK	OK	
0,15	no	OK	OK	OK	OK	OK	
0,3	no	OK	OK	OK	OK	OK	
0,5	no	OK	OK	OK	OK	OK	
1	no	OK	OK	OK	OK	OK	

Add-on block mounting



Dimensions



Moulded case circuit breakers h250

2 versions of trip unit:
 - Thermal magnetic trip unit:
 thermal adjustment: 0.63 to 1 In
 magnetic adjustment:
 6-8-10-13 x In
 3P
 Mechanical test button,
 lockable settings,

Electronic trip unit LSI:

Long delay (thermal equivalent)
 adjustable: $I_r = 0.4$ to $1 \times I_n$
 short delay (magnetic equivalent)
 adjustable: 2.5 to $10 \times I_r$
 time delay: 0,1 - 0,2 s
 3P & 4P
 Mechanical test button,
 sealable settings,

Not for use in TPN and panel boards.

Connection:
 Directly on copper cable terminal,
 with end lug max. width: 25 mm

Comply with IEC 60 947-2.



HHG250U

Designation	Characteristics	In	Cat. ref.	
			3P	4P
MCCBs h250 25kA TM	breaking capacity	32A	HHG032U	-
	I_{cu} : 25 kA (400/415 V AC)	63A	HHG063U	-
	I_{cs} : 19 kA	100A	HHG100U	-
		125A	HHG125U	-
	adjustable thermal	160A	HHG160U	-
	0.63 to $1 \times I_n$	200A	HHG200U	-
	adjustable magnetic	250A	HHG250U	-
	6 - 8 - 10 - 13 x In			
MCCBs h250 50kA TM	breaking capacity	20A	HNG020U	-
	I_{cu} : 30 kA (20-32A)	32A	HNG032U	-
	I_{cu} : 50 kA (400/415 V AC)	63A	HNG063U	-
	I_{cs} : 25 kA	100A	HNG100U	-
		125A	HNG125U	-
	adjustable thermal	160A	HNG160U	-
	0.63 to $1 \times I_n$	200A	HNG200U	-
	adjustable magnetic	250A	HNG250U	-
	6 - 8 - 10 - 13 x In			
MCCBs h250 65kA TM	breaking capacity	50A	HEG050U	-
	I_{cu} : 65 kA (400/415 V AC)	63A	HEG063U	-
	I_{cs} : 36 kA	100A	HEG100U	-
		125A	HEG125U	-
	adjustable thermal	160A	HEG160U	-
	0.63 to $1 \times I_n$	200A	HEG200U	-
	adjustable magnetic	250A	HEG250U	-
	6 - 8 - 10 - 13 x In			
MCCBs h250 50kA LSI	breaking capacity	40A	HNC040U	HNC041U
	I_{cu} : 50 kA (400/415 V AC)	125A	HNC125U	HNC126U
	I_{cs} : 25 kA	250A	HNC250U	HNC251U
	adjustable thermal			
	$I_r = 0.4$ to $1 \times I_n$			
	adjustable magnetic			
	2.5 to $10 \times I_r$			
	3P, 3 trip units & 4P, 3 trip units			
MCCBs h250 70kA LSI	breaking capacity	40A	HEC040U	HEC041U
	I_{cu} : 70 kA (400/415 V AC)	125A	HEC125U	HEC126U
	I_{cs} : 70 kA	250A	HEC250U	HEC251U
	adjustable thermal			
	$I_r = 0.4$ to $1 \times I_n$			
	adjustable magnetic			
	2.5 to $10 \times I_r$			
	3P, 3 trip units & 4P, 3 trip units			



HEC250U

Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB is "open" or "close".
 - 1 changeover alarm contact: indicates MCCB tripping.

Coil connection

Connection capacity:
 0,75 mm² flexible or rigid cables
 Optional connection cables.
 The cable capacity of the terminals is 0,5 to 1,25 mm².

Shunt trip

Remotes tripping of MCCBs or trip-free switches.
 Operating voltage: 0,7 to 1,1 x Un

Under voltage release

Allows the tripping of MCCBs or trip-free switches when voltage level drop between 35 and 70% of Un. Pick up voltage 0,85 x Un

Direct rotary handle

- padlockable
 - equipped with front cover and handle
 - fixing without any additional screw.

Extended rotary handle

- IP 55
 - supplied complete with shaft and handle.

Designation	Characteristics	Cat. ref.
Auxiliary contacts	1 changeover contact	HXC021H
AX	250 V AC / 3A	
AL	125 V DC / 0,4A	
	1 NO + 1 NC	
	1 changeover alarm contact	HXC024H
	250 V AC / 3A	
	125 V DC / 0,4A	
	1 NO + 1 NC	
	low level contact (ON/OFF)	HXA025H
	125 V AC	
	1 NO + 1 NC	
	low level alarm contact	HXA026H
	125 V AC	
	1 NO + 1 NC	
Shunt trips	24 V DC	HXC001H
SH	48 V DC	HXC002H
	100 - 120 V AC	HXC003H
	200 - 240 V AC	HXC004H
	380 - 450 V AC	HXC005H
Undervoltage releases	24 V DC	HXC011H
UV	100 - 120 V AC	HXC013H
	200 - 240 V AC	HXC014H
	380 - 450 V AC	HXC015H
Delayed undervoltage releases	24 V DC	HXC051H
DUVR	110 - 120 V AC	HXC053H
	200 - 240 V AC	HXC054H
	380 - 415 V AC	HXC055H
Direct rotary handles	padlockable handle Ø 5 - 8 mm ² max	HXC030H
Extended rotary handles	padlockable handle Ø 5 - 8 mm ² max	HXC031H





HXC039H

Designation	Characteristics	Cat. ref.	
Padlocks	to mount on MCCBs for handle locking for 3 padlocks max Ø 5 mm	HXC039H	
Motor operators	24 V DC 230-240 V AC	HXC040H	HXC042H
Interlocking	wire type	HXC065H	

Designation	Characteristics	Cat. ref.	
		3P	4P
Collar terminals	set of 3 or 4 pieces for copper conductors 120 mm ²	HYC003H	HYC004H



HYC011H

Extended connections	spreader connections	HYC011H	HYB012H
	straight connections	HYC010H	HYC010H



HYC022H

Terminal covers	for extended straight connections (LSI only)	HYC021H	HYC022H
	for extended straight connections (TM only)	HYG021H	HYG022H
	for rear connections (LSI only)	HYC025H	HYC026H
	for collar terminals	HYC027H	HYC028H

Rear connections	for LSI only	HYC031H	HYC032H
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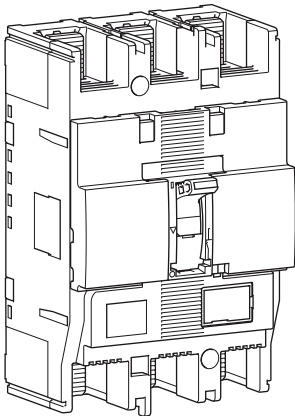


HYC031H

Connecting kit	0,75 mm ² set of 3 x 2 wires length: 1,30m	HYA035H	HYA035H
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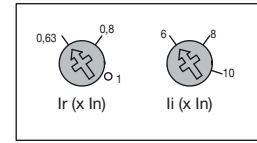
Main incomers

MCCBs



		220/240 V	380/415 V	660/690 V
		AC (kA)	AC (kA)	AC (kA)
HHG	Icu	35	25	-
	Ics	27	19	-
HNG	Icu	35	50	-
	Ics	65	25	-
HEG	Icu	85	65	-
	Ics	85	36	-
HNC	Icu	85	50	7,5
	Ics	85	25	7,5
HEC	Icu	100	70	20
	Ics	100	70	15

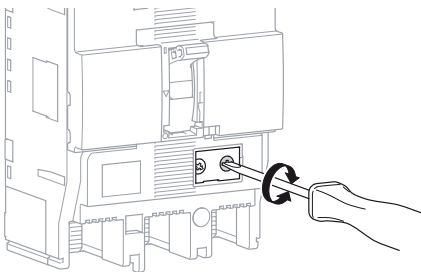
Magnetic and thermal settings



Thermal adjustment from 0,63 to 1 x In

Magnetic adjustment from 6 to 10 x In (250A)
from 6 to 13 x In (160 and 200A)
from 6 to 12 x In (32, 63, 100 and 125A)

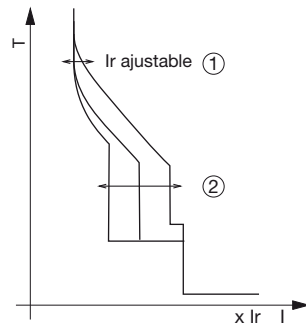
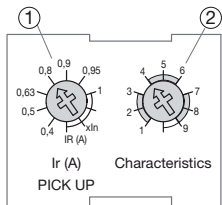
Electronic trip unit setting (LSI)



L - Long delay - protection against overloads: Ir and tr settings

S - Short delay - protection against short circuits: Isd and tsd settings

I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: 2,5 to 10 x Ir.

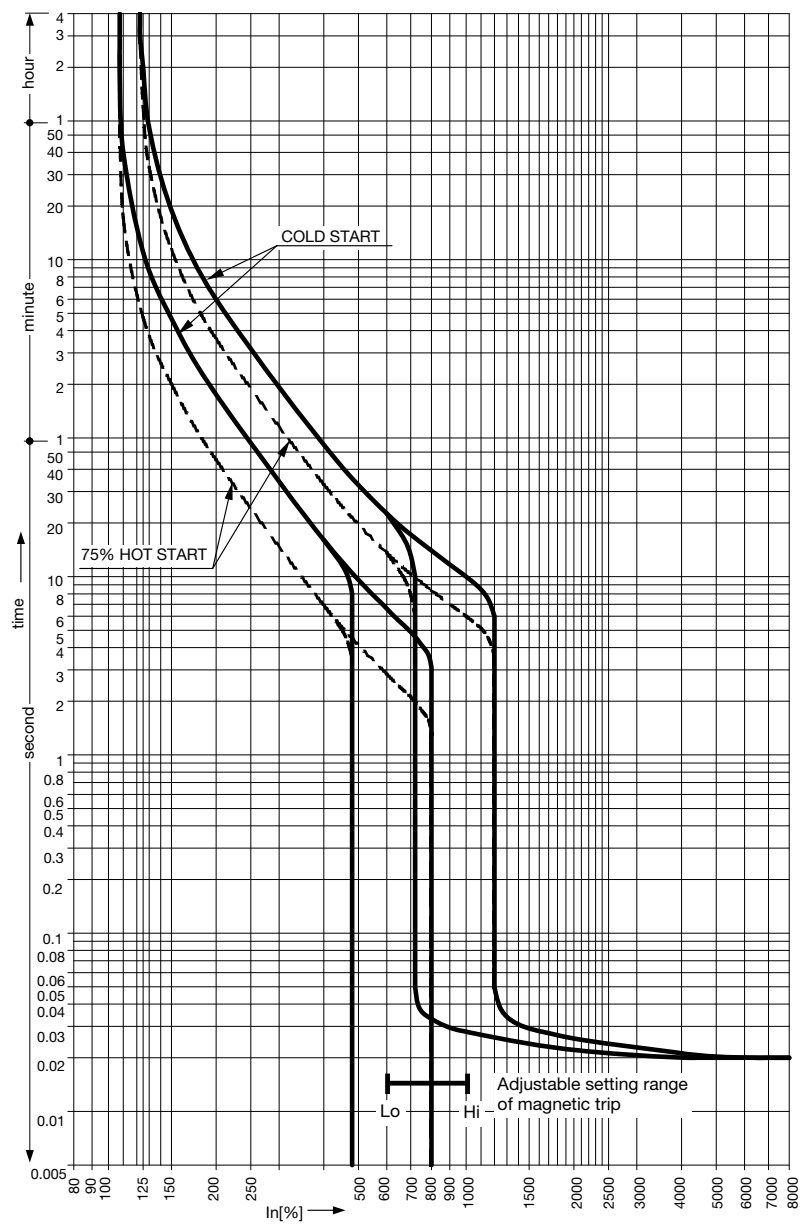


Use	Characteristics (*)	
	3 P	4 P
Generator protection	pos. 1	pos. 1, 4 and 7
Standard protection	pos. 2 and 3	pos. 2, 5 and 8
Motor protection	pos. 4 and 5	pos. 3, 6 and 9

LSI	In A										
	Ir (x In)	3P				4P					
		Long Time Delay		Short Time Delay		Inst	Long Time Delay		Short Time Delay		Inst
	tr (s)	isd (xlr)	tsd (s)	li (xlr)	Ir (x In)	tr (s)	isd (xlr)	tsd (s)	li (xlr)	Neutral	
Ir (x In)	0,4	OK				OK					
	0,5	OK				OK					
	0,63	OK				OK					
	0,8	OK				OK					
	0,9	OK				OK					
	0,95	OK				OK					
	1	OK				OK					
Characteristics	1	11s at 2 xlr	2,5	0,1	14 (max 12 x In)		11 s at 2 xlr	2,5	0,1	14 (max 10 x In)	no
	2	21s at 2 xlr					21 s at 2 xlr				
	3		7,5 s at 6 xlr	10			0,2				
	4	5 s at 6 xlr	10		11 s at 2 xlr		2,5	0,1			50%
	5	7,5 s at 6 xlr			21 s at 2 xlr						
	6				7,5 s at 6 xlr		2,5	0,2			
	7				11 s at 6 xlr		2,5	0,1			100%
	8				21 s at 2 xlr		5				
	9				21 s at 2 xlr		10	0,2			

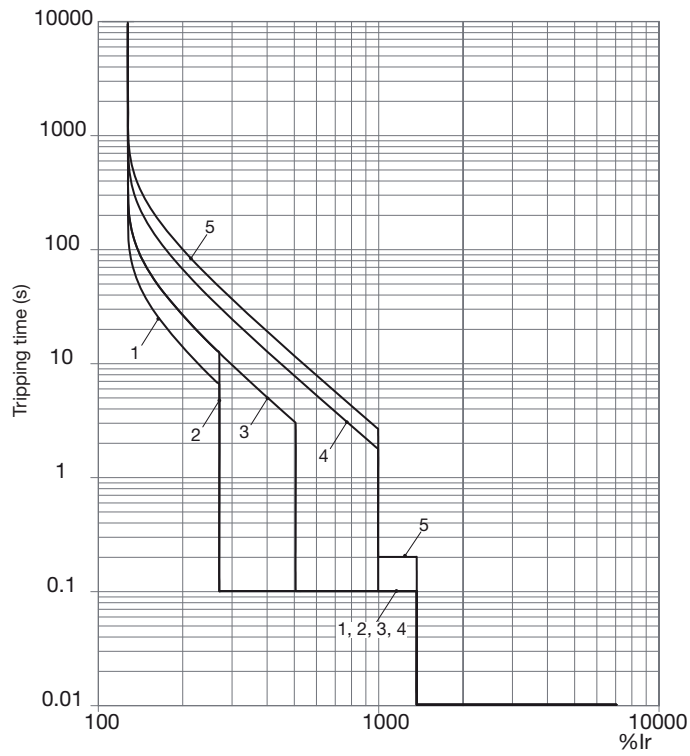
Tripping curve

MCCB h250 TM



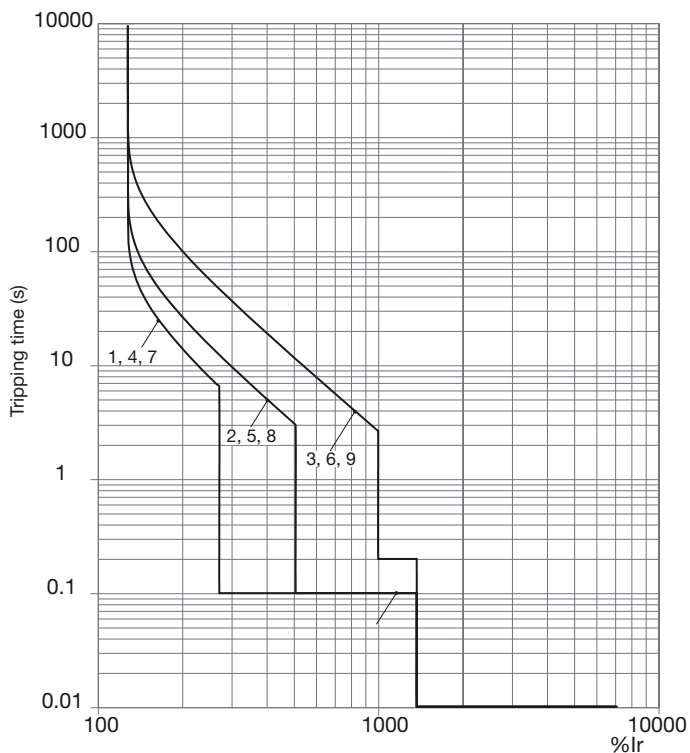
Main incomers

MCCB h250 3P LSI



LTD pick-up current		Ir	x In	0,4	0,5	0,63	0,8	0,9	0,95	1	
Characteristics			No.	1	2	3	4	5			
Standard	LTD	Tr	(s)	11	21	21	5	7,5			
				200 % x Ir				600 % x Ir			
	STD	Isd	x Ir	2,5	2,5	5	10	10			
		tsc	(s)	0,1	0,1	0,1	0,1	0,2			
INST	li	x Ir	14 (max 13 x In)								

MCCB h250 4P LSI

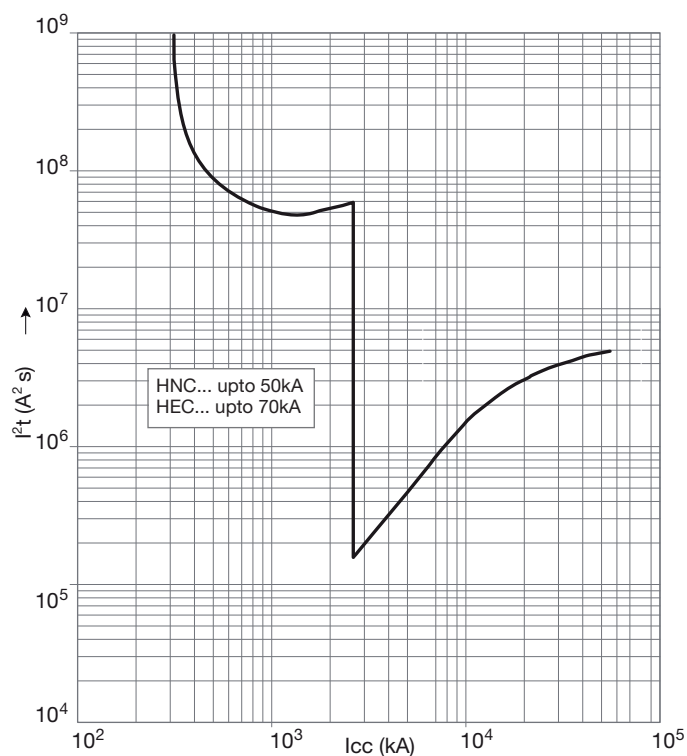


Main incomers

LTD pick-up current		Ir	x In	0,4	0,5	0,63	0,8	0,9	0,95	1		
Characteristics		No.		1	2	3	4	5	6	7	8	9
LTD	Tr	(s)		11 s	21 s	7,5 s	11 s	21 s	7,5 s	11 s	21 s	7,5 s
				200 % x Ir		600% x Ir	200 % x Ir		600% x Ir	200 % x Ir		600% x Ir
STD	Isd	x Ir		2,5	5	10	2,5	5	10	2,5	5	10
		(s)		0,1		0,2	0,1		0,2	0,1		0,2
INST		x Ir		14 (max 13 x In)								
Neutral protection				no			0,5			1		

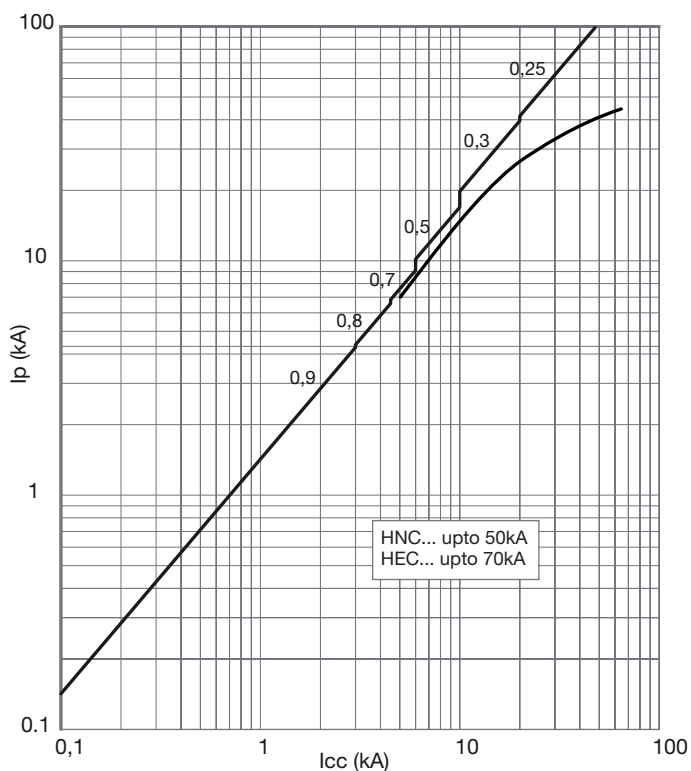
Thermal constraint curve at 400V (Let-through energy)

MCCB h250



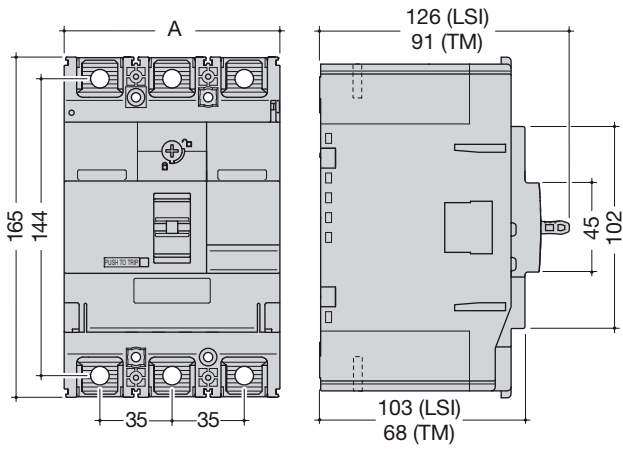
Current limiting curve at 400V (Let-through peak current)

MCCB h250



Dimensions

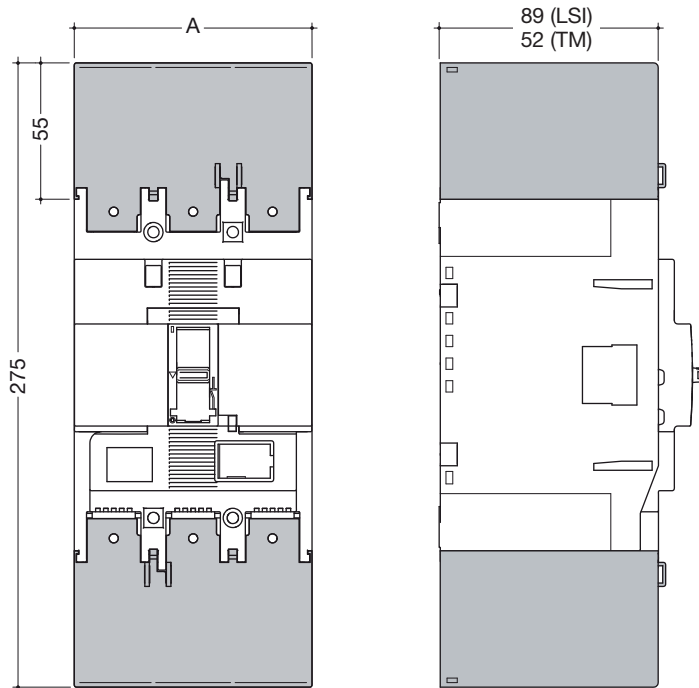
MCCBs



	A (mm)
3P	105
4P	140

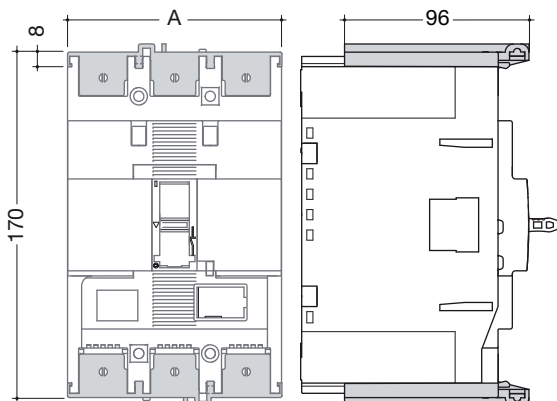
Accessories

Terminal covers for extended straight connections



	A (mm)
3P	105
4P	140

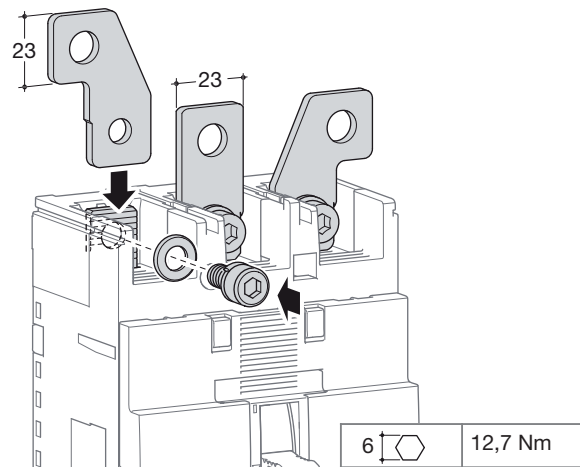
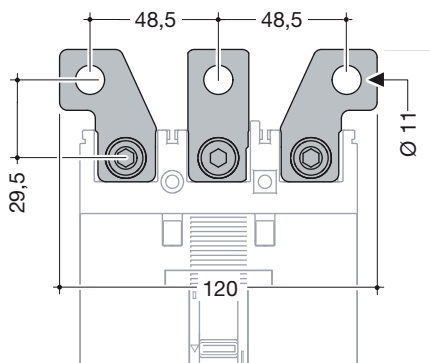
Terminal cover for rear connections (LSI only)



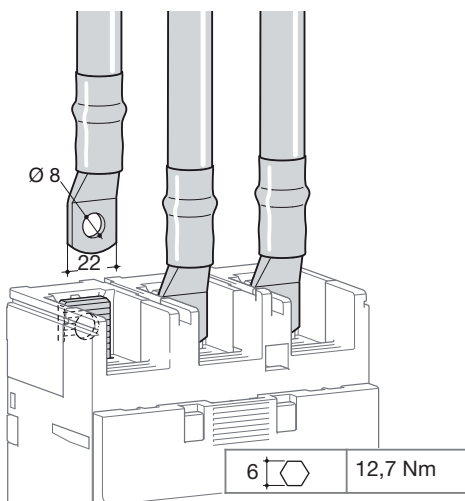
	A (mm)
3P	105
4P	140

Connection

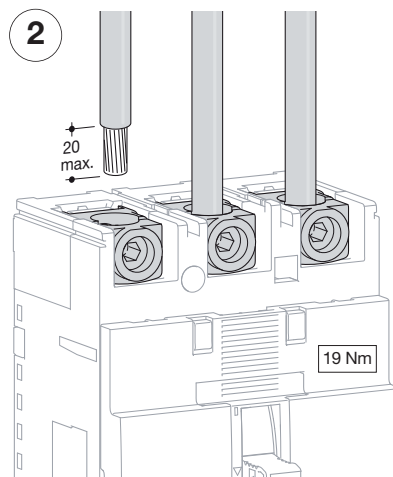
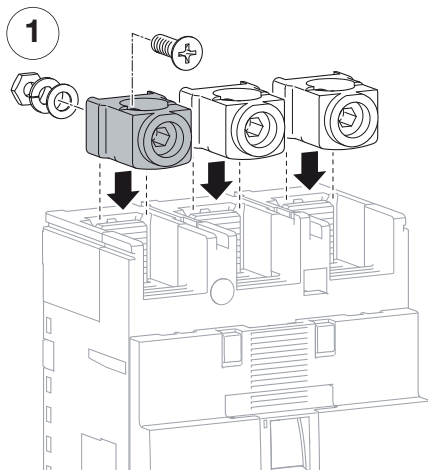
Extended straight and spreader connections



Connection with end lugs



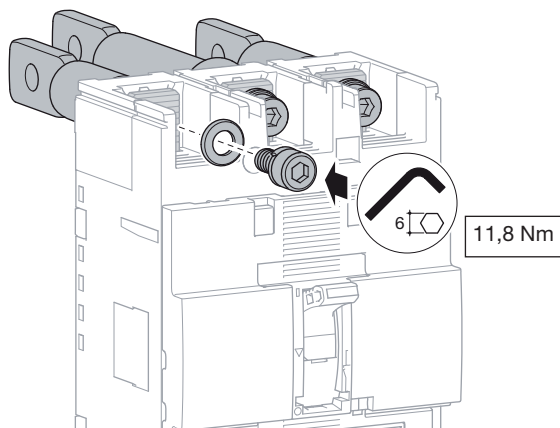
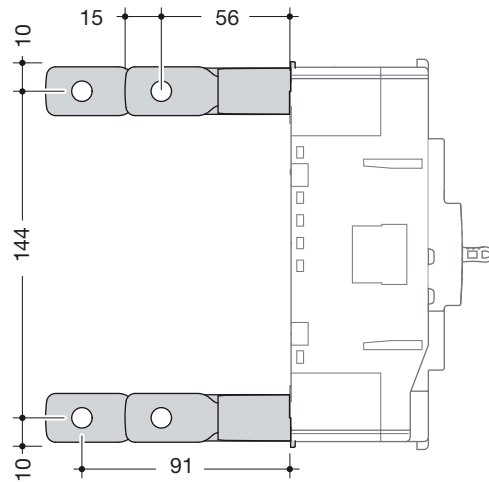
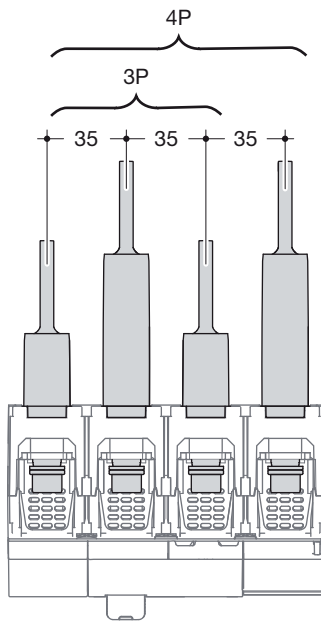
Connection by collar



Terminals for copper conductors
HYC003H, HYC004H

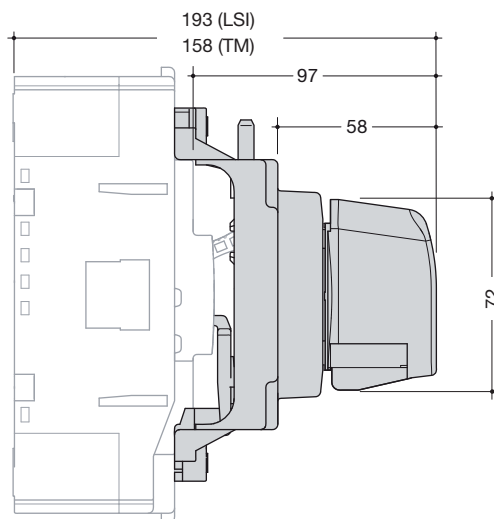
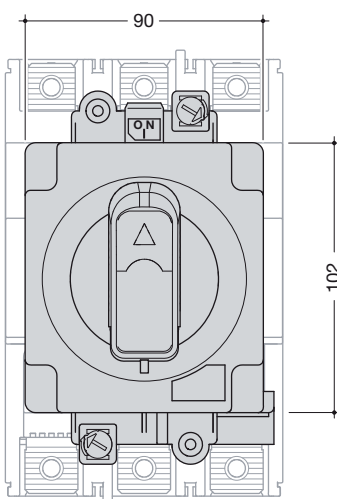
	min. 35 mm ²	max. 120 mm ²
	min. 35 mm ²	max. 120 mm ²
6	19 Nm	

Rear connections (LSI only)

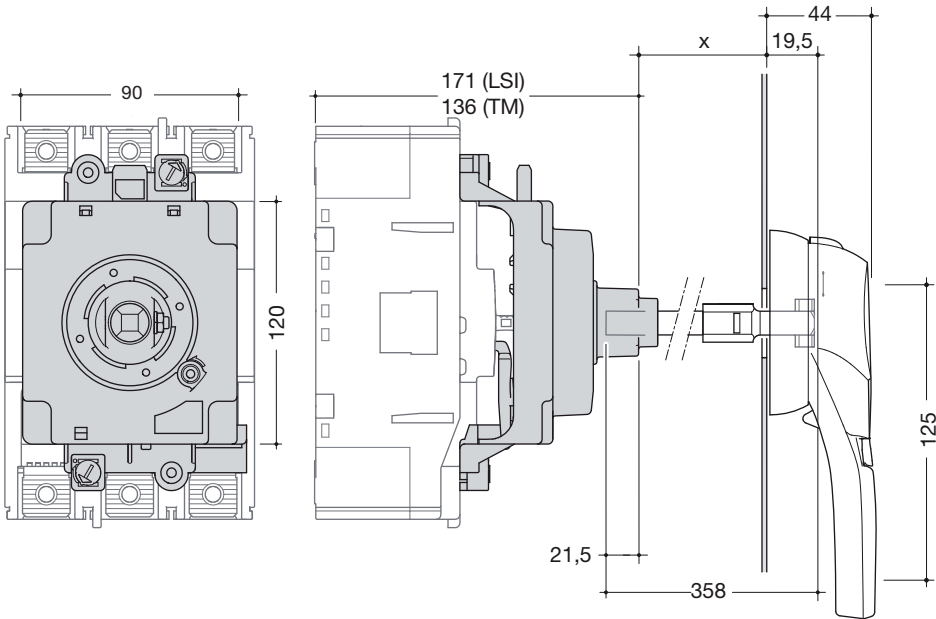


Accessories

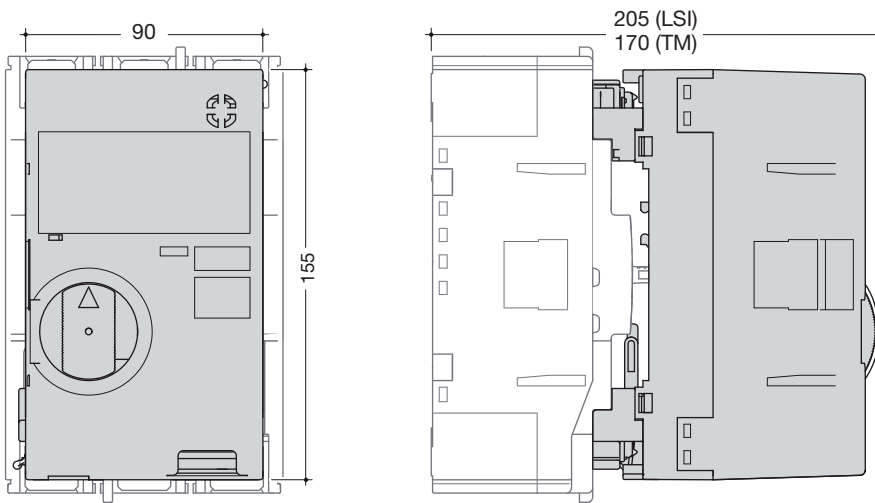
Direct rotary handle



Extended rotary handle



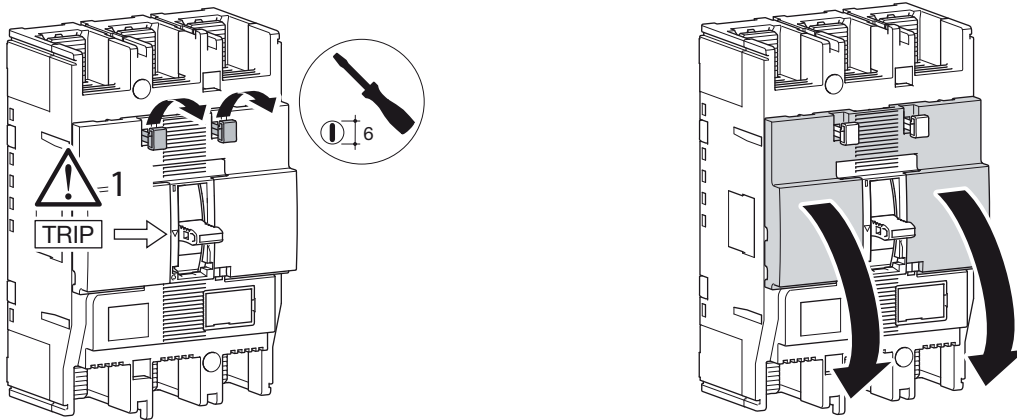
Motor operator



		HXC040H	HXC042H
Operating voltage		24V DC	230-240V AC
Operating current / starting current peak value (A)	24V DC	18/26	-
	230-240V AC	-	3,5/7
Operating time (s)	(ON)	0,1s	
	(OFF)	0,1s	
	(RESET)	0,1s	
Power supply required		300VA min.	
Dielectric properties (1 min)		1000V AC	1500V AC

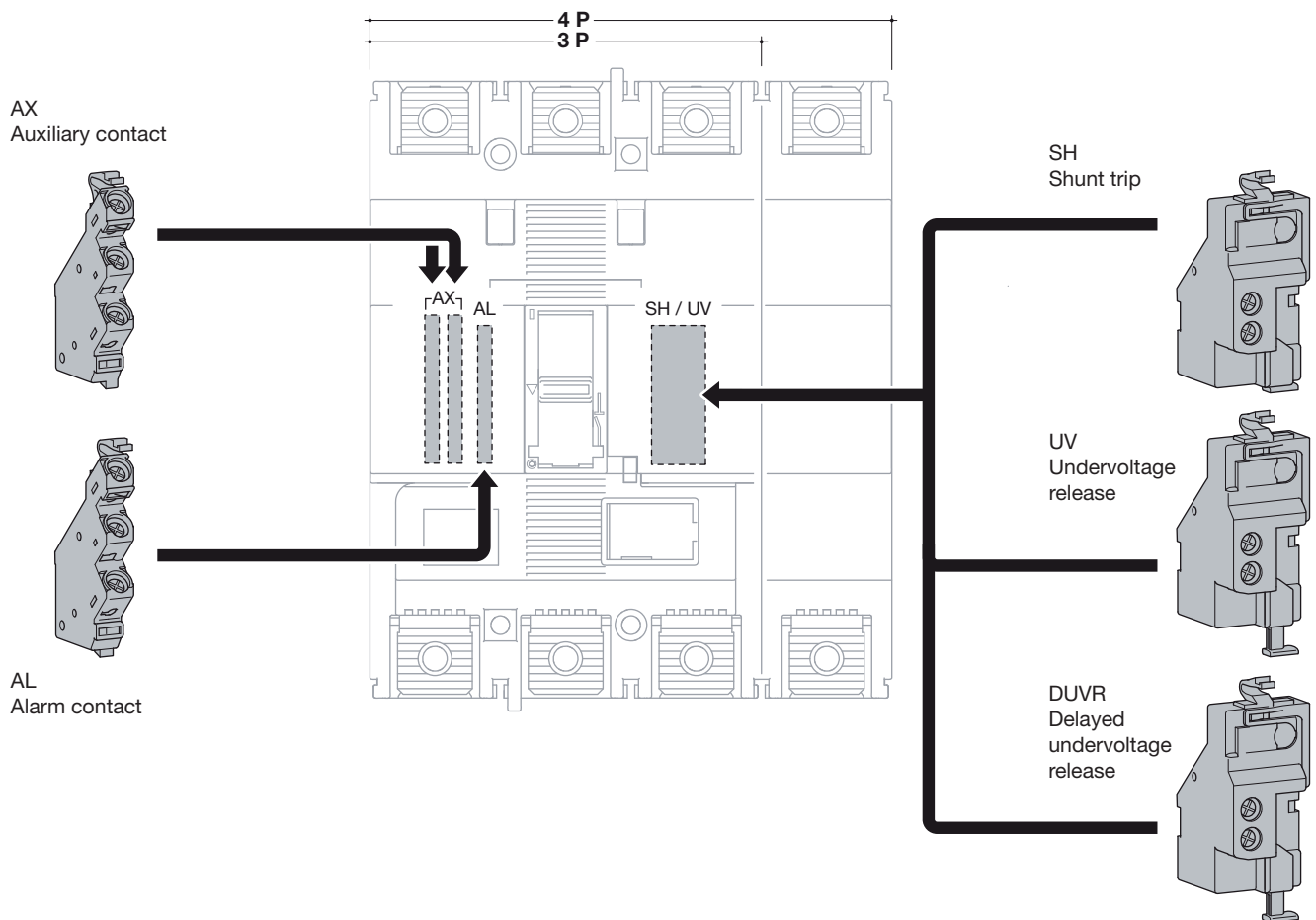
Auxiliaries

Auxiliaries for MCCBs and trip-free switches



Main incomers

Mounting combination for auxiliaries and releases



Moulded case circuit breakers h400, h630

2 versions of trip unit:
Thermal magnetic trip unit TM:
- thermal adjustment:
from 0.63 to 1 x I_n
- magnetic adjustment:
from 6 to 12 x I_n

Electronic trip unit LSI:

- long delay (thermal equivalent) adjustable:
I_r = 0.4 to 1 x I_n
- short delay (magnetic equivalent) adjustable:
2.5 to 10 x I_r (400A)
2.5 to 8 x I_r (630A)
- time delay: 0,1 - 0,2 s
3P & 4P (adjustable neutral 0 - 50% - 100%).

Mechanical test button, lockable settings

Connection:
Directly on copper cable terminal,
with end lug max. width: 30 mm

Comply with IEC 60 947-2.

Trip-free switches

Allows tripping at distance using a voltmetrical trip unit (optional)

Comply with IEC 60 947-3.
AC 23A / DC 22A

Add-on blocks

For h630 (LSI) devices
These devices are intended to be

fixed at the bottom of the devices.

Fixed version: 300mA sensitivity and instantaneous tripping
Adjustable version: sensitivity from 30mA to 6A, tripping from instantaneous to 1s delay.
Test button for differential functioning check.
Mechanical test button.
LED or remote signal for tripping or advance warning (25-50% IΔn).

Type A (for fault component DC pulsating current) and HI (reinforced immunity against unexpected tripping).

Comply with IEC 60 947-2.

Designation	Characteristics	In	Cat. ref.	
			3P	4P
MCCBs h400 25kA TM	breaking capacity I _{cu} : 25 kA (400/415 V AC) I _{cs} : 25 kA	250A	HHD250U	-
	adjustable thermal: 0.63 to 1 x I _n adjustable magnetic: 6 to 12 x I _n	400A	HHD400U	-
MCCBs h400 50kA TM	breaking capacity I _{cu} : 50 kA (400/415 V AC) I _{cs} : 50 kA	250A	HND250U	HND251U
	adjustable thermal: 0.63 to 1 x I _n adjustable magnetic: 6 to 12 x I _n	400A	HND400U	HND401U
MCCBs h630 50kA LSI * delivered with spreader bars	breaking capacity I _{cu} : 50 kA (400/415 V AC) I _{cs} : 50 kA	400A	HND400H	HND401H
	adjustable thermal: I _r = 0.4 to 1 x I _n adjustable magnetic: 2.5 to 10 x I _r (250-400A) 2.5 to 8 x I _r (630A) time delay: 0,1 - 0,2 s	630A	HND630U*	HND631U*
MCCBs h630 70kA LSI * delivered with spreader bars	breaking capacity I _{cu} : 70 kA (400/415 V AC) I _{cs} : 50 kA	400A	HED400U	HED401U
	adjustable thermal: I _r = 0.4 to 1 x I _n adjustable magnetic: 2.5 to 10 x I _r (250-400A) 2.5 to 8 x I _r (630A) time delay: 0,1 - 0,2 s	630A	HED630U*	HED631U*
Trip-free switches	suitable for AC 22A / AC 23A U _e : 415 V AC I _{cw} (0,3s) = 5kA	400A	HCD400U	HCD401U
		630A	HCD630U	HCD631U
Add-on blocks (only for h630)	adjustable sensitivity I _n : 0,03 - 0,1 - 0,3 - 1 - 3 - 6A	400A	-	HBD401H
	adjustable tripping instantaneous time delay: 0,06s - 0,15s - 0,3s - 0,5 - 1s	500A	-	HBD631H



HHD400U



HND630U



HBD401H

Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB is "open" or "close".
- 1 changeover alarm contact: indicates MCCB tripping.

Coil connection

Connection capacity:
0,75 mm² flexible or rigid cables
Optional connection cables.
The cable capacity of the terminals is 0,5 to 1,25 mm².

Shunt trip

Remotes tripping of MCCBs or trip-free switches.
Operating voltage: 0,7 to 1,1 x Un
Un

Under voltage release

Allows the tripping of MCCBs or trip-free switches when voltage level drop between 35 and 70% of Un. Pick up voltage 0,85 x Un

Direct rotary handle

- padlockable
- equipped with front cover and handle
- fixing without any additional screw.

Extended rotary handle

- IP 55
- supplied complete with shaft and handle.

Designation	Characteristics	Cat. ref.
Auxiliary contacts	1 changeover contact	HXC021H
AX	250 V AC / 3A	
AL	125 V DC / 0,4A	
	1 NO + 1 NC	
	1 changeover alarm contact	HXC024H
	250 V AC / 3A	
	125 V DC / 0,4A	
	1 NO + 1 NC	
	low level contact (ON/OFF)	HXC025H
	125 V AC	
	1 NO + 1 NC	
	low level alarm contact	HXC026H
	125 V AC	
	1 NO + 1 NC	
Shunt trips	24 V DC	HXC001H
SH	48 V DC	HXC002H
	100 - 120 V AC	HXC003H
	200 - 240 V AC	HXC004H
	380 - 450 V AC	HXC005H
Undervoltage releases	24 V DC	HXC011H
UV	100 - 120 V AC	HXC013H
	200 - 240 V AC	HXC014H
	380 - 450 V AC	HXC015H
Delayed undervoltage releases	24 V DC	HXD051H
DUVR	100 - 120 V AC	HXD053H
	200 - 240 V AC	HXD054H
	380 - 450 V AC	HXD055H
Designation	Characteristics	Cat. ref.
Direct rotary handle	padlockable handle max Ø 6 mm	HXD030H
Extended rotary handle	padlockable handle max Ø 8 mm	HXD031H
Padlock	to mount on MCCBs for handle locking for 3 padlock Ø 5 - 8 mm ² max	HXD039H



HXC021H



HXC024H



HXC004H



HXC014H



HXD030H



HXD039H



HXD042H



HYD003H



HYD015H



HYD022H

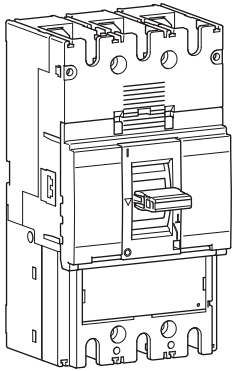


HYD033H

Designation	Characteristics	In	Cat. ref.	
			3P	4P
Motor operators	24-48 V DC		HXD040H	HXD040H
	100-240 V AC		HXD042H	HXD042H
Interlocking	wire type		HXD065H	HXD065H
Collar terminals	set of 3 or 4 terminals for copper conductors 1 x 35 - 240 mm ²	250 - 400A	HYD003H	HYD004H
	set of 3 or 4 terminals for aluminium / copper conductors 1 x 35 - 240 mm ²	250 - 400 - 630A	HYD005H	HYD006H
	set of 3 or 4 terminals for multiple aluminium / copper conductors 2 x 35 - 240 mm ²	250 - 400 - 630A	HYD007H	HYD008H
Extended connections	set of 4 pieces for straight connections	250 - 400A 630A	HYD010H HYD013H	HYD010H HYD013H
	spreader connections	250 - 400A 630A	HYD011H HYD014H	HYD012H HYD015H
Terminal covers	for extended straight connections		HYD021H	HYD022H
	for extended spreader connections		HYD023H	HYD024H
	for rear connections		HYD025H	HYD026H
	for collar terminals		HYD027H	HYD028H
Rear connections		250 - 400A 630A	HYD031H HYD033H	HYD032H HYD034H
Connecting kit	0,75 mm ² set of 3 x 2 wires length: 1,30m		HYA035H	HYA035H

Designation	Characteristics	Cat. ref.
Ring lugs	compact lugs 120 mm ² Ø10	HYD093H
	compact lugs 150 mm ² Ø10,5	HYD095H
	compact lugs 185 mm ² Ø10,5	HYD096H
	compact lugs 185 mm ² Ø12,8 suitable with spreader	HYD097H
	compact lugs 240 mm ² Ø12,8 suitable with spreader	HYD098H

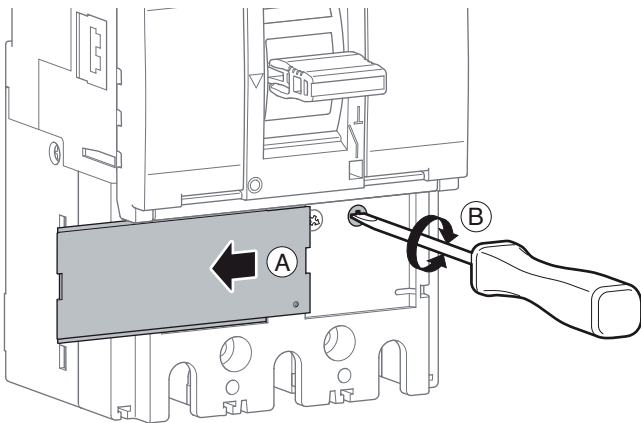
MCCBs



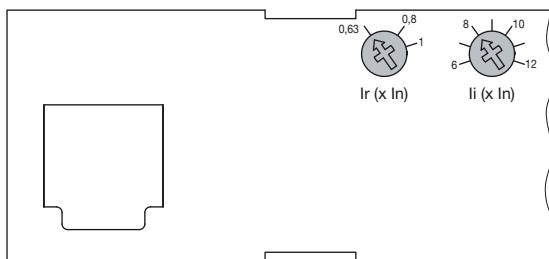
		220/240 V AC (kA)	380/415 V AC (kA)	660/690 V AC (kA)
h400/h630 HND	l _{cu}	85	50	20
	l _{cs}	85	50	15
h630 HED	l _{cu}	100	70	20
	l _{cs}	85	50	15
h630 HCD	l _{cm}	–	9	–
	l _{cw}	–	5 kA-0,3 s	–

Main incomers

Settings



Magnetic and thermal settings



Thermal adjustment from 0,63 to 1 x I_n

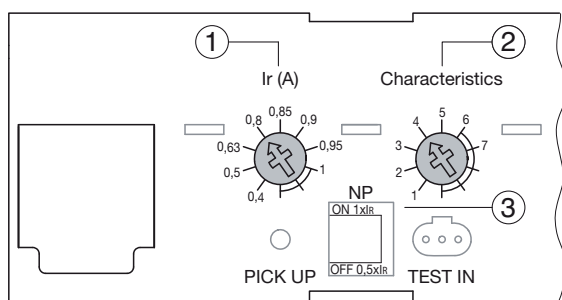
Magnetic adjustment from 6 to 12 x I_n

Electronic trip unit setting (LSI)

L - Long delay - protection against overloads: I_r and t_r settings

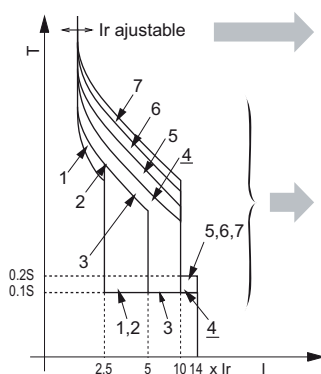
S - Short delay - protection against short circuits: I_{sd} and t_{sd} settings

I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: $2,5$ to $10 \times I_r$ (250 - 400A) and $2,5$ to $8 \times I_r$ (630A).



Neutral settings:

- ① Long delay current I_r setting
- ② Other curve characteristics setting (t_r , I_{sd} , t_{sd})
- ③ Neutral protection against overloads setting



LSI	In A										
		250 A / 400 A					630 A				
		Long Time Delay	Short Time Delay		Inst	Long Time Delay	Short Time Delay		Inst		
	$I_r (x I_n)$	$t_r (s)$	$I_{sd} (x I_r)$	$t_{sd} (s)$	$I_i (x I_r)$	$I_r (x I_n)$	$t_r (s)$	$I_{sd} (x I_r)$	$t_{sd} (s)$	$I_i (x I_r)$	
① $I_r (x I_n)$	0,4	OK				OK					
	0,5	OK				OK					
	0,63	OK				OK					
	0,8	OK				OK					
	0,85	-				OK					
	0,9	OK				OK					
	0,95	OK				OK					
	1	OK				OK					
② Characteristics	1		11 s at 2 xlr	2,5	0,1	14 (max 13 x I_n)		11 s at 2 xlr	2,5	0,1	14 (max 10 x I_n)
	2		21 s at 2 xlr					21 s at 2 xlr			
	3			5					5		
	4		5 s at 6 xlr	10				5 s at 6 xlr	8		
	5		10 s at 6 xlr		0,2			10 s at 6 xlr		0,2	
	6		19 s at 6 xlr					16 s at 6 xlr			
	7		29 s at 6 xlr					-		-	-
③ Neutral protection	0%										
	50%										
	100%										

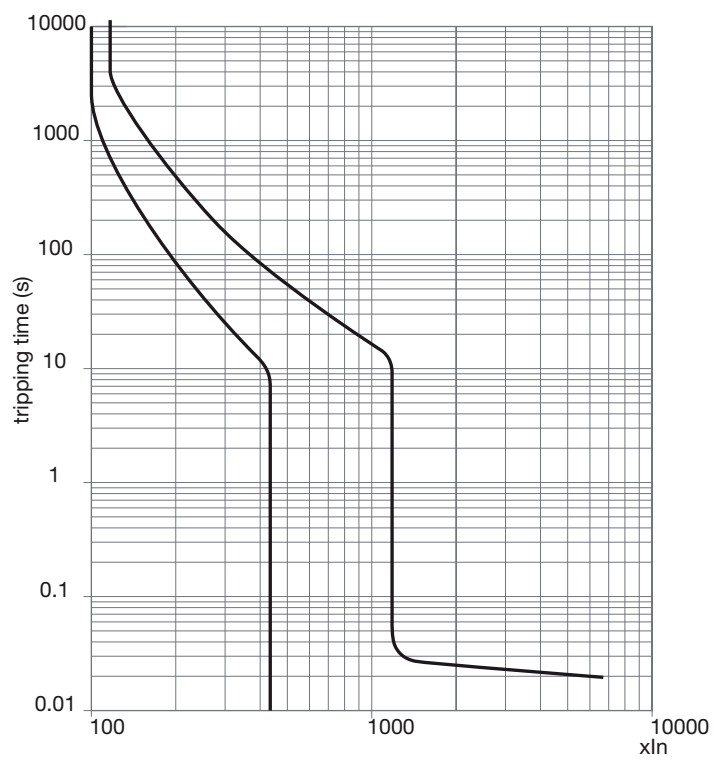
(*) Characteristic 1 : use for generators protection.

Characteristic 2 to 4 - standard protection : options allow coordination optimisation with other products.

Characteristic 5 to 7 - motor protection: use positions according to motor starting characteristics.

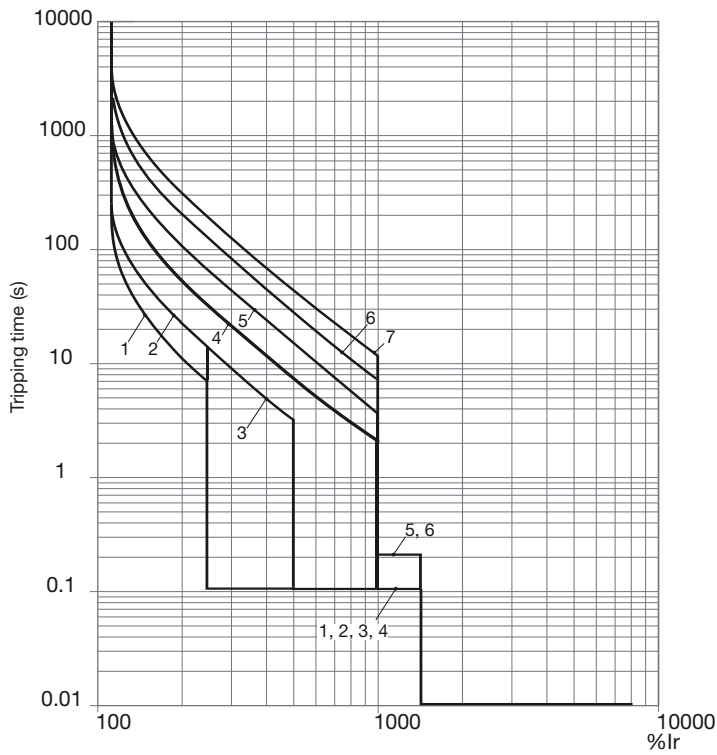
Tripping curve

MCCB h400 TM (250 and 400A)



Tripping curve

MCCB h630 LSI (250A and 400A)



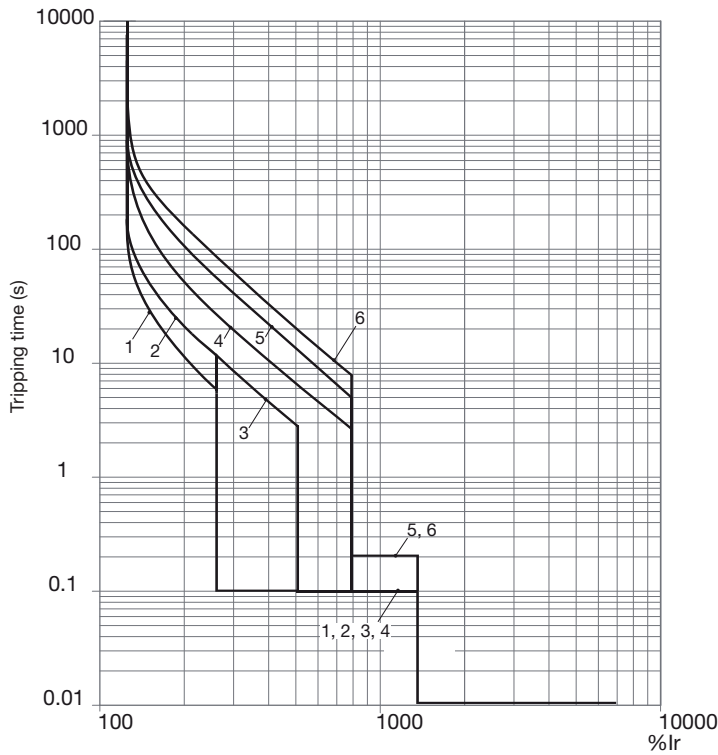
Electronic trip unit setting (LSI)

MCCB h630 LSI (250A and 400A)

		/R (A)								
LTD Pick-up current		/R	x/n	0,4	0,5	0,63	0,8	0,9	0,95	1
Characteristics			No.	1	2	3	4	5	6	7
Standard	LTD	tR	(s)	11	21	21	5	10	19	29
				200% x I R			600% x I R			
	STD	/sd	x/R	2,5		5	10			
		tsd	(s)	0,1				0,2		
	INST	/i	x/R	14 (max : 13 x In)						
Optional	N	/N	x/n	0 - 0,5 - 1						
		tN	(s)	tN=tR						

Tripping curve

MCCB h630 LSI (630A electronic)



Main incomers

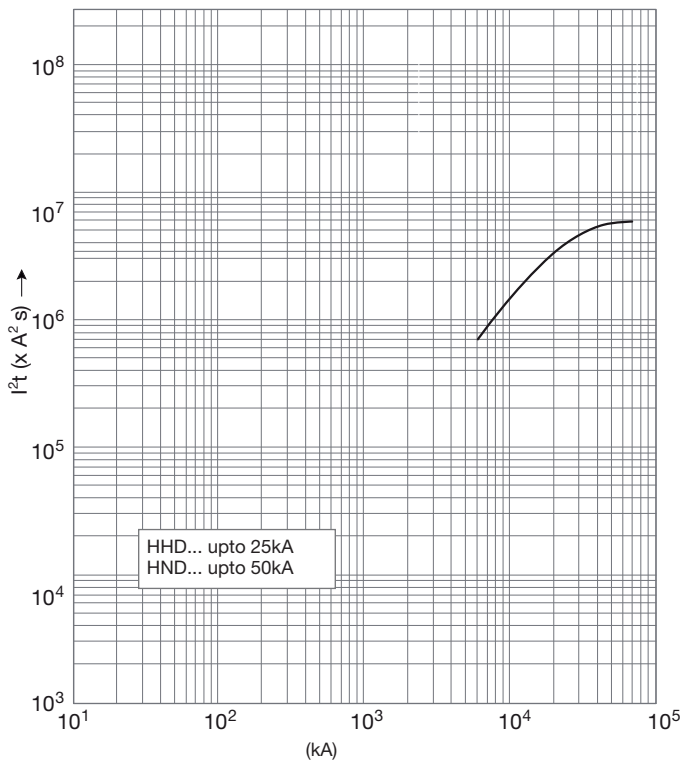
Electronic trip unit setting (LSI)

MCCB h630 LSI (630A electronic)

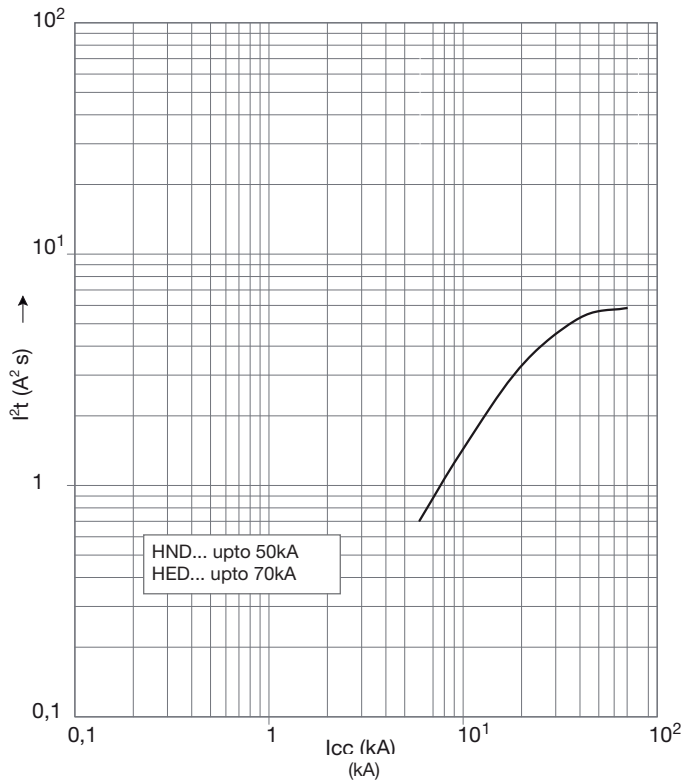
		/R (A)									
LTD Pick-up current		/R	x/n	0,4	0,5	0,63	0,8	0,85	0,9	0,95	1
Characteristics			No.	1	2	3	4	5	6		
Standard	LTD	tR	(s)	11	21	21	5	10	16		
				200% x I R			600% x I R				
	STD	/sd	x/R	2,5		5	8				
		tsd	(s)	0,1				0,2			
	INST	/i	x/R	14 (max : 13 x In)							
Optional	N	/N	x/n	0 - 0,5 - 1							
		tN	(s)	tN=tR							

Thermal constraint curve at 400V (Let-through energy)

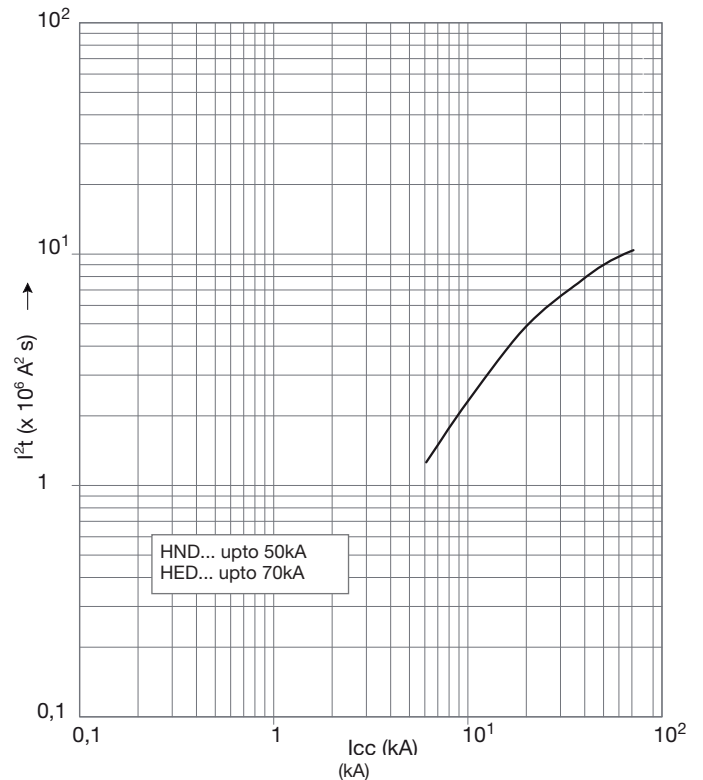
MCCB h400 TM (250A and 400A)



MCCB h630 LSI (250A and 400A)

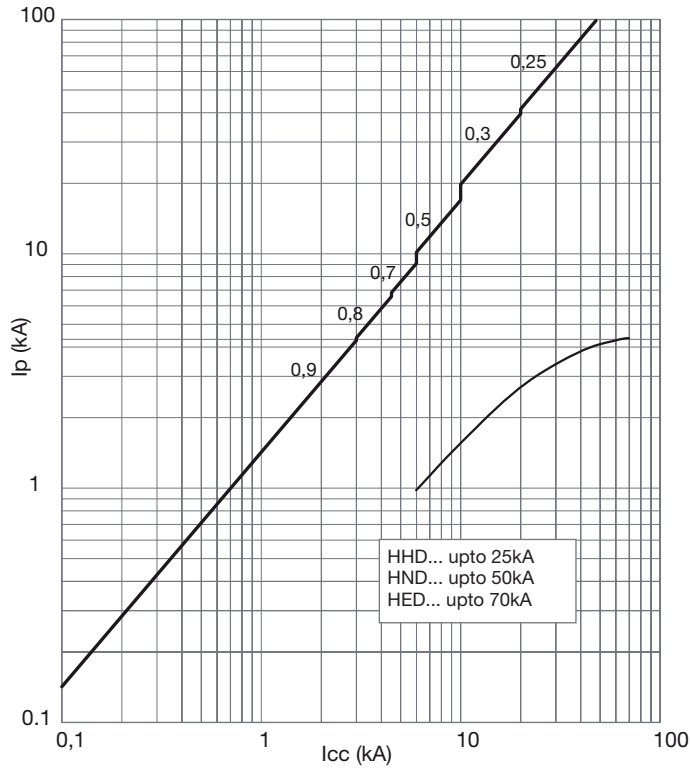


MCCB h630 LSI (630A)

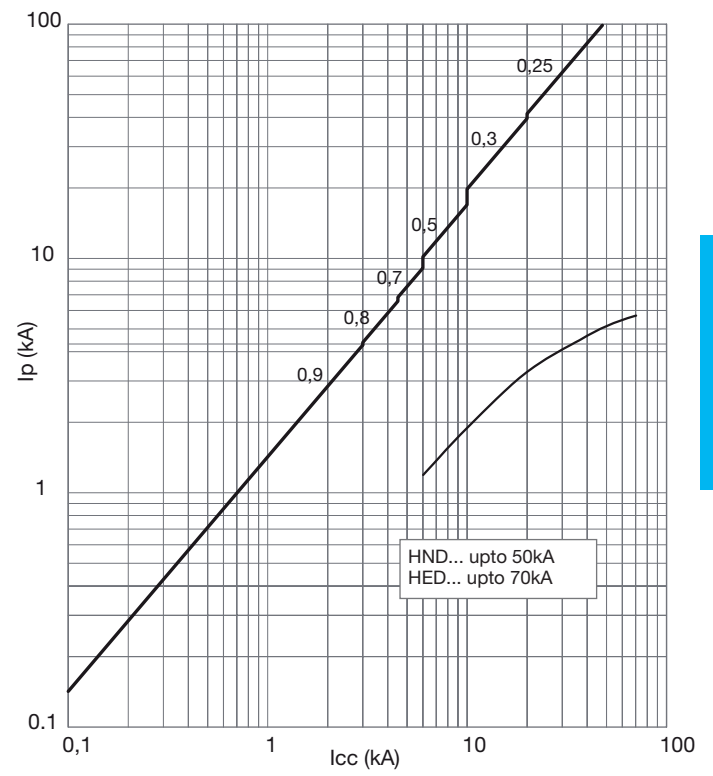


Current limiting curve at 400V (Let-through peak current)

MCCB h630 LSI (250A and 400A)
MCCB h400 TM

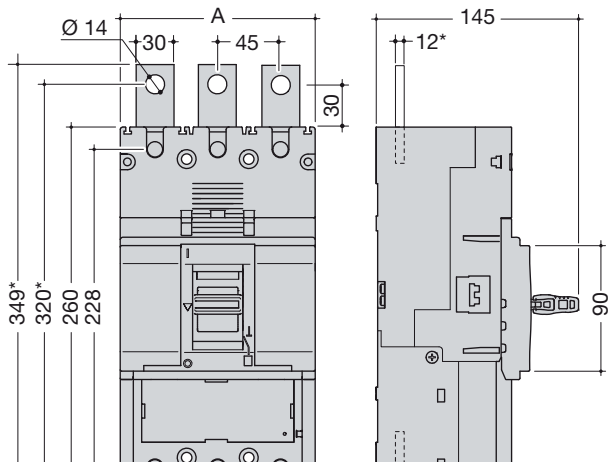


MCCB h630 LSI (630A)



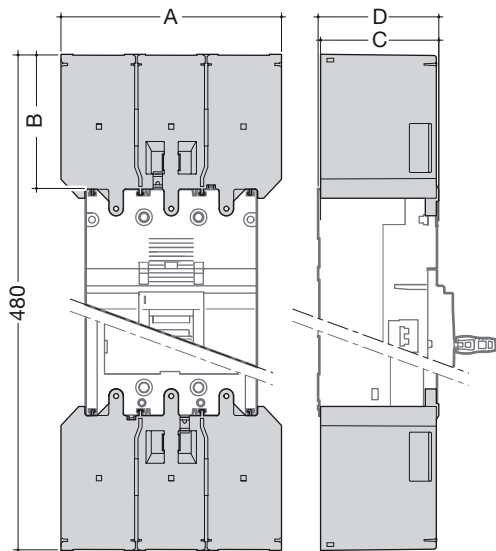
Dimensions

MCCBs



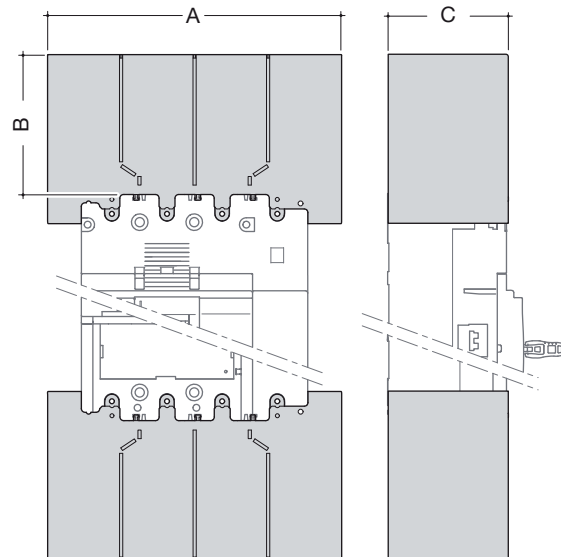
	A (mm)	B (mm)	C (mm)
3P	140	45	214
4P	185	45	214

Terminal covers for extended straight connections



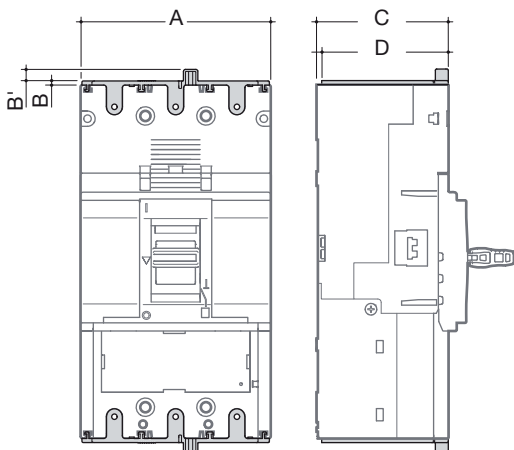
	A (mm)	B (mm)	C (mm)	D (mm)
3P	140	85	97	94,5
4P	185	85	97	94,5

Terminal covers for extended spreader connections



	A (mm)	B (mm)	C (mm)
3P	180	110	97
4P	240	114	98

Terminal covers for rear connections and collar terminal

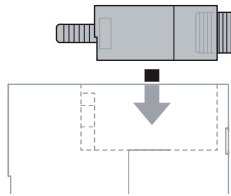
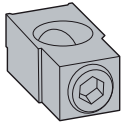


	A (mm)	B (mm)	B' (mm)	C (mm)	D (mm)
3P	140	3	4,5	97	93
4P	185	3	4,5	97	93

Connection

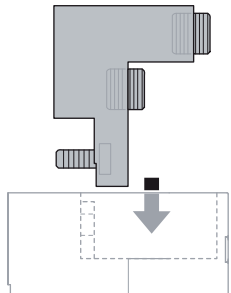
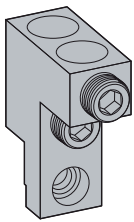
Connection for aluminium / copper conductors (h400 TM, h630 LSI)

HYD005 (3P) - HYD006H (4P)

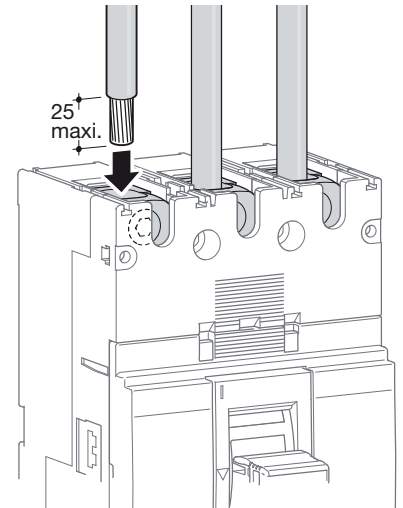


	max. 1x240 mm ²
10	25 Nm

HYD007 (3P) - HYD008H (4P)

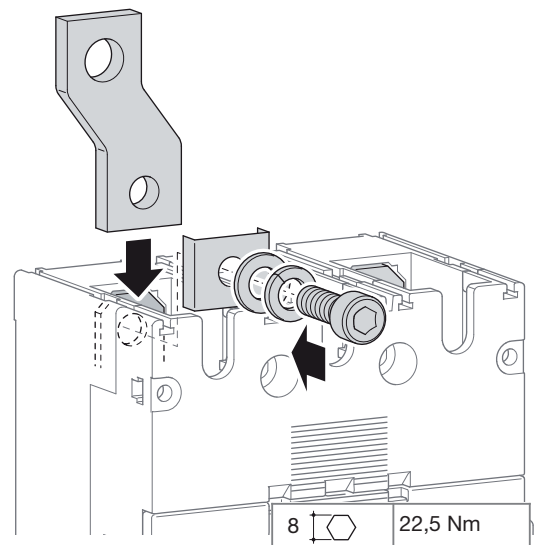
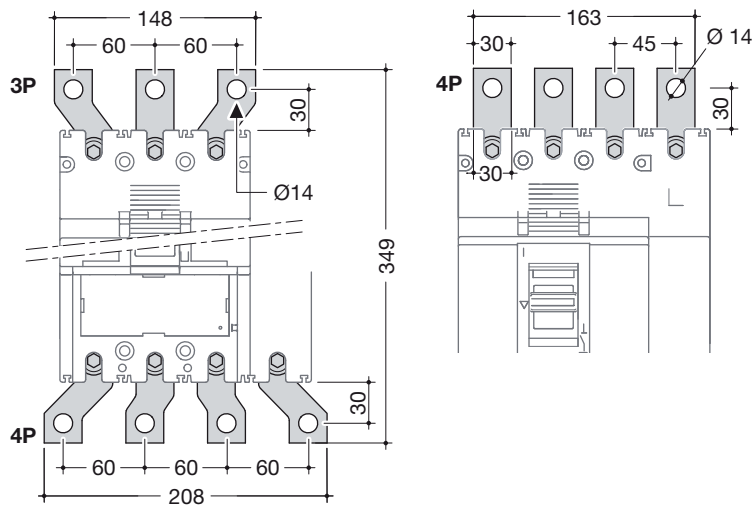


	max. 2x240 mm ²
10	25 Nm



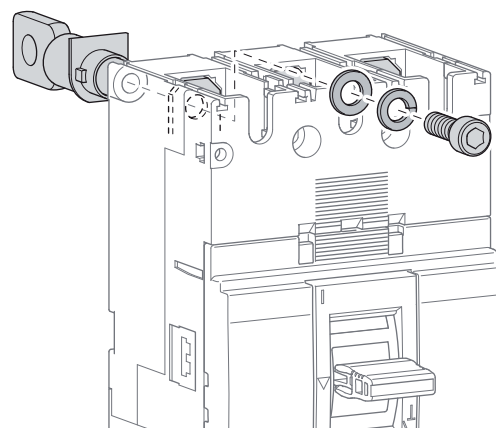
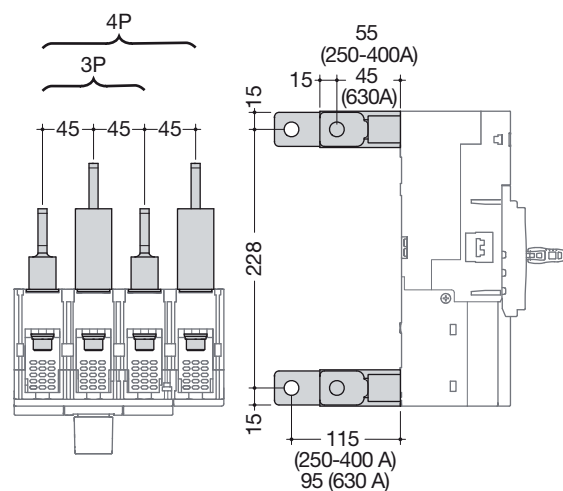
Main incomers

Extended straight and spreader connections

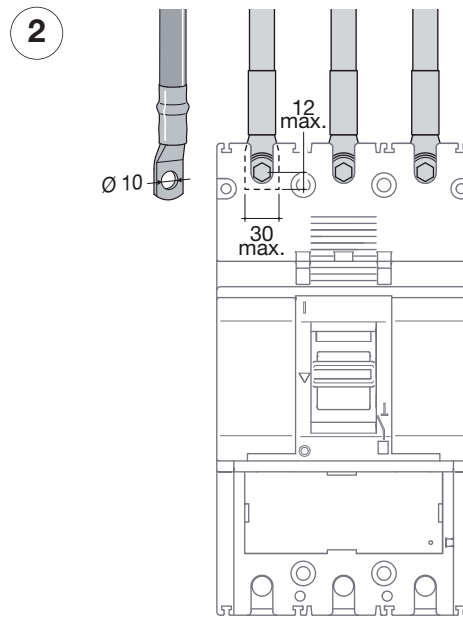
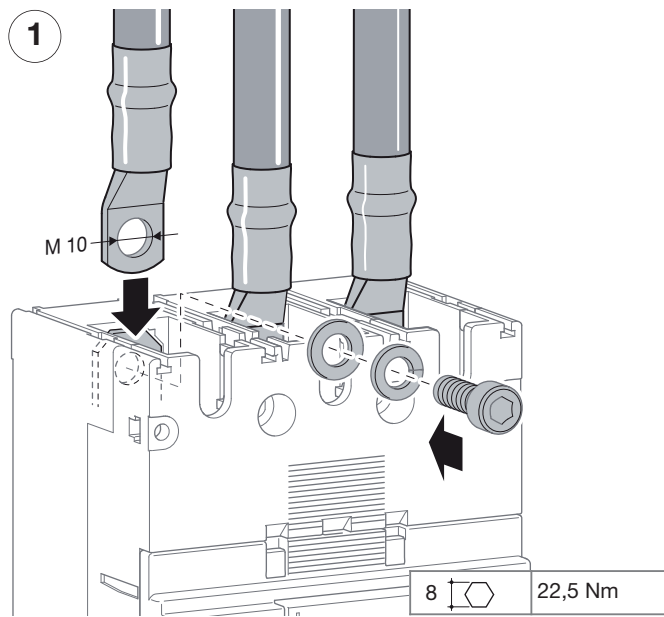


8	22,5 Nm
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Rear connections

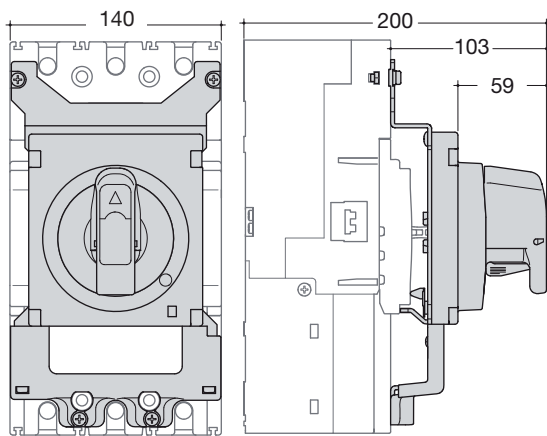


Connection with end lugs

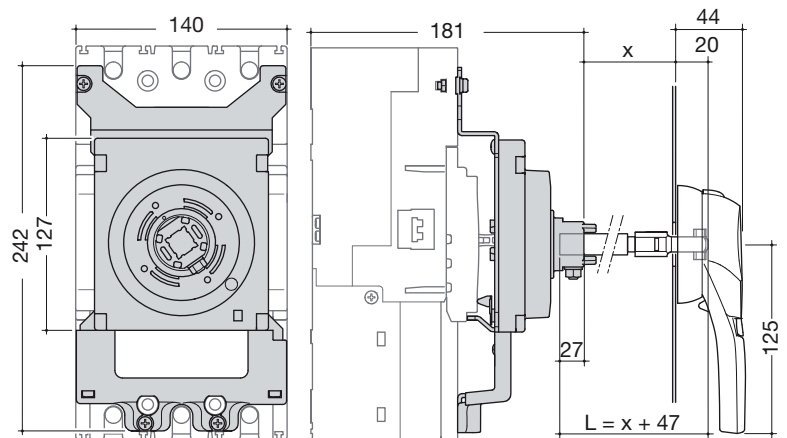


Accessories

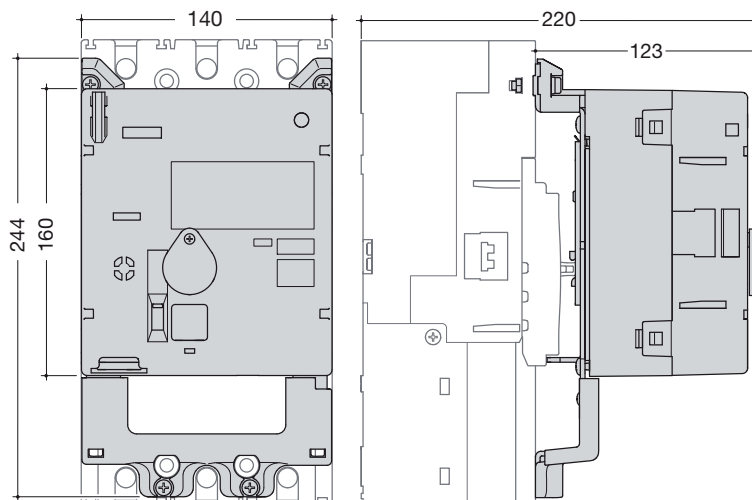
Direct rotary handle



Extended rotary handle



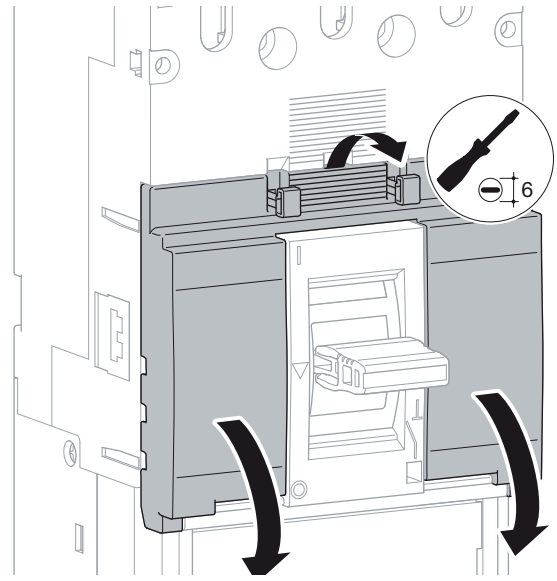
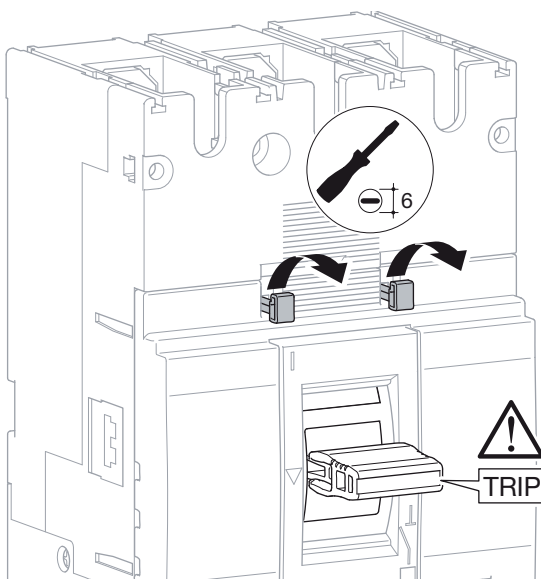
Motor operator



		HXD040H	HXD042H
Operating voltage		24-48V DC	100-240V AC
Operating current/starting current peak value (A)	24V DC	-/9,2 (ON) 4,3/9,8 (OFF, RESET)	-
	48V DC	-/3,8 (ON) 2,0/5,2 (OFF, RESET)	-
	100-110V AC	-	-/1,9 (ON) 1,3/3,8 (OFF, RESET)
	200-240V AC	-	-/3,3 (ON) 0,9/3,8 (OFF, RESET)
Operating time (s)	(ON)	0,1s	
	(OFF)	1,5 s	
	(RESET)	1,5 s	
Power supply required		300VA min.	
Dielectric properties (1 min)		1000V AC	1500V AC

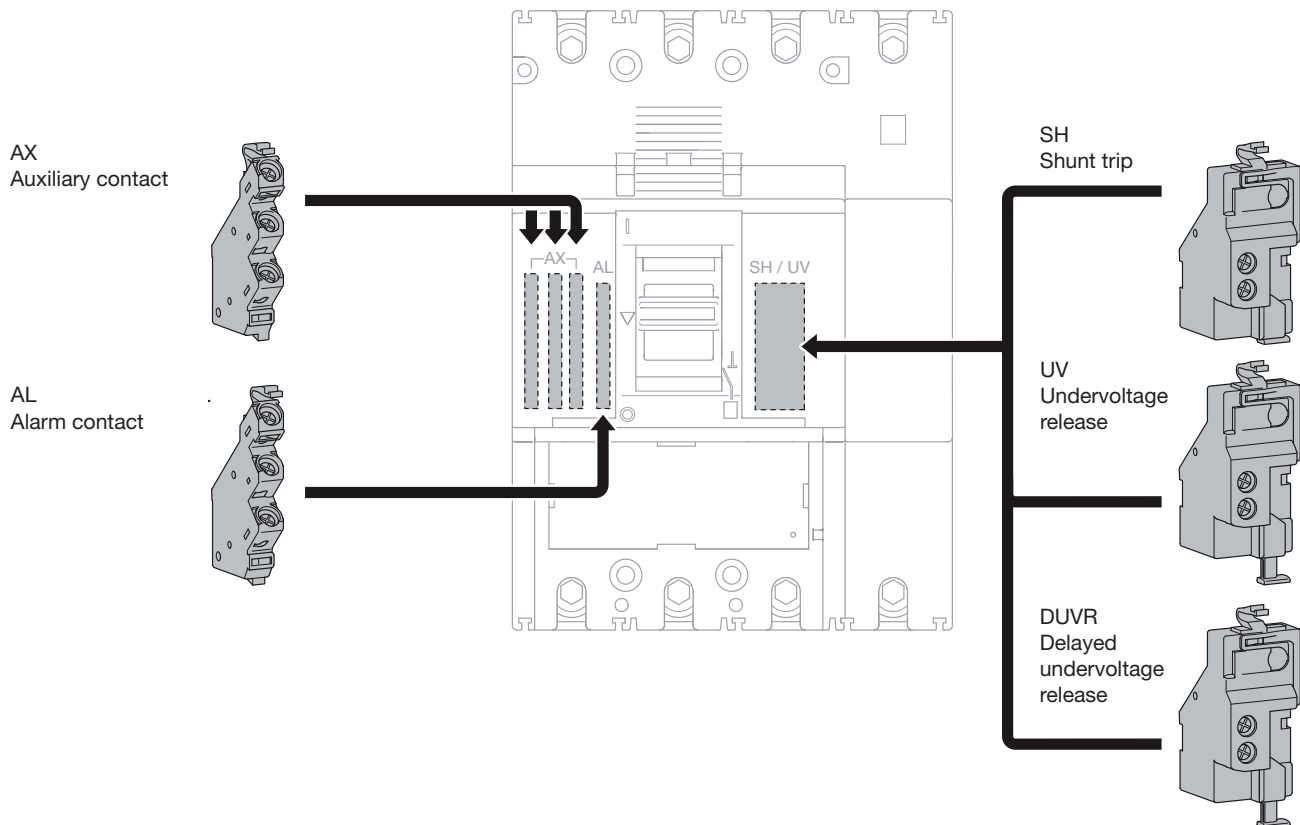
Auxiliaries

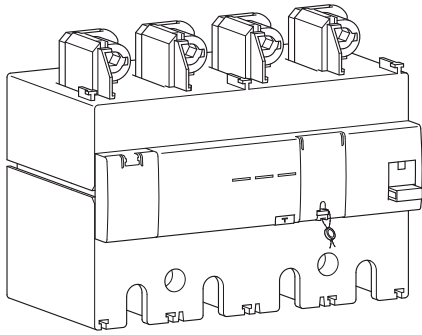
Auxiliaries for MCCBs and free tripping switches



Main incomers

Mounting combination for auxiliaries and releases





When associated with MCCB, the add-on block provides an earth fault protection and protects against electrical shocks by direct or indirect contacts.

The add-on blocks are protected against nuisance tripping caused by transient voltages. It's able to detect sinusoidal alternating currents and residual pulsating direct currents (A type). It also avoids miss tripping (HI type - High Immunity).

Characteristics

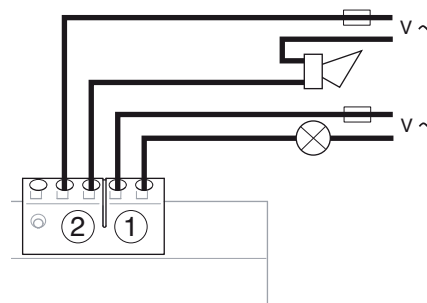
Reset button :
Signals add-on block tripping and must be acknowledged before switching on the installation.

Test button for differential functioning :
Allows to check the electrical operating of the MCCB / Add-on block association.

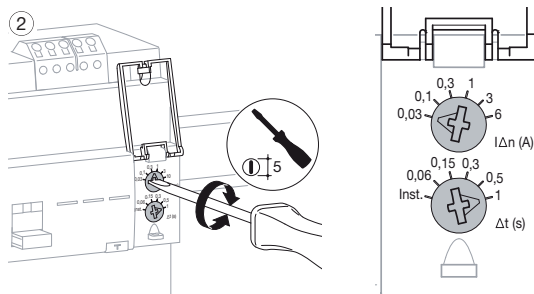
Mechanical test button :
Allows to check the mechanical operating of the MCCB / Add-on block association.

LED signaling default current level in the installation:
25% (orange) and 50% (red) $I_{\Delta n}$; green light to signal correct operating.

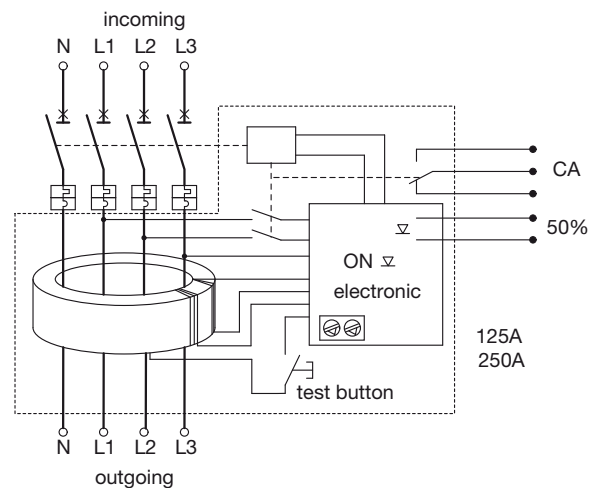
Remote tripping and advanced warning (50% $I_{\Delta n}$) signaling thanks to these contacts:



Earth leakage current ($I_{\Delta n}$) and delay (Δt) setting

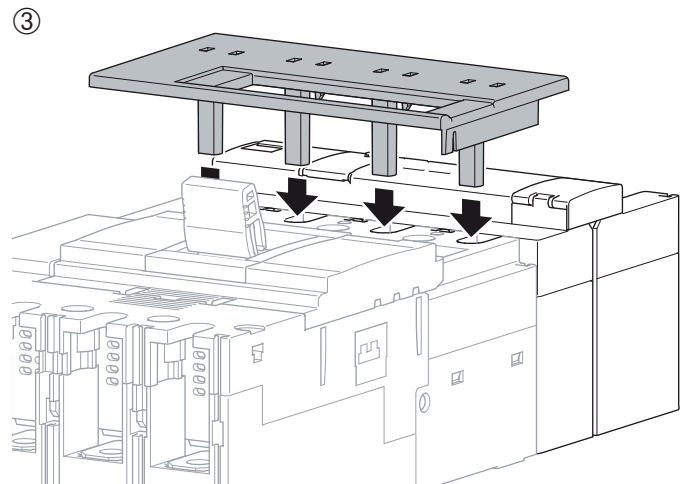
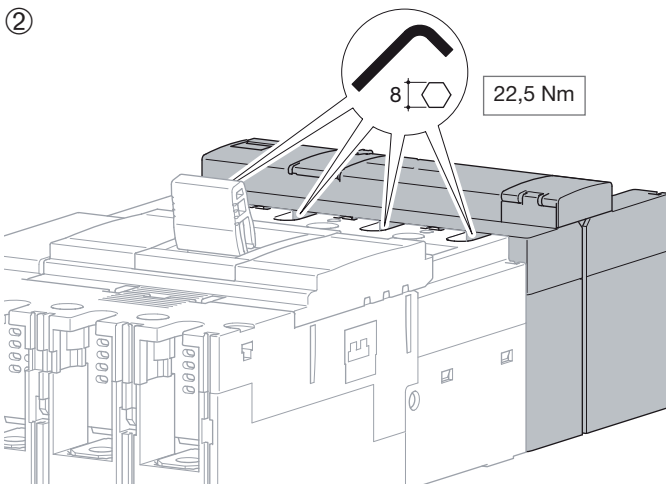
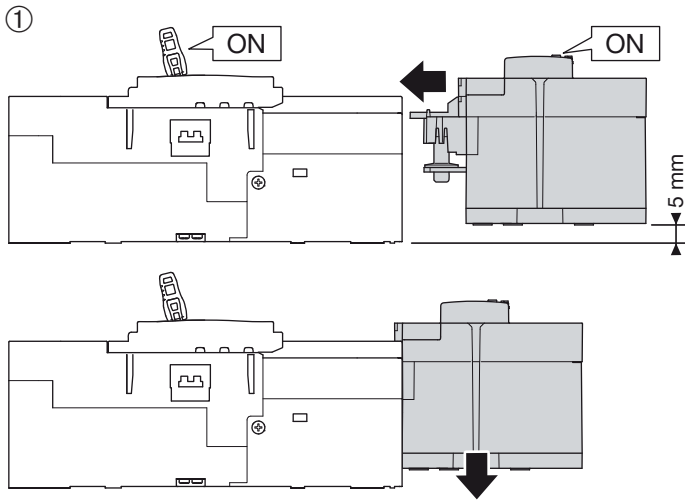


Add-on block operating



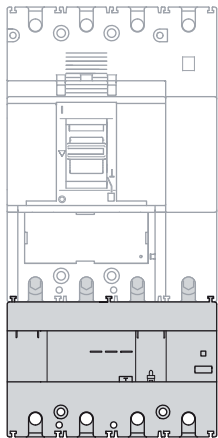
S (Δt)	A ($I_{\Delta n}$)						
	0,03	0,1	0,3	1	3	6	
Inst.	OK	OK	OK	OK	OK	OK	
0,06	no	OK	OK	OK	OK	OK	
0,15	no	OK	OK	OK	OK	OK	
0,3	no	OK	OK	OK	OK	OK	
0,5	no	OK	OK	OK	OK	OK	
1	no	OK	OK	OK	OK	OK	

Add-on block mounting



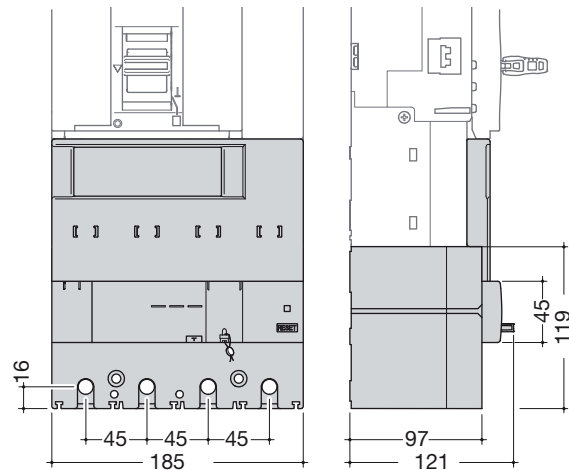
Main incomers

Association / Compatibility



250 - 400A	630A x 0,8
HBD401H 400A	HBD631H 500A (le: 630A x 0,8)

Dimensions



Moulded case circuit breakers h1000

Electronic trip unit LSI:
 - long delay (thermal equivalent) adjustable:
 $I_r = 0,4$ to $1 \times I_n$
 - short delay (magnetic equivalent) adjustable:
 $2,5$ to $10 \times I_r$ (630-800A)
 and $2,5$ to $8 \times I_r$ (1000A)
 - time delay: 0,1-0,2 s

3P & 4P (adjustable neutral 0 - 50% - 100%).
 Mechanical test button, lockable settings.

Connection:

Directly on copper cable terminal,
 with end lug max. width: 50 mm

Comply with IEC 60 947-2.

Trip-free switches

Allows tripping at distance using a voltmeterical trip unit (optional)

Comply with IEC 60 947-3.
 AC 23A / DC 22A



HNE970U

Designation	Characteristics	In	Cat. ref.	
			3P	4P
MCCBs h1000 50kA LSI	breaking capacity Icu : 50 kA (400/415 V AC) Ics: 50 kA	630A	HNE630U*	HNE631U*
		800A	HNE800U	HNE801U
	adjustable thermal $I_r = 0,4$ to $1 \times I_n$ adjustable magnetic $2,5$ to $10 \times I_r$ (630 - 800A) $2,5$ to $8 \times I_r$ (1000A) time delay: 0,1-0,2 s neutral setting from 0-50 to 100% * without straight extended connection	1000A	HNE970U	HNE971U
MCCBs h1000 70kA LSI	breaking capacity Icu : 70 kA (400/415 V AC) Ics: 50 kA	800A	HEE800U	HEE801U
		1000A	HEE970U	HEE971U
	adjustable thermal $I_r = 0,4$ to $1 \times I_n$ adjustable magnetic $2,5$ to $10 \times I_r$ (800A) $2,5$ to $8 \times I_r$ (1000A) time delay: 0,1-0,2 s neutral setting from 0-50 to 100%			
Trip-free switches	suitable for AC 22A / AC 23A Ue : 415 V AC Icw (0,3 s) = 10 kA	800A	HCE800U	HCE801U
		1000A	HCE970U	HCE971U

Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB is "open" or "close".
- 1 changeover alarm contact: indicates MCCB tripping.

Coil connection

Connection capacity:
0,75 mm² flexible or rigid cables
Optional connection cables.

The cable capacity of the terminals is 0,5 to 1,25 mm².





Shunt trip

Remotes tripping of MCCBs or trip-free switches.
Operating voltage:
0,7 to 1,1 x Un

Under voltage release

Allows the tripping of MCCBs or

trip-free switches when voltage level drop between 35 and 70% of Un. Pick up voltage 0,85 x Un

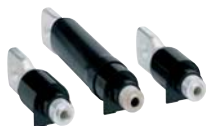
Designation	Characteristics	Cat. ref.
 HXC021H	Auxiliary contacts AX AL 1 changeover contact 250 V AC / 3A 125 V DC / 0,4A 1 NO + 1 NC	HXC021H
	1 changeover alarm contact 250 V AC / 3A 125 V DC / 0,4A 1 NO + 1 NC	HXC024H
 HXC024H	low level contact (ON/OFF) 125 V AC 1 NO + 1 NC	HXC025H
	low level alarm contact 125 V AC 1 NO + 1 NC	HXC026H
 HXC004H	Shunt trips SH 24 V DC	HXC001H
	48V DC	HXC002H
	100 - 120 V AC	HXC003H
	200 - 240 V AC	HXC004H
	380 - 450 V AC	HXC005H
 HXE014H	Undervoltage releases UV 24 V DC	HXE011H
	110 - 120 V AC	HXE013H
	220 - 240 V AC	HXE014H
	380 - 415 V AC	HXE015H

Main incomers

Direct rotary handle
- padlockable
- equipped with front cover and handle
- fixing without any additional screw.

Extended rotary handle
- IP 55
- supplied complete with shaft and handle.

Designation	Characteristics	In	Cat. ref.	
			3P	4P
Delayed undervoltage releases DUVR	24 V DC		HXE051H	HXE051H
	110 - 120 V AC		HXE053H	HXE053H
	220 - 240 V AC		HXE054H	HXE054H
	380 - 415 V AC		HXE055H	HXE055H
Collar terminals	Terminals for aluminium / copper conductors 4 x 35 - 240 mm ²	630-800A	HYE007H	HYE008H
Connecting kits	0,75 mm ² set of 3 x 2 wires length: 1,30m		HYA035H	HYA035H
Terminal covers	for extended connections		HYE021H	HYE022H
	for rear connections		HYE025H	HYE026H
Rear connections		630-800A	HYE031H	HYE032H
		1000A	HYE033H	HYE034H



HYE031H

Designation	Characteristics	Cat. ref.	
Direct rotary handles	padlockable handle	HXE030H	
Extended rotary handles	padlockable handle	HXE031H	
Padlocks	to mount on MCCB for handle locking for 3 padlocks max Ø 8 mm	HXD039H	
Motor operators	24 - 48V DC	HXE040H	
	100 - 240V AC	HXE042H	
Interlocking	wire type	HXE065H	

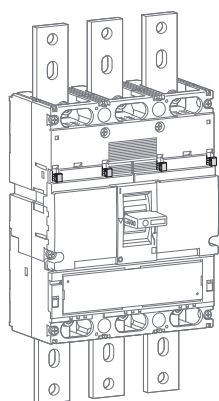


HXE030H



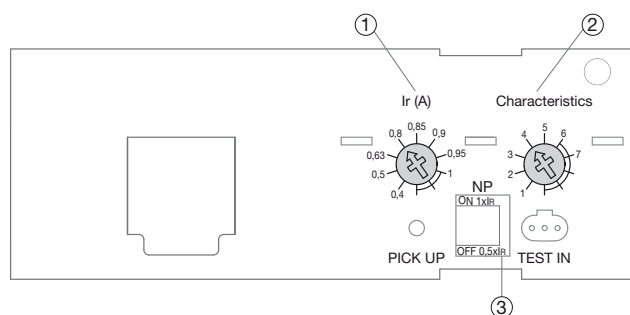
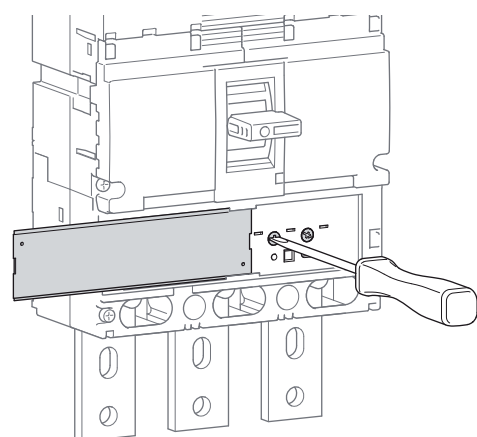
HXD039H

MCCBs



		220/240 V AC (kA)	380/415 V AC (kA)	660/690 V AC (kA)
HNE	l _{cu}	85 (630-800A), 75 (1000A)	50	20
	l _{cs}	85 (630-800A), 75 (1000A)	50	20
HEE	l _{cu}	100	70	20
	l _{cs}	100 (630-800A), 75 (1000A)	50	20
HCE	l _{cm}	-	17	-
	l _{cw}	-	10 kA-0,3 s	-

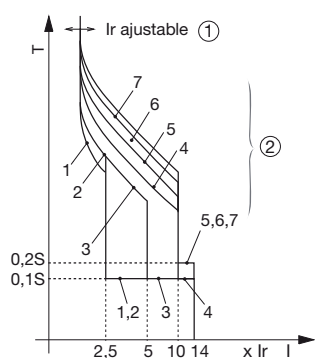
Electronic trip unit settings (LSI)



L - Long delay - protection against overloads: I_r and t_r settings

S - Short delay - protection against short circuits: I_{sd} and t_{sd} settings

I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: 2,5 to 10 x I_r (630-800A) and 2,5 to 8 x I_r (1000A).



LSI	I _n A									
	630-800 A					1000 A				
	Long Time Delay		Short Time Delay		Inst	Long Time Delay		Short Time Delay		Inst
I _r (x I _n)	t _r (s)	isd (x I _r)	t _{sd} (s)	li (x I _r)	I _r (x I _n)	t _r (s)	isd (x I _r)	t _{sd} (s)	li (x I _r)	
① I _r (x I _n)	0,4	OK				OK				
	0,5	OK				OK				
	0,63	OK				OK				
	0,8	OK				OK				
	0,9	OK				OK				
	0,95	OK				OK				
	1	OK				OK				
② Characteristics*	1	11s at 2 x I _r	2,5	0,1	14 (max 12 x I _n)	11s at 2 x I _r	2,5	0,1	14 (max 10 x I _n)	
	2	21s at 2 x I _r				21s at 2 x I _r				
	3		5				5			
	4	5 s at 6 x I _r	10			5 s at 6 x I _r	8			
	5	10 s at 6 x I _r		0,2		10 s at 6 x I _r		0,2		
	6	19 s at 6 x I _r				16 s at 6 x I _r				
	7	29 s at 6 x I _r				-				
③ Neutral protection	0%	50%	100%							

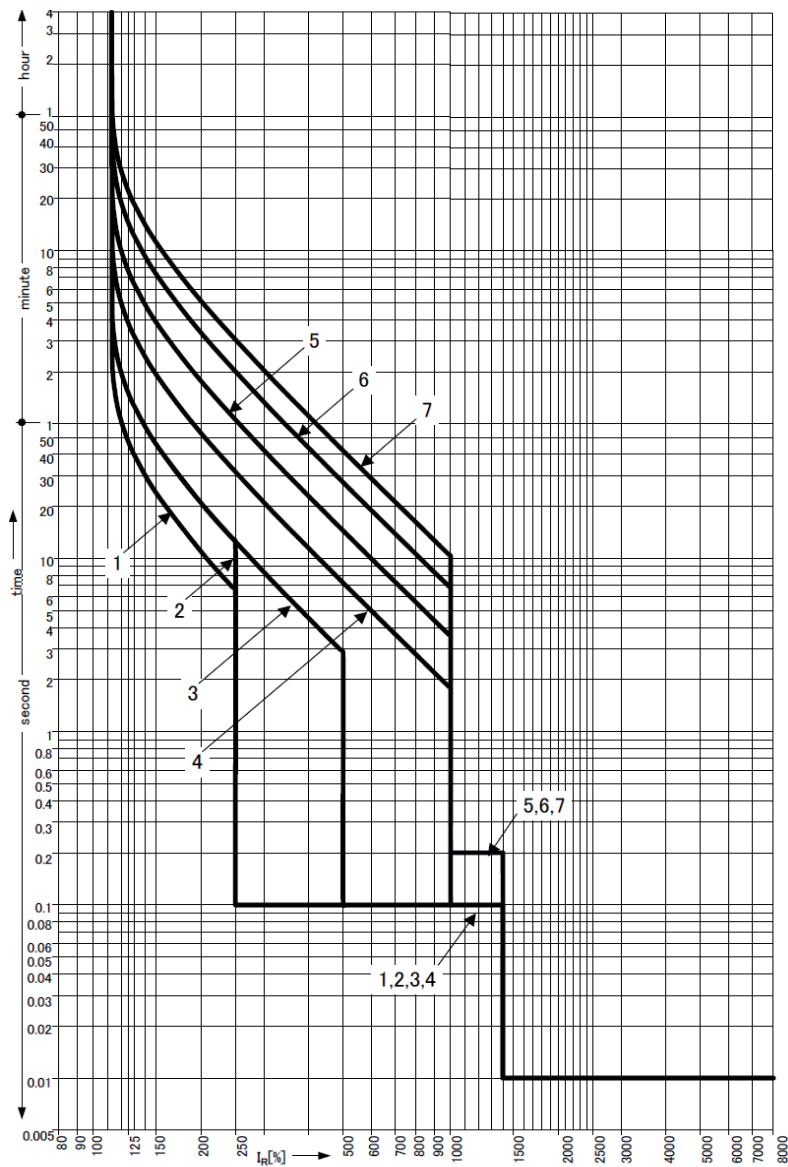
(*) Characteristic 1 : use for generators protection.

Characteristic 2 to 4 - standard protection : options allow coordination optimisation with other products.

Characteristic 5 to 7 - motor protection: use positions according to motor starting characteristics.

Tripping curve

MCCB h1000 LSI (630-800A)



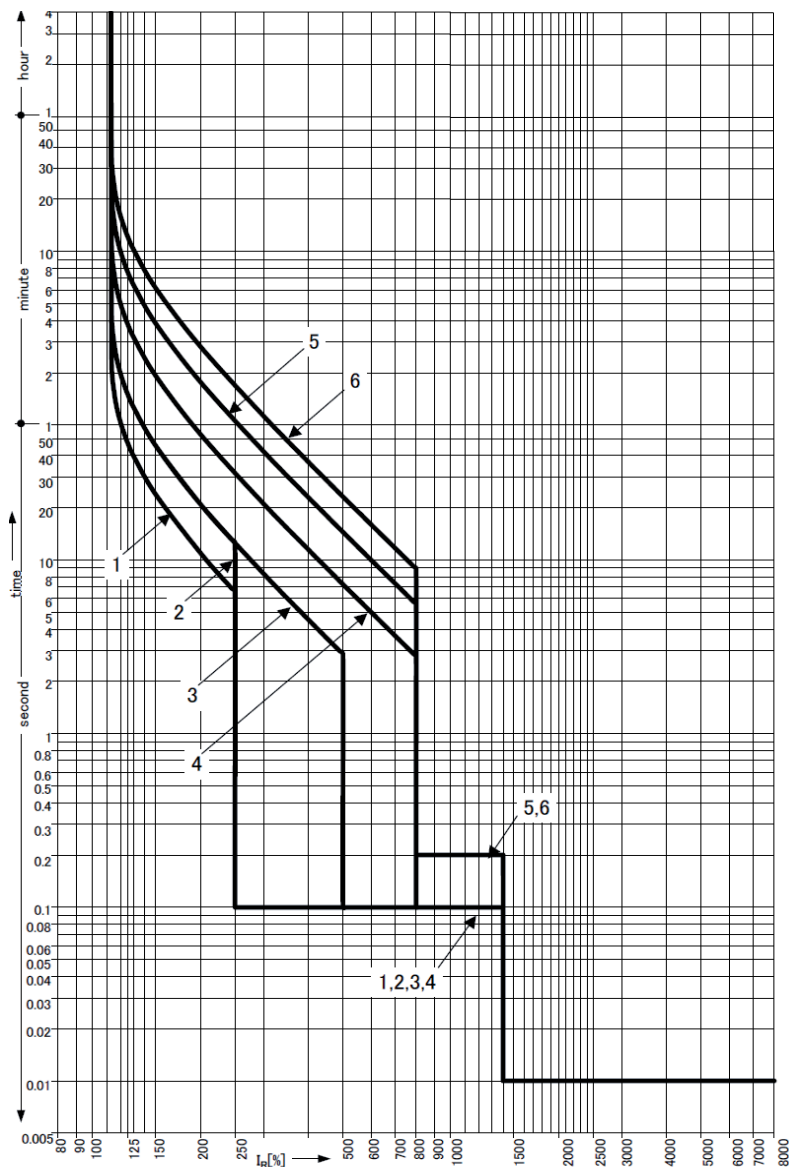
Electronic trip unit setting (LSI)

MCCBs 630-800A electronic

		/R (A)								
LTD Pick-up current		/R	x/n	0,4	0,5	0,63	0,8	0,9	0,95	1
Characteristics			No.	1	2	3	4	5	6	7
Standard	LTD	tR	(s)	11	21	21	5	10	19	29
				200% x I R			600% x I R			
	STD	/isd	x/R	2,5		5	10			
			tstd	(s)	0,1					
	INST	/i	x/R	14 (max : 12 x In)						
Optional	NP	/IN	x/R	0,5 or 1 or NON (/N x 105% NT, /N x 120% T)						
			tN	(s)	/N=tR					

Tripping curve

MCCB h1000 LSI (1000A)



Main incomers

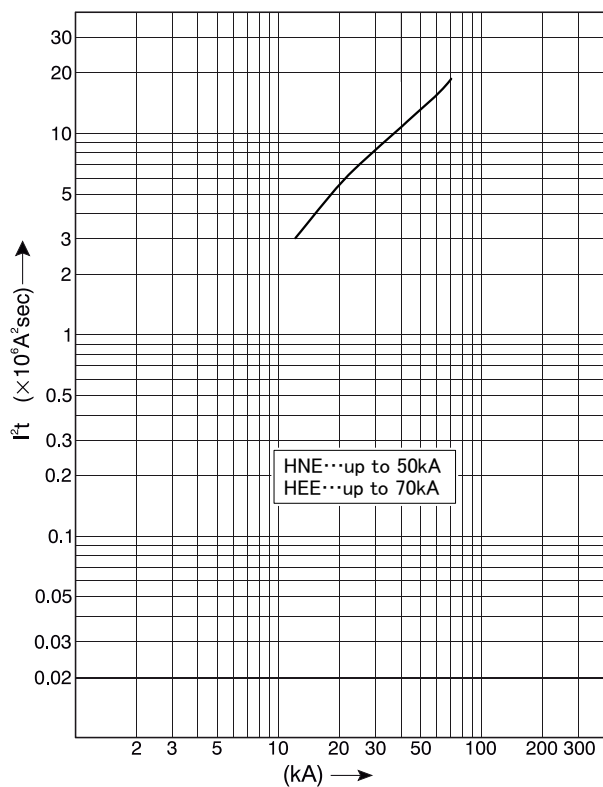
Electronic trip unit setting (LSI)

MCCBs 1000A electronic

			/R (A)								
LTD Pick-up current		/R	x/n	0,4	0,5	0,63	0,8	0,9	0,95	1	
Characteristics			No.	1	2	3	4	5	6		
Standard	LTD	tR	(s)	11	21	21	5	10	16		
		200% x I R						600% x I R			
	STD	/sd	x/R	2,5		5	8				
		tsd	(s)	0,1					0,2		
	INST	/i	x/R	14 (max : 10 x I _n)							
Optional	NP	/N	x/n	0,8							
		tN	(s)	/N=tR							

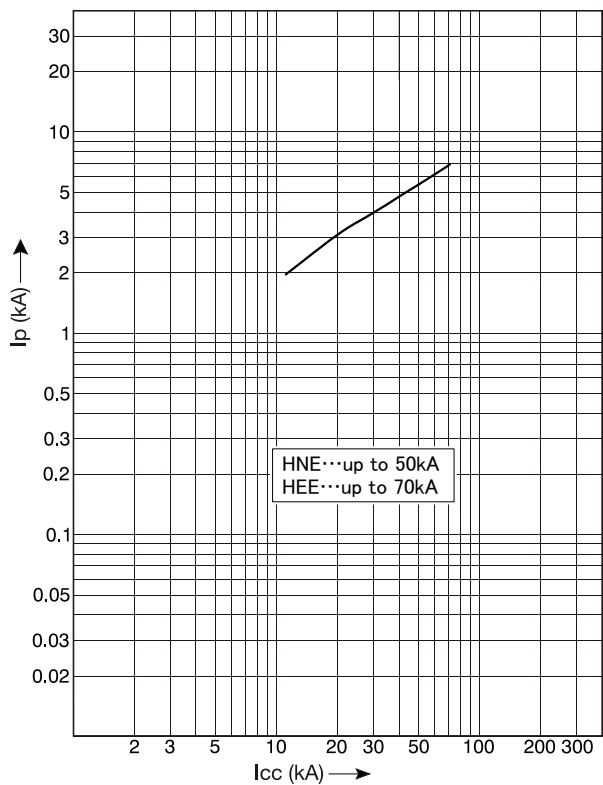
Thermal constraint curve at 400V (Let-through energy)

MCCB h1000



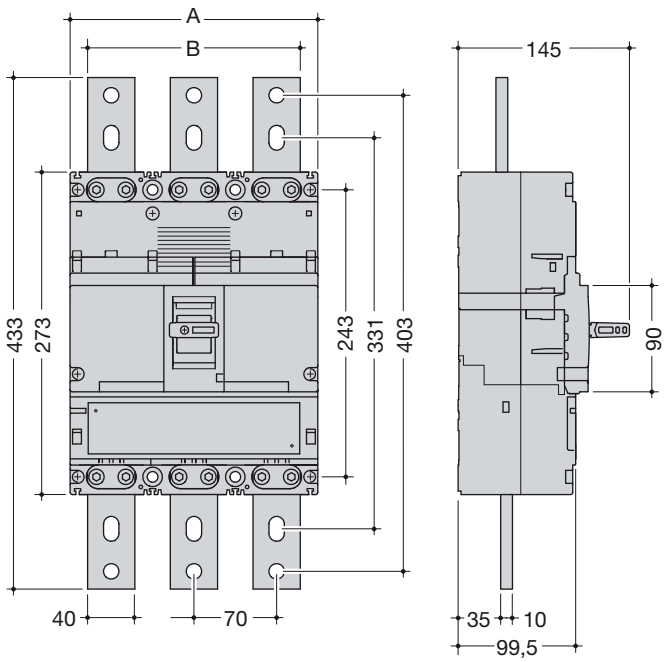
Current limiting curve at 400V (Let-through peak current)

MCCB h1000



Dimensions

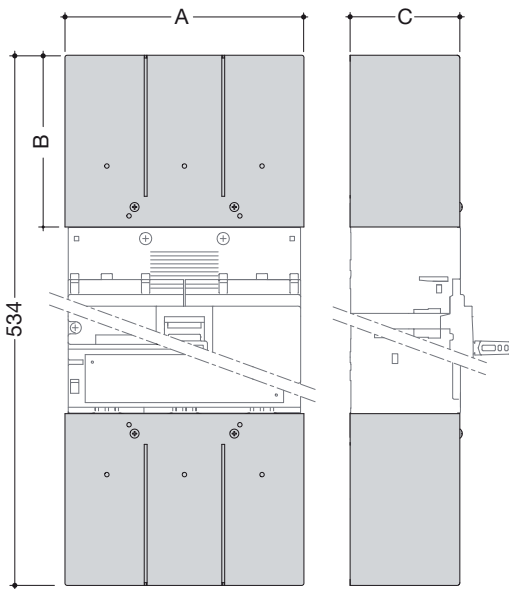
MCCBs



	A (mm)	B (mm)
3P	210	180
4P	280	250

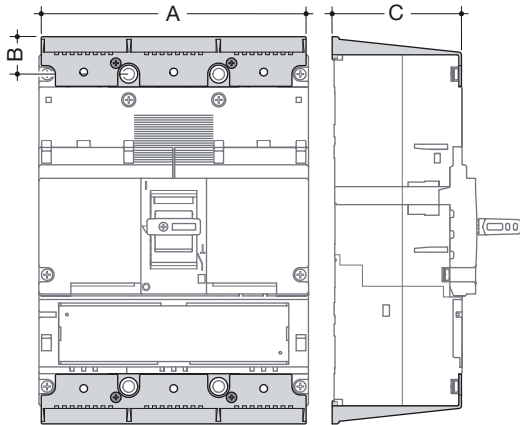
Main incomers

Terminal covers for extended straight connections



	A (mm)	B (mm)	C (mm)
3P	215	130	99,5
4P	285	130	99,5

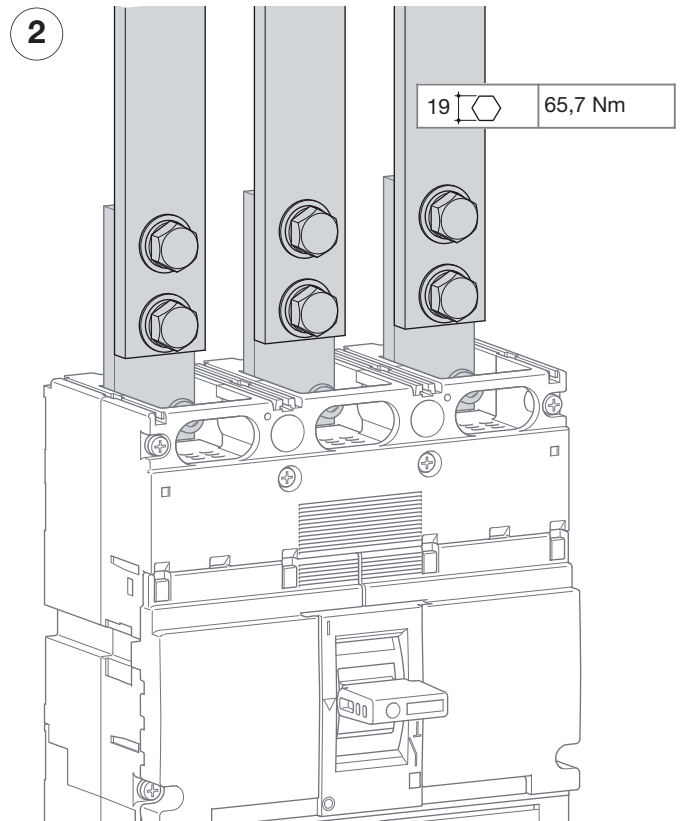
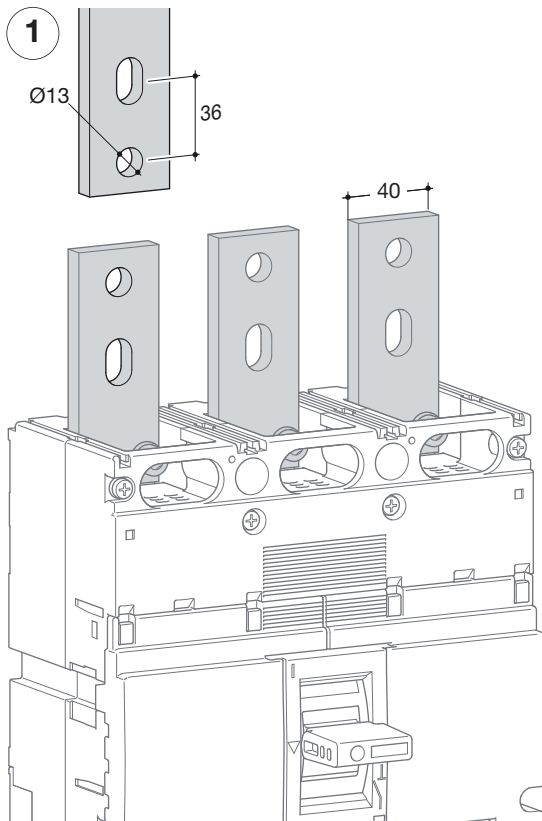
Terminal covers for rear connections



	A (mm)	B (mm)	C (mm)
3P	210	14	101
4P	280	18	99

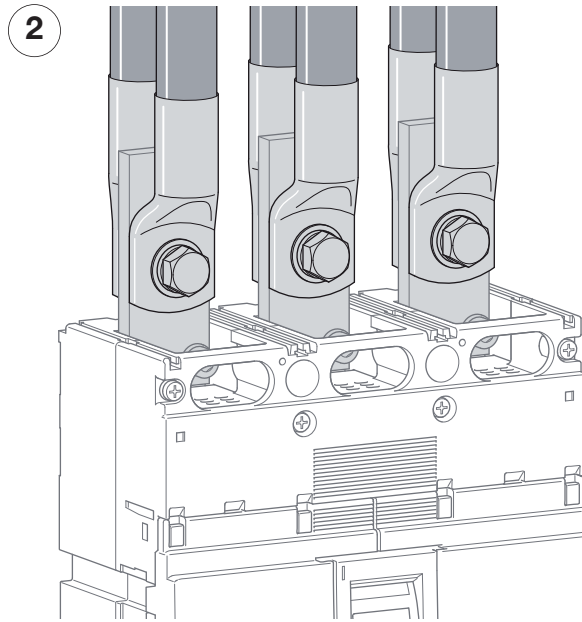
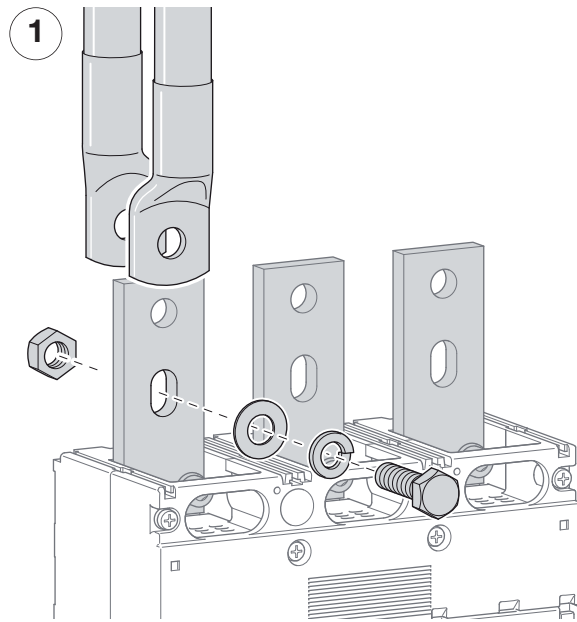
Connection

Extended straight connections

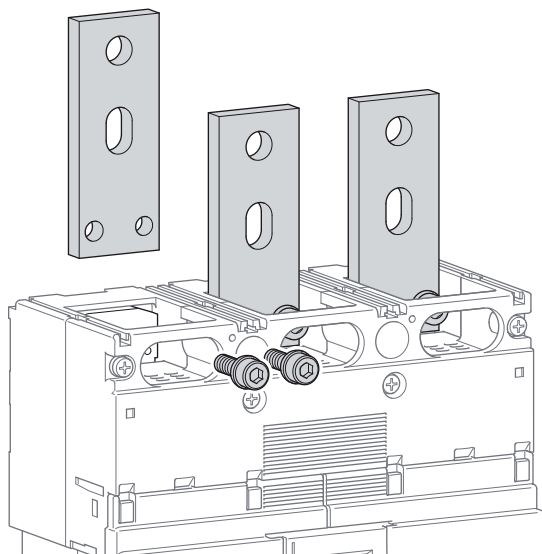


Direct cable connection on terminal
Copper with conductor max. width: 50 mm

Connection with end lugs

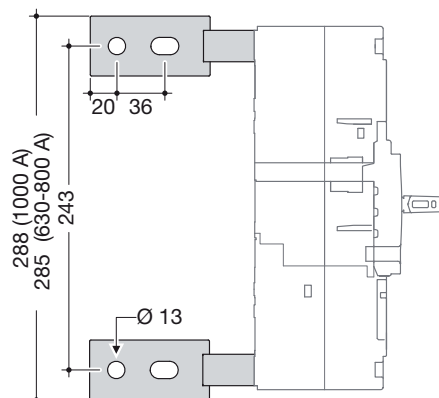
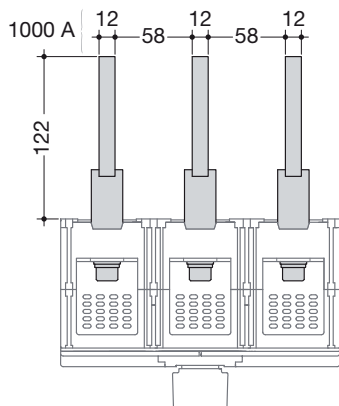
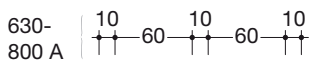
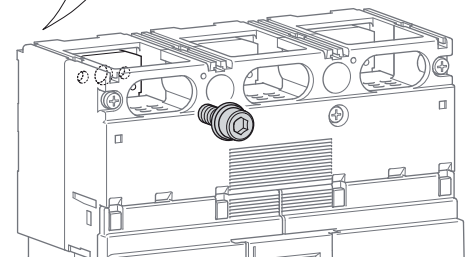
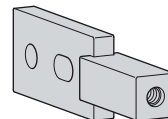
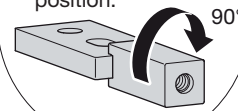


Rear connections



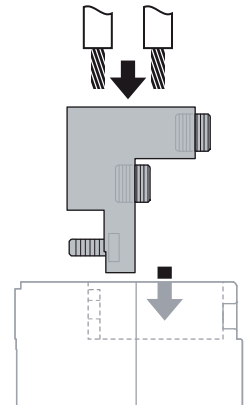
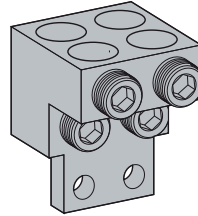
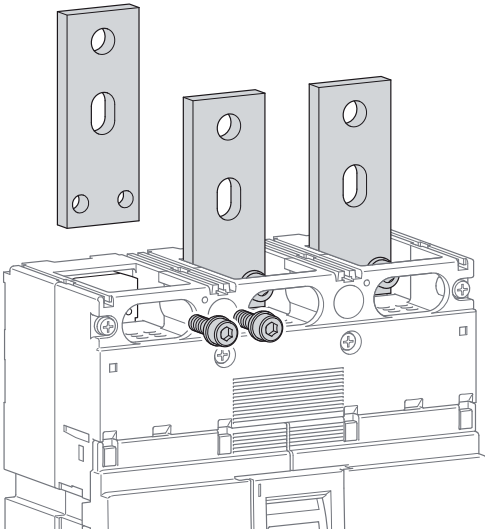
1000A:
vertical only.

630-800A:
vertical or horizontal
position.



Connection for aluminium / copper conductors (h1000)

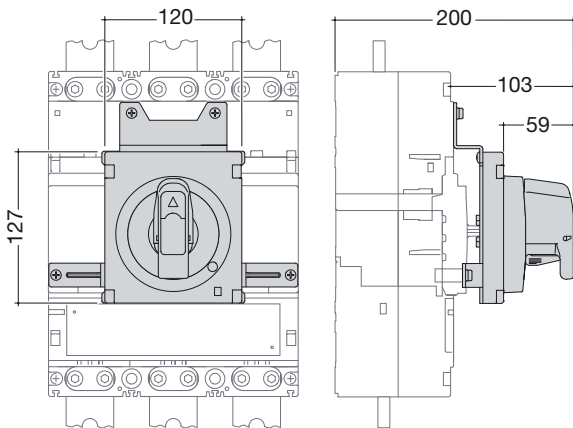
HYE007 (3P) - HYE008H (4P)



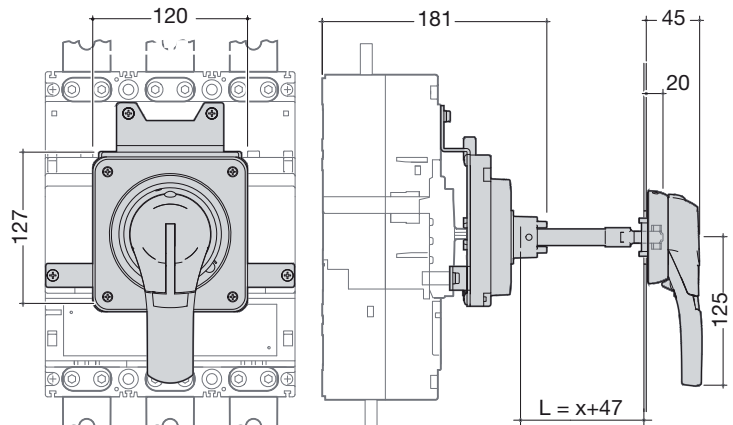
	max. 4x240 mm ²
	25 Nm

Accessories

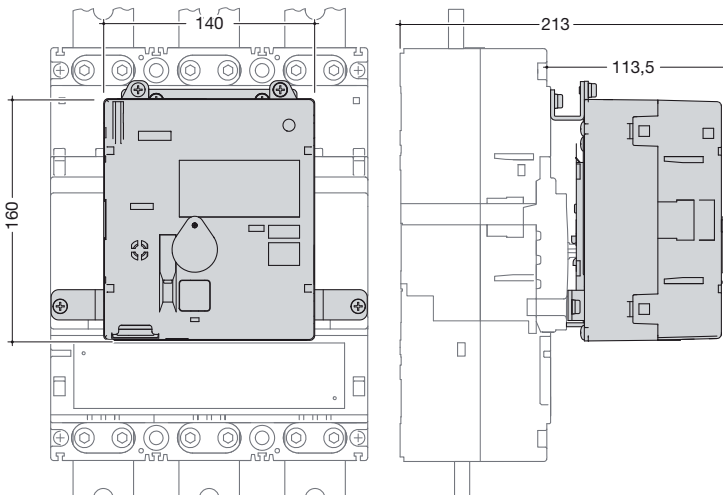
Direct rotary handle



Extended rotary handle



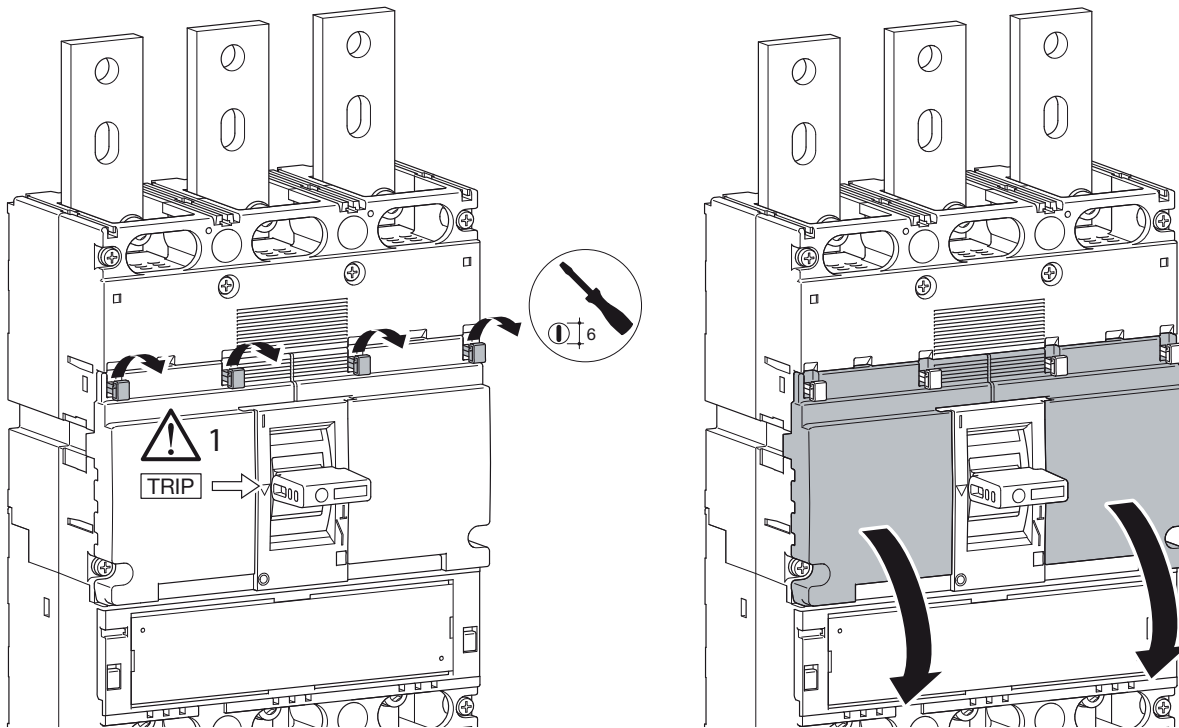
Motor operator



		HXE040H	HXE042H
Operating voltage		24-48V DC	100-240V AC
Operating current/starting current peak value (A)	24V DC	-/12 (ON) 6/11,5 (OFF, RESET)	-
	48V DC	-/7 (ON) 3,2/6,5 (OFF, RESET)	-
	100-110V AC	-	-/2,2 (ON) 1,7/3,5 (OFF, RESET)
	200-240V AC	-	-/2,2 (ON) 1,3/3,5 (OFF, RESET)
Operating time (s)	(ON)	0,1s	
	(OFF)	1,5 s	
	(RESET)	1,5 s	
Power supply required		300VA min.	
Dielectric properties (1 min)		1000V AC	1500V AC

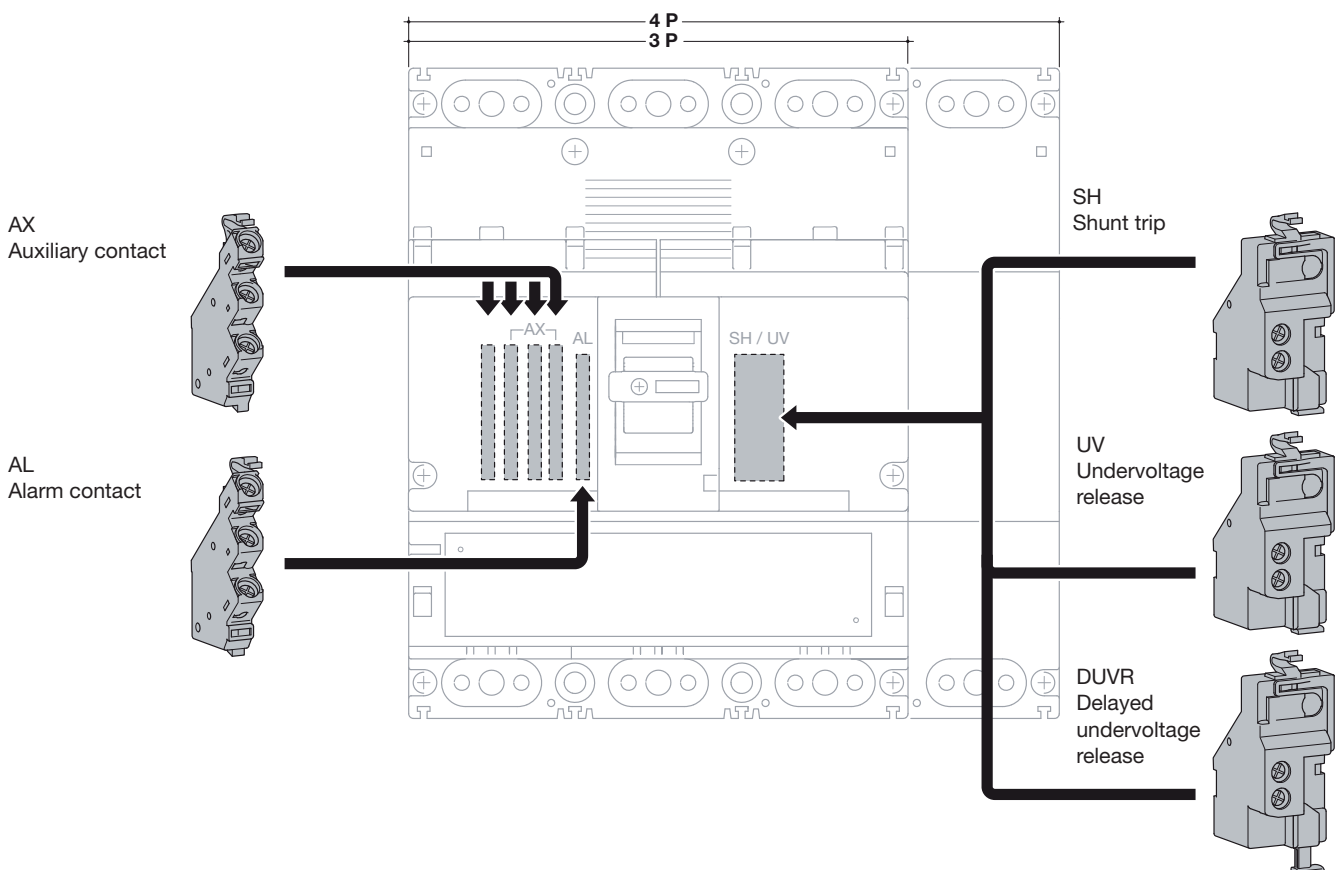
Auxiliaries

Auxiliaries for MCCBs and free tripping switches



Main incomers

Mounting combination for auxiliaries and releases



Moulded case circuit breakers h1600, selection and protection

Electronic trip unit LSI
 - Long delay (thermal equivalent) adjustable:
 $I_r = 0,4$ to $1 \times I_n$
 - short delay (magnetic equivalent) adjustable:
 $2,5$ to $10 \times I_r$
 - time delay: 0,1-0,2 s

3 pole, 3 trip units,
 4 pole, 4 trip units,
 adjustable neutral 0 - 50% - 100%

Mechanical test button, lockable settings.

Connection:

Directly on copper cable terminal, with end lug max. width: 60 mm

Comply with IEC 60 947-2.

Trip-free switches

Allows tripping at distance using a voltmeterical trip unit (optional)

Comply with IEC 60 947-3.
 AC 23A / DC 22A



HNF990U

Designation	Characteristics	In	Cat. ref.	
			3P	4P
MCCBs h1600 50kA LSI	breaking capacity Icu : 50 kA (400/415 V AC) Ics: 50 kA	1250A	HNF980U	HNF981U
	adjustable thermal $I_r = 0,4$ to $1 \times I_n$ adjustable magnetic $2,5$ to $10 \times I_r$ time delay: 0,1-0,2 s neutral setting 0, 50, 100%	1600A	HNF990U	HNF991U
MCCBs h1600 70kA LSI	breaking capacity Icu : 70 kA (400/415 V AC) Ics: 50 kA	1250A	HEF980U	HEF981U
	adjustable thermal $I_r = 0,4$ to $1 \times I_n$ adjustable magnetic $2,5$ to $10 \times I_r$ time delay: 0,1-0,2 s neutral setting from 0, 50, 100%	1600A	HEF990U	HEF991U
Trip-free switches	suitable for AC 22A / AC 23A Ue : 415 V AC Icw (0,3 s) = 20 kA	1250A	HCF980U	HCF981U
		1600A	HCF990U	HCF991U

Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB is "open" or "close".
- 1 changeover alarm contact: indicates MCCB tripping.

Coil connection

Connection capacity:
0,75 mm² flexible or rigid cables
Optional connection cables.
The cable capacity of the terminals is 0,5 to 1,25 mm².

Shunt trip

Remotes tripping of MCCBs or trip-free switches.
Operating voltage:
0,7 to 1,1 x Un

Under voltage release

Allows the tripping of MCCBs or trip-free switches when voltage level drop between 35 and 70% of Un. Pick up voltage 0,85 x Un

Direct rotary handle

- padlockable
- equipped with front cover and handle
- fixing without any additional screw.

Extended rotary handle

- IP 55
- supplied complete with shaft and handle.

Rear connection: included



HXC 021H



HXC 024H



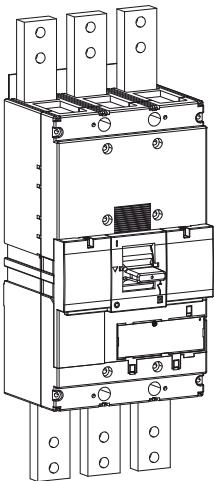
HXC 004H



HXC 014H

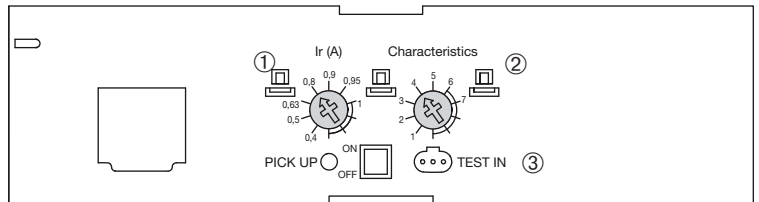
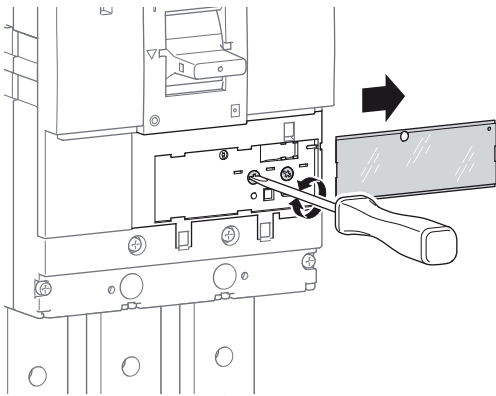
Designation	Characteristics	Cat. ref.
Auxiliary contacts	1 changeover contact	HXC021H
AX	250 V AC / 3A	
AL	125 V DC / 0,4A	
	1 NO + 1 NC	
	1 changeover alarm contact	HXC024H
	250 V AC / 3A	
	125 V DC / 0,4A	
	1 NO + 1 NC	
	low level contact (ON/OFF)	HXC025H
	125 V AC	
	1 NO + 1 NC	
	low level alarm contact	HXC026H
	125 V AC	
	1 NO + 1 NC	
Shunt trips	24 V DC	HXC001H
SH	48 V DC	HXC002H
	100 - 120 V AC	HXC003H
	200 - 240 V AC	HXC004H
	380 - 450 V AC	HXC005H
Undervoltage releases	24 V DC	HXE011H
UV	110 - 120 V AC	HXE013H
	220 - 240 V AC	HXE014H
	380 - 415 V AC	HXE015H
Direct rotary handle	padlockable handle, max Ø 8 mm	HXF030H
Extended rotary handle	padlockable handle, max Ø 8 mm	HXF031H
Padlock	to mount on MCCB for handle locking for 3 padlocks max Ø 8 mm	HXF039H
Motor operators	24 V DC	HXF040H
	200 - 230 V AC	HXF042H
Interphase barriers	3/4 P	HYF019H
Connection kit	0,75 mm ² set of 3 x 2 wires length: 1,30m	HYA035H
Delayed undervoltage releases	24 V DC	HXF051H
DUVR	110 - 120 V AC	HXF053H
	220 - 240 V AC	HXF054H
	380 - 415 V AC	HXF055H

MCCBs



		220/240 V AC (kA)	380/415 V AC (kA)	660/690 V AC (kA)
HNF	l _{cu}	100	50	25
	l _{cs}	75	50	25
HEF	l _{cu}	100	70	45
	l _{cs}	75	50	34
HCF	l _{cm}		45 kA	
	l _{cw}		20 kA-0,3 s	

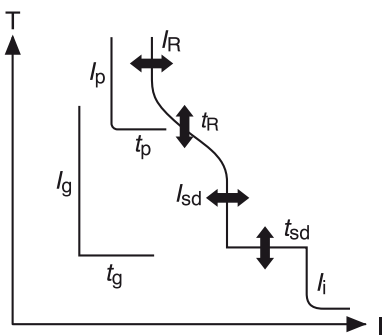
Electronic trip unit settings (LSI)



L - Long delay - protection against overloads: I_r and t_r settings

S - Short delay - protection against short circuits: I_{sd} and t_{sd} settings

I - Instantaneous - max. instantaneous threshold (< 10 ms) in case of short circuit: 2,5 to 10 x I_r.



	① I _r (A)	② I _m	③ N
LSI	0,4 - 1 I _n	2,5 - 10 I _r	0% 50% 100 %

LSI	I _n A				
	1250 - 1600 A				
	Long Time Delay		Short Time Delay		Inst
I _r (x I _n)	t _r (s)	isd (xI _r)	tsd (s)	li (xI _r)	
① I _r (x I _n)	0,4	OK			
	0,5	OK			
	0,63	OK			
	0,8	OK			
	0,9	OK			
	0,95	OK			
	1	OK			
② Characteristics*	1	11s at 2 xI _r	2,5	0,1	14 (max 12 x I _n)
	2	21s at 2 xI _r			
	3		5		
	4	5 s at 6 xI _r	10	0,2	
	5	10 s at 6 xI _r			
	6	19 s at 6 xI _r			
	7	29 s at 6 xI _r			
③ Neutral protection	0%	50%	100%		

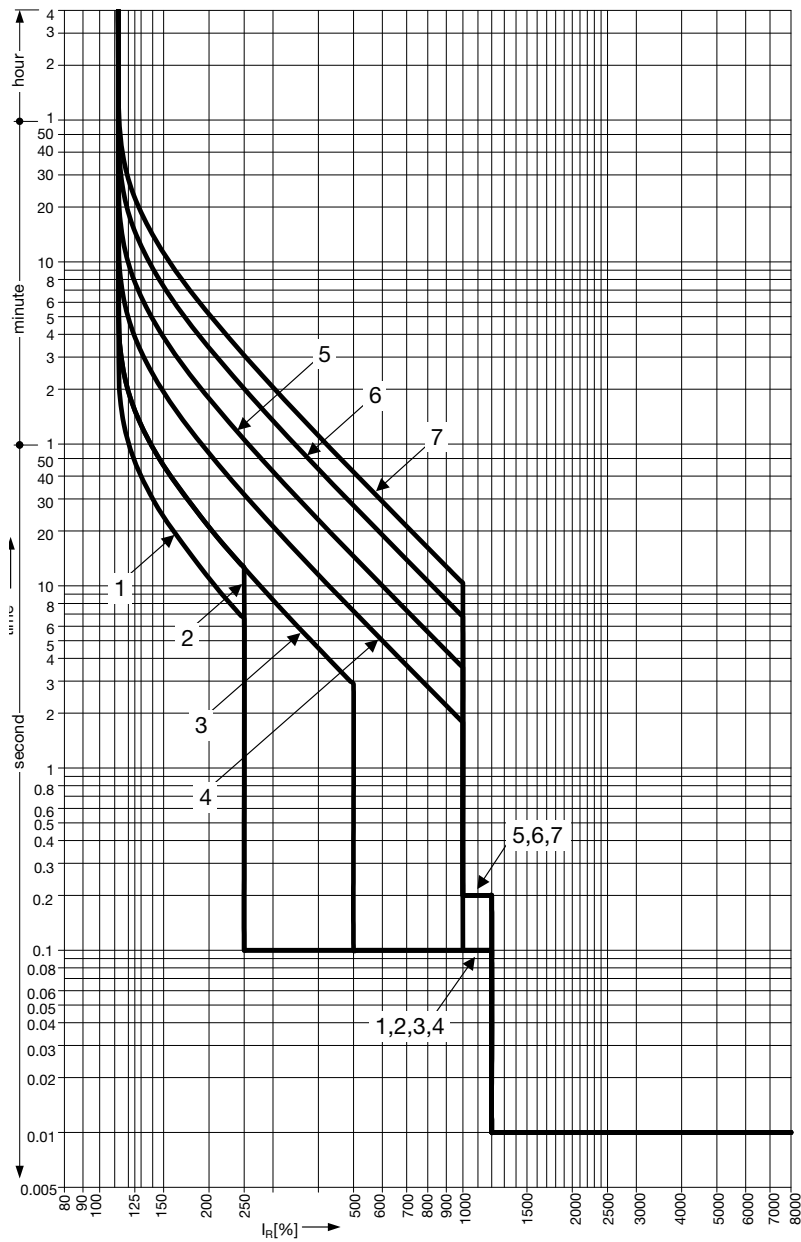
(*) Characteristic 1 : use for generators protection.

Characteristic 2 to 4 - standard protection : options allow coordination optimisation with other products.

Characteristic 5 to 7 - motor protection: use positions according to motor starting characteristics.

Tripping curve

MCCB h1600 LSI



Main incomers

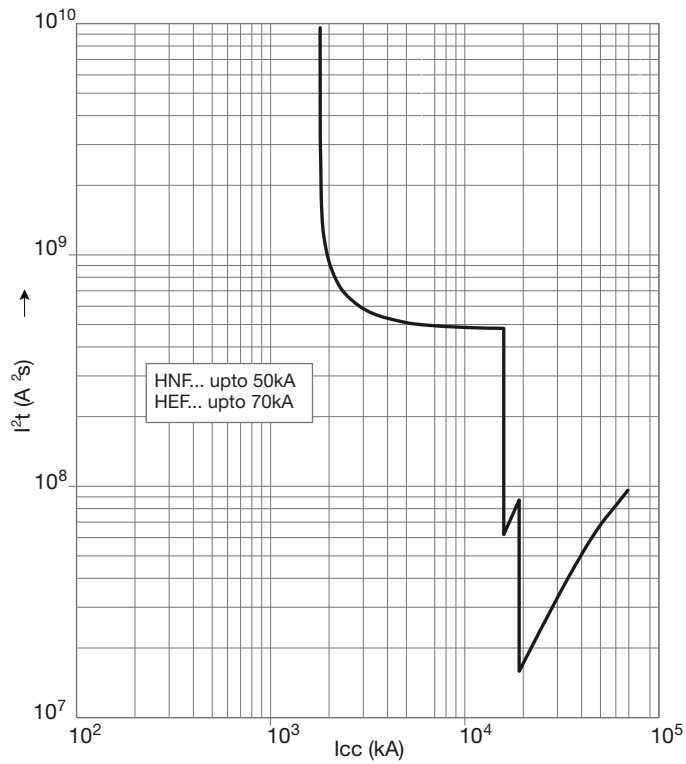
Electronic trip unit setting (LSI)

MCCBs 1250A and 1600A electronic

		/R (A)									
LTD Pick-up current		/R	x/n	0,4	0,5	0,63	0,8	0,9	0,95	1	
Characteristics			No.	1	2	3	4	5	6	7	
Standard	LTD	tR	(s)	11	21	21	5	10	19	29	
					200% x I R			600% x I R			
	STD	/sd	x/R	2,5		5		10			
		tSD	(s)	0,1					0,2		
	INST	/i	x/R	14 (max : 12 x In)							
Optional	NP	/N	x/R	0,5 or 1 or NON (/N x 105% NT, /N x 120% T)							
		tN	(s)	/N=tR							

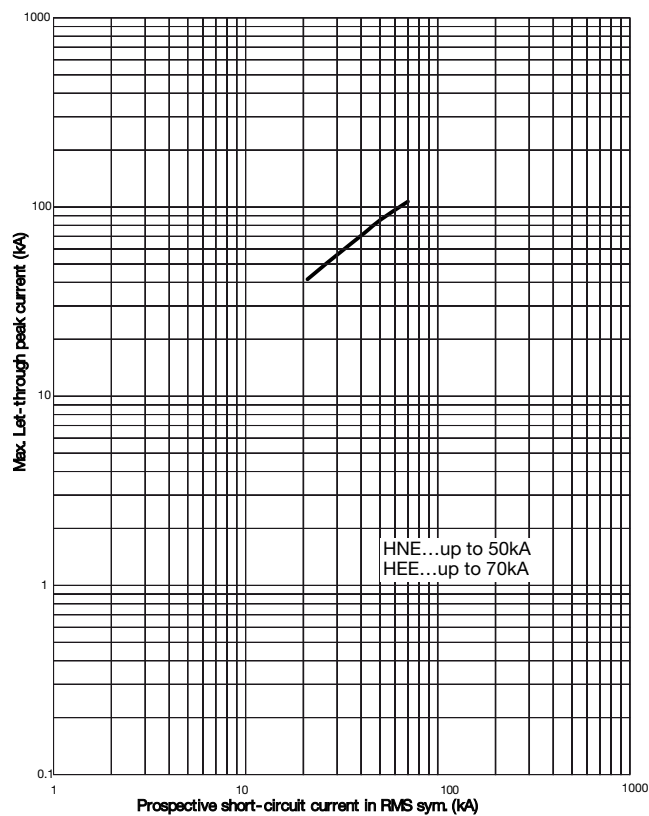
Thermal constraint curve at 400V (Let-through energy)

MCCB h1600



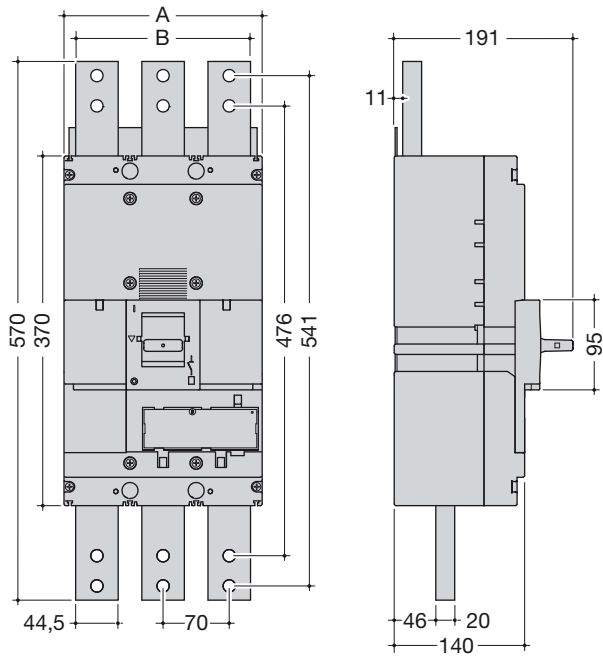
Current limiting curve at 400V (Let-through peak current)

MCCB h1600



Dimensions

MCCBs

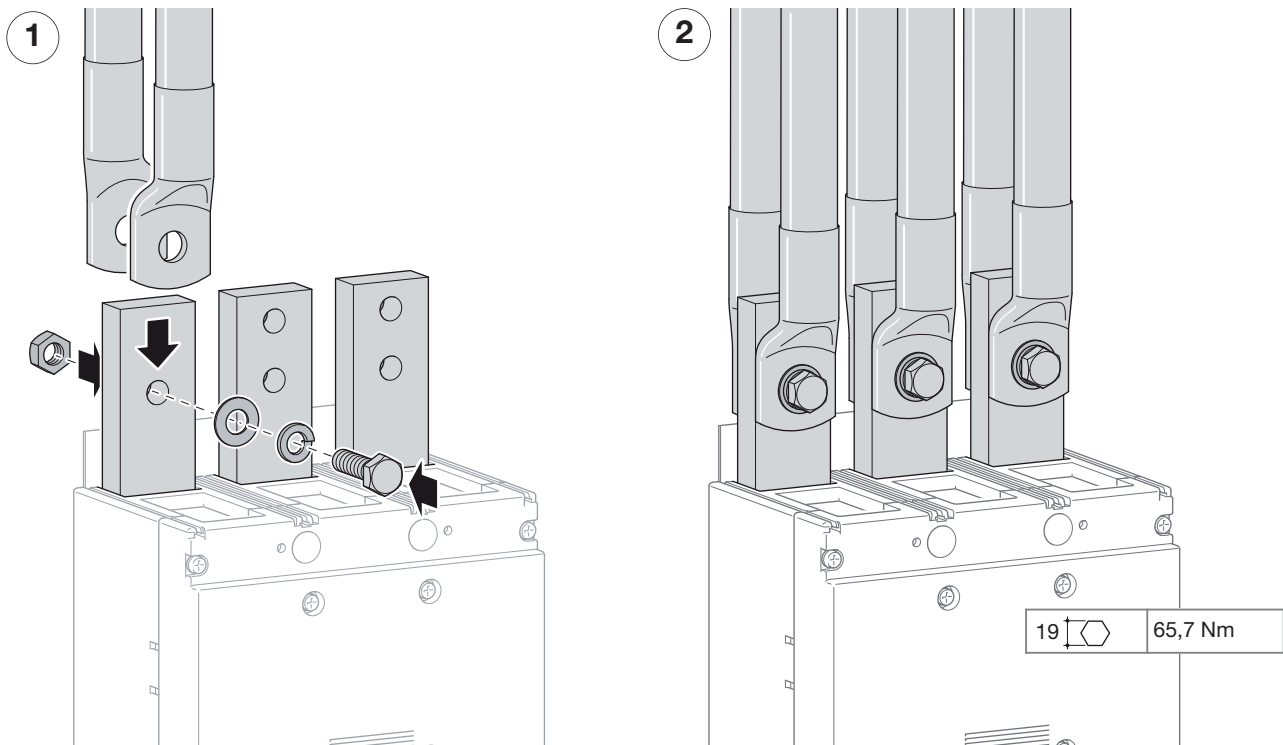


	A (mm)	B (mm)
3P	210	185
4P	280	255

Main incomers

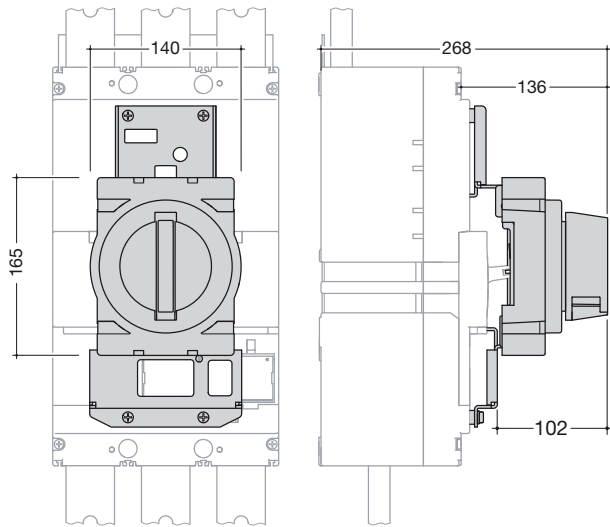
Connection

Connection with end lugs

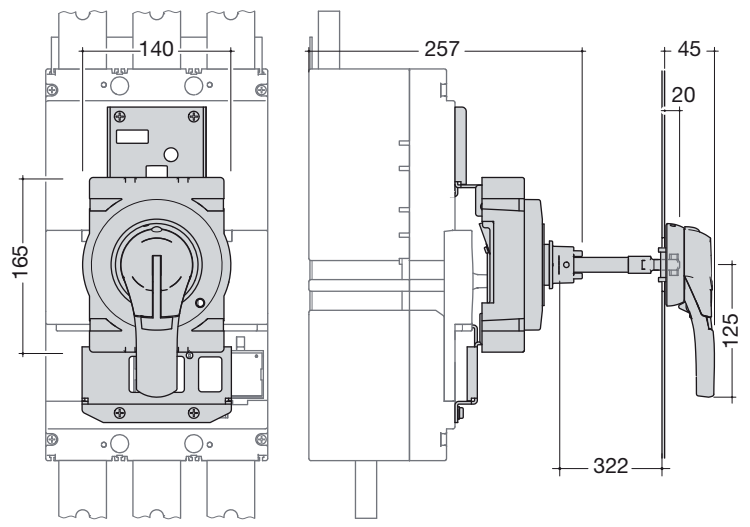


Accessories

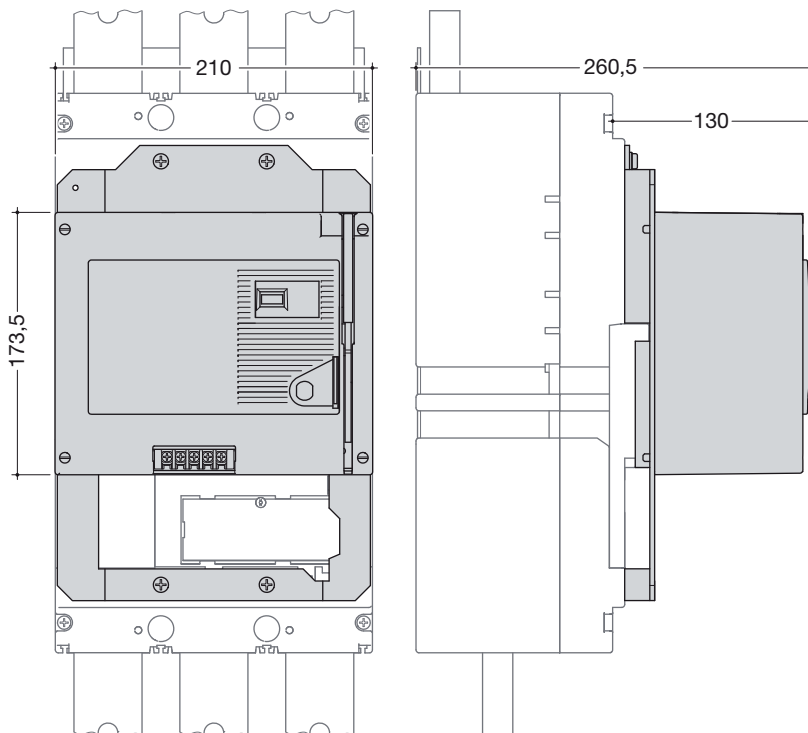
Direct rotary handle



Extended rotary handle



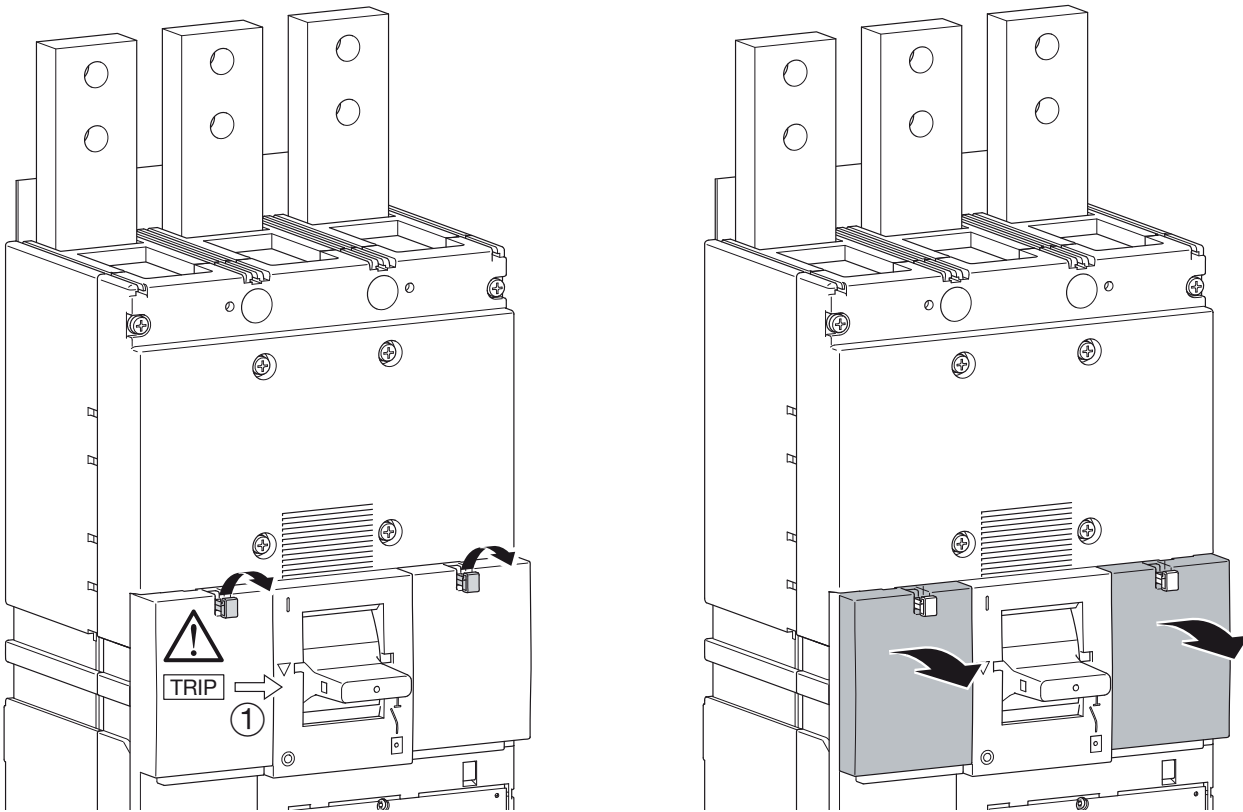
Motor operator



		HXF040H	HXF042H
Operating voltage		24V DC	200-230V AC
Operating current / starting current peak value (A)	24V DC	-4,5 (ON) 4,0/12,0 (OFF, RESET)	-
	200-230V AC	-	-1,2 (ON) 1,0/3,2 (OFF, RESET)
Operating time (s)	(ON)	0,06s	
	(OFF)	3s	
	(RESET)	3s	
Power supply required		300VA min.	
Dielectric properties (1 min)		500V AC	1500V AC

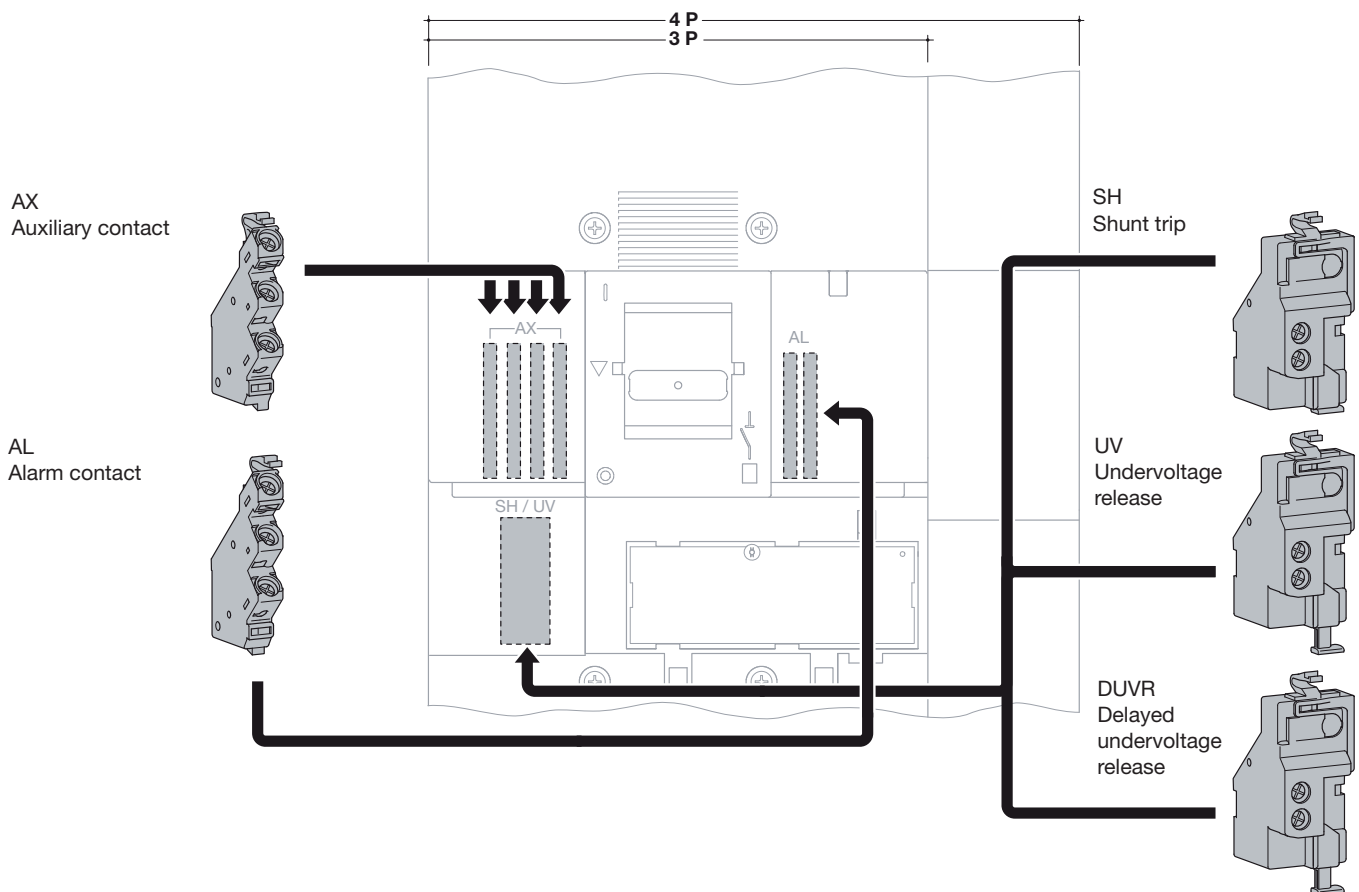
Auxiliaries

Auxiliaries for MCCBs and free tripping switches



Main incomers

Mounting combination for auxiliaries and releases



Cascading according to CEI 60947-2 MCCBs x160, x250, h250, h630, h1000, h1600

Cascading values in kA according to CEI 947-2 Network : 3 phases + neutral 380V - 415V AC

				Upstream						
				x160 TM			x250 TM		h250 TM	
				HDA	HHA	HNA	HHB	HNB	HHG	HNG
				18 kA	25 kA	40 kA	25 kA	40 kA	25 kA	50 kA
Downstream	x160 TM	HDA	18 kA	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA	40 kA
		HHA	25 kA	-	25 kA	40 kA	25 kA	40 kA	25 kA	50 kA
		HNA	40 kA	-	-	40 kA	25 kA	40 kA	25 kA	50 kA
	x250 TM	HHB	25 kA	-	-	-	25 kA	40 kA	25 kA	50 kA
		HNB	40 kA	-	-	-	-	40 kA	-	50 kA
	h250 TM	HHG	25 kA	-	-	-	25 kA	40 kA	25 kA	50 kA
		HNG	50 kA	-	-	-	-	-	-	50 kA
		HEG	65 kA	-	-	-	-	-	-	-
	h250 LSI	HNC	50 kA	-	-	-	-	-	-	50 kA
		HEC	70 kA	-	-	-	-	-	-	-
	h400 TM	HHD	25 kA	-	-	-	-	-	-	-
		HND	50 kA	-	-	-	-	-	-	-
	h630 LSI	HND	50 kA	-	-	-	-	-	-	-
		HED	70 kA	-	-	-	-	-	-	-
	h1000 LSI	HNE	50 kA	-	-	-	-	-	-	-
		HEE	70 kA	-	-	-	-	-	-	-
	h1600 LSI	HNF	50 kA	-	-	-	-	-	-	-
		HEF	70 kA	-	-	-	-	-	-	-

Cascading values in kA according to CEI 947-2 Network : 3 phases + neutral 220V - 240V AC

				Upstream						
				x160 TM			x250 TM		h250 TM	
				HDA	HHA	HNA	HHB	HNB	HHG	HNG
				25 kA	35 kA	85 kA	35 kA	85 kA	35 kA	85 kA
Downstream	x160 TM	HDA	25 kA	25 kA	35 kA	85 kA	-	85 kA	35 kA	85 kA
		HHA	35 kA	-	35 kA	85 kA	35 kA	85 kA	35 kA	85 kA
		HNA	85 kA	-	-	85 kA	35 kA	85 kA	35 kA	85 kA
	x250 TM	HHB	35 kA	-	-	-	35 kA	85 kA	35 kA	85 kA
		HNB	85 kA	-	-	-	-	85 kA	-	85 kA
	h250 TM	HHG	35 kA	-	-	-	35 kA	85 kA	35 kA	85 kA
		HNG	85 kA	-	-	-	-	85 kA	-	85 kA
		HEG	85 kA	-	-	-	-	85 kA	-	85 kA
	h250 LSI	HNC	85 kA	-	-	-	-	85 kA	-	85 kA
		HEC	100 kA	-	-	-	-	-	-	-
	h400 TM	HHD	35 kA	-	-	-	-	-	-	-
		HND	85 kA	-	-	-	-	-	-	-
	h630 LSI	HND	85 kA	-	-	-	-	-	-	-
		HED	100 kA	-	-	-	-	-	-	-
	h1000 LSI	HNE	85 kA	-	-	-	-	-	-	-
		HEE	100 kA	-	-	-	-	-	-	-
	h1600 LSI	HNF	85 kA	-	-	-	-	-	-	-
		HEF	100 kA	-	-	-	-	-	-	-

		h250 LSI		h400 TM		h630 LSI		h1000 LSI		h1600 LSI	
	HEG	HNC	HEC	HHD	HND	HND	HED	HNE	HEE	HNF	HEF
	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
	40 kA	50 kA	40 kA	25 kA	34 kA	24 kA	24 kA	25 kA	25 kA	18 kA	18 kA
	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	55 kA	45 kA	45 kA	28 kA	28 kA
	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	50 kA
	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	55 kA	45 kA	45 kA	28 kA	28 kA
	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	50 kA
	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	55 kA	45 kA	45 kA	28 kA	28 kA
	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
	-	-	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
	-	-	-	25 kA	50 kA	50 kA	55 kA	45 kA	45 kA	28 kA	28 kA
	-	-	-	-	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
	-	-	-	-	-	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
	-	-	-	-	-	-	70 kA	50 kA	70 kA	50 kA	70 kA
	-	-	-	-	-	-	-	50 kA	70 kA	50 kA	70 kA
	-	-	-	-	-	-	-	-	70 kA	50 kA	70 kA
	-	-	-	-	-	-	-	-	-	50 kA	70 kA
	-	-	-	-	-	-	-	-	-	-	70 kA

Main incomers

		h250 LSI		h400 TM		h630 LSI		h1000 LSI		h1600 LSI	
	HEG	HNC	HEC	HHD	HND	HND	HED	HNE	HEE	HNF	HEF
	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	85 kA	100 kA
	85 kA	50 kA	100 kA	35 kA	85 kA	85 kA	100 kA	57 kA	57 kA	30 kA	30 kA
	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	45 kA	45 kA
	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	45 kA	45 kA
	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100kA	85 kA	100 kA	45 kA	45 kA
	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	-	-	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	-	-	-	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	45 kA	45 kA
	-	-	-	-	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	-	-	-	-	-	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	-	-	-	-	-	-	100 kA	85 kA	100 kA	100 kA	100 kA
	-	-	-	-	-	-	-	85 kA	100 kA	100 kA	100 kA
	-	-	-	-	-	-	-	-	100 kA	100 kA	100 kA
	-	-	-	-	-	-	-	-	-	100 kA	100 kA
	-	-	-	-	-	-	-	-	-	-	100 kA

Cascading MCCBs / MCBs

Cascading MCCBs / MCBs 1PP+N / 2PP 230V - 240 V IEC 947-2

Range				x160 TM			x250 TM		h250 TM
				HDA	HHA	HNA	HHB	HNB	HHG
Breaking capacity IEC 60898 / 61009-1				-	-	-	-	-	-
				Breaking capacity IEC 60947-2				25 kA	35 kA
				Curve					
				-	-	-	-	-	-
Ax8xx	4,5 kA	6 kA	B, C	15 kA	15 kA	15 kA	6,5 kA	6,5 kA	6 kA
Ax9xx	6 kA	10 kA	B, C	45 kA	45 kA	45 kA	15 kA	15 kA	18 kA
AC1xx, AD1xx, AE1xx, AF1xx, ACx1xx, ADx1xx, AEx1xx	6 kA	10 kA	B, C	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
	10 kA	15 kA	B, C	25 kA	35 kA	45 kA	15 kA	15 kA	18 kA
MHN, MJN	4,5 kA	6 kA	B, C	15 kA	15 kA	15 kA	6,5 kA	6,5 kA	6 kA
MLN	6 kA	7,5 kA	B, C	24 kA	24 kA	24 kA	9 kA	9 kA	9 kA
NBN, NCN, NDN	10 kA	30 kA	B, C, D	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
NQN, NRN, NSN	-	50 kA	B, C, D	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
	-	40 kA	B, C, D	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
	-	30 kA	B, C, D	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
MMN 2xx, MMN 3xx	-	50 kA	magn.	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
	-	40 kA	magn.	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
HLE, HLF	15 kA	30 kA	B, C	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
HMB, HMC, HMD	15 kA	30 kA	B, C, D	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
HMJ, HMK	-	60 kA	B, C	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA
HMX	-	100 kA	C	25 kA	35 kA	85 kA	35 kA	85 kA	35 kA

Cascading MCCBs / MCBs 1PP 230V - 240 V 2PP / 3PP / 3PP+N / 4PP 400 - 415 V IEC 947-2

Range				x160 TM			x250 TM		h250 TM
				HDA	HHA	HNA	HHB	HNB	HHG
Breaking capacity IEC 60898				-	-	-	-	-	-
				Breaking capacity IEC 60947-2				18 kA	25 kA
				Curve					
				-	-	-	-	-	-
MV, MW	3 kA	4,5 kA	B, C	5,4 kA	5,4 kA	5,4 kA	5,2 kA	5,2 kA	5,8 kA
MU, MT, MBxxxA, MCxxxA	6 kA	10 kA	B, C	18 kA	20 kA	20 kA	14 kA	14 kA	10 kA
MBN, MCN	6 kA	-	B, C	8 kA	8 kA	8 kA	6,5 kA	6,5 kA	6 kA
NGN	6 kA	10 kA	B, C, D	18 kA	18 kA	18 kA	14 kA	14 kA	10 kA
NBN, NCN, NDN	10 kA	15 kA	B, C, D	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA
NQN, NRN, NSN	-	25 kA	B, C, D	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA
	-	20 kA	B, C, D	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA
	-	15 kA	B, C, D	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA
MMN 2xx, MMN 3xx	-	25 kA	magn.	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA
	-	20 kA	magn.	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA
HLE, HLF	10 kA	10 kA	B, C	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA
HMB, HMC, HMD	15 kA	15 kA	B, C, D	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA
HMJ, HMK	-	30 kA	B, C	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA
HMX	-	50 kA	C	18 kA	25 kA	40 kA	25 kA	40 kA	25 kA

		h250 LSI		h400 LSI		h630 LSI		h1000 LSI		h1600 LSI		
	HNG	HEG	HNC	HEC	HHD	HND	HND	HED	HNE	HEE	HNF	HEF
	-	-	-	-	-	-	-	-	-	-	-	-
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	-	-	-	-	-	-	-	-	-	-	-	-
	6 kA	6 kA	6 kA	7 kA	8,2 kA	8,2 kA	7,2 kA	7,2 kA	-	-	-	-
	18 kA	18 kA	18 kA	40 kA	19 kA	19 kA	15 kA	15 kA	-	-	-	-
	85 kA	85 kA	85 kA	100 kA	35 kA	42 kA	37 kA	37 kA	27 kA	27 kA	16 kA	16 kA
	18 kA	18 kA	18 kA	40 kA	19 kA	19 kA	15 kA	15 kA	14 kA	14 kA	-	-
	6 kA	6 kA	6 kA	7 kA	8,2 kA	8,2 kA	7,2 kA	7,2 kA	-	-	-	-
	9 kA	9 kA	9 kA	12 kA	13,5 kA	13,5 kA	10 kA	10 kA	-	-	-	-
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	85 kA	37 kA	37 kA
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	85 kA	85 kA
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	55 kA	55 kA
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	37 kA	37 kA
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	85 kA	85 kA
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	55 kA	55 kA
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	37 kA	37 kA
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	37 kA	37 kA
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA
	85 kA	85 kA	85 kA	100 kA	35 kA	85 kA	85 kA	100 kA	85 kA	100 kA	100 kA	100 kA

Main incomers

		h250 LSI		h400 LSI		h630 LSI		h1000 LSI		h1600 LSI		
	HNG	HEG	HNC	HEC	HHD	HND	HND	HED	HNE	HEE	HNF	HEF
	-	-	-	-	-	-	-	-	-	-	-	-
	50 kA	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA
	-	-	-	-	-	-	-	-	-	-	-	-
	5,8 kA	5,8 kA	5,1 kA	5,1 kA	-	-	-	-	-	-	-	-
	10 kA	10 kA	14 kA	14 kA	13,6 kA	13,6 kA	10,1 kA	10,1 kA	-	-	-	-
	6 kA	6 kA	6,5 kA	6,5 kA	-	-	-	-	-	-	-	-
	10 kA	10 kA	14 kA	14 kA	13,6 kA	13,6 kA	10 kA	10 kA	-	-	-	-
	25 kA	25 kA	47 kA	47 kA	23 kA	23 kA	19 kA	19 kA	18 kA	18 kA	-	-
	50 kA	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	58 kA	44 kA	44 kA	28 kA	28 kA
	50 kA	55 kA	50 kA	70 kA	25 kA	44 kA	29 kA	29 kA	30 kA	30 kA	20 kA	20 kA
	25 kA	25 kA	47 kA	47 kA	25 kA	33 kA	19 kA	19 kA	18 kA	18 kA	-	-
	50 kA	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	58 kA	44 kA	44 kA	28 kA	28 kA
	50 kA	53,4 kA	50 kA	70 kA	25 kA	44 kA	29 kA	29 kA	30 kA	30 kA	20 kA	20 kA
	25 kA	25 kA	47 kA	47 kA	23 kA	23 kA	18,6 kA	18,6 kA	18 kA	18 kA	-	-
	25 kA	25 kA	47 kA	48 kA	24 kA	23 kA	19 kA	19 kA	18 kA	18 kA	-	-
	50 kA	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	65 kA	34 kA	34 kA
	50 kA	65 kA	50 kA	70 kA	25 kA	50 kA	50 kA	70 kA	50 kA	70 kA	50 kA	70 kA

Discrimination chart

Downstream	Upstream	x160 TM 18/25/40kA										x250 TM 25/40kA					h250 TM 25/50/65 kA		
		In	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	160A	100A	125A	160A	200A	250A	32A
MCB Ph+E 1 module MJN, MHN, MLN (6kA max IEC 60 898)	B curve	6A	1,5	1,5	1,5	1,5	1,5	1,5	5,1	5,1	T	T	T	T	T	T	T	T	0,71
		10A	1,2	1,2	1,2	1,2	1,2	1,2	3,6	3,6	T	T	T	5,7	T	T	T	T	0,62
		16A	1,2	1,2	1,2	1,2	1,2	1,2	3,1	3,1	T	T	T	4,7	T	T	T	T	0,62
		20A	-	1	1	1	1	1	2,6	2,6	T	T	T	3,9	T	T	T	T	0,54
		25A	-	-	0,91	0,91	0,91	0,91	2,3	2,3	5,5	5,5	T	3,2	5,5	T	T	T	0,53
		32A	-	-	-	0,82	0,82	0,82	1,8	1,8	4,4	4,4	5	2,7	4,4	T	T	T	0,5
		40A	-	-	-	-	0,79	0,79	1,4	1,4	3	3	3,4	2	3	5,5	T	T	0,5
		40A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	C curve	1A	4,6	4,6	4,6	4,6	4,6	4,6	T	T	T	T	T	T	T	T	T	T	1,3
		2A	4,6	4,6	4,6	4,6	4,6	4,6	T	T	T	T	T	T	T	T	T	T	1,3
		6A	1,5	1,5	1,5	1,5	1,5	1,5	5,1	5,1	T	T	T	T	T	T	T	T	0,71
		10A	1,2	1,2	1,2	1,2	1,2	1,2	3,6	3,6	T	T	T	5,7	T	T	T	T	0,62
		16A	1,2	1,2	1,2	1,2	1,2	1,2	3,1	3,1	T	T	T	4,7	T	T	T	T	0,62
		20A	-	1	1	1	1	1	2,6	2,6	T	T	T	3,9	T	T	T	T	0,54
		25A	-	-	0,91	0,91	0,91	0,91	2,3	2,3	5,5	5,5	T	3,2	5,5	T	T	T	0,53
		32A	-	-	-	0,82	0,82	0,82	1,8	1,8	4,4	4,4	5	2,7	4,4	T	T	T	0,5
RCBO Ph+E 2 modules ADC, ADH, AX8xx, AX9xx (6kA max IEC 61 009)	B curve	6A	1,5	1,5	1,5	1,5	1,5	4,3	4,3	T	T	T	6,8	T	T	T	T	0,73	
		10A	1,2	1,2	1,2	1,2	1,2	1,2	3	3	7,5	7,5	8,3	4,4	7,5	T	T	T	0,62
		13A	1,2	1,2	1,2	1,2	1,2	1,2	3	3	7,5	7,5	8,3	4,4	7,5	T	T	T	0,62
		16A	1,1	1,1	1,1	1,1	1,1	1,1	2,4	2,4	5,8	5,8	6,5	3,5	5,8	T	T	T	0,54
		20A	-	0,95	0,95	0,95	0,95	0,95	2,1	2,1	4,9	4,9	5,4	3	4,9	8,1	T	T	0,52
		25A	-	-	0,92	0,92	0,92	0,92	1,8	1,8	4,1	4,1	4,5	2,6	4,1	6,6	T	T	0,5
		32A	-	-	-	0,86	0,86	0,86	1,6	1,6	3,5	3,5	4	2,4	3,5	5,8	8,8	T	0,5
		40A	-	-	-	-	0,83	0,83	1,5	1,5	3,1	3,1	3,4	2,1	3,1	4,9	7,1	9,2	-
	C curve	1A	4,7	4,7	4,7	4,7	4,7	4,7	T	T	T	T	T	T	T	T	T	T	1,25
		2A	4,7	4,7	4,7	4,7	4,7	4,7	T	T	T	T	T	T	T	T	T	T	1,25
		3A	1,5	1,5	1,5	1,5	1,5	1,5	4,3	4,3	T	T	T	6,8	T	T	T	T	0,73
		4A	1,5	1,5	1,5	1,5	1,5	1,5	4,3	4,3	T	T	T	6,8	T	T	T	T	0,73
		6A	1,5	1,5	1,5	1,5	1,5	1,5	4,3	4,3	T	T	T	6,8	T	T	T	T	0,73
		10A	1,2	1,2	1,2	1,2	1,2	1,2	3	3	7,5	7,5	8,3	4,4	7,5	T	T	T	0,62
		13A	1,2	1,2	1,2	1,2	1,2	1,2	3	3	7,5	7,5	8,3	4,4	7,5	T	T	T	0,62
		16A	1,1	1,1	1,1	1,1	1,1	1,1	2,4	2,4	5,8	5,8	6,5	3,5	5,8	T	T	T	0,54
RCBO Ph+E 1 module AC1xx, AE1xx, AF1xx, ACk1xx, ADk1xx, AEk1xx (10kA max IEC 61 009)	B curve	6A	1,3	1,3	1,3	1,3	1,3	2,6	2,6	5,5	5,5	6,3	3,8	5,5	8,4	T	T	6,5	
		10A	1,1	1,1	1,1	1,1	1,1	1,1	2,3	2,3	4,6	4,6	5,3	3,1	4,6	7	T	5,8	
		16A	0,96	0,96	0,96	0,96	0,96	0,96	2,1	2,1	3,9	3,9	4,4	2,6	3,9	5,7	10	5,4	
		20A	-	0,9	0,9	0,9	0,9	0,9	1,8	1,8	3,3	3,3	3,7	2,4	3,3	4,8	8,1	8,1	5,2
		25A	-	-	0,9	0,9	0,9	0,9	1,8	1,8	3,3	3,3	3,7	2,4	3,3	4,8	8,1	7	5,2
		32A	-	-	-	0,83	0,83	0,83	1,6	1,6	2,8	2,8	3,2	2,1	2,8	4,2	7	7	5
		40A	-	-	-	-	0,8	0,8	1,4	1,4	2,4	2,4	2,8	1,8	2,4	3,6	6	6	-
		45A	-	-	-	-	-	0,8	1,4	1,4	2,4	2,4	2,8	1,8	2,4	3,6	T	T	-
C curve	6A	1,3	1,3	1,3	1,3	1,3	2,6	2,6	5,5	5,5	6,3	3,8	5,5	8,4	T	T	6,5		
	10A	1,1	1,1	1,1	1,1	1,1	1,1	2,3	2,3	4,6	4,6	5,3	3,1	4,6	7	T	5,8		
	16A	0,96	0,96	0,96	0,96	0,96	0,96	2,1	2,1	3,9	3,9	4,4	2,6	3,9	5,7	10	5,4		
	20A	-	0,9	0,9	0,9	0,9	0,9	1,8	1,8	3,3	3,3	3,7	2,4	3,3	4,8	8,1	8,1	5,2	
	25A	-	-	0,9	0,9	0,9	0,9	1,8	1,8	3,3	3,3	3,7	2,4	3,3	4,8	8,1	7	5,2	
	32A	-	-	-	0,83	0,83	0,83	1,6	1,6	2,8	2,8	3,2	2,1	2,8	4,2	7	7	5	
	40A	-	-	-	-	0,8	0,8	1,4	1,4	2,4	2,4	2,8	1,8	2,4	3,6	6	6	-	
	45A	-	-	-	-	-	0,8	1,4	1,4	2,4	2,4	2,8	1,8	2,4	3,6	T	T	-	

Breaking capacity according to IEC 60 947-2. Network : 3 phasis + neutral 220/380 ~ 240/415 V AC

notes : "T" = total discrimination (up to the breaking capacity of the downstream device)

"-" = no discrimination

							h250 LSI 50/70 kA			h400 TM 25/50 kA			h630 LSI 50/70 kA			h1000 LSI 50/70 kA			h1600 LSI 50/70 kA	
	63A	100A	125A	160A	200A	250A	40A	125A	250A	250A	400A	250A	400A	630A	630A	800A	1000A	1250A	1600A	
	2,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,8	5,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,6	4,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,4	3,9	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,2	3,2	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	2,7	4,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1	2	3	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,8	5,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,6	4,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,4	3,9	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,2	3,2	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	2,7	4,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1	2	3	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2,3	6,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,7	4,4	7,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,7	4,4	7,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,4	3,5	5,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,35	3	4,9	8,1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,3	2,6	4,1	6,6	T	9,6	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,2	2,4	3,5	5,8	8,8	8	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	2,1	3,1	4,9	7,1	6,8	T	T	T	T	T	T	T	T	T	T	T	T	T	
	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2,3	6,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2,3	6,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2,3	6,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,7	4,4	7,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,7	4,4	7,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,4	3,5	5,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,35	3	4,9	8,1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,3	2,6	4,1	6,6	T	9,6	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,2	2,4	3,5	5,8	8,8	8	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	2,1	3,1	4,9	7,1	6,8	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,6	3,8	5,5	8,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,5	3,1	4,6	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,4	2,6	3,9	5,7	10	9,1	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,4	2,4	3,3	4,8	8,1	7,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,3	2,4	3,3	4,8	8,1	7,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,2	2,1	2,8	4,2	7	6,4	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,4	3,6	6	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,4	3,6	T	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,4	3,6	T	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,6	3,8	5,5	8,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,5	3,1	4,6	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,4	2,6	3,9	5,7	10	9,1	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,4	2,4	3,3	4,8	8,1	7,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,3	2,4	3,3	4,8	8,1	7,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,2	2,1	2,8	4,2	7	6,4	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,4	3,6	6	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,4	3,6	T	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,4	3,6	T	5,5	T	T	T	T	T	T	T	T	T	T	T	T	T	

Main incomers

Discrimination chart

Downstream	Ups-tream	x160 TM 18/25/40kA											x250 TM 25/40kA					h250 TM 25/50/65 kA	
	In	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	160A	100A	125A	160A	200A	250A	32A	
MCB 1 module / pole, Ocean2 and V1 ranges MV, MW, MU, MT (10kA max IEC 60 898)	B curve	6A	1,3	1,3	1,3	1,3	1,3	1,3	2,7	2,7	5,9	5,9	6,6	3,7	5,9	9,8	T	T	0,65
		10A	1,1	1,1	1,1	1,1	1,1	1,1	2,3	2,3	4,9	4,9	5,3	3,1	4,9	8	T	T	0,59
		13A	0,96	0,96	0,96	0,96	0,96	0,96	2	2	4,2	4,2	4,8	2,7	4,2	6,9	T	T	0,54
		16A	0,96	0,96	0,96	0,96	0,96	0,96	2	2	4,2	4,2	4,8	2,7	4,2	6,9	T	T	0,54
		20A	-	0,9	0,9	0,9	0,9	0,9	1,8	1,8	3,6	3,6	4	2,4	3,6	5,6	8,5	9,3	0,52
		25A	-	-	0,9	0,9	0,9	0,9	1,8	1,8	3,6	3,6	4	2,4	3,6	5,6	8,5	9,3	0,52
		32A	-	-	-	0,83	0,83	0,83	1,5	1,5	3	3	3,3	2,1	3	4,6	7	7,8	0,5
		40A	-	-	-	-	0,83	0,83	1,5	1,5	3	3	3,3	2,1	3	4,6	7	7,8	-
		50A	-	-	-	-	-	0,8	1,4	1,4	2,6	2,6	2,8	1,8	2,6	3,7	5,4	6	-
	63A	-	-	-	-	-	-	1,4	1,4	2,6	2,6	2,7	1,8	2,6	3,7	5,4	6	-	
	C curve	0,5A	5	5	5	5	5	5	T	T	T	T	T	T	T	T	T	T	1,8
		1A	1,7	1,7	1,7	1,7	1,7	1,7	4,8	4,8	T	T	T	7	T	T	T	T	0,84
		2A	1,7	1,7	1,7	1,7	1,7	1,7	4,8	4,8	T	T	T	7	T	T	T	T	0,84
		3A	1,4	1,4	1,4	1,4	1,4	1,4	3,5	3,5	8	8	9	4,1	8	T	T	T	0,7
		4A	1,4	1,4	1,4	1,4	1,4	1,4	3,5	3,5	8	8	9	4,1	8	T	T	T	0,7
		6A	1,3	1,3	1,3	1,3	1,3	1,3	2,7	2,7	5,9	5,9	6,6	3,7	5,9	9,8	T	T	0,65
		10A	1,1	1,1	1,1	1,1	1,1	1,1	2,3	2,3	4,9	4,9	5,3	3,1	4,9	8	T	T	0,59
		13A	0,96	0,96	0,96	0,96	0,96	0,96	2	2	4,2	4,2	4,8	2,7	4,2	6,9	T	T	0,54
		16A	0,96	0,96	0,96	0,96	0,96	0,96	2	2	4,2	4,2	4,8	2,7	4,2	6,9	T	T	0,54
		20A	-	0,9	0,9	0,9	0,9	0,9	1,8	1,8	3,6	3,6	4	2,4	3,6	5,6	8,5	9,3	0,52
		25A	-	-	0,9	0,9	0,9	0,9	1,8	1,8	3,6	3,6	4	2,4	3,6	5,6	8,5	9,3	0,52
		32A	-	-	-	0,83	0,83	0,83	1,5	1,5	3	3	3,3	2,1	3	4,6	7	7,8	0,5
		40A	-	-	-	-	0,83	0,83	1,5	1,5	3	3	3,3	2,1	3	4,6	7	7,8	-
		50A	-	-	-	-	-	0,8	1,4	1,4	2,6	2,6	2,8	1,8	2,6	3,7	5,4	6	-
		63A	-	-	-	-	-	-	1,4	1,4	2,6	2,6	2,7	1,8	2,6	3,7	5,4	6	-
	D curve	0,5A	4,3	4,3	4,3	4,3	4,3	4,3	T	T	T	T	T	T	T	T	T	T	1,8
		1A	1,7	1,7	1,7	1,7	1,7	1,7	4,6	4,6	T	T	T	6,8	T	T	T	T	0,84
		2A	1,7	1,7	1,7	1,7	1,7	1,7	4,6	4,6	T	T	T	6,8	T	T	T	T	0,84
		3A	1,4	1,4	1,4	1,4	1,4	1,4	3,2	3,2	7,6	7,6	8,6	4,6	7,6	T	T	T	0,7
		4A	1,4	1,4	1,4	1,4	1,4	1,4	3,2	3,2	7,6	7,6	8,6	4,6	7,6	T	T	T	0,7
		6A	1,2	1,2	1,2	1,2	1,2	1,2	2,4	2,4	5,5	5,5	6,1	3,4	5,5	9,1	T	T	0,62
		10A	1	1	1	1	1	1	2,1	2,1	4,3	4,3	5	2,7	4,3	7,2	T	T	0,57
		13A	0,93	0,93	0,93	0,93	0,93	0,93	1,8	1,8	3,8	3,8	4,2	2,5	3,8	6	9,2	T	0,54
16A		0,93	0,93	0,93	0,93	0,93	0,93	1,8	1,8	3,8	3,8	4,2	2,5	3,8	6	9,2	T	0,54	
20A		-	0,86	0,86	0,86	0,86	0,86	1,6	1,6	3,1	3,1	3,4	2,2	3,1	4,9	7,2	8	0,52	
25A		-	-	0,86	0,86	0,86	0,86	1,6	1,6	3,1	3,1	3,4	2,2	3,1	4,9	7,2	8	0,52	
32A		-	-	-	0,81	0,81	0,81	1,5	1,5	2,6	2,6	2,8	1,8	2,6	3,8	5,4	6	0,5	
40A		-	-	-	-	0,81	0,81	1,5	1,5	2,6	2,6	2,8	1,8	2,6	3,8	5,4	6	-	
50A		-	-	-	-	-	0,78	1,4	1,4	2,4	2,4	2,5	1,7	2,4	3,3	4,6	5	-	
63A		-	-	-	-	-	-	1,4	1,4	2,4	2,4	2,5	1,7	2,4	3,3	4,6	5	-	
MBNxxxx, MCNxxxx	B curve	6A	1,1	1,1	1,1	1,1	1,1	1,1	2,3	2,3	4,7	4,7	5,3	3,2	4,7	T	T	T	0,6
		10A	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4	4	4,5	2,6	4	T	T	T	0,55
		13A	0,9	0,9	0,9	0,9	0,9	0,9	1,7	1,7	3,4	3,4	4	2,4	3,4	9,4	T	T	0,52
		16A	0,9	0,9	0,9	0,9	0,9	0,9	1,7	1,7	3,4	3,4	4	2,4	3,4	9,4	T	T	0,52
		20A	-	0,82	0,82	0,82	0,82	0,82	1,5	1,5	3,1	3,1	3,4	2,1	3,1	4,7	T	T	0,5
		25A	-	-	0,82	0,82	0,82	0,82	1,6	1,6	3,1	3,1	3,4	2,1	3,1	4,7	T	T	0,5
		32A	-	-	-	0,81	0,81	0,81	1,5	1,5	2,7	2,7	3,1	1,9	2,7	4,1	T	T	0,5
		40A	-	-	-	-	0,81	0,81	1,5	1,5	2,7	2,7	3,1	1,9	2,7	4,1	T	T	-
		50A	-	-	-	-	-	0,8	1,4	1,4	2,4	2,4	2,8	1,7	2,4	3,7	9,3	9	-
	63A	-	-	-	-	-	-	1,4	1,4	2,4	2,4	2,8	1,7	2,4	3,7	9,3	9	-	
	C curve	0,5A	1,6	1,6	1,6	1,6	1,6	1,6	4,7	4,7	T	T	T	T	T	T	T	T	0,86
		1A	1,4	1,4	1,4	1,4	1,4	1,4	3,5	3,5	T	T	T	5,1	T	T	T	T	0,75
		2A	1,4	1,4	1,4	1,4	1,4	1,4	3,5	3,5	T	T	T	5,1	T	T	T	T	0,75
		3A	1,3	1,3	1,3	1,3	1,3	1,3	2,8	2,8	T	T	T	4	T	T	T	T	0,66
		4A	1,3	1,3	1,3	1,3	1,3	1,3	2,8	2,8	T	T	T	4	T	T	T	T	0,66
		6A	1,1	1,1	1,1	1,1	1,1	1,1	2,3	2,3	4,7	4,7	5,3	3,2	4,7	T	T	T	0,6
		10A	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4	4	4,5	2,6	4	T	T	T	0,55
		13A	0,9	0,9	0,9	0,9	0,9	0,9	1,7	1,7	3,4	3,4	4	2,4	3,4	9,4	T	T	0,52
		16A	0,9	0,9	0,9	0,9	0,9	0,9	1,7	1,7	3,4	3,4	4	2,4	3,4	9,4	T	T	0,52
		20A	-	0,82	0,82	0,82	0,82	0,82	1,5	1,5	3,1	3,1	3,4	2,1	3,1	4,7	T	T	0,5
		25A	-	-	0,82	0,82	0,82	0,82	1,6	1,6	3,1	3,1	3,4	2,1	3,1	4,7	T	T	0,5
32A		-	-	-	0,81	0,81	0,81	1,5	1,5	2,7	2,7	3,1	1,9	2,7	4,1	T	T	0,5	
40A	-	-	-	-	0,81	0,81	1,5	1,5	2,7	2,7	3,1	1,9	2,7	4,1	T	T	-		
50A	-	-	-	-	-	0,8	1,4	1,4	2,4	2,4	2,8	1,7	2,4	3,7	9,3	9	-		
63A	-	-	-	-	-	-	1,4	1,4	2,4	2,4	2,8	1,7	2,4	3,7	9,3	9	-		

Breaking capacity according to IEC 60 947-2. Network : 3 phasis + neutral 220/380 ~ 240/415 V AC
 notes : "T" = total discrimination (up to the breaking capacity of the downstream device)
 "-" = no discrimination

							h250 LSI 50/70 kA			h400 TM 25/50 kA		h630 LSI 50/70 kA			h1000 LSI 50/70 kA			h1600 LSI 50/70 kA	
	63A	100A	125A	160A	200A	250A	40A	125A	250A	250A	400A	250A	400A	630A	630A	800A	1000A	1250A	1600A
	1,7	3,7	5,9	9,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,5	3,1	4,9	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,4	2,7	4,2	6,9	T	9,8	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,4	2,7	4,2	6,9	T	9,8	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,4	3,6	5,6	8,3	7,9	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,4	3,6	5,6	8,3	7,9	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,15	2,1	3	4,6	7	6,4	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,15	2,1	3	4,6	7	6,4	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,1	1,8	2,6	3,7	5,3	5	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,1	1,8	2,6	3,7	5,3	5	T	T	T	T	T	T	T	T	T	T	T	T	T
	8,6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2,6	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2,6	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2	4,1	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2	4,1	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,7	3,7	5,9	9,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,5	3,1	4,9	8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,4	2,7	4,2	6,9	T	9,8	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,4	2,7	4,2	6,9	T	9,8	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,4	3,6	5,6	8,3	7,9	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,4	3,6	5,6	8,3	7,9	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,15	2,1	3	4,6	7	6,4	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,15	2,1	3	4,6	7	6,4	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,1	1,8	2,6	3,7	5,3	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T
	1,1	1,8	2,6	3,7	5,3	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T
	7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2,6	6,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2,6	6,8	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,9	4,6	7,6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,9	4,6	7,6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,5	3,4	5,5	9,1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,4	2,7	4,3	7,2	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,3	2,5	3,8	6	9,2	8,4	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,3	2,5	3,8	6	9,2	8,4	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,2	3,1	4,9	7,1	6,7	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,2	3,1	4,9	7,1	6,7	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,1	1,8	2,6	3,8	5,4	5,1	T	T	T	9	T	T	T	T	T	T	T	T	T
	1,1	1,8	2,6	3,8	5,4	5,1	T	T	T	9	T	T	T	T	T	T	T	T	T
	1	1,7	2,4	3,3	4,6	4,3	T	T	T	7,2	T	T	T	T	T	T	T	T	T
	1	1,7	2,4	3,3	4,6	4,3	T	T	T	7,2	T	T	T	T	T	T	T	T	T
	1,5	3,2	4,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,4	2,6	4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,3	2,4	3,4	9,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,3	2,4	3,4	9,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,1	3,1	4,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,1	3,1	4,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,1	1,9	2,7	4,1	T	9,6	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,1	1,9	2,7	4,1	T	9,6	T	T	T	T	T	T	T	T	T	T	T	T	T
	1	1,7	2,4	3,7	9,3	9	T	T	T	T	T	T	T	T	T	T	T	T	T
	1	1,7	2,4	3,7	9,3	9	T	T	T	T	T	T	T	T	T	T	T	T	T
	2,6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2,1	5,1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	2,1	5,1	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,7	4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,7	4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,5	3,2	4,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,4	2,6	4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,3	2,4	3,4	9,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,3	2,4	3,4	9,4	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,1	3,1	4,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,2	2,1	3,1	4,7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,1	1,9	2,7	4,1	T	9,6	T	T	T	T	T	T	T	T	T	T	T	T	T
	1,1	1,9	2,7	4,1	T	9,6	T	T	T	T	T	T	T	T	T	T	T	T	T
	1	1,7	2,4	3,7	9,3	9	T	T	T	T	T	T	T	T	T	T	T	T	T
	1	1,7	2,4	3,7	9,3	9	T	T	T	T	T	T	T	T	T	T	T	T	T

Discrimination chart

		Ups- tream	x160 TM 18/25/40kA										x250 TM 25/40kA					h250 TM 25/50/65 kA		
Downs- tream	In	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	160A	100A	125A	160A	200A	250A	32A		
NGN, NBNxxx, NDNxxx	B curve	6A	1,3	1,3	1,3	1,3	1,3	1,3	2,7	2,7	5,8	5,8	6,7	3,8	5,8	9,6	T	T	0,65	
		10A	1,2	1,2	1,2	1,2	1,2	1,2	2,2	2,2	4,8	4,8	5,4	3,1	4,8	8	13	T	0,58	
		13A	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4,3	4,3	4,8	2,8	4,3	6,9	11	12	0,55	
		16A	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4,3	4,3	4,8	2,8	4,3	6,9	11	12	0,55	
		20A	-	0,92	0,92	0,92	0,92	0,92	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,3	9,3	0,53	
		25A	-	-	0,92	0,92	0,92	0,92	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,3	9,3	0,53	
		32A	-	-	-	0,84	0,84	0,84	1,5	1,5	3	3	3,4	2,1	3	4,7	6,9	7,7	0,5	
		40A	-	-	-	-	0,84	0,84	1,5	1,5	3	3	3,4	2,1	3	4,7	6,9	7,7	-	
		50A	-	-	-	-	-	0,81	1,4	1,4	2,5	2,5	2,8	1,8	2,5	3,7	5,4	6	-	
	63A	-	-	-	-	-	-	1,4	1,4	2,5	2,5	2,8	1,8	2,5	3,7	5,4	6	-		
	0,5A	5	5	5	5	5	5	T	T	T	T	T	T	T	T	T	T	T	1,8	
	1A	1,6	1,6	1,6	1,6	1,6	1,6	1,6	4,8	4,8	12	12	14	7,1	12	T	T	T	0,85	
	2A	1,6	1,6	1,6	1,6	1,6	1,6	1,6	4,8	4,8	12	12	14	7,1	12	T	T	T	0,85	
	3A	1,4	1,4	1,4	1,4	1,4	1,4	1,4	3,5	3,5	8	8	9,2	5,1	8	14	T	T	0,7	
	4A	1,4	1,4	1,4	1,4	1,4	1,4	1,4	3,5	3,5	8	8	9,2	5,1	8	14	T	T	0,7	
	6A	1,3	1,3	1,3	1,3	1,3	1,3	1,3	2,7	2,7	5,8	5,8	6,7	3,8	5,8	9,6	T	T	0,65	
	10A	1,2	1,2	1,2	1,2	1,2	1,2	1,2	2,2	2,2	4,8	4,8	5,4	3,1	4,8	8	13	T	0,58	
	13A	0,97	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4,3	4,3	4,8	2,8	4,3	6,9	11	12	0,55	
	16A	0,97	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4,3	4,3	4,8	2,8	4,3	6,9	11	12	0,55	
	20A	-	0,92	0,92	0,92	0,92	0,92	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,3	9,3	0,53		
	25A	-	-	0,92	0,92	0,92	0,92	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,3	9,3	0,53		
	32A	-	-	-	0,84	0,84	0,84	1,5	1,5	3	3	3,4	2,1	3	4,7	6,9	7,7	0,5		
	40A	-	-	-	-	0,84	0,84	1,5	1,5	3	3	3,4	2,1	3	4,7	6,9	7,7	-		
	50A	-	-	-	-	-	0,81	1,4	1,4	2,5	2,5	2,8	1,8	2,5	3,7	5,4	6	-		
	63A	-	-	-	-	-	-	1,4	1,4	2,5	2,5	2,8	1,8	2,5	3,7	5,4	6	-		
	0,5A	4,3	4,3	4,3	4,3	4,3	4,3	14	14	T	T	T	T	T	T	T	T	T	1,8	
	1A	1,6	1,6	1,6	1,6	1,6	1,6	1,6	4,6	4,6	11	11	13	6,8	11	T	T	T	0,84	
	2A	1,6	1,6	1,6	1,6	1,6	1,6	1,6	4,6	4,6	11	11	13	6,8	11	T	T	T	0,84	
	3A	1,4	1,4	1,4	1,4	1,4	1,4	1,4	3,2	3,2	7,4	7,4	8,5	4,6	7,4	13	T	T	0,7	
	4A	1,4	1,4	1,4	1,4	1,4	1,4	1,4	3,2	3,2	7,4	7,4	8,5	4,6	7,4	13	T	T	0,7	
	6A	1,2	1,2	1,2	1,2	1,2	1,2	1,2	2,4	2,4	5,4	5,4	6,2	3,4	5,4	9	T	T	0,62	
	10A	0,98	0,98	0,98	0,98	0,98	0,98	0,98	2	2	4,3	4,3	4,9	2,8	4,3	7,2	12	13	0,56	
	13A	0,92	0,92	0,92	0,92	0,92	0,92	0,92	1,8	1,8	3,7	3,7	4,2	2,5	3,7	6	9,2	11	0,54	
16A	0,92	0,92	0,92	0,92	0,92	0,92	0,92	1,8	1,8	3,7	3,7	4,2	2,5	3,7	6	9,2	11	0,54		
20A	-	0,86	0,86	0,86	0,86	0,86	0,86	1,6	1,6	3,2	3,2	3,4	2,2	3,2	4,8	7,1	7,9	0,52		
25A	-	-	0,86	0,86	0,86	0,86	0,86	1,6	1,6	3,2	3,2	3,4	2,2	3,2	4,8	7,1	7,9	0,52		
32A	-	-	-	0,81	0,81	0,81	1,5	1,5	2,5	2,5	2,7	1,8	2,5	3,7	5,4	5,9	0,5			
40A	-	-	-	-	0,81	0,81	1,5	1,5	2,5	2,5	2,7	1,8	2,5	3,7	5,4	5,9	-			
50A	-	-	-	-	-	0,78	1,4	1,4	2,4	2,4	2,5	1,7	2,4	3,3	4,6	5	-			
63A	-	-	-	-	-	-	1,4	1,4	2,4	2,4	2,5	1,7	2,4	3,3	4,6	5	-			
MMN2xx, MMN3xx	range	0,63A	1,3	1,3	1,3	1,3	1,3	1,3	3,1	3,1	7	7	7,9	4,4	7	12	19	21	0,7	
		1,25A	1,3	1,3	1,3	1,3	1,3	1,3	1,3	3,1	3,1	7	7	7,9	4,4	7	12	19	21	0,7
		1,6A	1,1	1,1	1,1	1,1	1,1	1,1	1,1	2,5	2,5	5,3	5,3	6	3,5	5,3	8,9	14	16	0,64
		2,5A	1,1	1,1	1,1	1,1	1,1	1,1	1,1	2,5	2,5	5,3	5,3	6	3,5	5,3	8,9	14	16	0,64
		4A	0,9	0,9	0,9	0,9	0,9	0,9	0,9	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,4	9,3	0,53
		6,3A	0,9	0,9	0,9	0,9	0,9	0,9	0,9	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,4	9,3	0,53
		10A	0,84	0,84	0,84	0,84	0,84	0,84	0,84	1,6	1,6	2,8	2,8	3,1	2	2,8	4,2	6,1	6,8	0,51
		12,5A	0,84	0,84	0,84	0,84	0,84	0,84	0,84	1,6	1,6	2,8	2,8	3,1	2	2,8	4,2	6,1	6,8	0,51
		16A	0,81	0,81	0,81	0,81	0,81	0,81	0,81	1,5	1,5	2,6	2,6	2,8	1,8	2,6	3,8	5,4	6	0,5
		20A	-	0,81	0,81	0,81	0,81	0,81	0,81	1,5	1,5	2,6	2,6	2,8	1,8	2,6	3,8	5,4	6	0,5
25A	-	-	0,81	0,81	0,81	0,81	0,81	1,5	1,5	2,6	2,6	2,8	1,8	2,6	3,8	5,4	6	0,5		

Breaking capacity according to IEC 60 947-2. Network : 3 phasis + neutral 220/380 ~ 240/415 V AC
 notes : "T" = total discrimination (up to the breaking capacity of the downstream device)
 "-" = no discrimination

							h250 LSI 50/70 kA			h400 TM 25/50 kA		h630 LSI 50/70 kA			h1000 LSI 50/70 kA			h1600 LSI 50/70 kA	
63A	100A	125A	160A	200A	250A	40A	125A	250A	250A	400A	250A	400A	630A	630A	800A	1000A	1250A	1600A	
1,7	3,8	5,8	9,6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,5	3,1	4,8	8	13	12	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,4	2,8	4,3	6,9	11	9,7	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,4	2,8	4,3	6,9	11	9,7	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,3	2,4	3,6	5,5	8,3	7,7	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,3	2,4	3,6	5,5	8,3	7,7	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,2	2,1	3	4,7	6,9	6,4	T	T	T	12	T	T	T	T	T	T	T	T	T	
1,2	2,1	3	4,7	6,9	6,4	T	T	T	12	T	T	T	T	T	T	T	T	T	
1,1	1,8	2,5	3,7	5,4	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T	
1,1	1,8	2,5	3,7	5,4	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T	
8,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
2,6	7,1	12	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
2,6	7,1	12	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
2	5,1	8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
2	5,1	8	14	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,7	3,8	5,8	9,6	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,5	3,1	4,8	8	13	12	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,4	2,8	4,3	6,9	11	9,7	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,4	2,8	4,3	6,9	11	9,7	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,3	2,4	3,6	5,5	8,3	7,7	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,3	2,4	3,6	5,5	8,3	7,7	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,2	2,1	3	4,7	6,9	6,4	T	T	T	12	T	T	T	T	T	T	T	T	T	
1,2	2,1	3	4,7	6,9	6,4	T	T	T	12	T	T	T	T	T	T	T	T	T	
1,1	1,8	2,5	3,7	5,4	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T	
1,1	1,8	2,5	3,7	5,4	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T	
7	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
7	6,8	11	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
2,6	6,8	11	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
2,6	4,6	7,4	13	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,9	4,6	7,4	13	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,5	3,4	5,4	9	T	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,4	2,8	4,3	7,2	12	10,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,3	2,5	3,7	6	9,2	8,4	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,3	2,5	3,7	6	9,2	8,4	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,2	2,2	3,2	4,8	7,1	6,7	T	T	T	12	T	T	T	T	T	T	T	T	T	
1,2	2,2	3,2	4,8	7,1	6,7	T	T	T	12	T	T	T	T	T	T	T	T	T	
1,1	1,8	2,5	3,7	5,4	5,1	T	T	T	9	T	T	T	T	T	T	T	T	T	
1,1	1,8	2,5	3,7	5,4	5,1	T	T	T	9	T	T	T	T	T	T	T	T	T	
1	1,7	2,4	3,3	4,6	4,3	T	T	T	7,2	T	T	T	T	T	T	T	T	T	
1	1,7	2,4	3,3	4,6	4,3	T	T	T	7,2	T	T	T	T	T	T	T	T	T	
1,8	4,4	7	12	19	17	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,8	4,4	7	12	19	17	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,5	3,5	5,3	8,9	14	13	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,5	3,5	5,3	8,9	14	13	T	T	T	T	T	T	T	T	T	T	T	T	T	
1,3	2,4	3,6	5,5	8,4	7,8	T	T	T	15	T	T	T	T	T	T	T	T	T	
1,3	2,4	3,6	5,5	8,4	7,8	T	T	T	15	T	T	T	T	T	T	T	T	T	
1,15	2	2,8	4,2	6,1	5,7	T	T	T	11	T	T	T	T	T	T	T	T	T	
1,15	2	2,8	4,2	6,1	5,7	T	T	T	11	T	T	T	T	T	T	T	T	T	
1,1	1,8	2,6	3,8	5,4	5	T	T	T	9	T	T	T	T	T	T	T	T	T	
1,1	1,8	2,6	3,8	5,4	5	T	T	T	9	T	T	T	T	T	T	T	T	T	
1,1	1,8	2,6	3,8	5,4	5	T	T	T	9	T	T	T	T	T	T	T	T	T	

Main incomers

Discrimination chart

		Ups-tream	x160 TM 18/25/40kA										x250 TM 25/40kA					h250 TM 25/50/65 kA		
Downs-tream		In	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	160A	100A	125A	160A	200A	250A	32A	
NON, NFN, NSN	B curve	6A	1,3	1,3	1,3	1,3	1,3	1,3	2,7	2,7	5,8	5,8	6,7	3,8	5,8	9,6	15	17	0,65	
		10A	1,2	1,2	1,2	1,2	1,2	1,2	2,2	2,2	4,8	4,8	5,4	3,1	4,8	8	13	14	0,58	
		13A	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4,3	4,3	4,8	2,8	4,3	6,9	11	12	0,55	
		16A	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4,3	4,3	4,8	2,8	4,3	6,9	11	12	0,55	
		20A	-	0,92	0,92	0,92	0,92	0,92	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,3	9,3	0,53	
		25A	-	-	0,92	0,92	0,92	0,92	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,3	9,3	0,53	
		32A	-	-	-	0,84	0,84	0,84	1,5	1,5	3	3	3,4	2,1	3	4,7	6,9	7,7	0,5	
		40A	-	-	-	-	0,84	0,84	1,5	1,5	3	3	3,4	2,1	3	4,7	6,9	7,7	-	
		50A	-	-	-	-	-	0,81	1,4	1,4	2,5	2,5	2,8	1,8	2,5	3,7	5,4	6	-	
	63A	-	-	-	-	-	-	1,4	1,4	2,5	2,5	3,8	1,8	2,5	3,7	5,4	6	-		
	0,5A	5	5	5	5	5	5	17	17	T	T	T	T	T	T	T	T	T	1,8	
	1A	1,6	1,6	1,6	1,6	1,6	1,6	4,8	4,8	12	12	14	7,1	12	20	T	T	T	0,85	
	2A	1,6	1,6	1,6	1,6	1,6	1,6	4,8	4,8	12	12	14	7,1	12	20	T	T	T	0,85	
	3A	1,4	1,4	1,4	1,4	1,4	1,4	3,5	3,5	8	8	9,2	5,1	8	14	22	T	T	0,7	
	4A	1,4	1,4	1,4	1,4	1,4	1,4	3,5	3,5	8	8	9,2	5,1	8	14	22	T	T	0,7	
	6A	1,3	1,3	1,3	1,3	1,3	1,3	2,7	2,7	5,8	5,8	6,7	3,8	5,8	9,6	15	17	0,65		
	10A	1,2	1,2	1,2	1,2	1,2	1,2	2,2	2,2	4,8	4,8	5,4	3,1	4,8	8	13	14	0,58		
	13A	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4,3	4,3	4,8	2,8	4,3	6,9	11	12	0,55		
	16A	0,97	0,97	0,97	0,97	0,97	0,97	2	2	4,3	4,3	4,8	2,8	4,3	6,9	11	12	0,55		
	20A	-	0,92	0,92	0,92	0,92	0,92	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,3	9,3	0,53		
	25A	-	-	0,92	0,92	0,92	0,92	1,8	1,8	3,6	3,6	4	2,4	3,6	5,5	8,3	9,3	0,53		
	32A	-	-	-	0,84	0,84	0,84	1,5	1,5	3	3	3,4	2,1	3	4,7	6,9	7,7	0,5		
	40A	-	-	-	-	0,84	0,84	1,5	1,5	3	3	3,4	2,1	3	4,7	6,9	7,7	-		
	50A	-	-	-	-	-	0,81	1,4	1,4	2,5	2,5	2,8	1,8	2,5	3,7	5,4	6	-		
	63A	-	-	-	-	-	-	1,4	1,4	2,5	2,5	2,8	1,8	2,5	3,7	5,4	6	-		
	0,5A	4,3	4,3	4,3	4,3	4,3	4,3	14	14	T	T	T	18	T	T	T	T	T	1,8	
	1A	1,6	1,6	1,6	1,6	1,6	1,6	4,6	4,6	11	11	13	6,8	11	19	T	T	T	0,84	
	2A	1,6	1,6	1,6	1,6	1,6	1,6	4,6	4,6	11	11	13	6,8	11	19	T	T	T	0,84	
	3A	1,4	1,4	1,4	1,4	1,4	1,4	3,2	3,2	7,4	7,4	8,5	4,6	7,4	13	21	24	0,7		
	4A	1,4	1,4	1,4	1,4	1,4	1,4	3,2	3,2	7,4	7,4	8,5	4,6	7,4	13	21	24	0,7		
	6A	1,2	1,2	1,2	1,2	1,2	1,2	2,4	2,4	5,4	5,4	6,2	3,4	5,4	9	15	16	0,62		
	10A	0,98	0,98	0,98	0,98	0,98	0,98	2	2	4,3	4,3	4,9	2,8	4,3	7,2	12	13	0,56		
	13A	0,92	0,92	0,92	0,92	0,92	0,92	1,8	1,8	3,7	3,7	4,2	2,5	3,7	6	9,2	11	0,54		
	16A	0,92	0,92	0,92	0,92	0,92	0,92	1,8	1,8	3,7	3,7	4,2	2,5	3,7	6	9,2	11	0,54		
	20A	-	0,86	0,86	0,86	0,86	0,86	1,6	1,6	3,2	3,2	3,4	2,2	3,2	4,8	7,1	7,9	0,52		
	25A	-	-	0,86	0,86	0,86	0,86	1,6	1,6	3,2	3,2	3,4	2,2	3,2	4,8	7,1	7,9	0,52		
	32A	-	-	-	0,81	0,81	0,81	1,5	1,5	2,5	2,5	2,7	1,8	2,5	3,7	5,4	5,9	0,5		
	40A	-	-	-	-	0,81	0,81	1,5	1,5	2,5	2,5	2,7	1,8	2,5	3,7	5,4	5,9	-		
	50A	-	-	-	-	-	0,78	1,4	1,4	2,4	2,4	2,5	1,7	2,4	3,3	4,6	5	-		
	63A	-	-	-	-	-	-	1,4	1,4	2,4	2,4	2,5	1,7	2,4	3,3	4,6	5	-		
	HLE, HLF, HMB, HMC, HMD	B curve	80A	-	-	-	-	-	-	-	1,3	2,3	2,3	2,5	1,6	2,3	3,2	4,2	4,6	0,5
			100A	-	-	-	-	-	-	-	1,3	2,3	2,3	2,5	1,6	2,3	3,2	4,2	4,6	0,5
125A			-	-	-	-	-	-	-	1,3	2,3	2,3	2,5	1,6	2,3	3,2	4,2	4,6	0,5	
C curve		80A	-	-	-	-	-	-	-	-	1,3	2,3	2,3	2,5	1,6	2,3	3,2	4,2	4,6	-
		100A	-	-	-	-	-	-	-	-	2,3	2,3	2,5	1,6	2,3	3,2	4,2	4,6	-	
		125A	-	-	-	-	-	-	-	-	2,3	2,3	2,5	-	2,3	3,2	4,2	4,6	-	
D curve	80A	-	-	-	-	-	-	-	1,3	2	2	2,1	1,5	2	2,5	3,5	3,8	-		
	100A	-	-	-	-	-	-	-	-	2	2	2,1	1,5	2	2,5	3,5	3,8	-		
	125A	-	-	-	-	-	-	-	-	-	2	2,1	-	2	2,5	3,5	3,8	-		
HMJ, HMK, HMX	C curve	10A	0,9	0,9	0,9	0,9	0,9	0,9	1,7	1,7	3	3	3,2	2,2	3	4,2	6	6,6	5,4	
		16A	0,9	0,9	0,9	0,9	0,9	0,9	1,7	1,7	3	3	3,2	2,2	3	4,2	6	6,6	5,4	
		20A	-	0,81	0,81	0,81	0,81	0,81	1,6	1,6	2,6	2,6	2,8	1,9	2,6	3,7	5	5,4	5,2	
		25A	-	-	0,84	0,84	0,84	0,84	1,6	1,6	2,6	2,6	2,8	1,9	2,6	3,7	5	5,4	5,2	
		32A	-	-	-	0,84	0,84	0,84	1,6	1,6	2,6	2,6	2,8	1,9	2,6	3,7	5	5,4	5,2	
		40A	-	-	-	-	0,78	0,78	1,4	1,4	2,3	2,3	2,4	1,6	2,3	3,1	4,2	4,6	-	
		50A	-	-	-	-	-	0,78	1,4	1,4	2,3	2,3	2,4	1,6	2,3	3,1	4,2	4,6	-	
		63A	-	-	-	-	-	-	1,4	1,4	2,3	2,3	2,4	1,6	2,3	3,1	4,2	4,6	-	
		80A	-	-	-	-	-	-	-	-	1,3	2,3	2,3	2,5	1,6	2,3	3,2	4,2	4,6	-
		100A	-	-	-	-	-	-	-	-	-	2,3	2,3	2,5	1,6	2,3	3,2	4,2	4,6	-
125A	-	-	-	-	-	-	-	-	-	-	2,3	2,5	-	2,3	3,2	4,2	4,6	-		

Breaking capacity according to IEC 60 947-2. Network : 3 phasis + neutral 220/380 ~ 240/415 V AC

notes : "T" = total discrimination (up to the breaking capacity of the downstream device)

"-" = no discrimination

							h250 LSI 50/70 kA			h400 TM 25/50 kA		h630 LSI 50/70 kA			h1000 LSI 50/70 kA				h1600 LSI 50/70 kA	
	63A	100A	125A	160A	200A	250A	40A	125A	250A	250A	400A	250A	400A	630A	630A	800A	1000A	1250A	1600A	
	1,7	3,8	5,8	9,6	15	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,5	3,1	4,8	8	13	12	T	T	T	24	T	T	T	T	T	T	T	T	T	
	1,4	2,8	4,3	6,9	11	9,7	T	T	T	18	T	T	T	T	T	T	T	T	T	
	1,4	2,8	4,3	6,9	11	9,7	T	T	T	18	T	T	T	T	T	T	T	T	T	
	1,3	2,4	3,6	5,5	8,3	7,7	T	T	T	15	T	T	T	T	T	T	T	T	T	
	1,3	2,4	3,6	5,5	8,3	7,7	T	T	T	15	T	T	T	T	T	T	T	T	T	
	1,2	2,1	3	4,7	6,9	6,4	T	T	T	12	T	T	T	T	T	T	T	T	T	
	1,2	2,1	3	4,7	6,9	6,4	T	T	T	12	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,5	3,7	5,4	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,5	3,7	5,4	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T	
	8,5	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2,6	7,1	12	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2,6	7,1	12	20	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2	5,1	8	14	22	20	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2	5,1	8	14	22	20	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,7	3,8	5,8	9,6	15	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,5	3,1	4,8	8	13	12	T	T	T	24	T	T	T	T	T	T	T	T	T	
	1,4	2,8	4,3	6,9	11	9,7	T	T	T	18	T	T	T	T	T	T	T	T	T	
	1,4	2,8	4,3	6,9	11	9,7	T	T	T	18	T	T	T	T	T	T	T	T	T	
	1,3	2,4	3,6	5,5	8,3	7,7	T	T	T	15	T	T	T	T	T	T	T	T	T	
	1,3	2,4	3,6	5,5	8,3	7,7	T	T	T	15	T	T	T	T	T	T	T	T	T	
	1,2	2,1	3	4,7	6,9	6,4	T	T	T	12	T	T	T	T	T	T	T	T	T	
	1,2	2,1	3	4,7	6,9	6,4	T	T	T	12	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,5	3,7	5,4	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,5	3,7	5,4	5	T	T	T	9,2	T	T	T	T	T	T	T	T	T	
	7	18	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	7	6,8	11	19	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2,6	6,8	11	19	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
	2,6	4,6	7,4	13	21	19	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,9	4,6	7,4	13	21	19	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,5	3,4	5,4	9	15	14	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,4	2,8	4,3	7,2	12	10,5	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,3	2,5	3,7	6	9,2	8,4	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,3	2,5	3,7	6	9,2	8,4	T	T	T	T	T	T	T	T	T	T	T	T	T	
	1,2	2,2	3,2	4,8	7,1	6,7	T	T	T	12	T	T	T	T	T	T	T	T	T	
	1,2	2,2	3,2	4,8	7,1	6,7	T	T	T	12	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,5	3,7	5,4	5,1	T	T	T	9	T	T	T	T	T	T	T	T	T	
	1,1	1,8	2,5	3,7	5,4	5,1	T	T	T	9	T	T	T	T	T	T	T	T	T	
	1	1,7	2,4	3,3	4,6	4,3	T	T	T	7,2	T	T	T	T	T	T	T	T	T	
	1	1,7	2,4	3,3	4,6	4,3	T	T	T	7,2	T	T	T	T	T	T	T	T	T	
	1	1,6	2,3	3,2	4,2	4	T	T	T	7	T	T	T	T	T	T	T	T	T	
	1	1,6	2,3	3,2	4,2	4	T	T	T	7	T	T	T	T	T	T	T	T	T	
	1	1,6	2,3	3,2	4,2	4	T	T	T	7	T	T	T	T	T	T	T	T	T	
	-	1,6	2,3	3,2	4,2	4	T	T	T	7	T	T	T	T	T	T	T	T	T	
	-	1,6	2,3	3,2	4,2	4	T	T	T	7	T	T	T	T	T	T	T	T	T	
	-	-	2,3	3,2	4,2	4	T	T	T	7	T	T	T	T	T	T	T	T	T	
	-	1,5	2	2,5	3,5	3,3	T	T	T	5,5	T	T	T	T	T	T	T	T	T	
	-	1,5	2	2,5	3,5	3,3	T	T	T	5,5	T	T	T	T	T	T	T	T	T	
	-	-	2	2,5	3,5	3,3	T	T	T	5,5	T	T	T	T	T	T	T	T	T	
	1,2	2,2	3	4,2	6	5,4	T	T	T	4,2	T	T	T	T	T	T	T	T	T	
	1,2	2,2	3	4,2	6	5,4	T	T	T	4,2	T	T	T	T	T	T	T	T	T	
	1,1	1,9	2,6	3,7	5	4,5	T	T	T	4,2	T	T	T	T	T	T	T	T	T	
	1,1	1,9	2,6	3,7	5	4,5	T	T	T	4,2	T	T	T	T	T	T	T	T	T	
	1,1	1,9	2,6	3,7	5	4,5	T	T	T	4,2	T	T	T	T	T	T	T	T	T	
	1	1,6	2,3	3,1	4,2	4	T	T	T	4,2	T	T	T	T	T	T	T	T	T	
	1	1,6	2,3	3,1	4,2	4	T	T	T	4,2	T	T	T	T	T	T	T	T	T	
	1	1,6	2,3	3,1	4,2	4	T	T	T	4,2	T	T	T	T	T	T	T	T	T	
	-	1,6	2,3	3,2	4,2	4	T	T	T	7	T	T	T	T	T	T	T	T	T	
	-	1,6	2,3	3,2	4,2	4	T	T	T	7	T	T	T	T	T	T	T	T	T	
	-	-	2,3	3,2	4,2	4	T	T	T	7	T	T	T	T	T	T	T	T	T	

Main incomers

Discrimination chart

I _{cc} (kA)	Upstream	x160 TM						x250 TM					h250 TM		
Downstream	(A)	16 - 50	63	80	100	125	160	100	125	160	200	250	32	63	100
x160 TM 18/25/40 kA	16	-	2	2	2,9	2,9	3	2,15	2,9	4,1	5,6	5,4	-	1,2	2,15
	20	-	2	2	2,9	2,9	3	2,15	2,9	4,1	5,6	5,4	-	1,2	2,15
	25	-	2	2	2,9	2,9	3	2,15	2,9	4,1	5,6	5,4	-	1,2	2,15
	32	-	1,8	1,8	2,6	2,6	2,7	2	2,6	3,6	5	4,8	-	1,15	2
	40	-	1,6	1,6	2,35	2,35	2,4	1,8	2,35	3,3	4,3	4,2	-	1,1	1,8
	50	-	1,6	1,6	2,35	2,35	2,4	1,8	2,35	3,15	4,25	4,15	-	1,1	1,8
	63	-	-	-	2,15	2,15	2,2	1,7	2,15	3	4,05	3,9	-	-	1,7
	80	-	-	-	2,15	2,15	2,2	1,7	2,15	2,9	3,9	3,8	-	-	1,7
	100	-	-	-	-	-	2,1	-	1,95	2,75	3,7	3,6	-	-	-
	125	-	-	-	-	-	2,1	-	1,95	2,65	3,5	3,4	-	-	-
160	-	-	-	-	-	-	-	1,95	2,6	3,45	3,35	-	-	-	
x250 TM 25/40 kA	100	-	-	-	-	-	-	-	1,95	2,5	3,15	3,3	-	-	-
	125	-	-	-	-	-	-	-	-	2,5	3,15	3,3	-	-	-
	160	-	-	-	-	-	-	-	-	-	3,15	3,3	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	3,3	-	-	-
	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
h250 TM 25/50/65 kA	32	-	-	-	-	-	-	1,55	1,95	2,5	3,15	3,3	-	1	1,55
	63	-	-	-	-	-	-	1,55	1,95	2,5	3,15	3,3	-	-	1,55
	100	-	-	-	-	-	-	-	1,95	2,5	3,15	3,3	-	-	-
	125	-	-	-	-	-	-	-	-	2,5	3,15	3,3	-	-	-
	160	-	-	-	-	-	-	-	-	-	3,15	3,3	-	-	-
	200	-	-	-	-	-	-	-	-	-	-	3,3	-	-	-
	250	-	-	-	-	-	-	-	-	-	-	-	3,3	-	-
h250 LSI 50/70 kA	40	-	-	-	-	-	-	1,55	1,95	2,5	3,15	3,3	-	1	1,55
	125	-	-	-	-	-	-	-	-	2,5	3,15	3,3	-	-	-
	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
h400 TM 25/50 kA	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-
h630 LSI 50/70 kA	250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	630	-	-	-	-	-	-	-	-	-	-	-	-	-	-
h1000 LSI 50/70 kA	630	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	800	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1000	-	-	-	-	-	-	-	-	-	-	-	-	-	-
h1600 LSI 50/70 kA	1250	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1600	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Breaking capacity according to IEC 947-2. Network : 3 phasis + neutral 220/380 ~ 240/415 V AC

notes : "T" = total discrimination (up to the breaking capacity of the downstream device)

"-" = no discrimination

				h250 LSI			h400 TM		h630 LSI			h1000 LSI			h1600 LSI		
	125	160	200	250	40	125	250	250	400	250	400	630	630	800	1000	1250	1600
	2,9	4,1	5,6	5,4	-	T	T	6,5	13	T	T	T	T	T	T	T	T
	2,9	4,1	5,6	5,4	-	T	T	6,5	13	T	T	T	T	T	T	T	T
	2,9	4,1	5,6	5,4	-	T	T	6,5	13	T	T	T	T	T	T	T	T
	2,6	3,6	5	4,8	-	T	T	5,6	10,5	T	T	T	T	T	T	T	T
	2,35	3,3	4,3	4,2	-	T	T	4,95	9,2	T	T	T	T	T	T	T	T
	2,35	3,15	4,25	4,15	-	T	T	4,8	8,8	T	T	T	T	T	T	T	T
	2,15	3	4,05	3,9	-	T	T	4,6	8,3	T	T	T	T	T	T	T	T
	2,15	2,9	3,9	3,8	-	T	T	4,35	7,9	T	T	T	T	T	T	T	T
	1,95	2,75	3,7	3,6	-	T	T	4,15	7,5	T	T	T	T	T	T	T	T
	1,95	2,65	3,5	3,4	-	T	T	4	7	T	T	T	T	T	T	T	T
	1,95	2,6	3,45	3,35	-	T	T	3,9	6,6	T	T	T	T	T	T	T	T
	1,95	2,5	3,15	3	-	T	T	3,6	5,75	T	T	T	T	T	T	T	T
	-	2,5	3,15	3	-	-	T	3,6	5,75	T	T	T	T	T	T	T	T
	-	-	3,15	3	-	-	T	3,6	5,75	T	T	T	T	T	T	T	T
	-	-	-	3	-	-	T	3,6	5,75	T	T	T	T	T	T	T	T
	-	-	-	-	-	-	T	3,6	5,75	T	T	T	T	T	T	T	T
	1,95	2,5	3,15	3	T	T	T	3,6	5,75	T	T	T	T	T	T	T	T
	1,95	2,5	3,15	3	-	T	T	3,6	5,75	T	T	T	T	T	T	T	T
	1,95	2,5	3,15	3	-	T	T	3,6	5,75	T	T	T	T	T	T	T	T
	-	2,5	3,15	3	-	-	T	3,6	5,75	T	T	T	T	T	T	T	T
	-	-	3,15	3	-	-	T	3,6	5,75	T	T	T	T	T	T	T	T
	-	-	-	-	-	-	T	3,6	5,75	T	T	T	T	T	T	T	T
	-	-	-	-	-	-	T	3,6	5,75	T	T	T	T	T	T	T	T
	1,95	2,5	3,15	3	-	1,65	3,25	3,6	5,75	T	T	T	T	T	T	T	T
	-	2,5	3,15	3	-	-	3,25	3,6	5,75	T	T	T	T	T	T	T	T
	-	-	-	-	-	-	-	5,75	-	T	T	T	T	T	T	T	T
	-	-	-	-	-	-	3,25	-	5,75	T	T	T	T	T	T	T	T
	-	-	-	-	-	-	-	-	-	T	T	T	T	T	T	T	T
	-	-	-	-	-	-	-	-	5,75	-	5,2	6,3	T	T	T	T	T
	-	-	-	-	-	-	-	-	-	-	-	6,3	T	T	T	T	T
	-	-	-	-	-	-	-	-	-	-	-	-	T	T	T	T	T
	-	-	-	-	-	-	-	-	-	-	-	-	-	9,6	10	T	T
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	T	T
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	T	T
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	19,2
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Main incomers

Load break switches with visual breaking 20 to 125A



Load break switches with visual breaking, 20 to 125A
- modular design,
- to mount directly on DIN rail,
- lockable in OFF position.

Comply with NF EN 60 947-3.

Connection:
with collar terminals copper
conductors compatible.

Connection capacity:
- HAB 20 to 63A:
16 mm² flexible or rigid cables

- HAC 60 to 100A:
35 mm² flexible or rigid cables
- HAD 100 and 125A:
70 mm² flexible or rigid cables



HAB406



HHC113



HHC212



HHC311

Designation	Characteristics	In/A	Width in		Cat. ref.	
			3P	4P	3P	4P
Load break switches visual breaking	disconnecter modular design IP20 In=lth, AC23	20A	2,6	3,5	HAB302	HAB402
		32A	2,6	3,5	HAB303	HAB403
		40A	2,6	3,5	HAB304	HAB404
		63A	2,6	3,5	HAB306	HAB406
		63A	3	4,5	HAC306	HAC406
		80A	3	4,5	HAC308	HAC408
		100A	3	4,5	HAC310	HAC410
		100A	4,5	6	HAD310	HAD410
		125A	4,5	6	HAD312	HAD412
		External handles IP55 lockable with 3 padlocks	for LBS 20 to 100A			
for LBS 100 to 125A					HZC011	HZC011
Shaft extensions	20 to 125A, 150mm				HZC111	HZC111
	20 to 125A, 200mm				HZC112	HZC112
	20 to 125A, 320mm				HZC113	HZC113
Terminal shrouds top and bottom 2 pieces / packaging	20 to 63A				HZC211	HZC212
	63 to 100A				HZC213	HZC214
	100 to 125A				HZC215	HZC216
Auxiliaries contacts In = 10A	1O + 1F		0,5	0,5	HZC311	HZC311
	2F		0,5	0,5	HZC312	HZC312

Load break switches with visible breaking 100 to 400A



Load break switches with visible breaking, 100 to 400A
- modular design,
- to mount directly on DIN rail for LBS up to 200A,
- lockable in OFF position.

HA964N and HA966N are with double visible breaking

(upstream and downstream).
Mounting on plate.

Comply with NF EN 60 947-3.

Connection:

- HAE: with collar terminals
copper conductors compatible,
- HA308, HA408, HA964N and

HA966N on terminal.

Connection capacity:

- HAE 100 to 160A:
70 mm² flexible or rigid cables
- HA308, HA408:
95 mm² end lugs,
- HA964N: 150 mm² end lugs,
- HA966N: 240 mm² end lugs.



HAE416



HZC014



HZC218



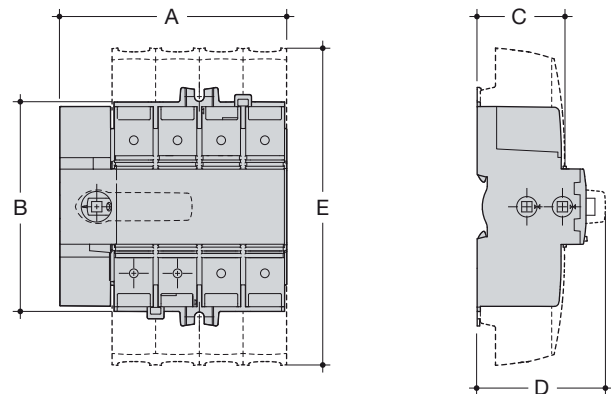
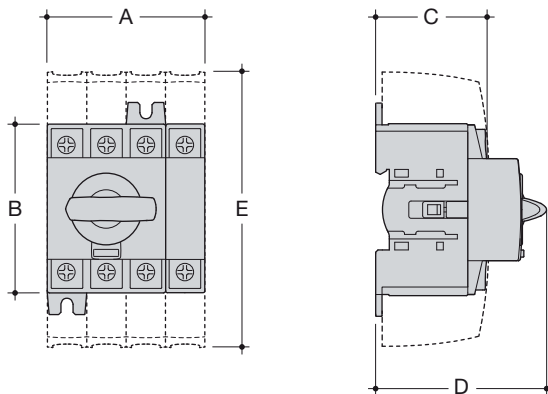
HZ022

Designation	Characteristics	In/A	Width in		Cat. ref.	
			3P	4P	3P	4P
Load break switches visible breaking	disconnecter modular design IP20	100A	6,5	8	HAE310	HAE410
		125A	6,5	8	HAE312	HAE412
		160A	6,5	8	HAE316	HAE416
		200A	8,5	8,5	HA308	HA408
		250A	-	11,5	-	HA964N
		400A	-	19,5	-	HA966N
External handles IP55 lockable with 3 padlocks	for LBS 100 to 160A				HZC014	HZC014
	for HA308, HA408, HA964N and HA966N				HZC001	HZC001
Shaft extensions	200 mm, for HA308 and HA408				HZC103	HZC103
	300 mm, for HA308 and HA408				HZC104	HZC104
	for HAE 100 to 160A, 150mm				HZC114	HZC114
	for HAE 100 to 160A, 200mm				HZC115	HZC115
	for HAE 100 to 160A, 320mm				HZC116	HZC116
Terminal shrouds top and bottom	100 to 160A				HZC217	HZC218
	for HA408				-	HZ062
	for HA964N				HZ095	HZ095
	for HA966N				HZ096	HZ096
Collar terminals	for HA308 and HA408 copper, 95mm ²				HZ082	HZ082
	for HA964 aluminium/copper, 185mm ²				HZ093	HZ093
Auxiliaries contacts	1NC + 1NO for HA308 and HA408		0,5	0,5	HZ022	HZ022

HAB, HAC, HAE switches

HAB402, HAB403, HAB404, HAB406, HAC408

HAE410, HAE412, HAE416



Dimensions (in mm)

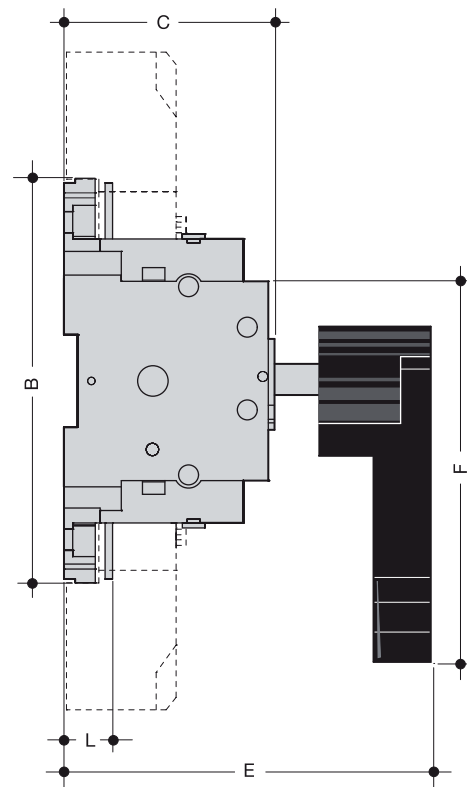
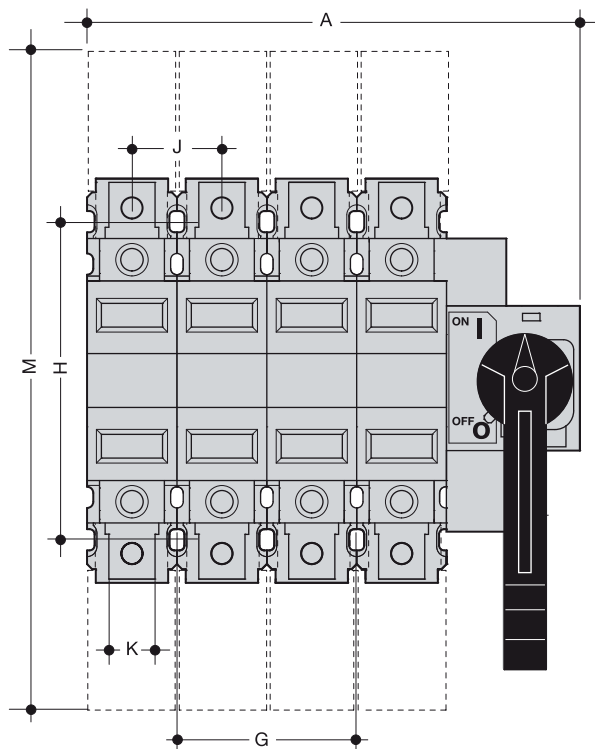
	with visual breaking				with visible breaking
	HAB302, HAB303, HAB304, HAB306	HAB402, HAB403, HAB404, HAB406	HAC306, HAC308, HAC310	HAC406, HAC408, HAC410	HAE410, HAE412, HAE416
A	45	60	54	71.5	135
B	68	68	76	76	124.5
C	48,5	48.5	48,5	48.5	50.5
D	75	75	75	75	76
E	110	110	110	110	189

Technical characteristics

	HAB302 HAB402	HAB303 HAB403	HAB304 HAB404	HAB306 HAB406	HAC306 HAC406	HAC308 HAC408	HAC310 HAC410	HAD310 HAD410	HAD312 HAD412	HAE310 HAE410	HAE312 HAE412	HAE316 HAE416
In	20 A	32 A	40 A	63 A	63 A	80 A	100 A	100 A	125A	100 A	125 A	160 A
rated insulation voltage U_i (V)	800	800	800	800	800	800	800	800	800	800	800	800
rated impulse withstand voltage U_{imp} (kV)	8	8	8	8	8	8	8	8	8	8	8	8
Ie AC 22 at 400 V (A)	20	32	40	63	63	80	100	100	125	100	125	160
Ie AC 23 at 400 V (A)	20	32	40	63	63	80	100	100	100	100	125	125
motor power AC 23A à 400 V~ (kW)	9	15	18.5	30	30	37	45	45	55	45	55	75
rated short-circuit breaking capacity in association with gG DIN fuse (kA)	50	50	50	50	50	50	50	50	50	100	65	50
current rated range (A)	20	32	40	63	63	80	100	100	125	100	125	160
short-circuit making capacity I_{cc} (A peak)	6 000	6 000	6 000	9 000	9 000	9 000	9 000	12 000	12 000	12 000	12 000	12 000
rated short-time withstand current for 1s I_{cw} (kA eff)	2.5	2.5	2.5	2.5	3	3	3	5	5	7	7	7
mechanical endurance (nr of operations)	100 000	100 000	100 000	100 000	100 000	100 000	100 000	100 000	100 000	50 000	50 000	50 000
connection (mm ²)	16	16	16	16	35	35	35	70	70	70	70	70

HA switches

HA964N - HA966N



Main incomers

Technical characteristics

	HA964N	HA966N
electrical characteristics		
rated current	250 A	400 A
rated insulation voltage U_i (V)	800	800
rated impulse withstand voltage U_{imp} (kV)	8	8
Ie AC 22A at 400 V (A)	250	400
Ie AC 23A at 400 V (A)	250	400
rated short-circuit breaking capacity (A)		
dynamic effect (peak)	11 900	15 300
thermal effect (eff. 1 s)	7 000	9 000
rated short-circuit current (kA)	80	50
with gI - gG fuses	250 A	400 A
mechanical endurance (nr of operations)	10 000	10 000
electrical connection		
cage terminal (mm ²)	185	-
bolt terminal (Ø mm)	M 8	M 8
lugs (mm ²)	150	240

Dimensions (in mm)

	HA964N	HA966N
A	201	344
B	162	214
C	85	80
E	140	135
F	145	145
G	72	132
H	130	172
J	36	66
K	18	45
L	20	20
M	268	360

Load break switches with rotary handle 125 to 1600A



Load break switches with rotary handle

Ith (40°): 125 to 1600A
Un 400 / 690V AC

For main and/or modular breaking, to use in commercial premises.

Characteristics:

3P and 4P switches with visible breaking, with sudden double breaking, positive action opening, breaking or engagement visualisation, selfcleaning silver plated copper contacts.

Fiberglass reinforced polyester case, self extinguishable, resists to creepage distance and arc, tropicalised.

Comply with EN 60 947-3.

Options:

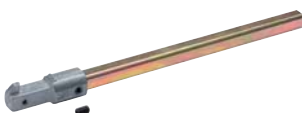
- extended handle;
- auxiliary contact.



HA358



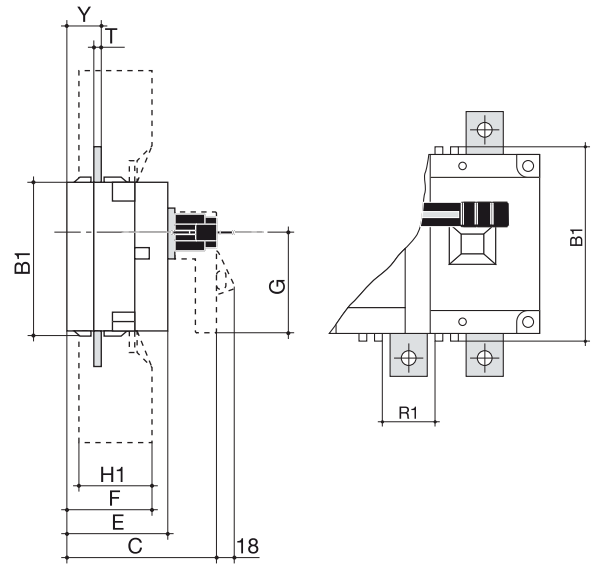
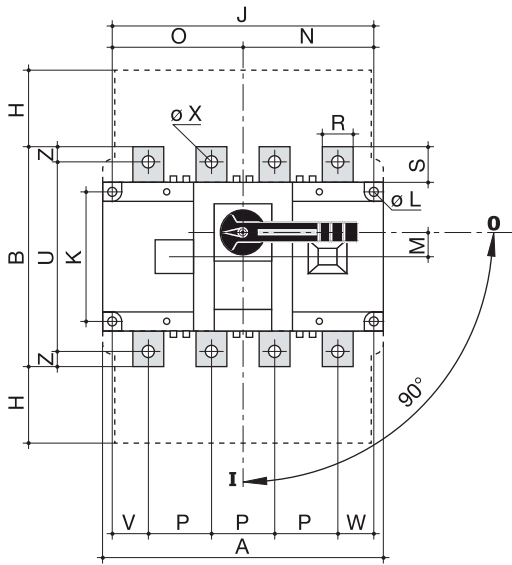
HZ023



HZC101

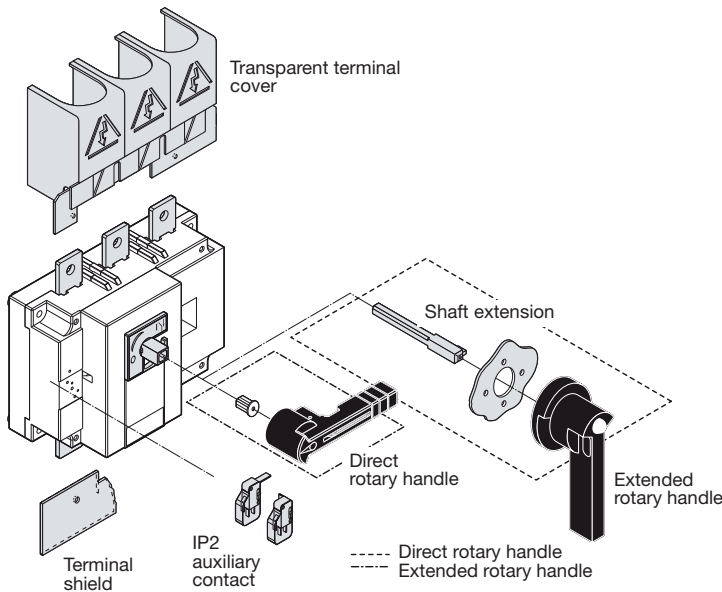
Designation	Characteristics	In/A	Cat. ref. 3P	4P
Load break switches with handle	switches with visible breaking	125A	HA351	HA451
3P	connection:	160A	HA352	HA452
4P	In 160A: 95 mm ² max.	200A	HA353	HA453
	In 250A: 150 mm ² max.	250A	HA354	HA454
	In 400A: 240 mm ² max.			
	ou 2 x 150 mm ² max.			
	Insulating voltage Ui:	400A	HA357	HA457
	from 160 to 400A: 800V AC	630A	HA358	HA458
	630A: 1000V AC			
	Delivered with:	800A	HA360	HA460
	1 lockable handle,	1250A	HA362	HA462
	fixing screws and nuts,			
	tightening programming segments	1600A	HA364	HA464
Auxiliaries contacts for HA load break switches	1NO + 1NC AC1, 5A, 250V	125 to 1600A	HZ023	HZ023
Rotary handles	for extended shaft - 125 to 630A		HZC002	HZC002
	- 800 to 1600A		HZC003	HZC003
Shaft extensions	63 to 630A, 200mm		HZC101	HZC101
	160 to 630A, 320mm		HZC102	HZC102
	800 to 1600A, 200mm		HZC105	HZC105
	800 to 1600A, 320mm		HZC106	HZC106
Terminal shields top and bottom	for switches: - HA351, HA352 - HA451, HA452 - HA354, HA357 - HA454, HA457 - HA358 - HA458 - HA360 - HA460 - HA362, HA364 - HA462, HA464		HZ033 - HZ034 - HZ035 - HZ036 - HZ037 -	- HZ043 - HZ044 - HZ045 - HZ046 - HZ047
Terminal shrouds	for switches: - HA351, HA352 - HA451, HA452 - HA354, HA357 - HA454, HA457 - HA358 - HA458		HZC201 - HZC203 - HZC205 -	- HZC202 - HZC204 - HZC206

HA351, HA451, HA352, HA452, HA454, HA454, HA357, HA457, HA358, HA458 switches

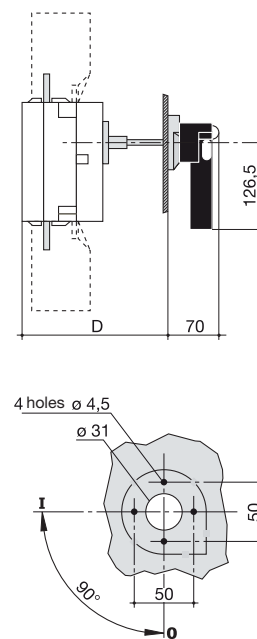


Main incomers

Mounting



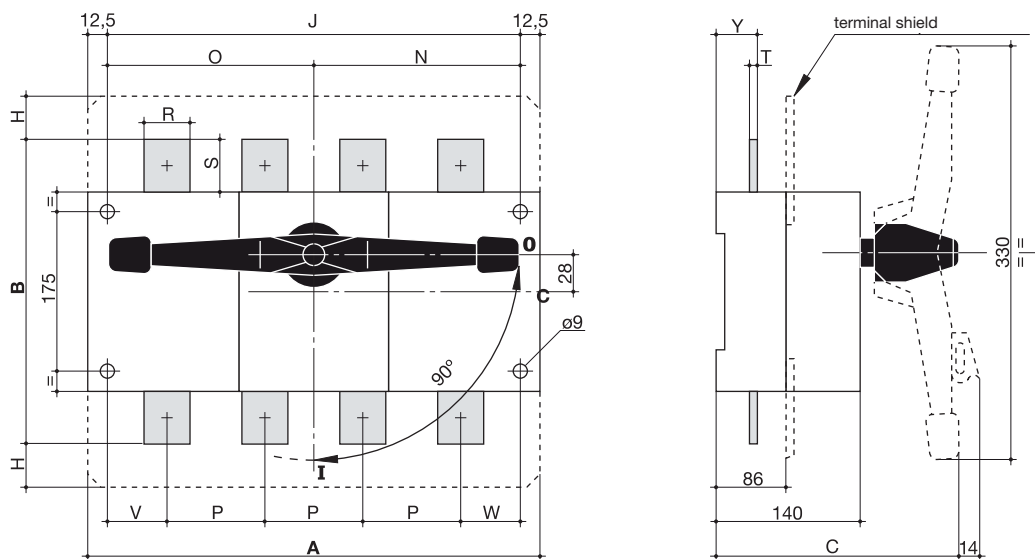
Extended rotary handle



Dimensions fo switches from 125A to 630A (rotary handle)

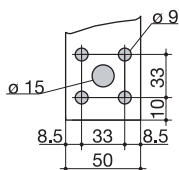
Ref.	In(A)	A	B	B1	C	D	E	F	G	H	H1	J	K	∅L	M	N	O	P	R	Rr1	S	T	U	V	W	X	Y	Z
HA351	125A	140	135	93	120	124/354	65	50	80	50	40	120	65	5,5	15	75	75	36	20	20,5	25	3,5	115	22	20	9	20,5	10
HA451	125A	170	135	93	120	124/354	65	50	80	50	40	150	65	5,5	15	75	75	36	20	20,5	25	3,5	115	22	20	9	20,5	10
HA352	160A	140	135	93	120	124/354	65	50	80	50	40	120	65	5,5	15	75	75	36	20	20,5	25	3,5	115	22	20	9	20,5	10
HA452	160A	170	135	93	120	124/354	65	50	80	50	40	150	65	5,5	15	75	75	36	20	20,5	25	3,5	115	22	20	9	20,5	10
HA354	250A	190	160	108	130	135/365	75	60	115	60	50	160	80	5,5	20	105	105	50	25	25,5	30	3,5	130	33	27	11	22,5	15
HA454	250A	230	160	108	130	135/365	75	60	115	60	50	210	80	5,5	20	105	105	50	25	25,5	30	3,5	130	33	27	11	22,5	15
HA357	400A	190	170	108	130	135/365	75	60	115	60	50	160	80	5,5	20	105	105	50	25	25,5	30	3,5	130	33	27	11	22,5	15
HA457	400A	230	170	108	130	135/365	75	60	115	60	50	210	80	5,5	20	105	105	50	25	25,5	30	3,5	130	33	27	11	22,5	15
HA358	630A	230	260	170	165	167/397	110	89	115	70	75	210	140	7	30	135	135	65	45	45,5	50	5	220	37,5	37,5	13	36	20
HA458	630A	290	260	170	165	167/397	110	89	115	70	75	270	140	7	30	135	135	65	45	45,5	50	5	220	37,5	37,5	13	36	20

HA360, HA362, HA364, HA460, HA462, HA464 switches with rotary handle

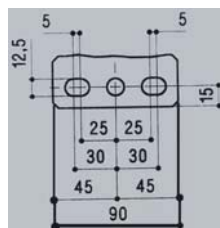


Connection terminals

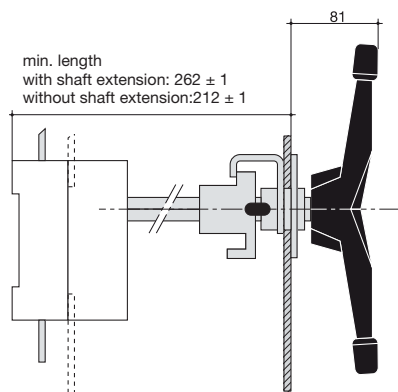
800A



1250-1600A



Rotary handle



Switches with rotary handle from 800A to 1600A

Ref.	In(A)	A	B	C	H	J	N	O	P	R	S	T	V	W	Y
HA360	800	280	320	214	50	255	127,5	127,5	80	50	60,5	7	47,5	47,5	46,5
HA460	800	360	320	214	50	335	167,5	167,5	80	50	60,5	7	47,5	47,5	46,5
HA362	1250	372	288	215	66,5	347	173,5	173,5	120	90	44	8	53,5	53,5	47,5
HA462	1250	492	288	215	66,5	467	233,5	233,5	120	90	44	8	53,5	53,5	47,5
HA364	1600	372	288	215	66,5	347	173,5	173,5	120	90	44	8	53,5	53,5	47,5
HA464	1600	492	288	215	66,5	467	233,5	233,5	120	90	44	8	53,5	53,5	47,5

Technical characteristics:

- Voltage range : 230V +/- 20%
- Network voltage: 50 to 700 V
- Frequency: 50 / 60 Hz
- Working temperature: -10 to +55°C
- Storage temperature: -25 to +70°C

- Max. cable length to torroids:

- 25m non-twisted cable 0,5 to 1,5mm²
- 50m twisted cable
- Standards: IEC 60755, IEC 947-2 annex B, IEC 61543, IEC 61008-1

Torroids:

- Frequency: 50 / 60 Hz
- Working temperature: -10 to +55°C
- Storage temperature: -25 to +70°C
- IP rating: IP 41



HR525



HR700



HR820



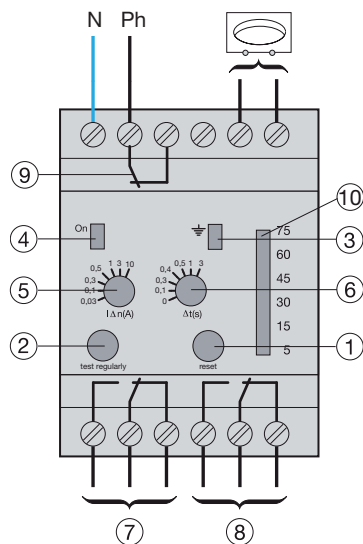
HR831

Designation	Characteristics	Power absorbed	Positive safety contact	Cat. ref.
Earth leakage relays non adjustable	fixed I Δ n: 0,03A instantaneous tripping	3VA		HR500
	fixed I Δ n: 0,3A instantaneous tripping	3VA		HR502
Earth leakage relays adjustable	adjustable I Δ n: 0,03-0,1-0,3-0,5-1-3-10A adjustable delay: 0-0,1-0,3-0,4-0,5-1-3 s	5VA	1 C/O	HR510
	adjustable I Δ n: 0,03-0,1-0,3-0,5-1-3-10A adjustable delay: 0-0,1-0,3-0,4-0,5-1-3-5 s	5VA	1 C/O	HR520
	adjustable I Δ n: 0,03-0,1-0,3-0,5-1-3-10A adjustable delay: 0-0,1-0,2-0,25-0,3-0,4-0,5 s	5VA	1 C/O	HR522
	adjustable I Δ n: 0,5-1-3-5-10-20-30A adjustable delay: 0-0,1-0,2-0,25-0,3-0,4-0,5 s	5VA	1 C/O	HR523
	adjustable I Δ n: 0,03-0,1-0,3-0,5-1-3-10A adjustable delay: 0-0,1-0,3-0,4-0,5-1-3 s	6VA	1 C/O	HR525
	adjustable I Δ n: 0,03-0,1-0,3-0,5-1-3-10-30A Instantaneous / sel / adjustable delay: 0-0,1-0,3-0,4-0,5-1-3 s	6VA	1 C/O	HR534
Circular torroids	Internal Ø 30 mm			HR700
	Internal Ø35 mm			HR741
	Internal Ø70 mm			HR742
	Internal Ø105 mm			HR743
	Internal Ø140 mm			HR744
	Internal Ø210 mm			HR745
Open rectangular torroids	80 x 80 mm			HR822
	80 x 120 mm			HR823
	80 x 160 mm			HR824
Rectangular torroids	75 x 175 mm			HR830
	115 x 305 mm			HR831
	150 x 350 mm			HR832

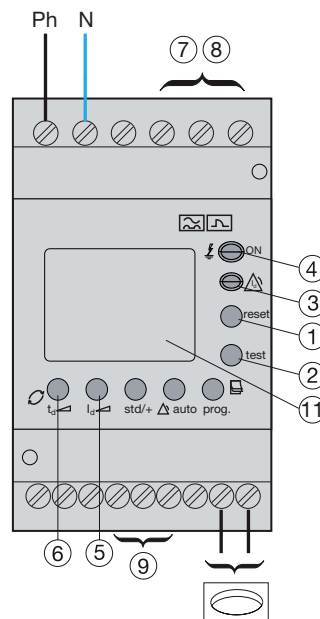
Technical characteristics

	HR500	HR502	HR510	HR520	HR525	HR534
supply voltage ~ 50/60 Hz	230 V ± 20%					
supervised power voltage ~ 50/60 Hz	50 to 700 V					
standard output 1 OF (tripping at 85 % of I _n ± 15 %)	yes	yes	yes	yes	yes	yes
positive safety output	yes	yes	yes	yes	yes	yes
pre-alarm fault output	no	no	yes	yes	yes	yes
external test and reset button	no	no	no	no	yes	yes
sensitivity I _n	30 mA	300 mA	30 - 100 - 300 - 500 mA - 1 - 3 - 10 A		30 - 100 - 300 - 500 mA - 1 - 3 - 10 - 30 A	
temporization (± 20%)	instantaneous		inst., 0,1-0,3-0,4-0,5-1-3s	inst., 0,1-0,3-0,4-0,5-1-3-5s	inst., \overline{S} - 0,02 - 0,1 - 0,3 - 0,4 - 0,5 - 1 - 3 - 5 - 10 s	
A type	yes	yes	yes	yes	yes	yes
high immunity HI	yes	yes	yes	yes	no	no
consummation	3 VA	3 VA	5 VA	5 VA	6 VA	6 VA
control output	free potential changeover switch					
breaking capacity (standard output, positive safety, pre-alarm 50%)	5 A / 250 V AC1		6 A / 250 V AC1			
torroid allowed overload	30 kA / 100 ms					
voltage for reset and test push buttons	100 à 250 V					
maxi length of test/reset connection	200 m					
maxi length of torroid/relay connection	50 m maxi with twisted cable 1,5 - 25 m non-twisted cable					
relay connection : collar terminal	rigid	1,5 mm ² to 4 mm ²				0,5 mm ² to 2 mm ²
	flexible	1 mm ² to 2,5 mm ²				0,5 mm ² to 2 mm ²
torroid connection	rigid	1,5 mm ² to 4 mm ²				0,5 mm ² to 2 mm ²
	flexible	1 mm ² to 6 mm ²				0,5 mm ² to 2 mm ²
operating temperature	- 10 to +55 °C					
storage temperature	- 25 to +70 °C					

HR510, HR520



HR525

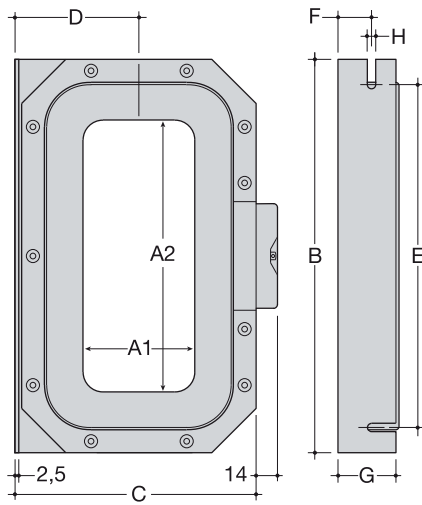


Product presentation :

- ① reset push button
- ② test push button
- ③ fault indicator
- ④ supply indicator
- ⑤ I_n ratings (A)
- ⑥ temporization t (s)
- ⑦ standard output 1 OF
- ⑧ positive safety output
- ⑨ pre-alarm output
- ⑩ barregraph : indicates continuously the value of the leakage current, 5 to 15 %, 15 to 30 %, 30 to 45 %, 45 to 60 % and 60 to 75 % of I_n.
- ⑪ LCD display

Technical characteristics

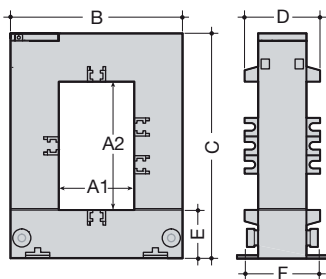
Rectangular torroids : HR830, HR831, HR832



Dimensions for rectangular and circular torroids (in mm)

ref.	A	A1	A2	B	C	D	E	F	G	H
HR830	-	70	175	260	162	85	225	22	40	7,5
HR831	-	115	305	400	225	116	360	25	48	8,5
HR832	-	150	350	460	270	140	415	28	48	8,5

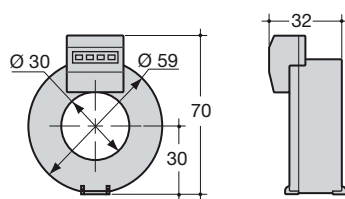
Open rectangular torroids: HR820 to HR824



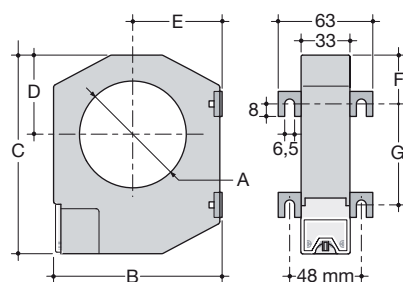
Dimensions for open rectangular torroids (in mm)

ref.	A1	A2	B	C	D	E	F
HR820	20	30	89	110	41	32	46
HR821	50	80	114	145	50	32	46
HR822	80	80	145	145	50	32	46
HR823	80	121	145	185	50	32	46
HR824	80	161	184	244	70	37	46

Circular torroids : HR700



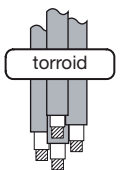
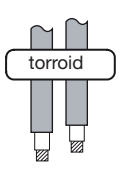
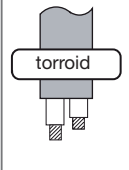
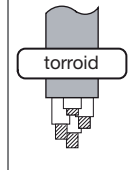
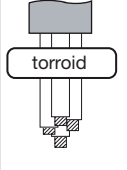
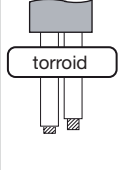
HR741 to HR745

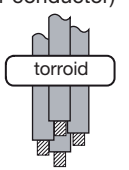
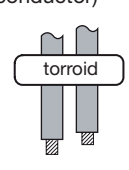


Dimensions for circular torroids (in mm)

ref.	A	B	C	D	E	F	G
HR741	$\text{Ø } 35$	79	100	35	43	26	48,5
HR742	$\text{Ø } 70$	110	130	52	57	32	66
HR743	$\text{Ø } 105$	146	170	72	73	38	94
HR744	$\text{Ø } 140$	196	220	97	98	48,5	123
HR745	$\text{Ø } 210$	284	299	141	142	69	161

Torroid capacity

Torroid inner diameter		U 1000 R2V copper (1 conductor) 	U 1000 R2V copper (1 conductor) 	U 1000 R2V copper (2 conductors) 	U 1000 R2V copper (4 conductors) 	U 1000 R2V copper (4 conductors) stripped 	U 1000 R2V copper (2 conductors) stripped 
30	HR700	4 x 16 mm ²	2 x 50 mm ²	35 mm ²	35 mm ²	35 mm ²	50 mm ²
35	HR701	4 x 25 mm ²	2 x 70 mm ²	35 mm ²	50 mm ²	35 mm ²	70 mm ²
70	HR702	4 x 185 mm ²	2 x 400 or 4 x 150 mm ²	35 mm ²	240 mm ²	35 mm ²	300 mm ²
105	HR703	4 x 500 mm ²	2 x 630 or 4 x 185 mm ²	35 mm ²	300 mm ²	35 mm ²	300 mm ²
140	HR704	4 x 630 mm ²	2 x 630 or 4 x 240 mm ²	35 mm ²	300 mm ²	35 mm ²	300 mm ²
210	HR705	4 x 630 mm ²	2 x 630 or 4 x 240 mm ²	35 mm ²	300 mm ²	35 mm ²	300 mm ²
70 x 175	HR830	4 x 630 mm ²	2 x 630 or 4 x 240 mm ²	35 mm ²	300 mm ²	35 mm ²	300 mm ²
115 x 305	HR831	4 x 630 mm ²	2 x 630 or 4 x 240 mm ²	35 mm ²	300 mm ²	35 mm ²	300 mm ²
150 x 350	HR832	4 x 630 mm ²	2 x 630 or 4 x 240 mm ²	35 mm ²	300 mm ²	35 mm ²	300 mm ²
20 x 30	HR820	4 x 16 mm ²	2 x 70 mm ²	35 mm ²	10 mm ²	35 mm ²	16 mm ²
50 x 80	HR821	4 x 240 mm ²	2 x 630 or 4 x 185 mm ²	35 mm ²	120 mm ²	35 mm ²	150 mm ²
80 x 80	HR822	4 x 500 mm ²	2 x 630 or 4 x 185 mm ²	35 mm ²	300 mm ²	35 mm ²	300 mm ²
80 x 120	HR823	4 x 630 mm ²	2 x 630 or 4 x 240 mm ²	35 mm ²	300 mm ²	35 mm ²	300 mm ²
80 x 160	HR824	4 x 630 mm ²	2 x 630 or 4 x 240 mm ²	35 mm ²	300 mm ²	35 mm ²	300 mm ²

Torroid inner diameter		H07 V - U copper (1 conductor) 	H07 V - U copper (1 conductor) 
30	HR700	4 x 35 mm ²	2 x 70 mm ²
35	HR701	4 x 50 mm ²	2 x 95 mm ²
70	HR702	4 x 240 mm ²	2 x 400 or 4 x 185 mm ²
105	HR703	4 x 400 mm ²	2 x 400 or 4 x 240 mm ²
140	HR704	4 x 400 mm ²	2 x 400 or 4 x 240 mm ²
210	HR705	4 x 400 mm ²	2 x 400 or 4 x 240 mm ²
70 x 175	HR830	4 x 400 mm ²	2 x 400 or 4 x 240 mm ²
115 x 305	HR831	4 x 400 mm ²	2 x 400 or 4 x 240 mm ²
150 x 350	HR832	4 x 400 mm ²	2 x 400 or 4 x 240 mm ²
20 x 30	HR820	4 x 10 mm ²	2 x 35 mm ²
50 x 80	HR821	4 x 185 mm ²	2 x 240 mm ²
80 x 80	HR822	4 x 400 mm ²	2 x 400 or 4 x 240 mm ²
80 x 120	HR823	4 x 400 mm ²	2 x 400 or 4 x 240 mm ²
80 x 160	HR824	4 x 400 mm ²	2 x 400 or 4 x 240 mm ²

**Manual changeover switches,
20 to 125A**

Allows manual switch, changeover switch or on load power circuit permutation. For safety breaking.

- 3P/4P,
- modular design,
- mounting on DIN rail,

- lockable on position: I, O or II.

Each switch can be equipped with 2 auxiliary contacts blocks max. One block is composed of 3 auxiliary contacts (positions I, O and II).

Comply with EN 60 947-3.

Connection for copper conductors with collar terminals.

Connection capacity:
 - HIM402/HIM404:
 16 mm² flexible or rigid;
 - HIM406/HIM408:
 35 mm² flexible or rigid;
 - HI405R/HI406R:
 50 mm² flexible or rigid.



HIM408



HZC016



HZC212

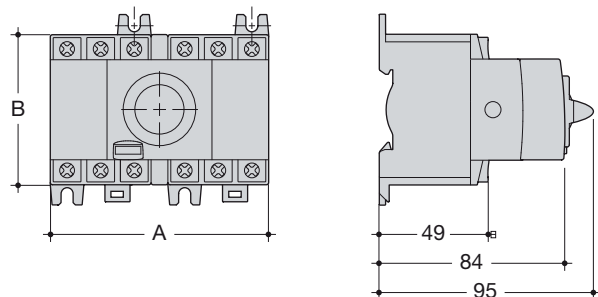


HZC311

Designation	Characteristics	In/A	Width in		Cat. ref. 3P	4P
			3P	4P		
Changeover switches visual breaking	disconnecter	20A	5	7	HIM302	HIM402
	modular design	40A	5	7	HIM304	HIM404
	3 positions: 0-I-II	63A	6	8	HIM306	HIM406
	IP20	80A	6	8	HIM308	HIM408
Changeover switches visible breaking		100A	-	12,5	-	HI405R
		125A	-	12,5	-	HI406R
External handles 3 positions: 0-I-II lockable with 3 padlocks	for HIM 20 to 80A				HZC016	HZC016
	for HI 100 to 125A				HZI004	HZI004
Shaft extensions	for HIM 20 to 80A, 150mm				HZC111	HZC111
	for HIM 20 to 80A, 200mm				HZC112	HZC112
	for HIM 20 to 80A, 300mm				HZC113	HZC113
	for HI 100 to 125A, 200mm				HZC103	HZC103
	for HI 100 to 125A, 300mm				HZC104	HZC104
Terminal shrouds top and bottom 2 pieces / packaging	for HIM 20 to 40A				HZC211	HZC212
	for HIM 63 to 80A				HZC213	HZC214
	for HI 100 to 125A				-	HZ062
Auxiliaries contacts	for HIM 20 to 80A, 1NO + 1NC		0,5	0,5	HZC311	HZC311
	for HIM 20 to 80A, 2NC		0,5	0,5	HZC312	HZC312
	for HI 100 to 125A, 1NO + 1NC		-	0,5	-	HZ160R
Insulated busbars	for HI 100 to 125A				-	HZ156R
Connection terminals	for HI 100 to 125A				-	HZ082
Terminal covers and connection terminals	for HI 100 to 125A				-	HZ092

Changeover switches

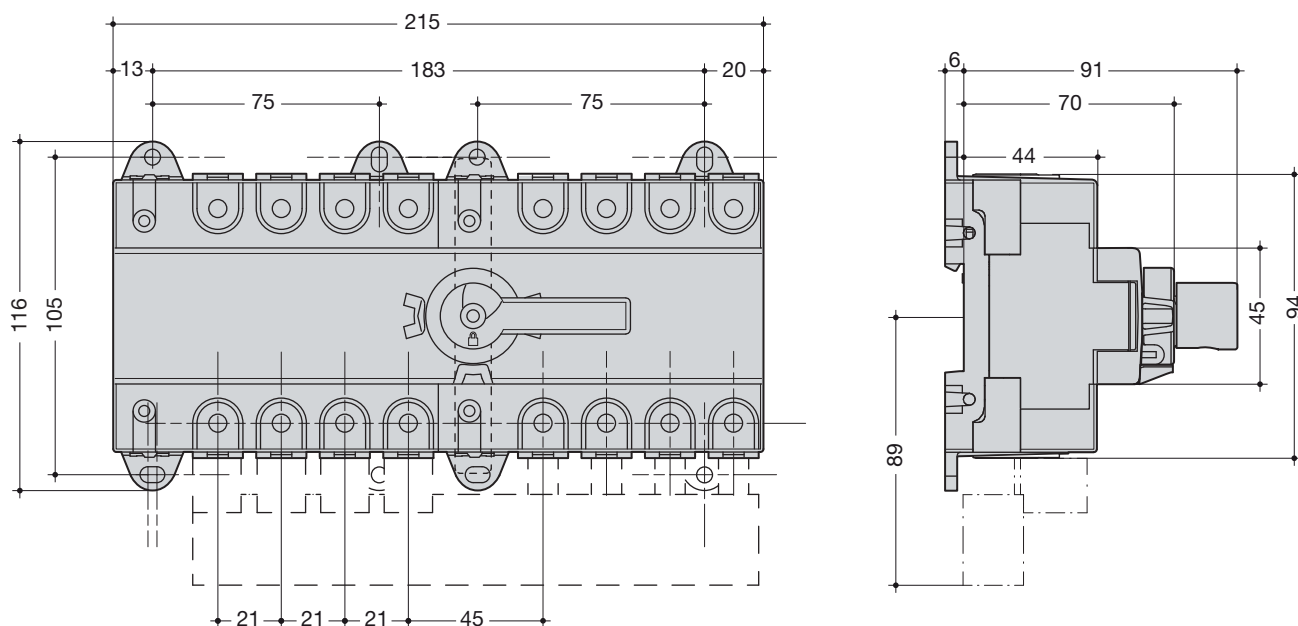
**HIM302, HIM304, HIM306, HIM308,
HIM402, HIM404, HIM406, HIM408**



Dimensions (in mm)

	HIM302 HIM304	HIM402 HIM404	HIM306 HIM308	HIM406 HIM408
A	97,5	127,5	105	140
B	68		76	

HI405R and HI406R



Technical characteristics

	HIM302 HIM402	HIM304 HIM404	HIM306 HIM406	HIM308 HIM408	HI405R	HI406R
In	20 A	40 A	63 A	80 A	100 A	125 A
insulation voltage U_i	(V) 800	800	800	800	690	690
impulse withstand voltage U_{imp}	(kV) 8	8	8	8	8	8
I_e AC 22, 400 V	(A) 20	40	63	80	100	125
I_e AC 23, 400 V	(A) 20	40	63	80	63	63
operational power AC 23A at 400 V~	(kW) 9	18.5	30	37	45	45
short circuit current with gG DIN fuses	(kA) 50	50	50	50	100	50
associated fuse rated	(A) 20	40	63	80	100	125
short-circuit resistance I_{cc}	(kA peak) 6	6	9	9	12	12
rated short time withstand current I_{cw}	(kA/1s) 2.5	2.5	3	3	2,5	2,5
mechanical endurance	(cycles) 10 000	10 000	10 000	10 000	10 000	10 000
connection	(mm ²) 16	16	35	35	50	50

**Manual changeover switches,
125 to 1600A**

Allows manual switch,
changeover switch or on load
power circuit permutation.
For safety breaking.

- 4P,
- mounting on perforated plates
or crossbars ,
- lockable on position: I, O or II.

HI452, HI454 and HI456 can be
mounted in quadro and univers
distribution boards.

HI458 is only recommended for
quadro+. For mounting in quadro
or univers, contact us.

Comply with EN 60 947-3.

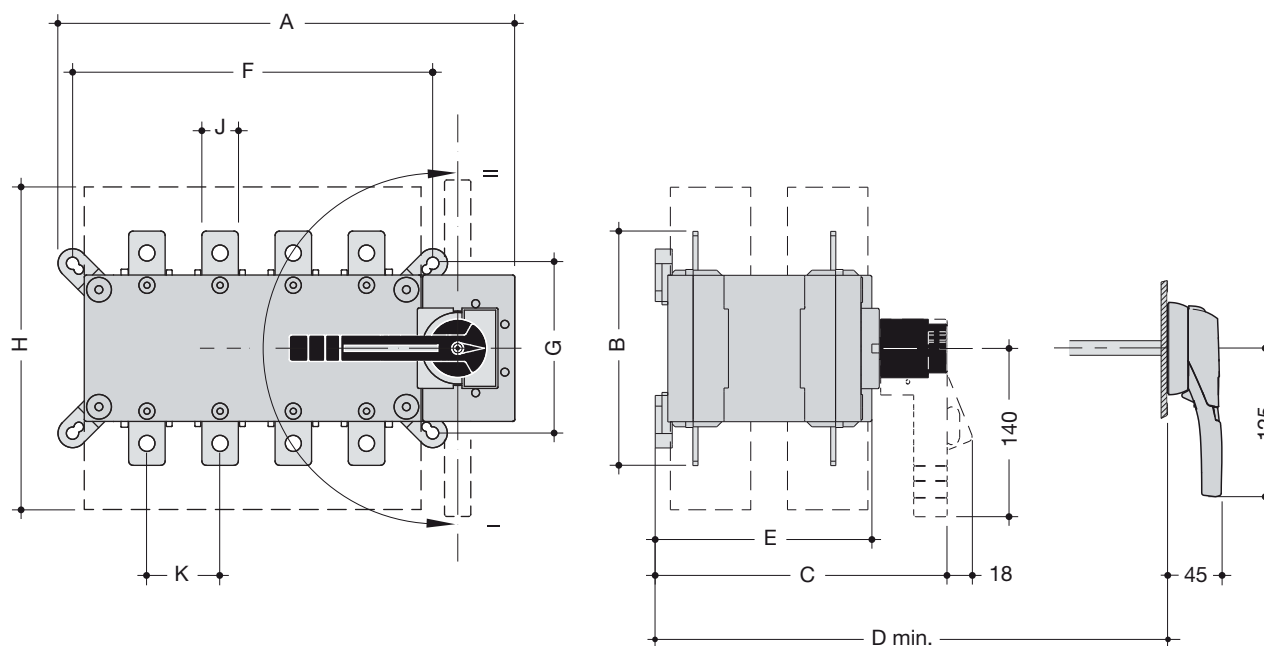
Connection with terminals.

	Designation	Characteristics	In/A	Cat. ref.	
 HI452	Changeover switches	4P non-modular design	125A	HI451	
			160A	HI452	
			250A	HI454	
			400A	HI456	
			630A	HI458	
			800A	HI460	
			1250A	HI462	
 HZI002	External handle 3 positions: 0-I-II locked with 3 padlocks	for HI 125 to 630A		HZI002	
		for HI 800 to 1600A		HZI003	
 HZC101	Shaft extension	for HI 125 to 630A, 200mm		HZC101	
		for HI 125 to 630A, 320mm		HZC102	
		for HI 800 to 1600A, 200mm		HZC105	
		for HI 800 to 1600A, 320mm		HZC106	
 HZ160	Terminal shrouds top and bottom 2 pieces / packaging	for HI 125 to 200A		HZC202	
		for HI 200 to 400A		HZC204	
		for HI 400 to 630A		HZC206	
 HZ160	Auxiliaries contacts	for HI 125 to 1600A, 1NO + 1NC		HZ160	
		Insulated busbars	for HI 100 to 125A		HZ156R
 HZ160	Terminal shield top and bottom	for HI460		HZ163M	
		for HI462 and HI464		HZ164M	
		Busbars	for HI451 and HI452		HZ156
			for HI454		HZ157
for HI456			HZ158		
		for HI458		HZ159	
		for HI460		HZ160M	
		for HI462		HZ161M	
		for HI464		HZ162M	

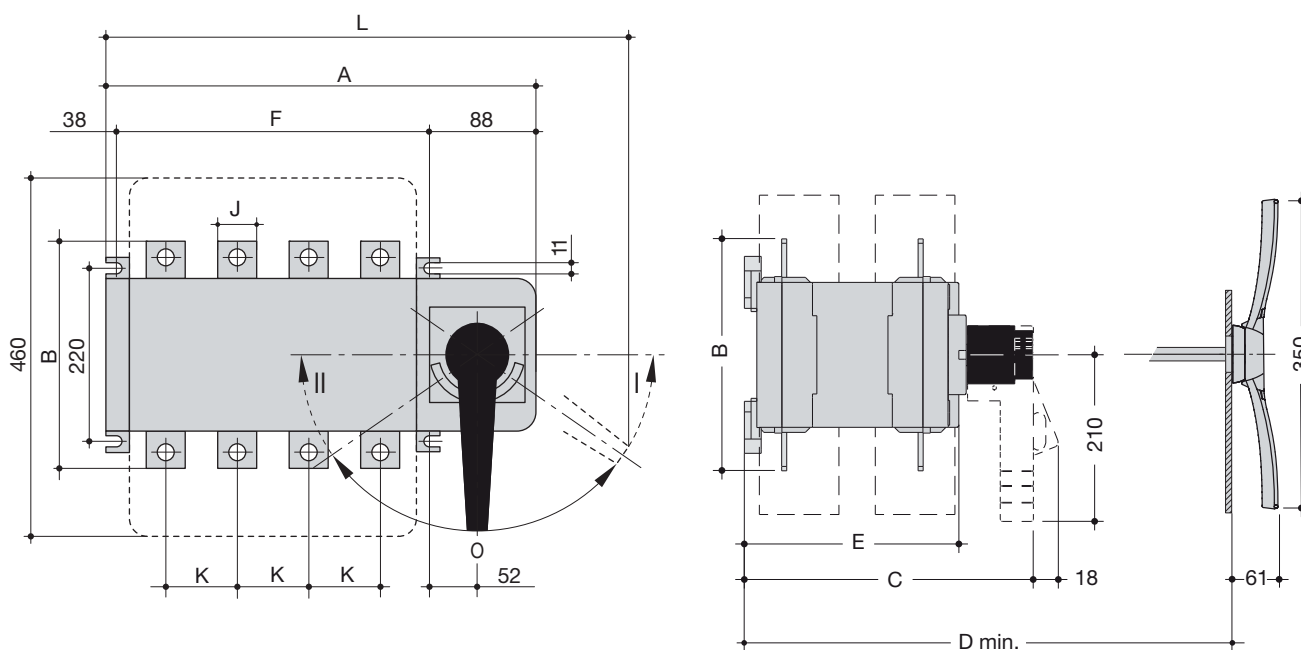
Main incomers

Changeover switches

HI452, HI454, HI456, HI458



HI460, HI462, HI464



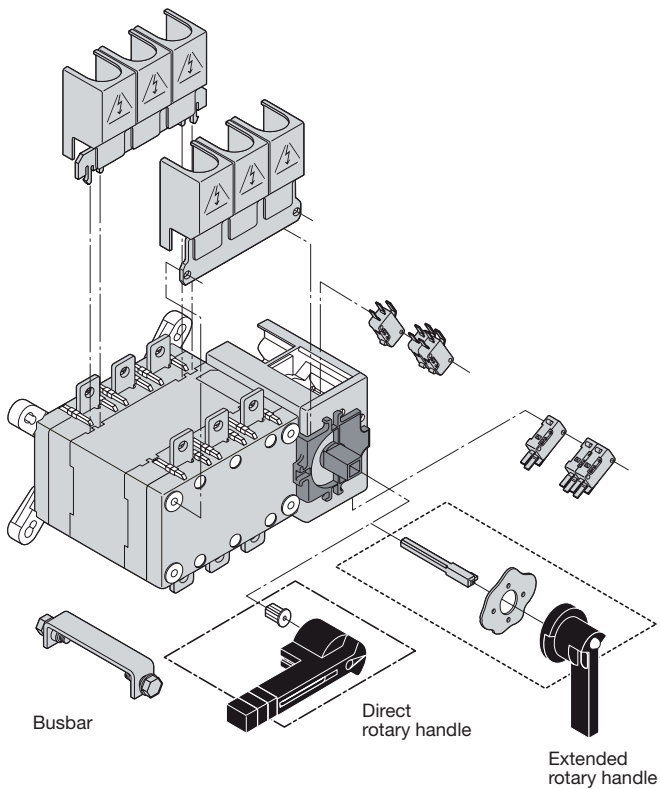
Dimensions (in mm)

	A	B	C	D mini.	E	F	G	H	J	K	L
HI452	251	135	218	208	148	186	101	235	20	36	-
HI454	312	160	218	208	148	246	116	280	25	50	-
HI456	312	170	218	208	148	246	116	280	35	50	-
HI458	379	260	295	285	225	306	176	400	45	65	-
HI460	460	320	374	390	302	335	220	460	50	80	609
HI462	592	330	374	390	302	467	220	460	60	120	741
HI464	592	360	374	390	302	467	220	460	90	120	741

Technical characteristics

		HI452	HI454	HI456	HI458	HI460	HI462	HI464
In		160 A	250 A	400 A	630 A	800 A	1250 A	1600 A
insulation voltage U_i	(V)	800	800	800	1000	1000	1000	1000
impulse withstand voltage U_{imp}	(kV)	8	12	8	12	12	12	12
I_e AC 22, 400 V	(A)	160	250	400	630	800	1250	1600
I_e AC 23, 400 V	(A)	160	250	250	500	800	1250	1600
operational power AC 23A à 400 V~	(kW)	80	132	220	280	450	710	710
short circuit current with gG DIN fuses	(kA)	100	50	18	70	50	100	100
associated fuse rated	(A)	160	250	400	630	800	1250	2 x 800
rated short circuit making capacity I_{cm}	(A peak)	12	17	15,3	30	48	75	86
rated short time withstand current I_{cw}	(kA/1s)	7	9	9	13	26	50	50
mechanical endurance	(cycles)	10 000	10 000	10 000	5 000	3000	4000	4000
connection for lugs	(mm ²)	95	150	240	2 x 300	2 x 300	4 x 185	6 x 185

Mounting



Motorized changeover switches, 20 to 160A

Allows automated switch, changeover switch or on load power circuit permutation. For safety breaking.

- 4P,
- lockable on position: O.

Controller and two built-in supplies.

Mounting on perforated plate or directly on DIN rail.

Each product can be equipped with 2 auxiliary contacts blocks max.

One block is composed of 3 auxiliary contacts (positions I, O and II).

Complies with EN 60 947-3.

Connection on copper conductors with collar terminals.

Connection capacity:
70 mm² flexible or rigid.

Designation	Characteristics	In/A	Cat. ref.
-------------	-----------------	------	-----------

Motorized changeover switches

4P
modular design
3 positions: 0-I-II

20A	HIC402A
40A	HIC404A
63A	HIC406A
80A	HIC408A
100A	HIC410A
125A	HIC412A
160A	HIC416A



HIC416A

Terminal shrouds
top and bottom
2 pieces / packaging

for HI 100 to 160A, sealable

HZC218



HZI300

Auxiliaries contacts

for HIC 20 to 160A, 1NO + 1NC

HZI300

Single phase voltage sensing taps

for switch control circuit supply
2 conductors / pole

HZI230



HZI230

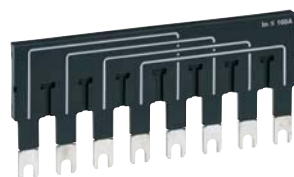
Bridging bars
2 x 4P

for 63 to 125A

HZI400

for 160A

HZI401



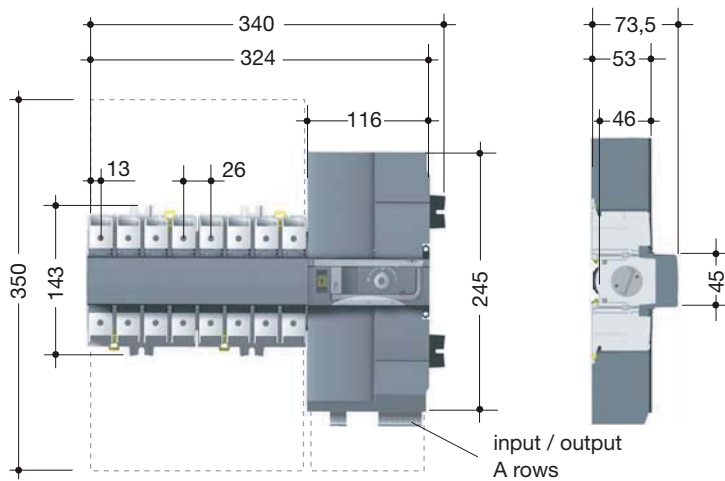
HZI401

Sealable cover

HZI210

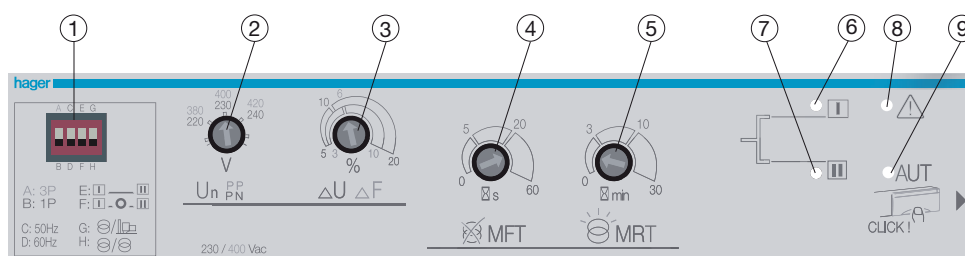
Changeover switches

HIC406A, HIC408A, HIC410A, HIC 412A, HIC416A



	HIC402A	HIC404A	HIC406A	HIC408A	HIC410A	HIC412A	HIC416A
In	20 A	40 A	63 A	80 A	100 A	125 A	160 A
rated insulation voltage U_i	(V) 800	800	800	800	800	800	800
rated impulse withstand voltage U_{imp}	(kV) 6	6	6	6	6	6	6
le AC 22, 400 V	(A) 20	40	63	80	100	125	160
le AC 23, 400 V	(A) 20	43	63	80	100	125	160
operational power AC 23 A at 400 V~	(kW) 9	18,5	30	37	45	45	63
short circuit current with gG DIN fuses	(kA) 50	50	50	50	50	50	50
associated fuse rated	(A) 20	40	63	80	100	125	160
short circuit making capacity I_{cc}	(A peak) 17	17	17	17	17	17	17
rated short time withstand current I_{cw}	(kA/1s) 4	4	4	4	4	4	4
mechanical endurance	(cycles) 10 000	10 000	10 000	10 000	10 000	10 000	10 000
connection	(mm ²) 70	70	70	70	70	70	70

Settings



① small switches configurator : single or three phase network, 50 or 60 Hz frequency, 0 position stay option - 0 or 2 s.
On O position, network/network or network/genset mode (source 1 priority or not after external validation via inputs 207 and 208 of A row).

② rated insulation voltage setting U_n

③ voltage threshold / frequency setting (U : 5 to 20 %, F : 2 to 10 %, hysteresis U/F 20%)

④ safety switch temporization (0 à 60 s)

⑤ return to O position temporization (0 à 30 min.)

⑥ source I status indicator

⑦ source II status indicator

⑧ product status indicator

⑨ automatic/manual mode indicator

Motorized changeover switches, 125 to 1600A

Allows automated switch, changeover switch or on load power circuit permutation. For safety breaking.

- 4P,
- lockable on position: O.

Mounting on plain or perforated plate.







HIB is only recommended for quadro+. For mounting in quadro or univers, contact us.

Double power supply HZI811 controls HIB switches.

HZI812 should be used to supply HZI811 and motorized control of HIB to avoid control circuit breaking.

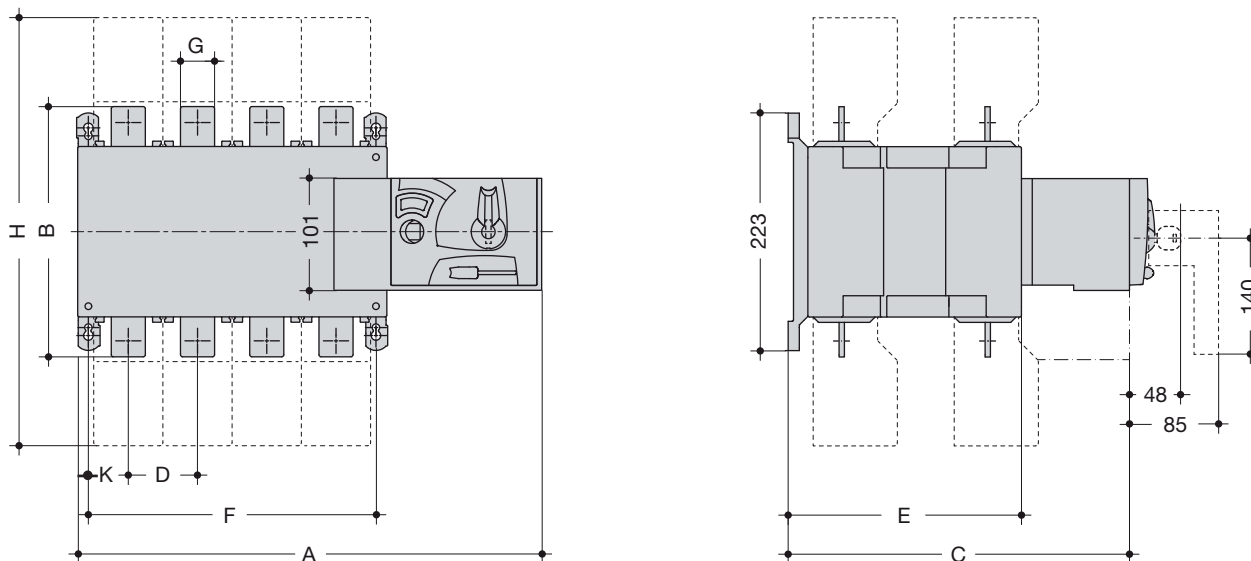
Comply with NF EN 60 947-3.

Connection with terminals.

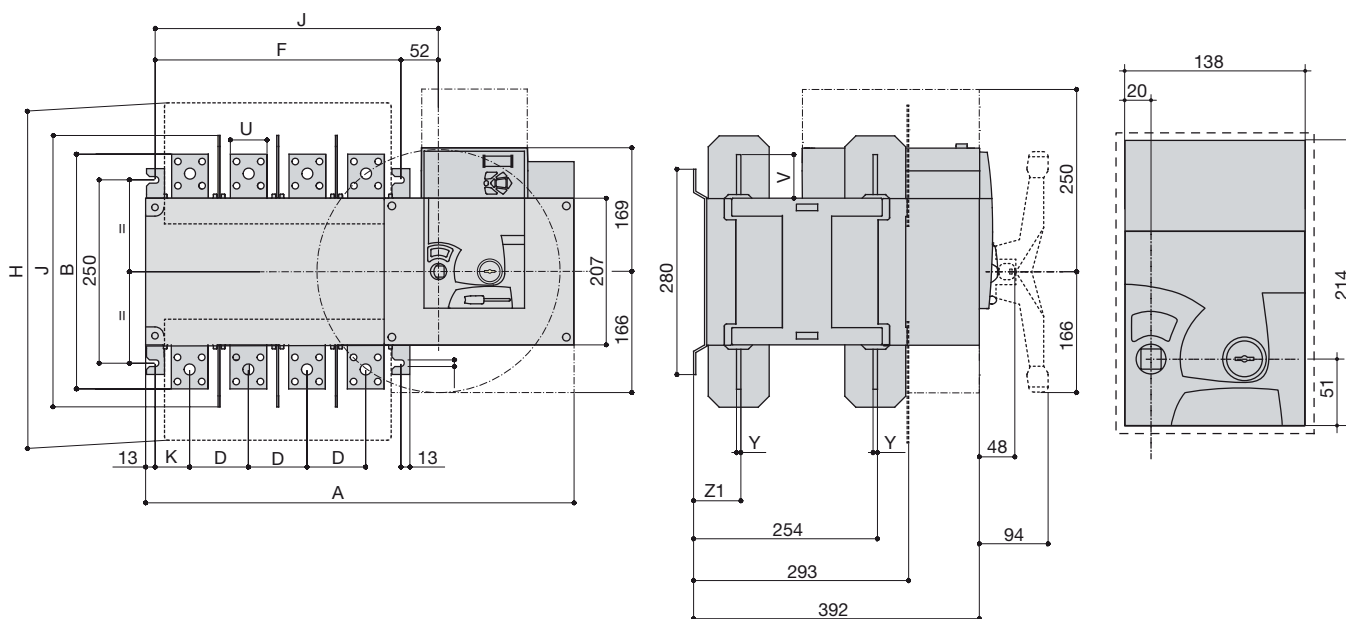
	Designation	Characteristics	In/A	Cat. ref. w/ autom. transf. relay	w/o autom. transf. relay
 HIB492	Motorized changeover switches	4P 3 positions: 0-I-II	125A	HIB412	HIC412
			160A	HIB416	HIC416
			250A	HIB425	HIC425
			400A	HIB440	HIC440
			630A	HIB463	HIC463
			800A	HIB480	HIC480
			1000A	HIB490	HIC490
 HZC204	Terminal shrouds top and bottom 2 pieces / packaging		1250A	HIB491	HIC491
			1600A	HIB492	HIC492
			for switches 125 to 160A	HZC202	HZC202
			for switches 250 to 400A	HZC204	HZC204
 HZI159	Terminal covers		for switches 630A	HZC206	HZC206
			for switches 800 to 1250A	HZI201	HZI201
			for switches 1600A	HZI202	HZI202
 HZI811	Busbars		for switches 400A	HZI203	HZI203
			for switches 630A	HZI204	HZI204
			for switches 800 to 1000A	HZI205	HZI205
			for switches 1250A	HZ156	HZ156
			for switches 1600A	HZ157	HZ157
				HZ158	HZ158
 HZI911	Automatic transfer relays	controller double power supply	HZI811	-	-
			HZI812	-	-
 HZI911	Remotes	changeover status display changeover status and control display	HZI910	HZI910	HZI910
			HZI911	HZI911	HZI911

Changeover switches

HIB412, HIB416, HIB425, HIB440, HIB463



HIB480, HIB490, HIB491, HIB492, HIC480, HIC490, HIC491, HIC492



Dimensions (in mm)

Ref.	A	B	C	D	E	F	G	H	J	K
HIB412	322,5	135	244	36	151	150	20	235	-	22
HIB416	322,5	135	244	36	151	150	20	235	-	22
HIB425	378	160	244,5	50	153	210	25	280	-	33
HIB440	378	170	244,5	50	153	210	35	280	-	33
HIB463	437	260	320,5	65	221	270	45	400	-	37,5
HIB480	584	321	391,5	80	293	335	50	461	370	60
HIB490	584	330	391,5	80	293	335	60	461	370	60
HIB491	584	330	391,5	80	293	335	60	461	370	60
HIB492	716	288	391,5	120	293	467	90	481	380	66
HIC412	322,5	135	244	36	151	150	20	235	-	22
HIC416	322,5	135	244	36	151	150	20	235	-	22
HIC425	378	160	244,5	50	153	210	25	280	-	33
HIC440	378	170	244,5	50	153	210	25	280	-	33
HIC463	437	260	320,5	65	221	270	45	400	-	37,5
HIC480	584	321	391,5	80	293	335	50	461	370	60
HIC490	584	330	391,5	80	293	335	60	461	370	60
HIC491	584	330	391,5	80	293	335	60	461	370	60
HIC492	716	288	391,5	120	293	467	90	481	380	66

Main incomers

Technical characteristics

	HIB412	HIB416	HIB425	HIB440	HIB463	HIB480	HIB490	HIB491	HIB492
In	125 A	160 A	250 A	400 A	630 V	800 V	1000 V	1250 V	1600 V
rated insulation voltage Ui (V)	800	800	800	1000	1000	1000	1000	1000	1000
rated impulse withstand voltage Uimp (kV)	8	8	8	8	12	12	12	12	12
Ie AC 22, 400 V (A)	125	160	250	400	630	800	1000	1250	1600
Ie AC 23A / AC 23B, 400 V (A)	125/125	160/160	250/250	400/400	500/630	800/800	1000/1000	1250/1250	1600/1600
operational power AC 23A at 400 V~ (kW)	63	80	132	220	280	450	600	710	710
short circuit current with gG DIN fuses (kA)	100	100	50	18	70	50	100	100	100
associated fuse rated (A)	125	160	250	400	630	800	1000	1250	2 x 800
rated peak withstand current (kA peak)	20	20	23	23	45	48	60	75	86
rated short time withstand current Icw (kA/1s)	7	7	9	13	13	26	35	50	50
mechanical endurance (cycles)	10 000	10 000	8 000	8 000	5 000	4000	4000	4000	4000
lugs connection (mm ²)	50	95	150	240	2 x 300	2 x 300	4 x 185	4 x 185	6 x 185

	HIC412	HIC416	HIC425	HIC440	HIC463	HIC480	HIC490	HIC491	HIC492
In	125 A	160 A	250 A	400 A	630 V	800 V	1000 V	1250 V	1600 V
rated insulation voltage Ui (V)	800	800	800	1000	1000	1000	1000	1000	1000
rated impulse withstand voltage Uimp (kV)	8	8	8	8	12	12	12	12	12
Ie AC 22, 400 V (A)	125	160	250	400	630	800	1000	1250	1600
Ie AC 23A / AC 23B, 400 V (A)	125/125	160/160	250/250	400/400	500/630	800/800	1000/1000	1250/1250	1600/1600
operational power AC 23A at 400 V~ (kW)	63	80	132	220	280	450	600	710	710
short circuit current with gG DIN fuses (kA)	100	100	50	18	70	50	100	100	100
associated fuse rated (A)	125	160	250	400	630	800	1000	1250	2 x 800
rated peak withstand current (kA peak)	20	20	30	30	45	55	80	80	110
rated short time withstand current Icw (kA/1s)	7	7	9	13	13	26	35	50	50
mechanical endurance (cycles)	10 000	10 000	8 000	8 000	5 000	4000	4000	4000	4000
lugs connection (mm ²)	50	95	150	240	2 x 300	2 x 300	4 x 185	4 x 185	6 x 185

h3 MCCBs

Easy safety



MCCBs and switch disconnectors from 16 to 1600A

The new H3 range of MCCBs provides safe and easy solutions for low voltage electrical circuits protection. The state of the art circuit breakers offers both designers and installers wide range of features and benefits.

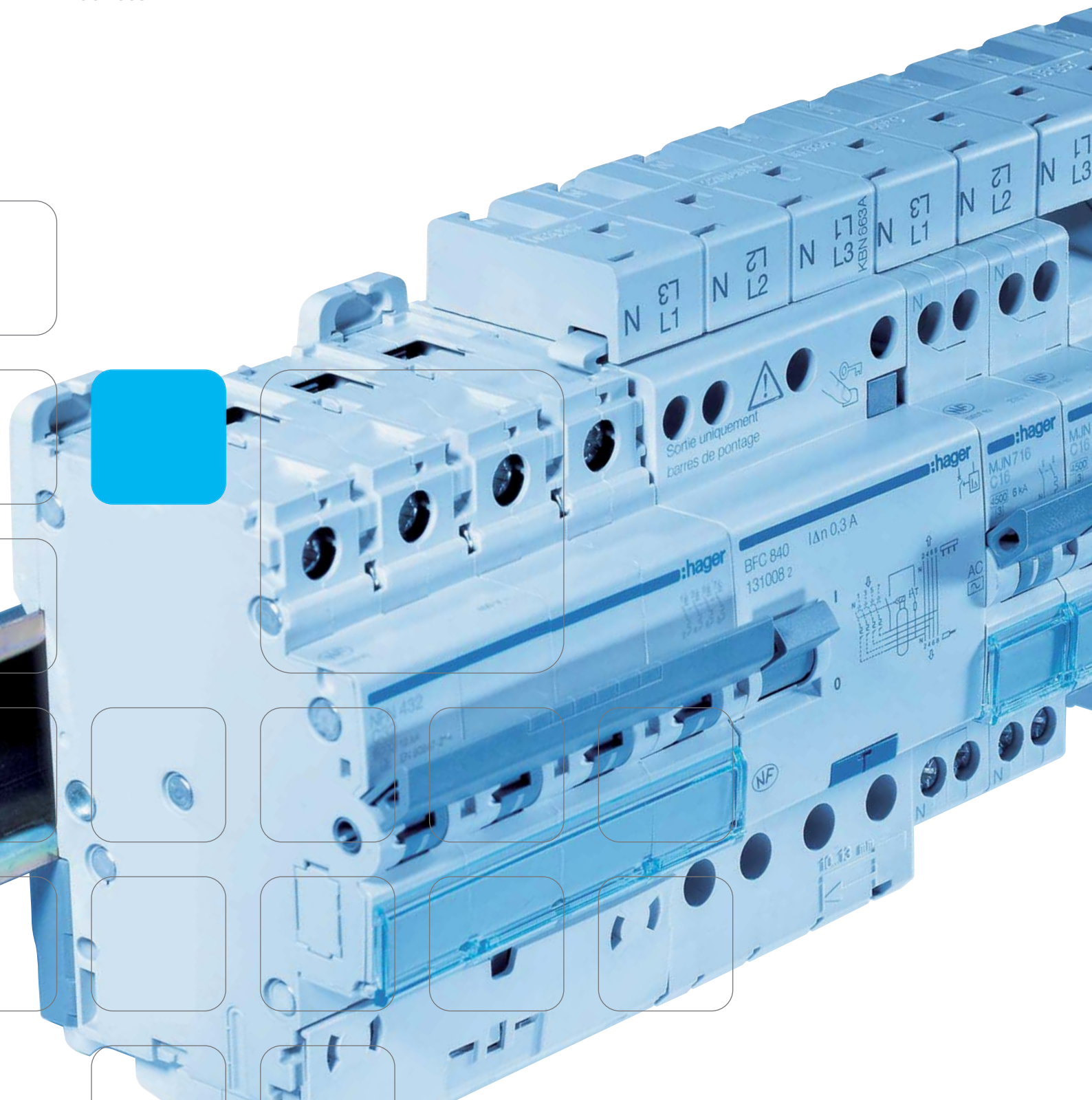
Special attention has been given to ergonomics, especially with the integration of these devices in the TP&N and panelboard.

The Hager logo consists of three orange squares stacked vertically to the left of the word 'hager' in a bold, blue, sans-serif font.

Protection devices

the complete solution

Hager offers a wide range of protection devices, such as miniature circuit breakers, auxiliaries and accessories, RCD add-on blocks, single pole and switched neutral devices, 2 and 4 pole RCCBs, RCCB auxiliaries, RCBOs, HRC fuse carriers, motor starters, earth fault relays and surge protection devices.



miniature circuit breakers	
- Ph/N, 1, 2, 3, 4 poles	D.2
- magnetic MCBs	D.10
- add-on blocks for MCB range	D.11
- commercial range	D.13
- add-on blocks for commercial range	D.17
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RCBOs	
- type B and C SP&N	D.19
- single pole	D.20
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2 and 4 pole RCCBs	D.21
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auxiliaries and accessories for MCBs, RCCBs and RCBOs	D.26
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remote control auxiliaries	D.28
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fuse carriers	D.31
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photovoltaic fuse carriers, SPD and switch disconnectors	D.37
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motor starters	D.38
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surge protection devices	D.40
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technical data	D.47
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MHN and MJN

Protection and control of circuits against overloads and short circuits.

Allow to isolate circuits.

Technical data

- breaking capacity : 4,5kA (IEC 60 898-1), 6kA (IEC 60 947-2)
- curves:
- B curve: 3 to 5 In
- C curve: 5 to 10 In
- poles: 1 SP&N
- voltage rating: 230 V AC
- current rating: 2 to 40A
- frequency: 50/60 Hz
- will accept accessories

Connecting capacity

- 10 mm² flexible conductor
- 16 mm² rigid conductor

Comply with IEC 60 898-1 and IEC 60 947-2.

MLN

Protection and control of circuits against overloads and short circuits.

Allow to isolate circuits.

Technical data

- breaking capacity : 6kA (IEC 60898-1),

7,5kA (IEC60947-2)

- curves : C curve : 5 to 10 In
- poles : 1 SP&N
- voltage rating : 230V AC
- current rating : 2 to 40A
- frequency : 50/60Hz
- will accept accessories

Connection capacity

rigid conductors : 16 mm²
flexible conductors : 10 mm²

Comply with IEC 60 898-1 and IEC 60 947-2.



MJN720

Designation	In/A	Width in ■ 17.5mm	Pack qty.	Cat. ref. B curve	C curve
Miniature circuit breakers					
1P+N, type B and C					
4500A, 6kA	2	1	12	-	MJN702
	6	1	12	MHN706	MJN706
	10	1	12	MHN710	MJN710
	16	1	12	MHN716	MJN716
	20	1	12	MHN720	MJN720
	25	1	12	MHN725	MJN725
	32	1	12	MHN732	MJN732
	40	1	12	MHN740	MJN740
Miniature circuit breakers					
1P+N, type C					
6000A, 7,5kA	2	1	12	-	MLN702
	6	1	12	-	MLN706
	10	1	12	-	MLN710
	16	1	12	-	MLN716
	20	1	12	-	MLN720
	25	1	12	-	MLN725
	32	1	12	-	MLN732
	40	1	12	-	MLN740

Miniature circuit breakers

3/4,5kA type B and C - MV, MW



Description

Protection and control of circuits against overloads and short circuits. Allow to isolate circuits.

Technical data

- breaking capacity :
3kA (IEC 60 898-1)
4,5kA (IEC 60 947-2)

- curves :

B curve : 3 to 5 I_n,
C curve : 5 to 10 I_n
- poles : 1PP, 2PP, 3PP, 4PP
(protected poles)
- voltage rating : 240/400V AC
- current rating : 6 to 40A
- frequency : 50/60Hz
- climate sealed : T2

- will not accept accessories

Connection capacity

rigid conductors : 25mm²
flexible conductors : 16mm²

Comply with IEC 60 898-1,
IEC 60 947-2.

Designation	In/A	Width in ■ 17.5mm	Pack qty.	Cat. ref. B curve	C curve
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Single pole MCBs



6	1	12	MV106	MW106
10	1	12	MV110	MW110
16	1	12	MV116	MW116
20	1	12	MV120	MW120
25	1	12	MV125	MW125
32	1	12	MV132	MW132
40	1	12	MV140	MW140



MV116

Double pole MCBs



6	2	6	MV206	MW206
10	2	6	MV210	MW210
16	2	6	MV216	MW216
20	2	6	MV220	MW220
25	2	6	MV225	MW225
32	2	6	MV232	MW232
40	2	6	MV240	MW240



MV240

Three pole MCBs



6	3	4	MV306	MW306
10	3	4	MV310	MW310
16	3	4	MV316	MW316
20	3	4	MV320	MW320
25	3	4	MV325	MW325
32	3	4	MV332	MW332
40	3	4	MV340	MW340



MV316

Four pole MCBs



6	4	3	MV406	MW406
10	4	3	MV410	MW410
16	4	3	MV416	MW416
20	4	3	MV420	MW420
25	4	3	MV425	MW425
32	4	3	MV432	MW432
40	4	3	MV440	MW440

Miniature circuit breakers 6kA type B and C - MBN, MCN



Description

Protection and control of circuits against overloads and short circuits. Allow to control and isolate circuits.

Technical data

- breaking capacity :
6kA (IEC 60 898-1),

- curves :

B curve : 3 to 5 I_n,
C curve : 5 to 10 I_n
- poles : 1PP, 2PP, 3PP, 4PP
(protected poles)
- voltage rating : 240/400V AC
- current rating : 6 to 63A
- frequency : 50/60Hz
- climate sealed : T2

- will accept accessories

Connection capacity

rigid conductors : 25mm²
flexible conductors : 16mm²

Comply with IEC 60 898-1.

Designation	In/A	Width in ■ 17.5mm	Pack qty.	Cat. ref. B curve	C curve
Single pole MCBs					
	6	1	12	MBN106A	MCN106A
	10	1	12	MBN110A	MCN110A
	16	1	12	MBN116A	MCN116A
	20	1	12	MBN120A	MCN120A
	25	1	12	MBN125A	MCN125A
	32	1	12	MBN132A	MCN132A
	40	1	12	MBN140A	MCN140A
	50	1	12	MBN150A	MCN150A
	63	1	12	MBN163A	MCN163A



MBN116A

Double pole MCBs					
	6	2	6	MBN206A	MCN206A
	10	2	6	MBN210A	MCN210A
	16	2	6	MBN216A	MCN216A
	20	2	6	MBN220A	MCN220A
	25	2	6	MBN225A	MCN225A
	32	2	6	MBN232A	MCN232A
	40	2	6	MBN240A	MCN240A
	50	2	6	MBN250A	MCN250A
	63	2	6	MBN263A	MCN263A



MBN232A

Three pole MCBs					
	6	3	4	MBN306A	MCN306A
	10	3	4	MBN310A	MCN310A
	16	3	4	MBN316A	MCN316A
	20	3	4	MBN320A	MCN320A
	25	3	4	MBN325A	MCN325A
	32	3	4	MBN332A	MCN332A
	40	3	4	MBN340A	MCN340A
	50	3	4	MBN350A	MCN350A
	63	3	4	MBN363A	MCN363A



MBN320A

Four pole MCBs					
	6	4	3	MBN406A	MCN406A
	10	4	3	MBN410A	MCN410A
	16	4	3	MBN416A	MCN416A
	20	4	3	MBN420A	MCN420A
	25	4	3	MBN425A	MCN425A
	32	4	3	MBN432A	MCN432A
	40	4	3	MBN440A	MCN440A
	50	4	3	MBN450A	MCN450A
	63	4	3	MBN463A	MCN463A



MBN440A

Miniature circuit breakers

6/10kA type B and C - MT, MU



Description

Protection and control of circuits against overloads and short circuits. Allow to isolate circuits.

Technical data

- breaking capacity :
6kA (IEC 60 898-1),
10kA (IEC 60 947-2)
- curves :
B curve : 3 to 5 I_n,
C curve : 5 to 10 I_n

- poles : 1PP, 2PP, 3PP, 4PP
(protected poles)
- voltage rating : 240/400V AC
- current rating : 6 to 63A
- frequency : 50/60Hz
- climate sealed : T2
- will not accept accessories

Comply with IEC 60 898-1 and IEC 60 947-2.

Connection capacity

rigid conductors : 25mm²
flexible conductors : 16mm²



MT116A



MT216A



MT320A

Designation	In/A	Width in 17.5mm	Pack qty.	Cat. ref. B curve	C curve
Single pole MCBs					
	6	1	12	MT106A	MU106A
	10	1	12	MT110A	MU110A
	16	1	12	MT116A	MU116A
	20	1	12	MT120A	MU120A
	25	1	12	MT125A	MU125A
	32	1	12	MT132A	MU132A
	40	1	12	MT140A	MU140A
	50	1	12	MT150A	MU150A
63	1	12	MT163A	MU163A	
Double pole MCBs					
	6	2	6	MT206A	MU206A
	10	2	6	MT210A	MU210A
	16	2	6	MT216A	MU216A
	20	2	6	MT220A	MU220A
	25	2	6	MT225A	MU225A
	32	2	6	MT232A	MU232A
	40	2	6	MT240A	MU240A
	50	2	6	MT250A	MU250A
63	2	6	MT263A	MU263A	
Three pole MCBs					
	6	3	4	MT306A	MU306A
	10	3	4	MT310A	MU310A
	16	3	4	MT316A	MU316A
	20	3	4	MT320A	MU320A
	25	3	4	MT325A	MU325A
	32	3	4	MT332A	MU332A
	40	3	4	MT340A	MU340A
	50	3	4	MT350A	MU350A
63	3	4	MT363A	MU363A	
Four pole MCBs					
	6	4	3	-	MU406A
	10	4	3	-	MU410A
	16	4	3	-	MU416A
	20	4	3	-	MU420A
	25	4	3	-	MU425A
	32	4	3	-	MU432A
	40	4	3	-	MU440A
	50	4	3	-	MU450A
63	4	3	-	MU463A	

Miniature circuit breakers

6/10kA type B and C - MB, MC



Description

Protection and control of circuits against overloads and short circuits. Allow to isolate circuits.

Technical data

- breaking capacity :
6kA (IEC 60 898-1),
10kA (IEC 60 947-2)

- curves :

B curve : 3 to 5 I_n,
C curve : 5 to 10 I_n
- poles : 1PP, 2PP, 3PP, 4PP (protected poles)
- voltage rating : 240/400V AC
- current rating : 0,5 to 63A
- frequency : 50/60Hz
- climate sealed : T2

- will accept accessories

Connection capacity

rigid conductors : 25mm²
flexible conductors : 16mm²

Comply with IEC 60 898-1 and IEC 60 947-2.



MC132A

Designation	In/A	Width in 17.5mm	Pack qty.	Cat. ref. B curve	C curve
Single pole MCBs					
	0.5	1	12	-	MC100A
	1	1	12	-	MC101A
	2	1	12	-	MC102A
	3	1	12	-	MC103A
	4	1	12	-	MC104A
	6	1	12	MB106A	MC106A
	10	1	12	MB110A	MC110A
	16	1	12	MB116A	MC116A
	20	1	12	MB120A	MC120A
	25	1	12	MB125A	MC125A
	32	1	12	MB132A	MC132A
	40	1	12	MB140A	MC140A
	50	1	12	MB150A	MC150A
63	1	12	MB163A	MC163A	



MC216A

Designation	In/A	Width in 17.5mm	Pack qty.	Cat. ref. B curve	C curve
Double pole MCBs					
	0.5	2	6	-	MC200A
	1	2	6	-	MC201A
	2	2	6	-	MC202A
	3	2	6	-	MC203A
	4	2	6	-	MC204A
	6	2	6	MB206A	MC206A
	10	2	6	MB210A	MC210A
	16	2	6	MB216A	MC216A
	20	2	6	MB220A	MC220A
	25	2	6	MB225A	MC225A
	32	2	6	MB232A	MC232A
	40	2	6	MB240A	MC240A
	50	2	6	MB250A	MC250A
63	2	6	MB263A	MC263A	



MC332A

Designation	In/A	Width in 17.5mm	Pack qty.	Cat. ref. B curve	C curve
Three pole MCBs					
	0.5	3	4	-	MC300A
	1	3	4	-	MC301A
	2	3	4	-	MC302A
	3	3	4	-	MC303A
	4	3	4	-	MC304A
	6	3	4	MB306A	MC306A
	10	3	4	MB310A	MC310A
	16	3	4	MB316A	MC316A
	20	3	4	MB320A	MC320A
	25	3	4	MB325A	MC325A
	32	3	4	MB332A	MC332A
	40	3	4	MB340A	MC340A
	50	3	4	MB350A	MC350A
63	3	4	MB363A	MC363A	

Designation	In/A	Width in 17.5mm	Pack qty.	Cat. ref. B curve	C curve
Four pole MCBs					
	0.5	4	3	-	MC400A
	1	4	3	-	MC401A
	2	4	3	-	MC402A
	3	4	3	-	MC403A
	4	4	3	-	MC404A
	6	4	3	MB406A	MC406A
	10	4	3	MB410A	MC410A
	16	4	3	MB416A	MC416A
	20	4	3	MB420A	MC420A
	25	4	3	MB425A	MC425A
	32	4	3	MB432A	MC432A
	40	4	3	MB440A	MC440A
	50	4	3	MB450A	MC450A
63	4	3	MB463A	MC463A	

Description

Protection and control of circuits against overloads and short circuits. Allow to isolate circuits.

Technical data

- breaking capacity :
6kA (IEC 60 898-1),
10kA (IEC 60 947-2)

- curves :

D curve : 10 to 20 In
- poles : 1PP, 2PP, 3PP, 4PP (protected poles)
- voltage rating : 240/400V AC
- current rating : 0,5 to 63A
- frequency : 50/60Hz
- climate sealed : T2
- will accept accessories

Connection capacity

rigid conductors : 35mm²
flexible conductors : 25mm²

Comply with IEC 60 898-1 and IEC 60 947-2.

Designation	In/A	Width in ■ 17.5mm	Pack qty.	Cat. ref. D curve
Single pole MCBs				
	0.5	1	1	NGN100
	1	1	1	NGN101
	2	1	1	NGN102
	3	1	1	NGN103
	4	1	1	NGN104
	6	1	1	NGN106
	10	1	1	NGN110
	16	1	1	NGN116
	20	1	1	NGN120
	25	1	1	NGN125
	32	1	1	NGN132
	40	1	1	NGN140
	50	1	1	NGN150
63	1	1	NGN163	
Double pole MCBs				
	0.5	2	1	NGN200
	1	2	1	NGN201
	2	2	1	NGN202
	3	2	1	NGN203
	4	2	1	NGN204
	6	2	1	NGN206
	10	2	1	NGN210
	16	2	1	NGN216
	20	2	1	NGN220
	25	2	1	NGN225
	32	2	1	NGN232
	40	2	1	NGN240
	50	2	1	NGN250
63	2	1	NGN263	
Three pole MCBs				
	0.5	3	1	NGN300
	1	3	1	NGN301
	2	3	1	NGN302
	3	3	1	NGN303
	4	3	1	NGN304
	6	3	1	NGN306
	10	3	1	NGN310
	16	3	1	NGN316
	20	3	1	NGN320
	25	3	1	NGN325
	32	3	1	NGN332
	40	3	1	NGN340
	50	3	1	NGN350
63	3	1	NGN363	
Four pole MCBs				
	0.5	4	1	NGN400
	1	4	1	NGN401
	2	4	1	NGN402
	3	4	1	NGN403
	4	4	1	NGN404
	6	4	1	NGN406
	10	4	1	NGN410
	16	4	1	NGN416
	20	4	1	NGN420
	25	4	1	NGN425
	32	4	1	NGN432
	40	4	1	NGN440
	50	4	1	NGN450
63	4	1	NGN463	



NGN116



NGN232



NGN320



NGN440

Miniature circuit breakers 10/15kA type B, C and D - NBN, NCN, NDN



Description

Protection and control of circuits against overloads and short circuits. Allows to isolate circuits.

Technical data

- breaking capacity :
10kA (IEC 60 898-1),
15kA (IEC 60 947-2)

- curves :

B curve : 3 to 5 I_n,
C curve : 5 to 10 I_n,
D curve : 10 to 20 I_n
- poles : 1PP, 2PP, 3PP, 4PP
(protected poles)

- voltage rating : 240/400V AC
- current rating : 0,5 to 63A
- frequency : 50/60Hz



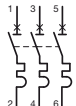
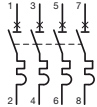
- climate sealed : T2

- will accept accessories

Connection capacity

rigid conductors : 35mm²
flexible conductors : 25mm²

Comply with IEC 60 898-1 and IEC 60 947-2.

Designation	In/A	Width in 17.5mm	Pack qty.	Cat. ref. B curve	C curve	D curve
Single pole MCBs						
	0.5	1	12	-	NCN100A	NDN100A
	1	1	12	-	NCN101A	NDN101A
	2	1	12	-	NCN102A	NDN102A
	3	1	12	-	NCN103A	NDN103A
	4	1	12	-	NCN104A	NDN104A
	6	1	12	NBN106A	NCN106A	NDN106A
	10	1	12	NBN110A	NCN110A	NDN110A
	16	1	12	NBN116A	NCN116A	NDN116A
	20	1	12	NBN120A	NCN120A	NDN120A
	25	1	12	NBN125A	NCN125A	NDN125A
	32	1	12	NBN132A	NCN132A	NDN132A
	40	1	12	NBN140A	NCN140A	NDN140A
	50	1	12	NBN150A	NCN150A	NDN150A
63	1	12	NBN163A	NCN163A	NDN163A	
Double pole MCBs						
	0.5	2	6	-	NCN200A	NDN200A
	1	2	6	-	NCN201A	NDN201A
	2	2	6	-	NCN202A	NDN202A
	3	2	6	-	NCN203A	NDN203A
	4	2	6	-	NCN204A	NDN204A
	6	2	6	NBN206A	NCN206A	NDN206A
	10	2	6	NBN210A	NCN210A	NDN210A
	16	2	6	NBN216A	NCN216A	NDN216A
	20	2	6	NBN220A	NCN220A	NDN220A
	25	2	6	NBN225A	NCN225A	NDN225A
	32	2	6	NBN232A	NCN232A	NDN232A
	40	2	6	NBN240A	NCN240A	NDN240A
	50	2	6	NBN250A	NCN250A	NDN250A
63	2	6	NBN263A	NCN263A	NDN263A	
Three pole MCBs						
	0.5	3	4	-	NCN300A	NDN300A
	1	3	4	-	NCN301A	NDN301A
	2	3	4	-	NCN302A	NDN302A
	3	3	4	-	NCN303A	NDN303A
	4	3	4	-	NCN304A	NDN304A
	6	3	4	NBN306A	NCN306A	NDN306A
	10	3	4	NBN310A	NCN310A	NDN310A
	16	3	4	NBN316A	NCN316A	NDN316A
	20	3	4	NBN320A	NCN320A	NDN320A
	25	3	4	NBN325A	NCN325A	NDN325A
	32	3	4	NBN332A	NCN332A	NDN332A
	40	3	4	NBN340A	NCN340A	NDN340A
	50	3	4	NBN350A	NCN350A	NDN350A
63	3	4	NBN363A	NCN363A	NDN363A	
Four pole MCBs						
	0.5	4	3	-	NCN400A	NDN400A
	1	4	3	-	NCN401A	NDN401A
	2	4	3	-	NCN402A	NDN402A
	3	4	3	-	NCN403A	NDN403A
	4	4	3	-	NCN404A	NDN404A
	6	4	3	NBN406A	NCN406A	NDN406A
	10	4	3	NBN410A	NCN410A	NDN410A
	16	4	3	NBN416A	NCN416A	NDN416A
	20	4	3	NBN420A	NCN420A	NDN420A
	25	4	3	NBN425A	NCN425A	NDN425A
	32	4	3	NBN432A	NCN432A	NDN432A
	40	4	3	NBN440A	NCN440A	NDN440A
	50	4	3	NBN450A	NCN450A	NDN450A
63	4	3	NBN463A	NCN463A	NDN463A	



NCN116A



NCN232A



NCN320A



NCN440A

Miniature circuit breakers

15 to 25kA type B, C and D - NQN, NRN, NSN



Description

Protection and control of circuits against overloads and short circuits. Allow to isolate circuits.

Technical data

- breaking capacity :
80kA for 0,5 to 2A (IEC 60 947-2)
50kA for 3 to 4A (IEC 60 947-2)
25kA for 6 to 25A (IEC 60 947-2)





20kA for 32 to 40A (IEC 60 947-2)
15kA for 50 to 63A (IEC 60 947-2)
- curves :
B curve : 3 to 5 I_n,
C curve : 5 to 10 I_n,
D curve : 10 to 20 I_n
- poles : 1PP, 2PP, 3PP, 4PP (protected poles)
- voltage rating : 240/400V AC
- current rating : 0,5 to 63A

- frequency : 50/60Hz
- climate sealed : T2
- will accept accessories

Connection capacity

rigid conductors : 35mm²
flexible conductors : 25mm²

Comply with IEC 60 947-2.

Designation	In/A	Breaking capacity (kA)	Width in 17.5mm	Pack qty.	Cat. ref. B curve	C curve	D curve
Single pole MCBs							
	0.5	80	1	1	-	NRN100	NSN100
	1	80	1	1	-	NRN101	NSN101
	2	80	1	1	-	NRN102	NSN102
	3	50	1	1	-	NRN103	NSN103
	4	50	1	1	-	NRN104	NSN104
	6	30	1	1	NQN106	NRN106	NSN106
	10	25	1	1	NQN110	NRN110	NSN110
	16	25	1	1	NQN116	NRN116	NSN116
	20	25	1	1	NQN120	NRN120	NSN120
	25	25	1	1	NQN125	NRN125	NSN125
	32	20	1	1	NQN132	NRN132	NSN132
	40	20	1	1	NQN140	NRN140	NSN140
	50	15	1	1	NQN150	NRN150	NSN150
	63	15	1	1	NQN163	NRN163	NSN163
Double pole MCBs							
	0.5	80	2	1	-	NRN200	NSN200
	1	80	2	1	-	NRN201	NSN201
	2	80	2	1	-	NRN202	NSN202
	3	50	2	1	-	NRN203	NSN203
	4	50	2	1	-	NRN204	NSN204
	6	30	2	1	NQN206	NRN206	NSN206
	10	25	2	1	NQN210	NRN210	NSN210
	16	25	2	1	NQN216	NRN216	NSN216
	20	25	2	1	NQN220	NRN220	NSN220
	25	25	2	1	NQN225	NRN225	NSN225
	32	20	2	1	NQN232	NRN232	NSN232
	40	20	2	1	NQN240	NRN240	NSN240
	50	15	2	1	NQN250	NRN250	NSN250
	63	15	2	1	NQN263	NRN263	NSN263
Three pole MCBs							
	0.5	80	3	1	-	NRN300	NSN300
	1	80	3	1	-	NRN301	NSN301
	2	80	3	1	-	NRN302	NSN302
	3	50	3	1	-	NRN303	NSN303
	4	50	3	1	-	NRN304	NSN304
	6	30	3	1	NQN306	NRN306	NSN306
	10	25	3	1	NQN310	NRN310	NSN310
	16	25	3	1	NQN316	NRN316	NSN316
	20	25	3	1	NQN320	NRN320	NSN320
	25	25	3	1	NQN325	NRN325	NSN325
	32	20	3	1	NQN332	NRN332	NSN332
	40	20	3	1	NQN340	NRN340	NSN340
	50	15	3	1	NQN350	NRN350	NSN350
	63	15	3	1	NQN363	NRN363	NSN363
Four pole MCBs							
	0.5	80	4	1	-	NRN400	NSN400
	1	80	4	1	-	NRN401	NSN401
	2	80	4	1	-	NRN402	NSN402
	3	50	4	1	-	NRN403	NSN403
	4	50	4	1	-	NRN404	NSN404
	6	30	4	1	NQN406	NRN406	NSN406
	10	25	4	1	NQN410	NRN410	NSN410
	16	25	4	1	NQN416	NRN416	NSN416
	20	25	4	1	NQN420	NRN420	NSN420
	25	25	4	1	NQN425	NRN425	NSN425
	32	20	4	1	NQN432	NRN432	NSN432
	40	20	4	1	NQN440	NRN440	NSN440
	50	15	4	1	NQN450	NRN450	NSN450
	63	15	4	1	NQN463	NRN463	NSN463

Description

Protection of smoke hatch motors against short circuit.

Connection capacity

- rigid conductors: 35mm²
- flexible conductors: 25mm²

Magnetic MCBs

25kA ≤ 12,5A
20kA > 12,5A (EN 60 947-2)
12 In

Nominal voltage: 400 V AC

Comply with IEC 60 947-2.



MMN216



MMN310

Designation	Breaking capacity (kA)	In/A	Width in 17.5mm	Cat. ref.
Double pole magnetic MCBs				
	25	0,63	2	MMN200
	25	1,25	2	MMN201
	25	1,6	2	MMN202
	25	2,5	2	MMN203
	25	4	2	MMN204
	25	6,3	2	MMN206
	25	10	2	MMN210
	25	12	2	MMN213
	20	16	2	MMN216
	20	20	2	MMN220
	20	25	2	MMN225

Three pole magnetic MCBs				
	25	0,63	3	MMN300
	25	1,25	3	MMN301
	25	1,6	3	MMN302
	25	2,5	3	MMN303
	25	4	3	MMN304
	25	6,3	3	MMN306
	25	10	3	MMN310
	25	12	3	MMN313
	20	16	3	MMN316
	20	20	3	MMN320
	20	25	3	MMN325



MM901



MM902

Designation	Characteristics	Pack qty.	Cat. ref.
Motor controllers			
	for 230V network - alarm from 0,25Ω to 2Ω 50 to 400 Hz	1	MM901
	for 400V network	1	MM902
	settings: - pre alarm from 50Ω to 10Ω - alarm from 0,25Ω to 2Ω 2 contacts, 5A / 230V, cos φ: 0,7		

Terminal shields for MCBs	screw shield	1	MZN120
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Interphase barriers for MCBs	set of 3	1	MZN121
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Description

To ensure localised control and protection of single and three phase motors. The rated motor current is set on the motor starter units by means of a current dial (in the front).

- AC3 utilisation category
 - Connection capacity: conductor cross-sections of the motor cables: flexible 1 to 4mm² rigid 1 to 6mm²

Auxiliary contacts: MZ520N, MZ522N
 Alarm contact: MZ527N
 Shunt trip: MZ523N

Comply with IEC/EN 60947 for low voltage switchgear. The motor outgoer wiring should be implemented in compliance to IEC/EN 60947-1 table 9.

Technical data

- Adjustable thermal relay

Options

Undervoltage release: MZ528N, MZ529N

Description	Standard power rating of 3 phase motors 50/60 Hz (AC3)		Width in ■	Cat. ref.
	230v (kW)	400V (kW)		
Motor starters				
current range Ie				
0,1 to 0,16A	-	-	-	MM501N
0,16 to 0,25A	-	0,06	2,5	MM502N
0,25 to 0,4A	0,06	0,09	2,5	MM503N
0,4 to 0,63A	0,09	0,12	2,5	MM504N
0,63 to 1,0A	0,09	0,12	2,5	MM505N
1,0 to 1,6A	0,25	0,55	2,5	MM506N
1,6 to 2,5A	0,55	0,8	2,5	MM507N
2,5 to 4A	0,8	1,5	2,5	MM508N
4 to 6,3A	1,5	2,5	2,5	MM509N
6,3 to 10A	2,5	4	2,5	MM510N
10 to 16A	4	7,5	2,5	MM511N
16 to 20A	5,5	9	2,5	MM512N
20 to 25A	7,5	12,5	2,5	MM513N



MM501N



MZ520N

MZ527N



MZ528N



MZ521N

Description	Characteristics	Width in ■	Cat. ref.
Auxiliary contacts indicates ON/OFF position.	1C + 1O 2A AC1 - 400V AC 3,5 A - 230V AC	0,5	MZ520N
Front auxiliary contacts cannot be mounted at the back of a modular panel	1C - 230-400V AC - 1A	0,5	MZ522N
Shunt trip	230V AC		MZ523N
Alarm contacts mounted inside the motor starter	1C 2A AC1 - 400V AC / 3,5A AC1 - 230V AC	0,5	MZ527N
Undervoltage releases prevent automatic restarting of the controlled device	230V AC 50 Hz 400V AC 50 Hz		MZ528N MZ529N
Surface mounting enclosures weatherproof IP55 with a removable window	w.78 x h.150 x d.125 mm		MZ521N
Emergency stop button IP65, mounted on surface mounting enclosure MZ521N	without key with key		MZ530N MZ531N

Technical specifications

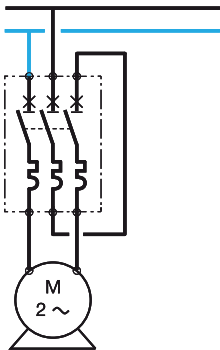
Electrical characteristics

- Electrical supply: 230/400/440/500/690V~
- Ambient temperature range: -25°C to +55°C

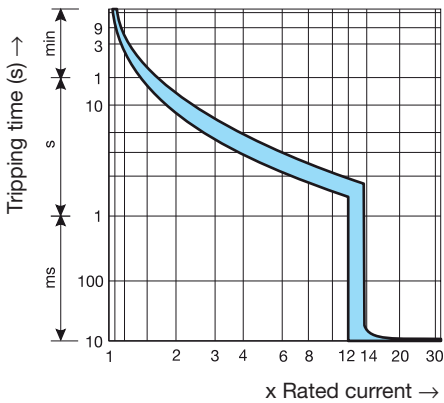
The influence of the ambient temperature on the deflection of the bimetallic releases is automatically compensated within a temperature range from -5 to +40°C by means of an additional current-free bimetallic release that continuously corrects the tripping range.

- Working life: 100,000 operations AC-3
- Maximum of 40 operations/hour
- Tropicalized for all climates
- Connection with clamp type, following conductor cross-sections of the motor cables:
 - flexible : 1 to 4mm²
 - rigid : 1 to 6mm²

Electrical connection single phase



Tripping characteristic



Conditional rated short-circuit current (according to IEC / EN 60 947-4-1)

	230V Icu (kA)	400V Icu (kA)	440V Icu (kA)	500V Icu (kA)	690V Icu (kA)
MM501N	150	150	100	100	100
MM502N	150	150	100	100	100
MM503N	150	150	100	100	100
MM504N	150	150	100	100	100
MM505N	150	150	100	100	100
MM506N	150	150	100	100	100
MM507N	150	150	100	100	5
MM508N	150	150	100	100	3
MM509N	150	150	42	42	3
MM510N	50	50	15	15	3
MM511N	50	50	10	6	3
MM512N	50	50	10	6	3
MM513N	50	50	10	6	3

■ no upstream protective device required, since this is an inherent stable range (100/150 kA)

N not required

1) primary fusing is required if the short-circuit current exceeds the conditional rated short-circuit current ($I_{cc} > I_{cu}$). The conditional rated short-circuit current is determined by the primary fuse used:
 100A gG/gL, $I_{cu} = 30kA$
 50A gG/gL, $I_{cu} = 100kA$

Under voltage release (no volt coil)

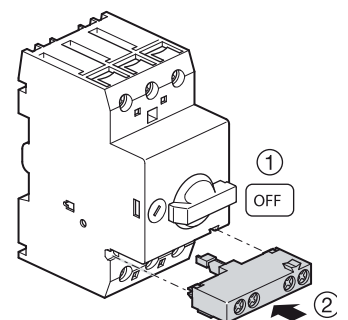
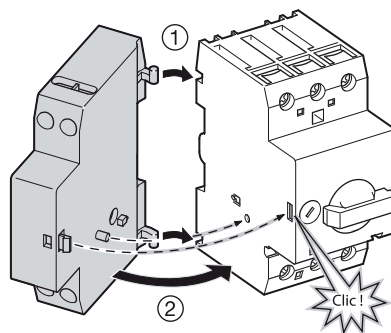
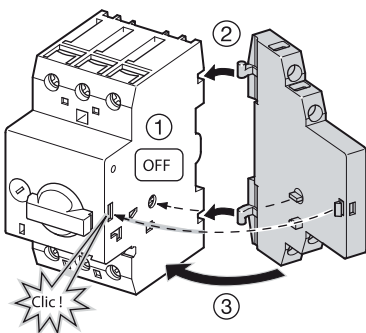
MZ528N MZ529N
 230V~ 400V~

Auxiliary contacts (Mounted inside starter)

MZ520N
 2A – 400V~
 3.5A – 230V~

Alarm contact (Mounted under starter)

MZ527N
 2A – 400V~
 1A – 230V~



Description

When add-on block is associated with MCBs (NGN, NBN, NCN, NDN, NQN, NRN, NSN), the complete unit provides an earth fault protection and protects against electrical shocks by direct or indirect contacts. They are designed to be fitted to the right hand side of 2, 3, and 4 poles MCBs.

Technical data

- sensitivity :
High sensitivity : 10mA, 30mA instant tripping,
Medium sensitivity : 100mA, 300mA, 500mA instant tripping / 300mA, 500mA, 1A selective (time delay)
- current rating : 25 to 63A
- voltage rating : 240/400V AC

- poles : 2P, 3P, 4P
- types : AC and A types
frequency : 50/60Hz
- mounting type : side mounted
- climate sealed : T2

Connection capacity

- 25A :
rigid conductors : 10mm²
flexible conductors : 6mm²
- 40A, 63A :
rigid conductors : 25mm²
flexible conductors : 16mm²

Technical information

- AC type : Ensured for residual sinusoidal alternating currents, whether suddenly applied or slowly rising. It incorporate a filtering device preventing the risk of nuisance tripping due to the transient voltages (lightening,

line disturbance on other equipment...) and transient currents (from high capacitive circuits).

- A and HI type (reinforced immunity) : In addition to the characteristics of AC type, it ensured for residual pulsating direct currents, whether suddenly applied or slowly rising. They are used whenever fault currents are not sinusoidal. It reduces the unexpected tripping when they protect equipment generating disturbances like DC fault current (washing machines, speed drives, microprocessing, electronic ballast...).

Comply with IEC 61 009-1.



BD226



BD364

Description	IΔn	In/A	Width in 17.5mm	Pack qty	Cat. ref. class AC	class A and HI
2 pole add-on blocks	10 mA	25	2	1	BC226	-
	30 mA	25	2	1	BD226	BD225
		40	2	1	BD241	BD240
		63	2	1	BD264	BD263
	100 mA	63	2	1	BE264	-
	S 100 mA	63	2	1	BN264	-
	300 mA	25	2	1	BF226	BF225
		40	2	1	BF241	BF240
		63	2	1	BF264	BF263
	S 300 mA	63	2	1	BP264	-
	500 mA	63	2	1	BG264	-
	S 500 mA	63	2	1	BR264	-
S 1A	63	2	1	BS264	BS263	
3 pole add-on blocks	30 mA	25	2	1	BD326	BD325
		40	3	1	BD341	BD340
		63	3	1	BD364	BD363
	300 mA	25	2	1	BF326	BF325
		40	3	1	BF341	BF340
		63	3	1	BF364	BF363
	S 300 mA	63	3	1	BP364	-
	500 mA	63		1	BG364	-
	S 1A	63	3	1	BS364	BS363



BD463

Description	I Δ n	In/A	Width in 17.5mm	Pack qty	Cat. ref. class AC	class A and HI
4 pole add-on blocks	30 mA	25	2	1	BD426	BD425
		40		1	BD441	BD440
		63		1	BD464	BD463
100 mA	63		1	BE464	-	
S 100 mA	63		1	BN464	-	
	300 mA	25	2	1	BF426	BF425
		40		1	BF441	BF440
		63		1	BF464	BF463
S 300 mA	63		1	BP464	-	
500 mA	63		1	BG464	-	
S 1A	63		1	BS464	-	



BFC840

4 pole add-on blocks double output	30 mA	25	3	1	BDC825	BDH825	
		40		3	1	BDC840	BDH840
		63		3	1	BDC863	BDH863
	300 mA	25	3	1	BFC825	BFH825	
		40		3	1	BFC840	BFH840
		63		3	1	BFC863	BFH863
S 300 mA	63	3	1	BPC863	-		
S 1A	63	3	1	BSC863	-		

Description

Protection and control of circuits against overloads and short circuits. Allow to isolate circuits. They can be used for installation in commercial building and industrial premises for high interrupt capacities.

Technical data

- breaking capacity :
50kA (IEC 60 898-1),
50kA (IEC 60 947-2)

- curves :

C curve : 5 to 10 In
- poles : 1PP, 2PP, 3PP, 4PP (protected poles)
- voltage rating : 230/400V AC
- current rating : 80 to 125A
- frequency : 50/60Hz
- will accept accessories
- climate sealed : T2

Connection capacity

rigid conductors : 70 mm²
flexible conductors : 35 mm²

Comply with IEC 60 898-1 and IEC 60 947-2.

Description	In/A	Width in 17.5mm	Pack qty	Cat. ref.
Single pole MCBs				
	10	1,5	1	HMX110
	16	1,5	1	HMX116
	20	1,5	1	HMX120
	25	1,5	1	HMX125
	32	1,5	1	HMX132
	40	1,5	1	HMX140
	50	1,5	1	HMX150
	63	1,5	1	HMX163
Double pole MCBs				
	10	3	1	HMX210
	16	3	1	HMX216
	20	3	1	HMX220
	25	3	1	HMX225
	32	3	1	HMX232
	40	3	1	HMX240
	50	3	1	HMX250
	63	3	1	HMX263
Three pole MCBs				
	10	4,5	1	HMX310
	16	4,5	1	HMX316
	20	4,5	1	HMX320
	25	4,5	1	HMX325
	32	4,5	1	HMX332
	40	4,5	1	HMX340
	50	4,5	1	HMX350
	63	4,5	1	HMX363
Four pole MCBs				
	10	6	1	HMX410
	16	6	1	HMX416
	20	6	1	HMX420
	25	6	1	HMX425
	32	6	1	HMX432
	40	6	1	HMX440
	50	6	1	HMX450
	63	6	1	HMX463



HMX120



HMX225



HMX320



HMX440

Description

Protection and control of circuits against overloads and short circuits. Allow to isolate circuits. They can be used for installation in commercial building and industrial premises.

Technical data

- breaking capacity :
10kA (IEC 60 898-1),
10kA (IEC 60947-2)





- curves :

B curve : 3 to 5 I_n,
C curve : 5 to 10 I_n
- poles : 1PP, 2PP, 3PP, 4PP
(protected poles)
- voltage rating : 230/400V AC
- current rating : 80 to 125A
- frequency : 50/60Hz
- will accept accessories
- climate sealed : T2

Connection capacity

rigid conductors : 70 mm²
flexible conductors : 35 mm²

Comply with IEC 60 898-1 and IEC 60 947-2.

	Description	In/A	Width in ■ 17.5mm	Pack qty	Cat. ref. B curve	C curve
 HLF199S	Single pole MCBs	80	1,5	1	HLE180S	HLF180S
		100	1,5	1	HLE190S	HLF190S
		125	1,5	1	HLE199S	HLF199S
 HLF299S	Double pole MCBs	80	3	1	HLE280S	HLF280S
		100	3	1	HLE290S	HLF290S
		125	3	1	HLE299S	HLF299S
 HLF399S	Three pole MCBs	80	4,5	1	HLE380S	HLF380S
		100	4,5	1	HLE390S	HLF390S
		125	4,5	1	HLE399S	HLF399S
 HLF499S	Four pole MCBs	80	6	1	HLE480S	HLF480S
		100	6	1	HLE490S	HLF490S
		125	6	1	HLE499S	HLF499S

Miniature circuit breakers 15kA type B, C and D - HMB, HMC, HMD



Description

Protection and control of circuits against overloads and short circuits. Allow to isolate circuits. They can be used for installation in commercial building and industrial premises.

Technical data

- breaking capacity :
15kA (IEC 60 898-1),
15kA (IEC 60 947-2)

- curves :

B curve : 3 to 5 In,
C curve : 5 to 10 In,
D curve : 10 to 20 In
- poles : 1PP, 2PP, 3PP, 4PP (protected poles)
- voltage rating : 230/400V AC
- current rating : 80 to 125A
- frequency : 50/60Hz
- will accept accessories
- climate sealed : T2

Connection capacity

rigid conductors : 70mm²
flexible conductors : 35mm²

Comply with IEC 60 898-1 and IEC 60 947-2.



HMC399



HMC499

Description	In/A	Width in ■ 17.5mm	Pack qty	Cat. ref.		
				B curve	C curve	D curve
Single pole MCBs	80	1,5	1	HMB180	HMC180	HMD180
	100	1,5	1	HMB190	HMC190	HMD190
	125	1,5	1	HMB199	HMC199	HMD199
Double pole MCBs	80	3	1	HMB280	HMC180	HMD180
	100	3	1	HMB290	HMC290	HMD290
	125	3	1	HMB299	HMC299	HMD299
Three pole MCBs	80	4,5	1	HMB380	HMC380	HMD380
	100	4,5	1	HMB390	HMC390	HMD390
	125	4,5	1	HMB299	HMC399	HMD399
Four pole MCBs	80	6	1	HMB480	HMC480	HMD480
	100	6	1	HMB490	HMC490	HMD490
	125	6	1	HMB499	HMC499	HMD499

Miniature circuit breakers 30kA type B and C - HMJ, HMK



Description

Protection and control of circuits against overloads and short circuits. Allow to isolate circuits. They can be used for installation in commercial building and industrial premises for high interrupt capacities.

Technical data

- breaking capacity :
30kA (IEC 60 898-1),

30kA (IEC 60 947-2)

- curves :
B curve : 3 to 5 In,
C curve : 5 to 10 In
- poles : 1PP, 2PP, 3PP, 4PP (protected poles)
- voltage rating : 230/400V AC
- current rating : 80 to 125A
- frequency : 50/60Hz
- will accept accessories
- climate sealed : T2

Connection capacity

rigid conductors : 70mm²
flexible conductors : 35mm²

Comply with IEC 60 898-1 and IEC 60 947-2.



HMK199



HMK399

Description	In/A	Width in 17.5mm	Pack qty	Cat. ref. B curve	C curve
Single pole MCBs	80	1,5	1	HMJ180	HMK180
	100	1,5	1	HMJ190	HMK190
	125	1,5	1	HMJ199	HMK199
Double pole MCBs	80	3	1	HMJ180	HMK180
	100	3	1	HMJ290	HMK290
	125	3	1	HMJ299	HMK299
Three pole MCBs	80	4,5	1	HMJ380	HMK380
	100	4,5	1	HMJ390	HMK390
	125	4,5	1	HMJ399	HMK399
Four pole MCBs	80	6	1	HMJ480	HMK480
	100	6	1	HMJ490	HMK490
	125	6	1	HMJ499	HMK499

Accessories for MCBs HLE, HLF, HMB, HMC, HMD, HMK, HMJ, HMX



MZN130



MZN131

Designation	Characteristics	Cat. ref.
Terminal cover / screw cap	sealable screw cap	MZN130
Phase separator	1 set of 3 pieces	MZN131

Description

When add-on block is associated with MCBs (HLE, HLF, HMB, HMC, HMD, HMJ, HMK, HMX), the complete unit provides an earth fault protection and protects against electrical shocks by direct or indirect contacts. They are designed to be fitted to the right hand side of 2, 3 and 4 poles MCBs.

Technical data

- sensitivity :
- High sensitivity : 30mA instant tripping (fixed)
- Medium sensitivity :
- 300mA instant tripping (fixed) / 300mA, 500mA, 1A adjustable (selective or time delay)
- time delay : 0ms, 60ms or 150ms
- current rating : 125A
- voltage rating : 240/400V AC
- poles : 2P, 3P, 4P
- types : AC and A/Hi types
- frequency : 50/60Hz
- mounting type : side mounted
- climate sealed : T2

Connection capacity

- rigid conductors : 70mm²
- flexible conductors : 35mm²

Technical information

- AC type : Ensured for residual sinusoidal alternating currents, whether suddenly applied or slowly rising. It incorporates a filtering device preventing the risk of nuisance tripping due to the transient voltages (lightening, line disturbance on other equipment...) and transient currents (from high capacitive circuits).


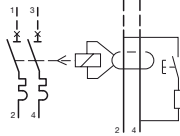

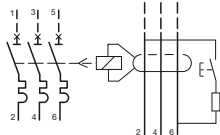

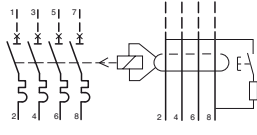
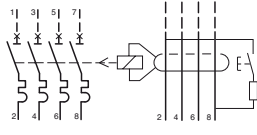
- A and HI type (reinforced immunity) : In addition to the characteristics of AC type, it ensured for residual pulsating direct currents, whether suddenly applied or slowly rising. They are used whenever fault currents are not sinusoidal. It reduces the unexpected tripping when they protect equipment generating disturbances like DC

fault current (washing machines, speed drives, microprocessing, electronic ballast...).

- Adjustable block : The setting is done by actuating the thumb wheel on the front face. The setting thumb wheels are protected by a transparent sealable cover.

- Tightening compensation terminals : The circuit breakers block are equipped with screw terminals with tightening compensation, reinforced arch and cable holding jaws. These contributes to an effective tightening over time.

Comply with IEC 61 009-1.

Description	I Δ n	In/A	Width in 17.5mm	Pack qty	Cat. ref. AC type	A and HI type
 BTH280E	Double pole add-on block	fixed 30mA	6	1	BDC280E	BDH280E
		adjustable 0,3 - 0,5 - 1A inst. - \overline{S} - 150 ms	6	1	BTC280E	BTH280E
 BTH380E	Three pole add-on block	fixed 30mA	6	1	BDC380E	BDH380E
		adjustable 0,3 - 0,5 - 1A inst. - \overline{S} - 150 ms	6	1	BTC380E	BTH380E
 BDC480E	Four pole add-on block	fixed 30mA	6	1	BDC480E	BDH480E
		fixed 300mA	6	1	BFC480E	BFH480E
		adjustable 0,3 - 0,5 - 1A inst. - \overline{S} - 150 ms	6	1	BTC480E	BTH480E

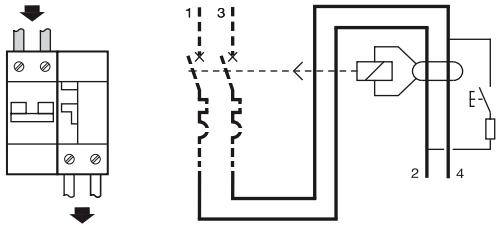
RCCB add-ons

3 sensitivities 30mA, 100mA and 300mA instantaneous.

2 sensitivities 100mA and 300mA time delayed.

RCCB add-ons can be associated with devices rated from 0,5 to 63A in 2 and 4 poles.

Wiring diagram



Connection capacity



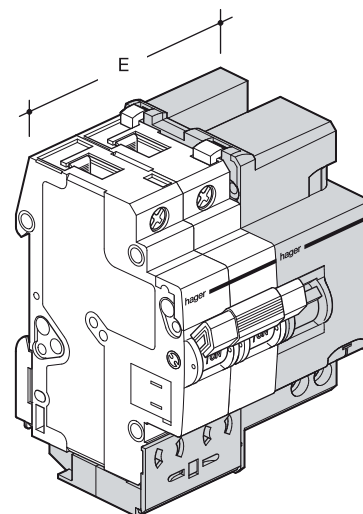
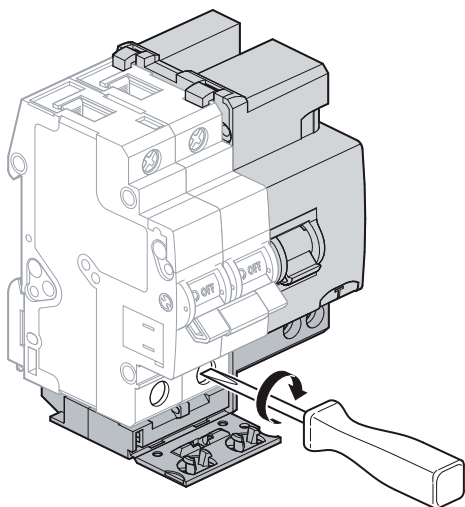
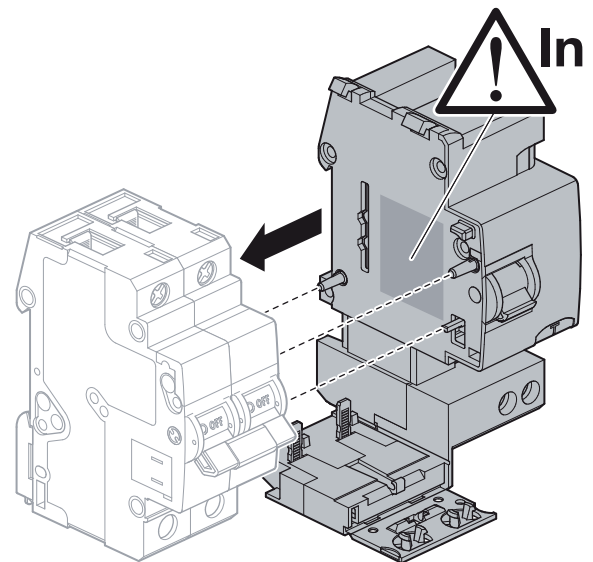
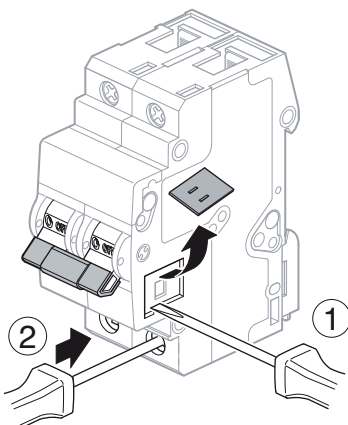
Characteristics

Easy coupling (drawer system)

Easy disassembly (without damage)

Conforms to EN61009 appendix G

Mounting



SP&N RCBOs (residual circuit breaker with overload) B and C curves



Description

Compact protection devices which provide MCB overload protection and RCD earth leakage protection (protect against electrical shocks by direct or indirect contacts).

Technical data

- sensitivity:
- High sensitivity: 30mA instant tripping (fixed)
- Medium sensitivity: 100mA, 300mA instant tripping (fixed)
- current rating: 6 to 40A
- curves: B and C
- voltage rating: 230V AC
- poles: SP&N
- types: AC and A types
- frequency: 50Hz

Connection capacity

rigid conductors: 25mm²
flexible conductors: 16mm²

Technical information

- AC type: Ensured for residual sinusoidal alternating currents, whether suddenly applied or slowly rising.
- A type: In addition to the characteristics of AC type, it ensured for residual pulsating direct currents, whether suddenly applied or slowly rising. They are used whenever fault currents are not sinusoidal. It is able to detect DC fault current generated by loads like washing machines, speed drives, microprocessing, electronic

ballast.

Approved according to IEC 61 009-1.
Comply with EN 60 947-2.



AD916J

Designation	Breaking capacity (IEC 60 898-1)	In/A	Width in 17.5mm	Pack qty.	Cat. ref. B curve	C curve
RCBOs AC type - 30mA	4,5kA	6A	2	1	AD806J	AD856J
		10A	2	1	AD810J	AD860J
		16A	2	1	AD816J	AD866J
		20A	2	1	AD820J	AD870J
		25A	2	1	AD825J	AD875J
		32A	2	1	AD832J	AD882J
		40A	2	1	AD840J	AD890J
	6kA	6A	2	1	AD906B	AD956B
		10A	2	1	AD910B	AD960B
		16A	2	1	AD916B	AD966B
		20A	2	1	AD920B	AD970B
		25A	2	1	AD925B	AD975B
		32A	2	1	AD932B	AD982B
		40A	2	1	AD940B	AD990B
RCBOs AC type - 100mA	6kA	6A	2	1	-	AE956B
		10A	2	1	-	AE960B
		16A	2	1	-	AE966B
		20A	2	1	-	AE970B
		25A	2	1	-	AE975B
		32A	2	1	-	AE982B
		40A	2	1	-	AE990B
RCBOs AC type - 300mA	6kA	6A	2	1	-	AF956B
		10A	2	1	-	AF960B
		16A	2	1	-	AF966B
		20A	2	1	-	AF970B
		25A	2	1	-	AF975B
		32A	2	1	-	AF982B
		40A	2	1	-	AF990B
RCBOs A type - 30mA	6kA	6A	2	1	AD906J	AD956J
		10A	2	1	AD910J	AD960J
		16A	2	1	AD916J	AD966J
		20A	2	1	AD920J	AD970J
		25A	2	1	AD925J	AD975J
		32A	2	1	AD932J	AD982J
		40A	2	1	AD940J	AD990J
RCBOs A type - 300mA	6kA	6A	2	1	-	AF956J
		10A	2	1	-	AF960J
		16A	2	1	-	AF966J
		20A	2	1	-	AF970J
		25A	2	1	-	AF975J
		32A	2	1	-	AF982J
		40A	2	1	-	AF990J

SP RCBOs (residual circuit breaker with overload) B and C curves

Description

Compact protection devices which provide MCB overload protection and RCD earth leakage protection (protect against electrical shocks by direct or indirect contacts).

Technical data

- sensitivity:
- High sensitivity: 10mA, 30mA instantaneous tripping (fixed)
- Medium sensitivity: 100mA, 300mA instantaneous tripping (fixed)
- current rating: 6 to 50A
- voltage rating: 230V AC
- poles: SP& passing N
- types: AC type
- frequency: 50Hz

- Flying neutral lead length: 700mm

Connection capacity

- outgoing:
- rigid conductors: 16mm²
- flexible conductors: 10mm²
- incoming:
- rigid conductors: 35mm²
- flexible conductors: 25mm²

Technical information

- AC type: Ensured for residual sinusoidal alternating currents, whether suddenly applied or slowly rising.

Approved according to IEC 61 009-1.



AD125Z

Designation	Breaking capacity	In/A	Width in I 17.5mm	Pack qty.	cat. ref. B curve	C curve	
RCBOs AC type - 10mA	6 kA	6	1	1	ACB106	ACC106	
		16	1	1	ACB116	ACC116	
		25	1	1	ACB125	ACC125	
		32	1	1	ACB132	ACC132	
RCBOs AC type - 30mA	6 kA	6	1	1	AD104	AD119	
		10	1	1	AD105	AD120	
		16	1	1	AD107	AD122	
		20	1	1	AD108	AD123	
		25	1	1	AD109	AD124	
		32	1	1	AD110	AD125	
		40	1	1	AD111	AD126	
		45	1	1	AD112	AD127	
		50	1	1	AD113	AD128	
		10 kA	6	1	1	-	AD184
			10	1	1	-	AD185
			16	1	1	-	AD187
			20	1	1	-	AD188
25	1		1	-	AD189		
32	1		1	-	AD190		
RCBOs AC type - 100mA	6 kA	6	1	1	-	AE106Z	
		10	1	1	-	AE110Z	
		16	1	1	-	AE116Z	
		20	1	1	-	AE120Z	
		25	1	1	-	AE125Z	
		32	1	1	-	AE132Z	
RCBOs AC type - 300mA	6 kA	10	1	1	-	AF110Z	
		16	1	1	-	AF116Z	
		20	1	1	-	AF120Z	
		25	1	1	-	AF125Z	
		32	1	1	-	AF132Z	
		40	1	1	-	AF140Z	
45	1	1	-	AF145Z			
50	1	1	-	AF150Z			

Description

Compact devices which provide RCD earth leakage protection (protect against electrical shocks by direct or indirect contacts). To open automatically in the event of an earth fault between phase and earth and/or neutral and earth.

Technical data

- sensitivity:
- High sensitivity: 30mA instantaneous tripping (fixed) / Medium sensitivity: 100mA, 300mA instantaneous or selective tripping (fixed)
- current rating: 25 to 100A
- voltage rating: 230V AC (2P) and 400V (4P)
- poles: 2P and 4P

- types: AC, A and HI types
- frequency: 50Hz

Connection capacity

- 25 to 63A:
- rigid conductors: 25mm²
- flexible conductors: 16mm²
- 80 and 100A:
- rigid conductors: 50mm²
- flexible conductors: 35mm²

Technical information

- AC type: Ensured for residual sinusoidal alternating currents, whether suddenly applied or slowly rising.

- A and HI type (reinforced immunity): In addition to the characteristics of AC type, it ensured for residual pulsating

direct currents, whether suddenly applied or slowly rising. They are used whenever fault currents are not sinusoidal. HI types only: It reduces the unexpected tripping when they protect equipment generating disturbances like DC fault current (washing machines, speed drives, microprocessing, electronic ballast...).

Comply with IEC 61 008-1.



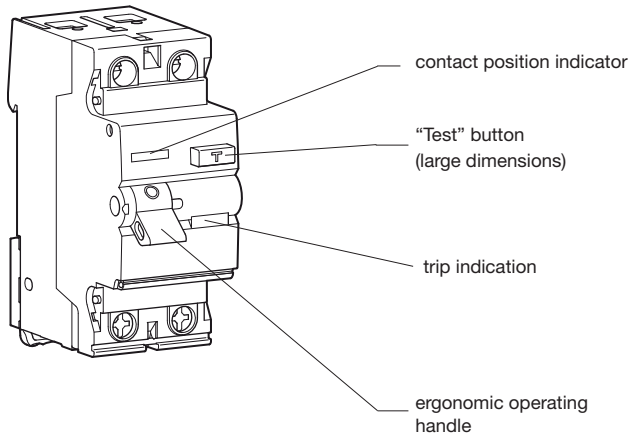
CD241J



CD441J

Sensitivity	Current rating	Pack qty	Cat. ref. 2P	4P
RCCBs 10mA	16A	1	CC217J	-
RCCBs 30mA	25A	1	CD226J	CD426J
	40A	1	CD241J	CD441J
	63A	1	CD264J	CD464J
	80A	1	CD281Z	CD480Z
	100A	1	CD285Z	CD485Z
RCCBs A type - 30mA	25A	1	CD225J	CD425J
	40A	1	CD240J	CD440J
	63A	1	CD263J	CD463J
RCCBs HI type - 30mA	25A	1	CH225J	CH425J
	40A	1	CH240J	CH440J
	63A	1	CH263J	CH463J
RCCBs 100mA	25A	1	CE226J	CE426J
	40A	1	CE241J	CE441J
	63A	1	CE264J	CE464J
	80A	1	CE281Z	CE481Z
	100A	1	CE285Z	CE485Z
RCCBs AC type - 300mA	25A	1	CF226J	CF426J
	40A	1	CF241J	CF441J
	63A	1	CF264J	CF464J
	80A	1	CF281Z	CF481Z
	100A	1	CF285Z	CF485Z
RCCBs AC type selective - 300mA	40A	1	-	CP441J
	63A	1	-	CP464J
RCCBs A type - 300mA	25A	1	CF225J	CF425J
	40A	1	CF240J	CF440J
	63A	1	CF263J	CF463J
RCCBs A type selective - 300mA	40A	1	-	CP440J
	63A	1	-	CP463J
RCCBs 300mA - HI type selective	40A	1	-	CQ440J
	63A	1	-	CQ463J

Product presentation



Contact positioning indicator

The mechanical indicator on the front of RCCB shows the physical position of the contacts.

- Red indication for closed contacts
- Green indication for open contacts

The green indication is the guarantee that the contacts are open and that the terminals are not live.

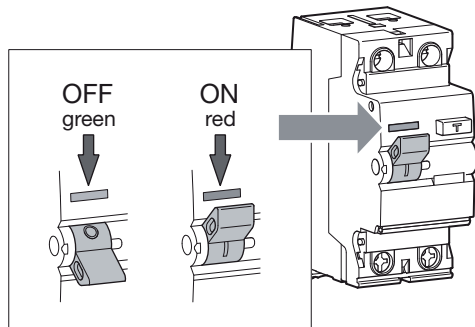
Trip indicator

The status of the RCCB can be visualised by the colour of the trip indicator in addition to the position of the operating lever.

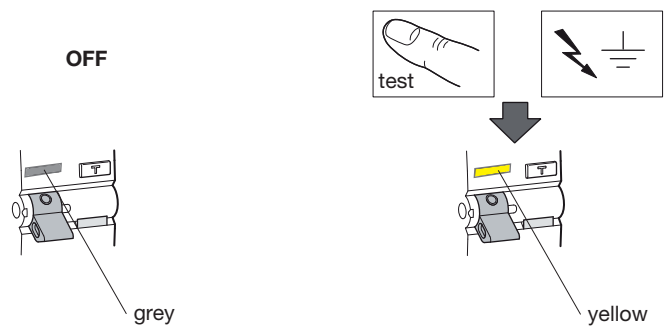
- Grey indication for normal conditions (even when operating lever is in ON/OFF position)
- Yellow indication for tripped condition, operating lever in OFF position.

Similar condition exists when TEST button is pushed or RCCB is remotely tripped via protection auxiliaries.

Positive contact indication



Earth leakage fault indication



Residual current devices

A residual current device (RCCB) is the generic term for a device which simultaneously performs the functions of detection of the residual current, comparison of this value with the rated residual operating value and opening the protected circuit when the residual current exceeds this value.

For fixed domestic installations and similar applications we have two types :

- Residual current operated circuit-breaker without integral over-current protection (RCCBs) which should comply with the requirements of IEC 61 008
- Residual current operated circuit-breaker with integral over-current protection (RCBOs) which should comply with the requirements of IEC 61 009

Both RCCBs and RCBOs are further divided into types depending on their operating function :

Type AC For which tripping is ensured for residual sinusoidal alternating currents, whether suddenly applied or slowly rising. Marked with the symbol:

Type A For which tripping is ensured for residual sinusoidal alternating currents and residual pulsating direct currents, whether suddenly applied or slowly rising. Marked with the symbol:

Type S For selectivity, with time-delay. Marked with the symbol:

RCCBs must be protected against short-circuits by means of circuit-breakers or fuses. RCBOs have their own in built short-circuit protection, up to it's rated value.

The drawing opposite shows how a torroid is located around the line and neutral conductors to measure the magnetic fields created by the current flowing in these conductors. The sum of the magnetic fields set up by these currents (which takes into consideration both the magnitude and phase relationship of the currents) is detected by the torroid.

In a normal healthy circuit the vector sum of the current values added together will be zero. Current flowing to earth, due to a line earth fault, will return via the earth conductor, and regardless of load conditions will register as a fault. This current flow will give rise to a residual current (I_{res}) which will be detected by the device.

It is most important that the line and neutral conductors are passed through the torroid. A common cause of nuisance operation is the failure to connect the neutral through the device.

RCCBs work just as well on three phase or three phase and neutral circuits, but when the neutral is distributed it must pass through the torroid.

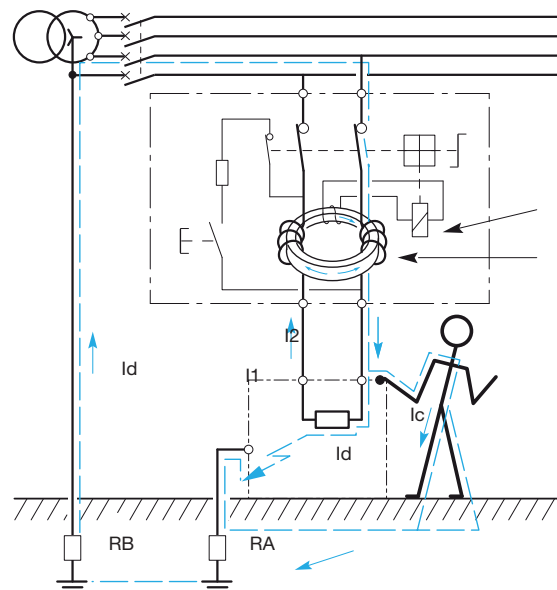
RCCBs are not suitable for use on DC systems and unearthed networks.

RCCBs – domestic installation

RCCBs can be installed in two ways:

1. whole house protection.
2. selective protection.

Principle



Current flowing through torroid in healthy circuit

$$I_{res} = I_1 - I_2 = 0$$

Current flowing through torroid in circuit with earth fault I_3

$$I_{res} = I_1 - I_2 + I_3 = I_3$$

Whole house protection is provided typically by a consumer unit where the RCCB device serves as the main switch. Although very popular this suffers from a disadvantage: all circuits are disconnected in the event of fault. Selective protection can be provided by associating the RCCB with identified high risk circuits by adopting one or more of the following :

- Split busbar consumer unit:
All circuits are fed via an overall isolator and selected circuits fed additionally via the RCCB. Typical circuits fed direct are lighting, freezer, storage heating; and circuits fed via the RCCB are socket outlets, garage circuits. This concept minimises inconvenience in the event of fault.

Individual RCBO

Each separate final circuit requiring protection by a RCD can be supplied through an RCBO. This method provides the best solution for minimising inconvenience.

Nuisance tripping

All Hager RCCBs incorporate a filtering device preventing the risk of nuisance tripping due to transient voltages (lightning, line disturbances on other equipment...) and transient currents (from high capacitive circuit).

Pulsating DC fault current sensitive

Increasingly, semi-conductors are also extensively used in computers, VDUs, printers, plotters... all of which may be fed from the mains electrical supply. The presence of semi-conductors may result in the normal sinusoidal AC waveform being modified. For example, the waveform may be rectified or, as in asymmetric phase control devices, the waveform may be chopped. The resulting waveforms are said to have a pulsating DC component.

In the event of an earth fault occurring in equipment containing semi-conductor devices, there is a probability that the earth fault current will contain a pulsating DC component.

Standard type AC may not respond to this type of earth fault current and the intended degree of protection will not be provided.

Use of RCCBs

RCCBs offer excellent protection against earth fault currents; the main areas of application being as follows:

• **Zs value too high to allow disconnection in the required time**

Where the overcurrent protection or a circuit breaker cannot provide disconnection within the specified time because the earth fault loop impedance is too high the addition of RCCB protection may well solve the problem without any other change in the system. Because of its high sensitivity to earth fault current and its rapid operating time, in most cases the RCCB will ensure disconnection within the specified time. This is achieved without any detriment to overcurrent discrimination because, unlike the situation in a fuse based system, the increased sensitivity is obtained without increasing sensitivity to overcurrent faults. Use of RCCBs in this way can be particularly useful for construction sites and bathrooms where disconnection times are more stringent than for standard installations. (Construction sites - 0.2s at 220-277V, bathrooms - 0.4s).

The limitation to this technique is the requirement that the rated residual operating current multiplied by Zs should not exceed 50V. This is to avoid the danger of exposed conductive parts reaching an unacceptably high voltage level.

Residual current protection can even be added to a completed distribution system where the value of Zs is excessive, either because of a design oversight or subsequent wiring modification.

• **Protection against shock by direct contact**

So far we have considered shock by indirect contact only. Direct contact is defined thus:

Direct contact - contact of persons or livestock with live parts which may result in electric shock. The consideration here is not the hazard of parts becoming live as a result of a fault but the possibility of touching circuit conductors which are intentionally live.

RCCBs, although affording good protection against the potentially lethal effects of electric shock, must not be used as the sole means of protection against shock by direct contact. The Electricity at Work Act recommends the use of RCCBs, "...danger may be reduced by the use of a residual current device but states that this should be "...considered as a second line of defence". The Wiring Regulations defines the other measures that should be taken i.e.

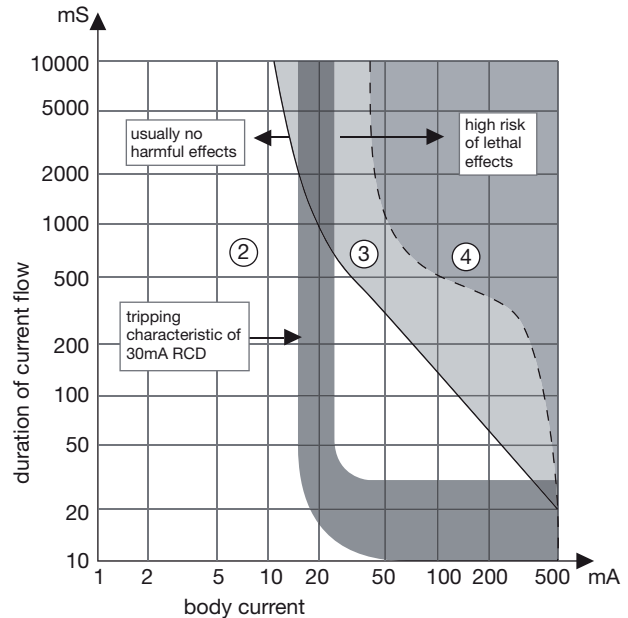
- insulation of live parts.
- barriers or enclosures.
- obstacles.
- placing live parts out of reach.

Additionally an RCCB used for this purpose should have:

- a sensitivity of 30mA
- an operating time not exceeding 40mS at a residual current of 150mA.

The specified sensitivity is based on research that has been carried out to estimate the effect various levels and duration of current can have on the human body. This experience is summarised in a graph shown in 'IEC 479-1: Effects of current passing through the human body'. A simplified version of this graph is shown opposite. It shows that very small currents can be tolerated for reasonably long periods and moderate currents for very short periods. It can be seen, for instance, that 100mA for 100mS or 20mA for 500mS will not normally cause any harmful effect. 200mA for 200mS or 50mA for 500mS which are in Zone 3, would be more dangerous; and shock levels in Zone 4 carry a risk of lethal consequences.

The tripping characteristic for a 30mA RCCB is also shown in the graph. It shows the level of current required to cause the RCCB to trip, for example; 50mA will cause a trip but not 10mA. Comparing its characteristic with the various zones on the graph it can be seen that the 30mA RCCB gives a very good measure of protection against the hazards associated with electric shock. Where a higher level of protection is required, for example in laboratories, 10mA devices are available.



IEC 60 479-1

Note : Although RCCBs are extremely effective devices they must never be used as the only method of protection against electric shock. With or without RCCBs protection all electrical equipment should be kept in good condition and should never be worked on live.

- **Protection against shock outside the equipotential bonding zone**

Bonding conductors are used in an installation to maintain metallic parts, as near as possible, to the same potential as earth. Working with portable equipment outside this equipotential bonding zone, e.g. in the car park of a factory, introduces additional shock hazards. Socket outlets rated 32A or less 'which may be reasonably expected to supply portable equipment for use outdoors' should have at least one socket nominated for outdoor use. This socket should be equipped with 30 mA RCCB protection unless fed from an isolating transformer or similar device, or fed from a reduced voltage.

- **Protection in special situations**

The use of RCCBs is obligatory or recommended in the following situations:

- caravans: 30mA RCCB should be used.
- TT systems.
- swimming pools: 30mA RCCB for socket outlets in Zone B obligatory; recommended in Zone C.
- agricultural and horticultural: 30mA RCCB for socket outlets and for the purpose of protection against fire, RCCB \leq 0.5A sensitivity.
- construction sites: 30mA RCCB recommended.

- **Portable equipment**

With the exception mentioned above, where a socket is specifically designated for work outside the equipotential bonding zone, the Wiring Regulations demand the use of RCCBs to protect the users of portable equipment. It is widely recognised that their use has made a significant contribution to safety in the workplace and the home.

- **Protection against fire hazards**

The provisions in the Wiring Regulations for protection against shock by indirect contact ensure rapid disconnection under earth fault assuming the fault has negligible impedance. Under such conditions the fault current, as we have seen, is sufficiently great to cause the overcurrent protection device to quickly disconnect the fault. However high impedance faults can arise where the fault current is sufficient to cause considerable local heat without being high enough to cause tripping of the overcurrent protective device. The heat generated at the point of the fault may initiate a fire long before the fault has deteriorated into a low impedance connection to earth.

The provision of residual current protection throughout a system or in vulnerable parts of a system will greatly reduce the hazard of fire caused by such faults.

- **PEN conductors**

The use of RCCBs with PEN conductors is prohibited. A PEN conductor is a single conductor combining the functions of neutral conductor and protective conductor. This being so, when the PEN conductor is taken through the torroid of an RCCB, earth faults will go undetected because the return path for the earth fault current is included in the residual sum.

- **Auxiliary contacts**

A range of auxiliaries, alarm and shunt contacts are available for Hager RCCBs.

- **Supply entry**

Top or bottom feed.

All auxiliaries are common to both single and multi-pole circuit breakers.

These auxiliaries are fitted to the left hand side of devices.

Shunt trips, and under-voltage releases are fitted with a flag

indicator that indicates the automatic/remote tripping of the device.

Connection capacity

6 mm² rigid cables

4 mm² flexible cables

Use of MZ203 - MZ209 on RCCBs requires the use of interface auxiliary CZ001.



MZ201



MZ203



MZ212



MZN175

Description	Characteristics	Width in 17,5mm	Cat. ref.
Auxiliary contacts	1NO + 1NC auxiliary contact indication of main contact status	0,5	MZ201
Alarm contacts	SD contact indicates a fault overcurrent (e.g. MCB tripped) on overload or short-circuit.	0,5	MZ202
Shunt trips	allows remote tripping of the device		
	24V - 415V AC 12V - 130V DC	1	MZ203
	24V - 48V AC 12V - 48V DC	1	MZ204
Under voltage releases	allows MCB to be closed only when voltage is above 70% of Un. MCB will automatically trip when voltage falls by 35% of Un.		
	48V DC	1	MZ205
	230V AC	1	MZ206
Over voltage releases	monitors the voltage between phase and neutral in a network. It opens the current circuit in case of over voltage by tripping the connected protection device (e.g. MCB or RCCB)		
	230V AC	1	MZ212
Locking kit	allows locking of the device dolly in the on/off position. Will accept two padlocks with hasps of 4,75 mm diameter max.		MZN175
Sealing kit			MZN176
Marking strip	13 modules for modular devices		MZN177

Functions

Tripping and indication auxiliary contacts are common to the range of multi-pole 10kA MCBs, and RCCBs. They should be mounted on the left hand side of the device.

Auxiliary Contact MZ201

Allows remote indication of the status of the device contacts to which it is associated.

Auxiliary Contact and Alarm Contact MZ202

This accessory has two separate functions. Like the MZ201 auxiliary contact, however the alarm contact will provide indication if the breaker trips under fault conditions.

MZ203 Shunt Trip*

Allows tripping of the device by feeding the coil. The contacts also allow for remote indication of operation.

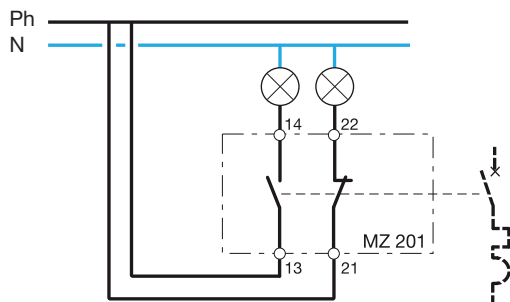
MZ206 Under Voltage Release*

Allows the MCB to trip when the voltage drops or by pressing a remote off switch (ie emergency stop).

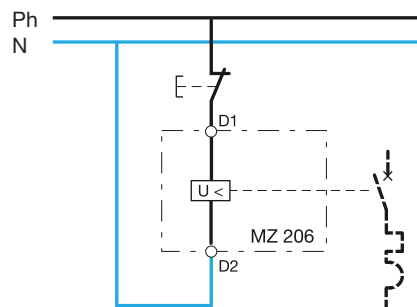
* Indication that the product has tripped due to the voltage release is provided by a flag on the product.

Wiring diagram

MZ201 auxiliary contact or MZ202 alarm contact



MZ206 under voltage release



Electrical characteristics

	MZ201/MZ206	MZ203	MZ206
	1 x O 1 x C contact 230V AC 6A - AC1		
		230/415 V AC 110/130 ...	230V AC 50 Hz

Electrical connection

By terminal fitted with fixed clamp screws wiring capacity.
Flexible : 2 x 1.5mm²
Rigid : 2 x 1.5mm²

MZ203

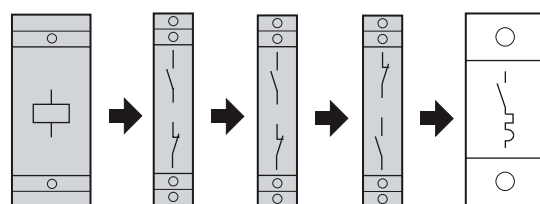
Power - 8VA
tolerance : -15% of Un

MZ206

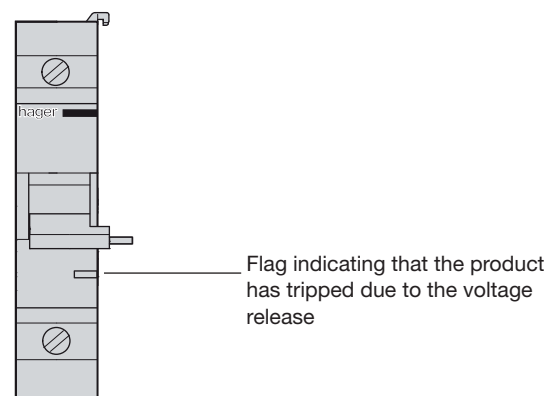
Latching voltage is between 35 and 70% of Un 230V AC
Coil consumption 3VA

Grouping / Combination of Several Auxiliaries

On 2, 3 and 4 pole MCBs it is possible to associate 3 auxiliaries – 2 indication auxiliaries and 1 release auxiliary. In this case, it is important to first fix the indication auxiliary (MZ201 and MZ202) and then the release auxiliary (MZ203 and MZ206).



MZ203 to MZ206 + MZ201 + MZ201 + MZ202 + MZ202 + MCB



MZ203 to MZ212

These products are remote control auxiliaries for modular protection devices (MCB, RCCB, RCBO).

They allow:

- to operate by remote control the closing and opening contacts of the associated device (MCB, RCD and RCBO),
- to indicate the state of contacts and the tripping of the associated product.

The product MZ913, MZ915 has a further function which allows a second automatic tripping when fault current.

Particular functioning modes

- power interruption:

When the power is interrupted, the product saves its state (time delays, handle position and number of trippings) in order to reset when the power supply returns.

During the interruption, the indicator light and the contacts "a" and "b" are open.

If a control disappears during an interruption, it is not executed when there is supply.

- soldered contacts on the associated product:

In this case, the handle of the remote auxiliary positions itself in the centre as the handle of the associated device.

This state is indicated by:

- "a" and "b" contacts opening,
- the indicator light is intermittent red.

- forced remote closing:

When "on" or automatic reclosing are jammed, the controlled device has tripped 3 times or a time delay (3 mins or 30 secs) is present, it is possible to reactivate them.

To unjam "on" remotely, we must activate "reset".

To unjam locally, we must hold the side selector in "reset" position (for 5 s) until a green indicator light appears.

To reinitialise the automatic resetting remotely, activate "reset" and then "on".
To reinitialise locally, hold the side selector

- remote control impossible when tripping (overloads or short-circuits):
It is impossible to impose a manual setting after tripping. To reset, cable the contacts "a" and "b" in order and connect them on "reset" control (input n°6).

Connection capacity

- Up:

Rigid conductor: 1,5 to 10mm²
Flexible conductor: 1 to 6 mm²

- Down:

Rigid conductor: 2 to 2.5mm²
Flexible conductor: 2 to 2.5mm²

Complies with EN 50-557.




MZ913

Description	Characteristics	Width in ■ 17,5mm	Pack qty.	Cat. ref.
Remote control auxiliaries	for 1, 2, 3, 4 pole MCBs, with or without add-on block	3	1	MZ903
	for 1, 2, 3, 4 pole MCBs, RCBOs, RCCBs, with or without add-on block	3	1	MZ905
Auto reclosing remote control auxiliaries	for 1, 2, 3, 4 pole MCBs, with or without add-on block	3	1	MZ913
	for 1, 2, 3, 4 pole MCBs, RCBOs, RCCBs, with or without add-on block	3	1	MZ915


Designation	References	Remote control auxiliary	
		MZ903/MZ913	MZ905/MZ915
RCBOs 1P+E up to 40A	Ax1xx, Ax1xxZ		ok
RCBOs 1P+E up to 40A	Ax8xxB, Ax9xxB, Ax9xxJ		ok
RCCBs 2P and 4P up to 63A	Cx2xxJ, Cx4xxJ		ok
RCCBs 2P and 4P 80 to 100A	Cx4xxZ, Cx2xxZ		
MCBs 1P, 2P, 3P and 4P	MV, MW MBxxx, MCxxx		ok
MCBs 1P+E	MHN, MJN, MLN		
MCBs 1P, 2P, 3P and 4P	MBNxxxA, MCNxxxA		ok
MCBs 1P and 2P	NBNxxxA, NCNxxxA, NDNxxxA, NGN, NQN, NRN, NSN with or without add-on block	ok	
MCBs 3P and 4P	NBNxxxA, NCNxxxA, NDNxxxA, NGN, NQN, NRN, NSN with or without add-on block		ok
Magnetic MCBs 2P	MMN2xx with or without add-on block	ok	
Magnetic MCBs 3P	MMN3xx with or without add-on block		
MCBs 1,5 ■	HLE, HLF		
	HMB, HMC, HMD		
	HMJ, HMK		
	HMX		

Functioning modes

For the front functioning modes “off & on” and “auto”, the remote controls “on”, “off”, “reset” and “” are operational (input n°2 - n°8). These control settings can be made operational by a direct contact such as a push button or closing switch (e.g. automation, supervisor, clocks etc.).

“on” remote control (input n°2)


It is jammed when:

- The selector or the controls activate “reset” or “” functions,
- Safety time delay is in progress,
- Trippings = 3 (end of cycle)
- The contacts are soldered.

“off” remote control (input n°4)

Takes priority for “on” setting and automatic reclosing.

It is jammed when:

- Selector activates the “reset” or “” functions,
- The contacts are soldered.

“reset” remote control (input n°6)

This control padlocks to the « on » position, the « off » position and reinitialises the product.

The initialisation consists of resetting the number of tripping and the time delay (3 mins or 30 secs).

This will remotely unjam the product.

“” remote control (input n°8)

This control locks “on” and automatic reclosing.

“off” is available.

The product does not operate if this control is not connected (minimum).

Side selector “time set”

Time delay of 3 mins is recommended for associated products before activating either remote control setting “on” or automatic reclosing. Even if it the device is reset before 3 mins the action will be delayed. However, for specific installations, when a continuity of service is required, the side selector can be set at 30 secs (except for MCBs and RCBOs).


Supervision

“a” and “b” signal outputs

If “a” and “b” are closed (the position of the associated product or remote control auxiliary handles is down), the cause could be:

- short-circuit, an overload or an earth leakage fault (depending on the associated device),
- tripping = 3 (end of cycle).

If “a” and “b” are open (position of the handle down or central), the cause could be:

- padlocking “” position, or “reset” position selected by either remote control or manually
- controlled device out of order,
- a safety time delay is in progress.


Indicator light

The indicator light shows the state of the product and allows a diagnosis.

We can distinguish 3 general cases:

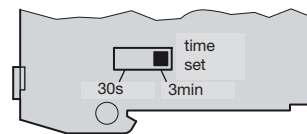
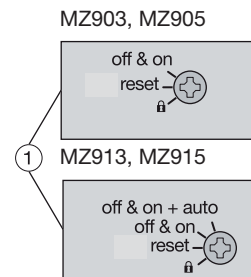
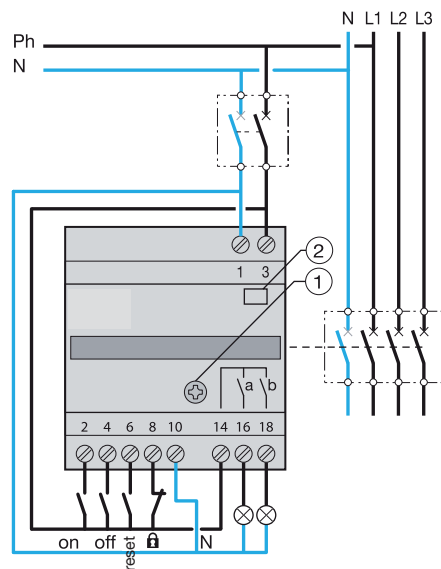
- indicator light on, the product is operational,
- indicator light off, the product is not supplied,
- indicator light intermittent, the remote controls or the automatic reclosing temporarily or permanently jammed.

Caused by

- Front selector padlocking position selected Remote control “reset” or “” positions selected
- Timer delay activated
- 3 trippings end of cycle.

If a red intermittent light is present, the controlled device is out of order.

Connection diagram



Technical specifications

Electrical characteristics

- Supply voltage: 230 V -10% / +15%
- Frequency: 50/60 Hz
- Product consumption:
 - transitional switching between closing/opening: 5 A max. for 150 ms
 - Permanent: 7 VA

Functional characteristics

- Controls:
 - minimum of control : 120 ms
 - max. distance: 200 m
- Signals outputs: 200 m
- 2 contacts dry:
 - max. breaking capacity: 5 A 250 V~
 - min. breaking capacity: 10 mA 5 V=
- Handlings: 10 000
- Opening or closing length: < 270 ms

Environment

- Functioning temperature: -5 °C to + 40 °C
- Storage temperature: -25 °C to + 70 °C

Operating principle

Position of front selector	Functioning	Indicator light
"off & on"	<ul style="list-style-type: none"> • Remote controls "on", "off", "reset" and "🔒" are all operational (input n°2 - n°8). • Contact openings for default current are counted: <ul style="list-style-type: none"> - tripping < 3: control setting "on" is operational after 3 mins or 30 secs time delay (see side selector "time set"). - tripping = 3: control setting "on" is jammed. 	<ul style="list-style-type: none"> • Green: no tripping • Amber: 1 tripping • Red: no more tripping allowed • Intermittent red: already 3 trippings (jammed product)
"auto" (MZ913, MZ915)	<ul style="list-style-type: none"> • Remote controls "on", "off", "reset" and "🔒" are all operational (input n°2 - n°8) as well as automatic reclosing. • Transient fault: if no other tripping occurs within 2 secs after closing, this fault is not taken into account and the number of tripping is reset to 0. Automatic reclosings or remote control settings (to) "on" are jammed for 3 mins or 30 secs after each tripping (see side selector "time set"). • Permanent fault: if tripping occurs in 2 secs after closing, this second fault is taken into account. <ul style="list-style-type: none"> - tripping < 3: automatic reclosings or remote control settings "on" are operational after 3 mins or 30 secs time delay (see side selector "time set"). - tripping = 3: automatic reclosing or control setting "on" are jammed for 3 mins or 30 secs after each tripping (see side selector "time set"). 	<ul style="list-style-type: none"> • Green: no tripping. • Intermittent red: already 3 trippings (jammed product)
"reset"	<ul style="list-style-type: none"> • This reinitialisation consists of resetting the time delays and the number of trippings. • All the controls and the automatic reclosing are locked (MZ913, Z915). • If the position is held over 5 secs, the product is reinitialised. • Then with front selector in position "off & on" or "auto", remote controls are operational. To activate the automatic resetting, use the remote control setting "on" (input n°2). • Remote unlocking is possible with remote control setting "reset" (input n°6). 	<ul style="list-style-type: none"> • Intermittent green • Green
"🔒"	<ul style="list-style-type: none"> • This position locks all the controls and also the automatic reclosing. 	<ul style="list-style-type: none"> • Intermittent light

Description

Protection and control of circuits against overloads and short circuits.

Technical data

- sizes : L31, L38, L51, L58
- poles : 1P, 2P, 3P, 4P
- voltage rating : 500 V AC, 690V AC
- current rating : 25 to 125A
- frequency : 50/60Hz
- climate sealed : T2
- will accept accessories
- short circuit resistance with fuse link 8,5 x 31,5 mm :

80kA – 690V~

- short circuit resistance with fuse link 10,3 x 38 mm :

80kA – 690V~ /

120kA – 500 V~

- short circuit resistance with fuse link 14x51 mm :

100kA – 690V

- short circuit resistance with fuse link 22x58 mm :

100kA – 690V

Connection capacity

- L31 (8,5x31,5) :
rigid conductors : 25mm²
flexible conductors : 16mm²
- L38 (10x38) :
rigid conductors : 25mm²
flexible conductors : 16mm²
- L51 (14x51) :
rigid conductors : 35mm²
flexible conductors : 25mm²
- L58 (22x58) :
rigid conductors : 50mm²
flexible conductors : 35mm²

Comply with IEC 60 269-2, IEC 60 269-2-1 and IEC 60 947-3.

Description	Characteristics	Width in mm 17,5 mm	Pack qty.	Cat. ref.
L31 fuse carriers 500V - 25A compatible with accessories	single pole	1	12	LS401
	two pole	2	6	LS402
	three pole	3	4	LS403
	3 phases + neutral link	4	3	LS404
	1 phase + neutral link	2	6	LS412
	single pole with signal light	1	12	LS431
	L38 fuse carriers 690V - 32A compatible with accessories	single pole	1	12
two pole		2	6	LS502
three pole		3	4	LS503
3 phases + neutral link		4	3	LS504
1 neutral link		1	12	LS509
1 phase + neutral link		2	6	LS512
single pole with signal light		1	12	LS531
L51 fuse carriers 690V - 50A	- compatible with accessories :			
	single pole	1,5	1	LS601
	two pole	3	1	LS602
	three pole	4,5	1	LS603
	3 phases + neutral link	6	1	LS604
	1 phase + neutral link	3	1	LS612
	- accessory free:			
	single pole	1,5	10	LR601
	two pole	3	5	LR602
	three pole	4,5	3	LR603
L58 fuse carriers 690V - 125A	- accessible:			
	single pole	2	1	LS701
	two pole	4	1	LS702
	three pole	6	1	LS703
	3 phases + neutral link	8	1	LS704
	1 phase + neutral link	4	1	LS712
	- accessory free:			
	single pole	2	6	LR701
	two pole	4	3	LR702
	three pole	6	2	LR703
Microswitches	- for L51 fuse carriers :			
	single pole		1	LS670
	three pole		1	LS671
	- for L58 fuse carriers :			
	single pole		1	LS770
three pole		1	LS771	
Signal lights 230V	for L51 and L58 fuse carriers		1	LS672



LS401



LS703



LS670



LS672

Withstand current correction table

- (a) - depending on ambient temperature,
- (b) - depending on the proximity heating effect of the fuse carriers themselves when fully loaded and mounted together in groups.

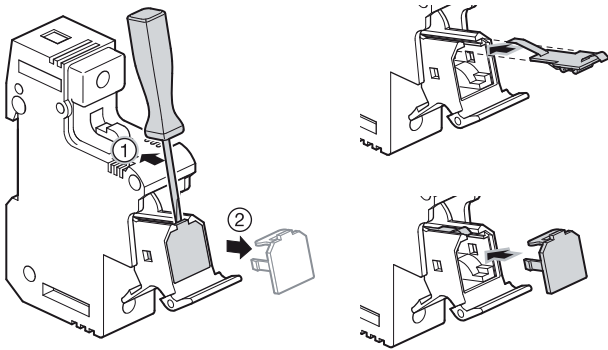
type		L 38	L 51	L 58
fuse size		10 x 38	14 x 51	22 x 58
In for Un 400 V~		32 A	50 A	125 A
In for Un 500 V~		20 A	40 A	80 A
(a)	20°	1	1	1
	30°	0,95	0,95	0,95
	40°	0,90	0,90	0,90
	50°	0,80	0,80	0,80
(b)	1 à 3 Ph	1	1	1
	4 à 6 Ph	0,8	0,8	0,8
	7 à 9 Ph	0,7	0,7	0,7
	> 10 Ph	0,6	0,6	0,6

Microswitches functions

- Fuse melting : a fuse-carrier containing a fuse-link with a striker that sends out a signal when the fuse element melts
- Pre-cut : when the fuse-carrier opens
- Presence : sends a signal when the fuse-carrier is closed with no fuse in it

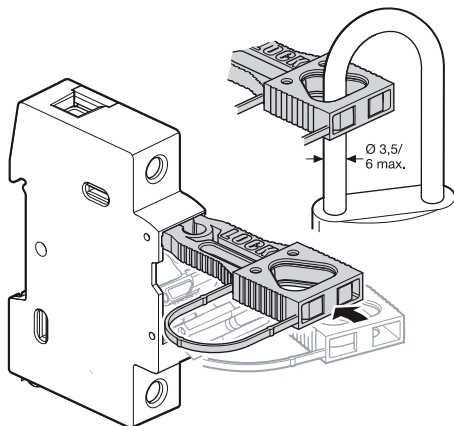
Signal light

Mounting on L 51 and L 58



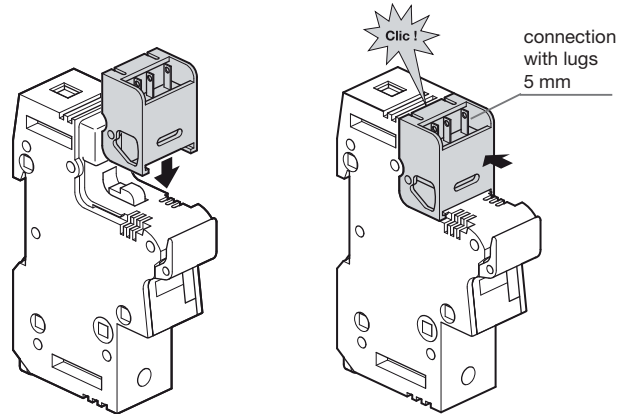
Padlocking and sealing

LS4xx and LS5xx in "open" position

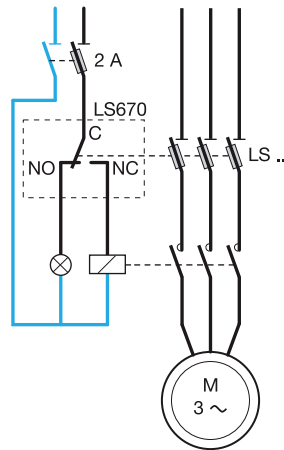


Microswitch

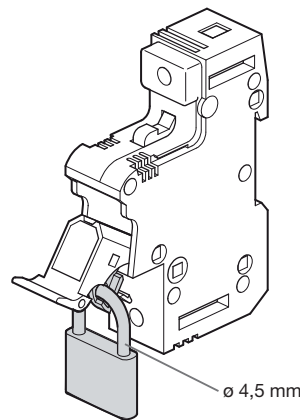
mounting on L 51 et L 58, single pole or multi pole



Application



Padlocking and sealing of the others fuse carriers in "open" position



Description

Cylindrical gG fuse-links are intended for industrial applications.
gG protection for general purpose applications against overload and short-circuits.

Sizes :

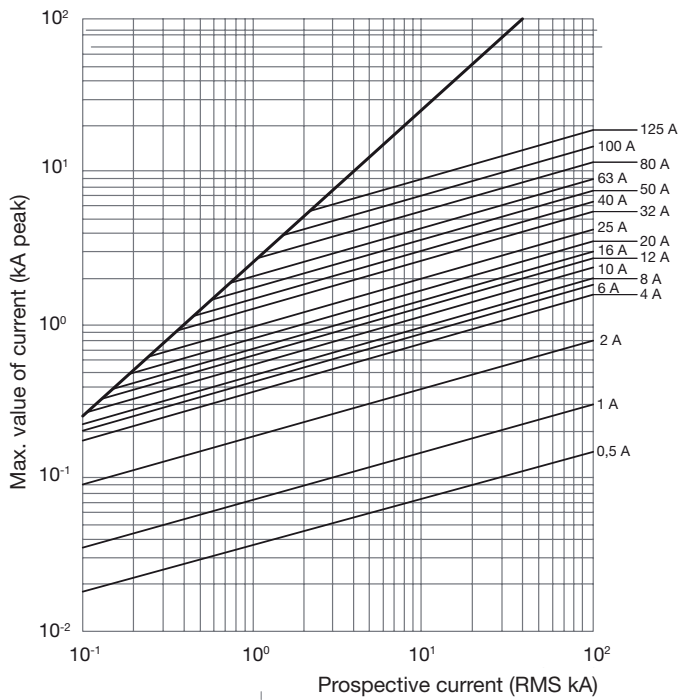
L 38 : 10 x 38
L 51 : 14 x 51
L 58 : 22 x 58

Comply with IEC 60 269-1 and 60 269-2.

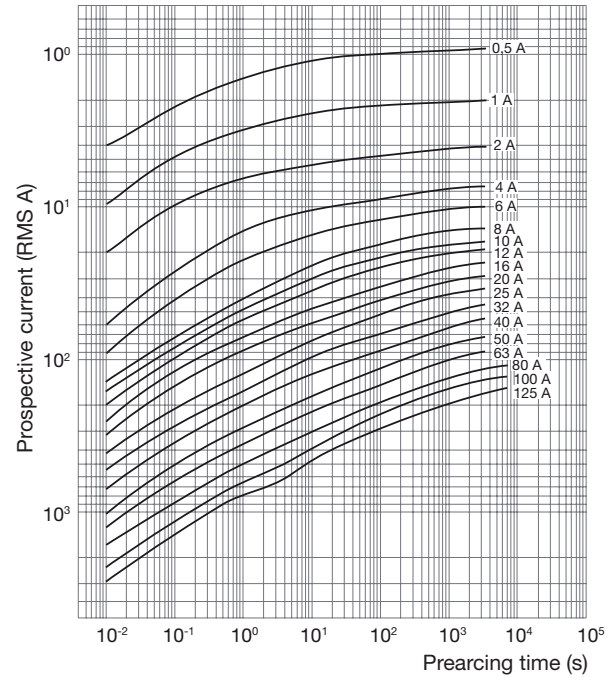
	Description	Voltage	In	Cat. ref.	
 LF302G	Cartridge fuses type gG 10 x 38 mm breaking capacity: 120kA	500 V AC	0,5A	LF300G	
			1A	LF301G	
			2A	LF302G	
			4A	LF304G	
			6A	LF306G	
			8A	LF308G	
			10A	LF310G	
			12A	LF312G	
			16A	LF316G	
			20A	LF320G	
			25A	LF325G	
		400 V AC	32A	LF332G	
		 LF425G	Cartridge fuses type gG 14 x 51 mm breaking capacity: 2 to 25A : 80kA 32 to 50A : 120kA	690 V AC	2A
4A	LF404G				
6A	LF406G				
8A	LF408G				
10A	LF410G				
12A	LF412G				
16A	LF416G				
20A	LF420G				
25A	LF425G				
500 V AC	32A				LF432G
40A	LF440G				
45A	LF445G				
400 V AC	50A			LF450G	
 LF563G	Cartridge fuses type gG 22 x 58 mm breaking capacity: 16 to 63A : 80kA 80 to 125A : 120kA	690 V AC	16A	LF516G	
			20A	LF520G	
			25A	LF525G	
			32A	LF532G	
			40A	LF540G	
			50A	LF550G	
			63A	LF563G	
		500 V AC	80A	LF580G	
		100A	LF590G		
		400 V AC	125A	LF599G	

Cartridge fuses - gG type

Cut-off characteristics current limitation



Time-current characteristics



Energy let through chart (A²s)

In	prearcing time I ² t	I ² t à 400 V	I ² t à 500 V	I ² t à 690 V
0,5	4,0	8,6	10,4	15,0
1	6,5	13,2	15,7	22,0
2	7,0	14,6	17,6	25,0
4	45	90	108	150
6	70	140	166	230
8	80	158	188	260
10	120	248	297	420
12	180	362	431	600
16	270	536	636	880
20	500	981	1162	1600
25	800	1688	2034	2900
32	1200	2412	2871	4000
40	2500	4907	5808	8000
45	2870	5603	6623	9100
50	5100	11262	13728	20000
63	7900	16451	19762	28000
80	16000	37242	46000	-
100	28000	68072	85000	-
125	40000	120000	-	-

Rated power dissipation (W)

In (A)	size 10 x 38	size 14 x 51	size 22 x 58
0,5	1,43	-	-
1	2,77	3,90	-
2	0,60	0,90	1,00
4	0,70	1,00	1,10
6	0,85	1,15	1,30
8	0,75	1,00	1,10
10	1,00	1,30	1,50
12	1,30	1,70	1,80
16	1,60	2,00	2,10
20	2,00	2,50	2,70
25	2,60	3,30	3,30
32	2,90	3,50	3,50
40	-	4,75	4,00
45	-	4,80	-
50	-	4,80	5,50
63	-	-	6,90
80	-	-	7,80
100	-	-	9,00
125	-	-	11,4




Description

Cylindrical aM fuse-links are intended for industrial applications.
aM protection for motor protection applications against short-circuits.

Sizes :

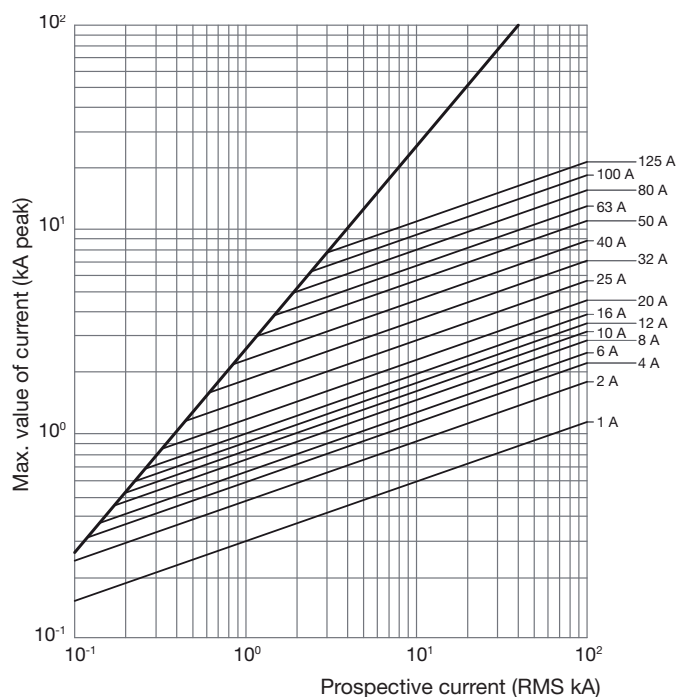
L 38 : 10 x 38
L 51 : 14 x 51
L 58 : 22 x 58

Comply with IEC 60 269-1 and 60 269-2.

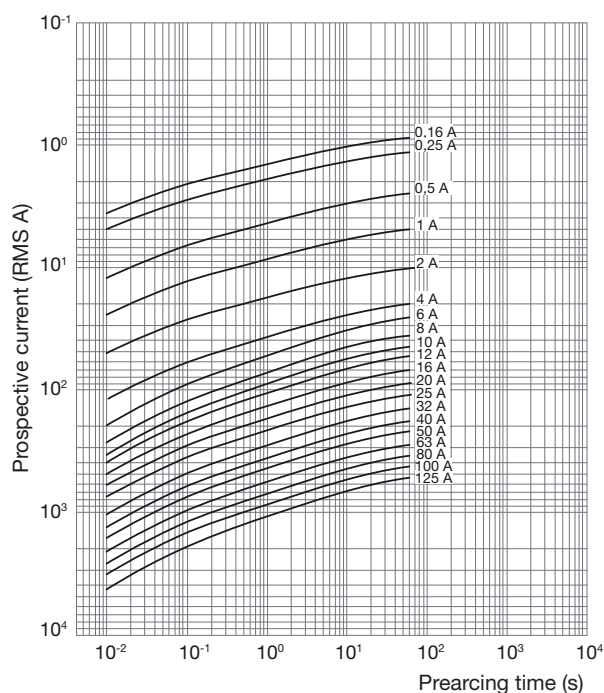
	Description	Voltage	In	Cat. ref.	
 LF302M	Cartridge fuses type aM 10 x 38 mm breaking capacity: 120kA	500 V AC	0,5A	LF300M	
			1A	LF301M	
			2A	LF302M	
			4A	LF304M	
			6A	LF306M	
			8A	LF308M	
			10A	LF310M	
			12A	LF312M	
			16A	LF316M	
		400 V AC	20A	LF320M	
			25A	LF325M	
			32A	LF332M	
 LF432M	Cartridge fuses type aM 14 x 51 mm breaking capacity: 2 to 25A : 80kA 32 to 50A : 120kA	690 V AC	2A	LF402M	
			4A	LF404M	
			6A	LF406M	
			8A	LF408M	
			10A	LF410M	
			12A	LF412M	
			16A	LF416M	
			20A	LF420M	
			25A	LF425M	
			500 V AC	32A	LF432M
				40A	LF440M
			400 V AC	45A	LF445M
		50A		LF450M	
 LF563M	Cartridge fuses type aM 22 x 58 mm breaking capacity: 16 to 63A : 80kA 80 to 125A : 120kA	690 V AC	16A	LF516M	
			20A	LF520M	
			25A	LF525M	
			32A	LF532M	
			40A	LF540M	
			50A	LF550M	
			63A	LF563M	
			500 V AC	80A	LF580M
				100A	LF590M
		400 V AC	125A	LF599M	

Cartridge fuses - aM type

Cut-off characteristics current limitation



Time-current characteristics



Energy let through chart (A² s)

In (A)	prearcing time I ² t	I ² t à 400 V	I ² t à 500 V	I ² t à 630 V
0,5	6,5	13,2	15,7	22,0
1	9,5	18,5	21,9	30,0
2	40	83	99	140
4	90	181	215	300
6	120	250	300	425
8	220	448	535	750
10	300	733	916	1400
12	380	936	1173	1800
16	550	1608	2103	3500
20	950	2488	3165	5000
25	1300	3728	4851	8000
32	2500	6207	7791	12000
40	4500	10685	13263	20000
45	8000	16538	19831	28000
50	10000	19626	23230	32000
63	15000	31520	37950	54000
80	30000	59088	70000	-
100	50000	113945	140000	-
125	80000	200000	-	-

Rated power dissipation (W)

In (A)	size 10 x 38	size 14 x 51	size 22 x 58
0,5	0,49	0,69	-
1	0,10	0,14	-
2	0,18	0,24	0,29
4	0,31	0,45	0,48
6	0,32	0,42	0,47
8	0,52	0,70	0,73
10	0,55	0,53	0,74
12	0,63	0,88	0,83
16	0,92	1,16	1,21
20	0,96	1,23	1,29
25	1,40	1,46	1,53
32	1,80	2,04	2,13
40	-	2,60	3,40
45	-	2,85	-
50	-	2,90	3,48
63	-	-	4,46
80	-	-	5,86
100	-	-	6,61
125	-	-	8,42

Photovoltaic fuse carriers and fuses

DC protection of photovoltaic strings against overload and short-circuits.

Technical data

- sizes : L38 (10x38)
- class of operation : gPV (PV fuse)
- poles : 1P, 2P
- voltage rating : 1000V DC for fuse carriers and 900V DC for fuses
- fuse carriers current rating : 32A
- fuses current rating : 2 to 20A
- breaking capacity : 30kA

- minimum Interrupting : 2 x In (2-3-4A), 1.9 x In (6-8-10-12A), 1.6 x In (16-20A)

Connection capacity

rigid conductors : 16mm²
flexible conductors : 10mm²

Comply with IEC 60269-2, IEC 60269-2-1 and IEC 60947-3.

Switch disconnectors

Designed for photovoltaic applications but fully compatible to any DC purposes. Contact making and break independent to operator speed.

Technical data

- poles : 4P
- voltage rating : 1000V DC 21B
- current rating : 32A

Connection capacity

rigid conductors : 16mm²
flexible conductors : 10mm²

Comply IEC 60 947-3.



L501PV



SB432PV

Description	In (A)	Characteristics	Pack qty.	Cat. ref.
L38 photovoltaic fuse carriers 1000V DC	32	single pole	12	L501PV
	32	double pole	6	L502PV
Photovoltaic cartridge fuses 900V DC	2		10	LF302PV
	3		10	LF303PV
	4		10	LF304PV
	6		10	LF306PV
	8		10	LF308PV
	10		10	LF310PV
	12		10	LF312PV
	16		10	LF316PV
20		10	LF320PV	
DC switch disconnectors	32	4 poles, 1000 V DC	1	SB432PV
Double pole polarized surge protection devices photovoltaic Ucpv ≤ 1000V DC		25kA, 4kV, class 2 with end of life indicator		SPV325

Description

The combined surge protection devices offer as an “all-in-one solution” lightning and surge-voltage in one device. They are in accordance with the requirement class type 1.

3 versions available, with or without auxiliary contact:
 - SPN800 for TNC-Networks, 75kA (lighting impulse current)
 - SPN801 for TNS-Networks, 100kA (lighting impulse current)
 - SPN802 for TT-Networks, 100kA (lighting impulse current)

Product features

- Lightning and surge-voltage protection in one device,
- Conforming to EN 61643-11, requirement class type 1+2,
- replaceable plug-in modules,
- integrated fault indicator in the plug-in modules,
- SPDs with separate auxiliary contact.



SPN800R



SPN801



SPN080

Description	Characteristics	No of poles	Cat. ref.
Surge protection devices, type 1+2, for TNC-Networks	with auxiliary contact	3	SPN800R
	without auxiliary contact	3	SPN800
Surge protection devices, type 1+2, for TNS-Networks	with auxiliary contact	4	SPN801R
	without auxiliary contact	4	SPN801
Surge protection devices, type 1+2, for TT-Networks	with auxiliary contact	4	SPN802R
	without auxiliary contact	4	SPN802
Cartridges	phase - 25kA for SPN8xxx		SPN080
	neutral - 25kA class 1 for SPN802 and SPN802R		SPN080N

Description

SPD's protect electrical and electronic equipment against transients, originating from lightning, switching of transformers, lighting and motors.

These transients can cause premature ageing of equipment, downtime, or complete destruction of electronic components and materials.

SPDs are strongly recommended in installations that are exposed to transients, to protect sensitive and expensive electrical equipment such as TV, video, washing machines, Hi-Fi, PC, alarm etc.

The choice of SPD depends on a number of criteria such as:

- The exposure of the building to transients.
- The sensitivity and value of the

electrical equipment that requires protection.

- Earthing system
- Level of protection

The range of SPDs is separated into 2 types of protection:

1. Main protection - class 2 SPDs with higher discharge current ($I_{max} 8/20$), to evacuate as much of the transient to earth as possible,
2. Fine protection - class 2 + 3 SPDs with low voltage protection level ($U_p \leq 1000V$), to cut-down the transient surge as low as possible to protect very sensitive equipment.

Technical data

Complies with IEC61643-1

- Reserve Status Indicator (R versions)
- End of Life Indicator (D versions)
- Auxiliary contact for remote

signalling (R versions only)
230V~ 1A
12V ∴ 10mA

Installation and Connection

The main protection SPDs are installed directly after the main incoming switch or RCCB (type S).

SPDs can be used in any supply system e.g TNCS, TNS, TT.

Options:

Spare cartridges.

Connected in parallel to the equipment to be protected.

Protection is assured in both common and differential modes.

Description	Characteristics	Cat. ref.
Single pole surge protection devices Un: 230/400V 50/60Hz	40kA, 2kV, class 2 with end of life indicator	SPN140C
Double pole surge protection devices Un: 230/400V 50/60Hz	65kA, 1,3kV, class 2 with reserve and remote contact	SPN265R
	40kA, 1,2kV, class 2 with reserve and remote contact	SPN240R
	40kA, 1,2kV, class 2 with end of life indicator	SPN240D
	15kA, 1kV, class 2 with reserve and remote contact	SPN215R
	15kA, 1kV, class 2 with end of life indicator	SPN215D
Four pole surge protection devices Un: 230/400V 50/60Hz	65kA, 1,5kV, class 2 with reserve and remote contact	SPN465R
	40kA, 1,2kV, class 2 with reserve and remote contact	SPN440R
	40kA, 1,2kV, class 2 with end of life indicator	SPN440D
	15kA, 1kV, class 2 with reserve and remote contact	SPN415R
	15kA, 1kV, class 2 with end of life indicator	SPN415D



SPN240D



SPN440R

Spare cartridges

These cartridges replace the cartridge in the main SPD. They allow simple replacement without the need to cut-off the power supply.

Cartridges are available for all discharge currents (40kA and 15kA) with and without condition indication.

A keying system exists to prevent a line cartridge being interchanged by mistake with a neutral one and vice versa. Neutral cartridges have a discharge current of 65kA.

For Phase:

SPN140D = SPN040D
 SPN215D = SPN015D
 SPN415D = SPN015D
 SPN215R = SPN015R
 SPN415R = SPN015R

For Neutral / Earth

SPN215D = SPN040N
 SPN415D = SPN040N
 SPN215R = SPN040N
 SPN415R = SPN040N



SPN040C



SPN040N



SPV025

Description	Characteristics	Cat. ref.
Spare cartridge phase	65kA, 275V AC for SPNx65R	SPN065R
	40kA, 440V AC for SPN140C	SPN040C
	40kA, 275V AC for SPNx40R	SPN040R
	40kA, 275V AC for SPNx40D	SPN040D
	15kA, 275V AC for SPNx40R	SPN015R
	15kA, 275V AC for SPNx40D	SPN015D
Spare cartridge neutral	65kA, 255V AC for SPNx65R	SPN065N
	40kA, 255V AC for SPNx40x and SPNx15x	SPN040N
Cartridge for photovoltaic SPDs	polarized +/- for SPV325	SPV025
	photovoltaic $U_{cpv} \leq 1000V$ DC	earth for SPV325 SPV025E

Surge protection devices with low voltage protection level

SPDs with low let through voltage levels

To protect very sensitive electronic equipment. This fine protection complements the main protection and can protect 1 or several electronic devices.

Optimal coordination is obtained when cascaded with a main protection device (lower Up).

Discharge current:
I_{max}. 8kA (8/20 wave)
A green LED on the front face indicates the status of the SPD SPN208S, connected in series with the equipment that needs to be protected (with a maximum line current of 25A).
Protection is assured in both common and differential modes.

Connection capacity
Terminal blocks L, N & E
- rigid conductor: 10mm²
- flexible conductor: 6mm²



SPN208S

Description	Characteristics	Width in ■	Cat. ref.
Double pole fine protection surge protection devices Uc: 230/400V 50/60Hz	8kA, 1,2kV, class 2 with light indicator	2	SPN208S
Four pole fine protection surge protection devices Uc: 230/400V 50/60Hz	8kA, 1,2kV, class 2 with light indicator	3	SPN408S

Surge protection devices for telephone lines

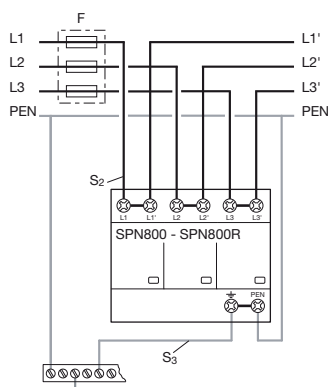
Description	Characteristics	Width in ■	Cat. ref.
SPD for analogical phone line	Un: 130V, Up: 600V AC	1,5	SPN505
SPD for numerical phone line	Un: 40V, Up: 600V AC	1,5	SPN504



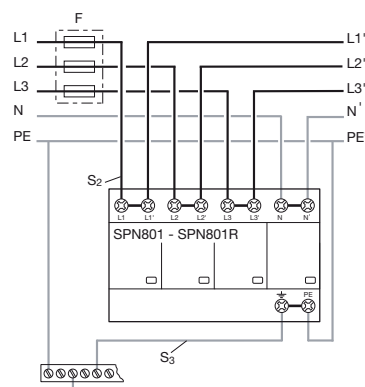
SPN505

SPD references	SPN800	SPN801	SPN802
Standards / approval	EN61643-11	EN61643-11	EN61643-11
	L1/L2/L3 → PE	L1/L2/L3/N → PE	L1/L2/L3/N → PE N → PE
Type / Class	T1/ I / B	T1/ I / B	T1/ I / B
Installation of SPD	in parallel	in parallel	in parallel
Earthing system	TN-C	TN-S	TT
Protection mode	common	common	common and differential
Nominal voltage (Un)	230/400 V AC	230/400 V AC	230/400 V AC
Max. continuous operating voltage (Uc)	255 V AC	255 V AC	255 V AC
Voltage protection level (Up)	≤ 1,5 kV	≤ 1,5 kV	≤ 1,5 kV
Temporary overvoltage (Ut)	440 V / 5 s	440 V / 5 s	440 V / 5 s 1200 V / 200 ms
Nominal current I (L)	315 Aeff	315 Aeff	315 Aeff
Nominal current I (L-L')	125 Aeff	125 Aeff	125 Aeff
Disconnection value (Ifi)	50 kAeff	50 kAeff	50 kA 100 kA
Discharge current capacity (8/20) nominal current (In)	75 kA	100 kA	25 kA 100 kA
Shock current (10/350) (Iimp)	75 kA	100 kA	25 kA 100 kA
Residual current IPE	≤ 100 µA	≤ 100 µA	≤ 100 µA
Max. upstream protection - fuse	125 A gL/gG in series or 315 A in parallel	125 A gL/gG in series or 315 A in parallel	125 A gL/gG in series or 315 A in parallel
Max. upstream protection - MCB	125 A in series or 160 A in parallel curve C	125 A in series or 160 A in parallel curve C	125 A in series or 160 A in parallel curve C
Max. short-circuit resistance with max. upstream protection - fuse	50 kA eff ac	50 kA eff ac	25 kA eff ac
Max. short-circuit resistance with max. upstream protection - MCB	50 kA eff ac	50 kA eff ac	25 kA eff ac
Temps de réponse (tA)	≤ 100 ns	≤ 100 ns	≤ 100 ns
Working temperature	-40°C to +60°C	-40°C to +60°C	-40°C to +60°C
Indication (disconnection device)	green - red light on L1, L2, L3	green - red light on L1, L2, L3, N	green - red light on L1, L2, L3, N
Connection capacity min. L1, L2, L3, PE - max. L1', L2', L3', PE'	10 mm ² rigid / flexible	10 mm ² rigid / flexible	10 mm ² rigid / flexible
Connection capacity max. L1, L2, L3, PE	50 mm ² multi-wired 35 mm ² flexible	50 mm ² multi-wired 35 mm ² flexible	50 mm ² multi-wired 35 mm ² flexible
Connection capacity max. L1', L2', L3', PE'	50 mm ² multi-wired 25 mm ² flexible	50 mm ² multi-wired 25 mm ² flexible	50 mm ² multi-wired 25 mm ² flexible
Terminals tightening torque	7,0 Nm	7,0 Nm	7,0 Nm
Mounting on	DIN rail 35 mm (EN 60715)	DIN rail 35 mm (EN 60715)	DIN rail 35mm, conform to EN 60715
Case material	thermoplastic, grey color, UL 94V-0	thermoplastic, grey color, UL 94V-0	thermoplastic, grey color, UL 94V-0
Degree of protection	IP20	IP20	IP20
Size	6 ■ , DIN 43880	6 ■ , DIN 43880	8 ■ , DIN 43880
Weight	970 g	1260 g	1272 g
Approval	VDE	VDE	VDE
Auxiliary contact references	SPN800R = SPN800 w/ aux. contact	SPN801R = SPN801 w/ aux. contact	SPN802R = SPN802 w/ aux. contact
Contact type	changeover	changeover	changeover
Electrical characteristics (Un/In)	AC: 250V/0,5A DC: 250V/0,1A ; 125V/0,2A ; 75V/0,5A	AC: 250V/0,5A DC: 250V/0,1A ; 125V/0,2A ; 75V/0,5A	AC: 250V/0,5A DC: 250V/0,1A ; 125V/0,2A ; 75V/0,5A
Min. connection capacity	0,25 mm ² rigid / flexible	0,25 mm ² rigid / flexible	0,25 mm ² rigid / flexible
Max. connection capacity	1,5 mm ² multi-wired / flexible	1,5 mm ² multi-wired / flexible	1,5 mm ² multi-wired / flexible

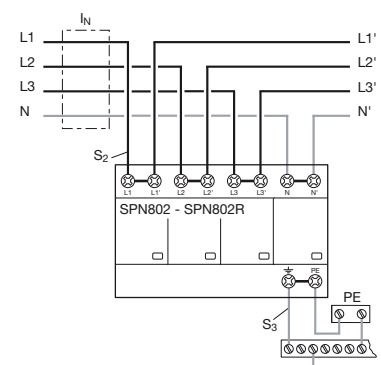
Installation in parallel TN-C



Installation in parallel TN-S



Installation in parallel TT



	Class II - Overvoltage protection					
	High	Medium				Fine
Reference	SPN140D	SPN215D	SPN215R	SPN415D	SPN415R	SPN208S
Installation exposure level (risk)	high	medium	medium	medium	medium	low
Installation of SPD	parallel	parallel	parallel	parallel	parallel	series
Number of poles	1P	1P+N	1P+N	3P+N	3P+N	1P+N
Number of modules	1	2	2	4	4	2
Nominal current	-	-	-	-	-	-
Nominal voltage Un (V)	230	230	230	400	400	230/400
Frequency (Hz)	50/60	50/60	50/60	50/60	50/60	50/60
Operating temperature range	-40°C to +60°C	-40°C to +60°C	-40°C to +60°C	-40°C to +60°C	-40°C to +60°C	-40°C to +60°C
Storage temperature range	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
Max. continuous operating voltage Uc (V)						
common mode	275	275	275	275	275	440
differential mode	-	-	-	-	-	255
Voltage protection level Up (kV)						
common mode						1,2
differential mode	1,2	1,0	1,0	1,0	1,0	1,0
Discharge current wave 8/20 μs (kA)						
nominal current In	15	5	5	5	5	2
maximum current Imax	40	15	15	15	15	8
Short circuit withstand with max.						
backup fuse or MCB	20kA	10kA	10kA	10kA	10kA	6A
max. backup fuse	25A	10A	10A	10A	10A	25A
backup MCB (C curve)	25A	25A	25A	25A	25A	25A
End of life indication (fault indication)						
1. three stage indication - green, green/red, red (R versions)	yes	N/A	yes	N/A	yes	N/A
2. basic indication - green/red (D versions)	N/A	yes	N/A	yes	N/A	N/A
3. green LED is on when SPD is working	N/A	N/A	N/A	N/A	N/A	yes
Applications						
industrial and commercial buildings	yes	yes	yes	yes	yes	yes
domestic buildings	yes	yes	yes	yes	yes	yes

Imax The maximum value of current that the SPD can withstand and remain operational.

In The nominal value of current that the SPD can withstand at least 20 times and still be serviceable.

Up The residual voltage that is measured across the terminal of the SPD when In is applied.

Uc The maximum voltage which may be continuously applied to the SPD without conducting.

Uoc Open circuit voltage under test conditions.

Isc Short circuit current under test conditions.

Un The nominal rated voltage of the installation

MOV Metal Oxide Varistor

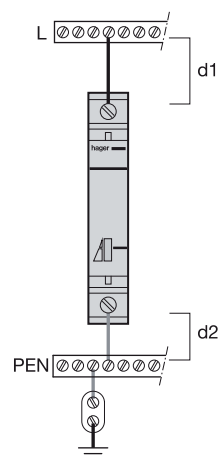
SPD Surge Protective Device

How to choose your surge protection device

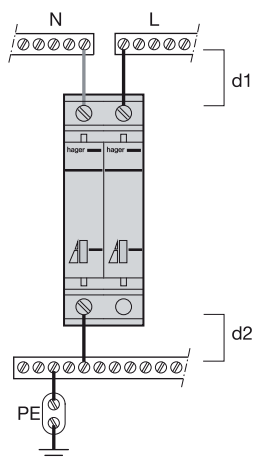
The choice of surge protection device depends on your supply arrangements and level of protection required.

Earthing system	Type of protection		connection	Products to be used in a	
				Single phase installation	Three phase installation
TN-C TN-C-S (P-M-E)	transient voltage surges (8/20ms)	class II main protection $I_{max} = 40kA$ or $15kA$ (depending on selection)	parallel		
		class II fine protection $U_p < 1kV$	parallel		
TN-S TT	transient voltage surges (8/20ms)	class II main protection $I_{max} = 15kA$ $I_{max} = 15kA$	parallel		
		class II fine protection $U_p < 1kV$	parallel		

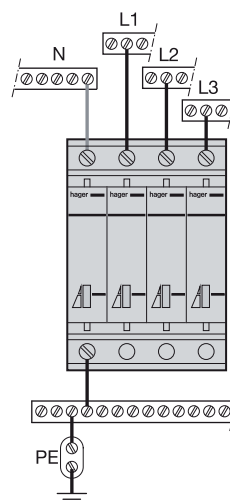
Connections



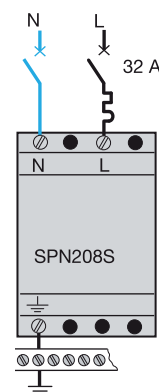
SPN140D



SPN265R



SPN415D/R



SPN208S

Basic Principles

The proper selection of the correct circuit protective device requires an understanding of the potential hazards against which protection for safety is required. The Wiring Regulations identify several hazards:

- electric shock
- thermal effects
- overcurrent
- undervoltage
- isolation

Electric shock

Electric shock is divided into two parts:

- direct contact: contact with parts which result in an electric shock in normal service
- indirect contact: contact with exposed conductive parts which result in an electric shock in case of a fault.

To protect against direct contact the Wiring Regulations suggest the following basic measures should be taken:

- (1) by insulation of live parts
- (2) by enclosures or barriers
- (3) by obstacles
- (4) by placing out of reach

To protect against indirect contact the Wiring Regulations suggest the following basic measures should be taken:

- (1) earthed equipotential bonding and automatic disconnection of supply
- (2) use of class II equipment or equivalent insulation
- (3) non-conducting location
- (4) earth-free local equipotential bonding
- (5) electrical separation

Of these five measures, the first is by far the most commonly used -

- (1) earthed equipotential bonding and automatic disconnection of supply:

In each installation main equipotential bonding conductors shall connect the main earthing terminal of the installation; this metalwork comprises exposed conductive parts which are part of the electrical installation itself and extraneous conductive parts including the following:

- main water pipes
- gas installation pipes
- other service pipes and ducting
- risers of central heating and air conditioning systems
- exposed metal parts of the building structure

This bonding creates a zone within which any voltages appearing between exposed conductive parts and extraneous conductive parts, are minimised; the earth fault loop impedance must have a value low enough to allow sufficient current to flow for the circuit protective device to operate rapidly to disconnect the supply; disconnection must be sufficiently fast so that voltages appearing on the bonded metalwork cannot persist long enough to cause danger; depending on the operating characteristics of the protective device and the earth impedance, such disconnection may be achieved either by overcurrent devices, Fuses, Miniature Circuit Breakers, (i.e. MCBs) or by Residual Current Devices, (i.e. RCCBs).

Thermal Effect

Refers to heat generated by the electrical equipment in normal use and under fault conditions. The proper selection of equipment complying with the latest product standards is essential in providing protection against thermal effects.

Overcurrent

Defined as a current exceeding the rated value of the circuit components. It may be caused by the overloading of a healthy circuit or it may take the form of a short-circuit current, defined as an "overcurrent resulting from a fault of negligible impedance between live conductors having a difference in potential under normal operating conditions". Overcurrent protection may be provided by using fuses or circuit breakers singly or in combination.

Undervoltage

Refers to the dangers that could be caused by the reduction or loss in voltage and the subsequent restoration, such as the unexpected re-starting of motors or the automatic closing of protective devices. The proper selection of control and protective devices must take the protection against undervoltage into consideration.

Isolation

Every circuit shall be provided with means of isolation (except in certain cases) to prevent or remove hazards associated with the installation, equipment and machines. The new standards for circuit breakers and switch-fuses now take this into account.

Protection against shock by indirect contact

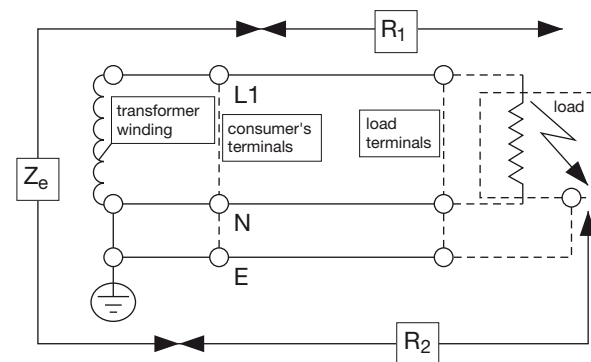
Indirect contact - is the contact of persons or livestock with exposed conductive parts made live by a fault and which may result in electric shock. An example would be where the insulation of an electric heater has broken down resulting in a live conductor internally touching the casing. This could result in the heater casing being raised to a hazardous voltage level, causing electric shock to a person touching it.

Two important measures must be taken to prevent this hazard:

- the impedance of circuit conductors is kept to a minimum. The earthfault loop impedance (Z_s) is used as a measure of the circuit impedance under fault conditions.
- the overcurrent device protecting the circuit is selected to rapidly disconnect an earth fault.

The effect of these two measures is inter-related.

1. By ensuring that the circuit protective conductor is of a low impedance, the voltage to which the live casing is raised, under fault conditions, is kept to a minimum.
2. The low impedance path provided by the circuit conductors and the circuit protective conductor will result in a high level of current in the event of an earth fault. This high fault current ensures that the overcurrent protective device will disconnect the fault in a short time, reducing the interval during which the casing of the faulty equipment is live.



Components of earth fault loop impedance (Z_s) in a system. (Earth fault at load between conductor and casing).

$$Z_s = Z_e + (R_1 + R_2)$$

Earth fault loop impedance (Z_s)

To ensure the impedance of conductors in a circuit is sufficiently low the system designer has to establish the value of the earth fault loop impedance.

Z_s - is a measure of the earth fault current loop, comprising the phase conductor and the earth conductor. It comprises the complete loop including the winding of the transformer from which the circuit is supplied as defined by the following:

Z_e - is the part of the earth fault loop impedance external to the installation, its value can be measured or a nominal value can be obtained from the supply authority.

$(R_1 + R_2)$ - where R_1 is the resistance of the phase conductor within the installation and R_2 is the resistance of the circuit protective conductor. These two components constitute the loop impedance within the installation.

Therefore: $Z_s = Z_e + (R_1 + R_2)$

Once the value of Z_s has been established a suitable overcurrent protective device has to be selected to ensure disconnection of an earth fault within the specified time. The times are:

- 5 seconds for fixed equipment.
- For portable equipment and for fixed equipment installed outside the equipotential bonding zone, the disconnection times are dependent on the nominal voltage to earth, i.e. 220 to 277 volts = 0.4 seconds.

Z_s by calculation

To establish whether the relevant disconnection time can be achieved a simple calculation must be made, based on Ohm's law:

$$I_f \text{ (fault current)} = \frac{U_o \text{ (open circuit voltage)*}}{Z_s \text{ (earth fault loop)}}$$

* voltage between phase and earth (240V)

The fault current (I_f) must be high enough to cause the circuit protective device to trip in the specified time. This can be established by consulting the time/current characteristic for the protective device. If the maximum trip time for the fault current calculated is less than or equal to the relevant value (5s for fixed equipment; 0.4s for portable equipment) then compliance is achieved. It is important that when consulting the characteristic curve the worst case is used, i.e. the maximum tripping time including any tolerance. An example is shown in Figs 1 and 2.

Z_s by tables

The above procedure can be used for any type of protective device providing a time/current characteristic curve is available. Frequently, however, a much simpler method is available using tables listing maximum Z_s values which have been interpreted from the characteristic curves for the relevant devices. Providing the system Z_s is equal to or less than the value given in the table, compliance is achieved. Tables for a number of 'standard' devices (certain fuses and MCBs) are given in the Wiring Regulations.

Z_s too high

If the system Z_s value is too high to achieve rapid enough disconnection with the overcurrent protective devices available then it is necessary to use one of the two following methods:

- fit a cable with a larger cross-section and consequently a lower impedance. This may be a very expensive solution especially when the installation is complete before the problem is discovered.
- use a Hager residual current device (RCD). Subject to certain conditions being met this provides a simple and economical solution.

Example

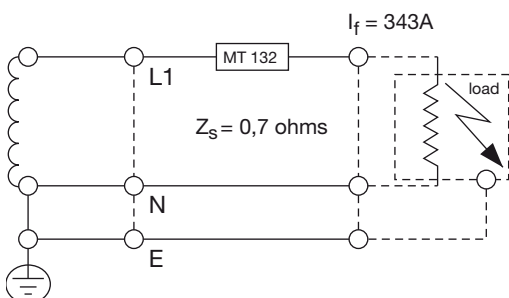
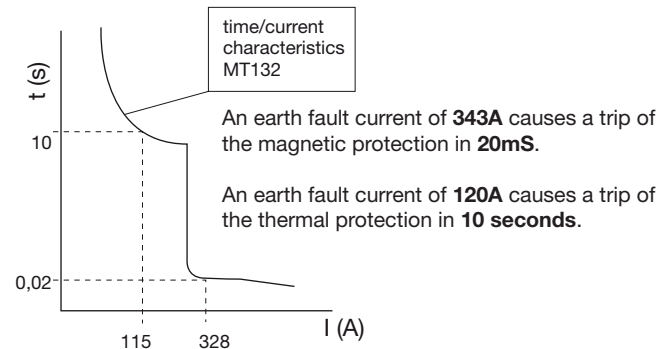


Diagram above shows a fixed circuit with an earth loop impedance Z_s of 0.7 ohms protected with an MT 132. The fault current (I_f) will therefore be $U_o/Z_s = 240/0.7 = 343A$

By referring to the characteristic for MT132 (see diagram below) it can be seen that the breaker will disconnect in 0.02 seconds for this current. The breaker therefore easily satisfies the requirement for disconnection in 5 seconds.

If the circuit Z_s was 2.0 ohms then the fault current would be: $240/2 = 120A$ and the disconnection time would be 10 seconds, in which case compliance would not be achieved.



Protection against overcurrent

Overcurrent - "A current exceeding the rated value. For conductors the rated value is the current-carrying capacity"

Overload Current

"An overcurrent occurring in a circuit which is electrically sound"

Short-Circuit Current

"An overcurrent resulting from a fault of negligible impedance between live conductors having a difference in potential under normal operating conditions."

Protection against Overload Current

For the protection against overload current, protective devices must be provided in the circuit to break any overload current flowing in the circuit conductors before it can cause a temperature rise which would be detrimental to insulation, joints, terminations or the surroundings of the conductors.

In order to achieve this protection the nominal current of the protective device I_n should be not less than the design current of the circuit I_b and that I_n should not exceed the current-carrying capacity of the conductors I_z , and that the current causing effective operation of the protective device I_2 does not exceed 1.45 times the current-carrying capacity of the conductor I_z , expressed as

$$I_b \leq I_n \leq I_z$$

$$I_2 \leq 1.45I_z$$

Protection against Short-Circuit Current

Protective devices must be provided to break any short-circuit current before it can cause danger due to thermal and mechanical (electro-dynamic) effects produced in the conductors and connections. The breaking capacity of the protective device shall not be less than the prospective short-circuit current at the point at which the device is installed. However a lower breaking capacity is permitted provided that a properly co-ordinated back-up device having the necessary breaking capacity is installed on the supply side.

Positioning of Overcurrent Devices

Devices for the protection against overload and short-circuit must be placed at the point where a reduction occurs in the current-carrying capacity of the conductors. This reduction could be caused by a change in the environmental conditions as well as the more obvious change in the cross-sectional area of the cable.

There are of course exceptions to this general rule which relate to a very few special applications. These are set out in detail in the the Wiring Regulations.

Both of the new International Standards covering Low Voltage Circuit Breakers provide the user with a better assurance of quality and performance by taking into account the actual operating conditions of the breaker. New definitions and symbols have been introduced which should be committed to memory. Some of those most frequently used are:

- U_e : rated service voltage
- U_i : rated insulation voltage ($> U_e$ max)
- U_{imp} : rated impulse withstand
- I_{cm} : rated short circuit making capacity
- I_{cn} : rated short circuit capacity
- I_{cs} : rated service short circuit breaking capacity
- I_{cu} : rated ultimate short circuit breaking capacity
- $I_{\Delta n}$: rated residual operating current (often called residual sensitivity)
- I_n : rated current = maximum value of current used for the temperature rise test
- Δt : trip delay of residual current devices

In addition IEC 898 sets out to provide a greater degree of safety to the uninstructed users of circuit breakers. It is interesting to note that the description "miniature circuit breaker" or MCB is not used at all in this standard, but no doubt both manufacturers and users will continue to call circuit breakers complying with IEC 898 miniature circuit breakers or MCBs for some time to come.

The scope of this standard is limited to ac air break circuit breakers for operation at 50Hz or 60Hz, having a rated current not exceeding 125A and a rated short-circuit capacity not exceeding 25kA.

A rated service short-circuit breaking capacity I_{cs} is also included which is equal to the rated short-circuit capacity I_{cn} for short-circuit capacity values up to and including 6kA, and 50% of I_{cn} above 6kA with a minimum value of 7.5kA. As the circuit-breakers covered by this standard are intended for household and similar uses, I_{cs} is of academic interest only. The rated short-circuit capacity of a MCB (I_{cn}) is the alternating component of the prospective current expressed by its r.m.s. value, which the MCB is designed to make, carry for its opening time and to break under specified conditions. I_{cn} is shown on the MCB label in a rectangular box without the suffix 'A' and is the value which is used for application purposes. I_{cn} (of the MCB) should be equal to or greater than the prospective short-circuit current at the point of application.

You will see from the curves that the inverse time delay characteristic which provides overload protection is the same on all three. This is because the Standards requires the breaker to carry 1.13 times the rated current without tripping for at least one hour and when the test current is increased to 1.45 times the rated current, it must trip within one hour, and again from cold if the last current is increased to 2.55 times the rated current the breaker must trip between 1 and 120 seconds. The inverse time delay characteristic of all MCBs claiming compliance with IEC 898 must operate within these limits.

The difference between the three types of characteristic curves designated 'B', 'C' and 'D' concerns only the magnetic instantaneous trip which provides short-circuit protection.

- For type 'B' the breaker must trip between the limits of 3 to 5 times rated current
- For type 'C' the breaker must trip between the limits of 5 to 10 times rated current, and
- For type 'D' the breaker must trip between the limits of 10 to 20 times rated current.

Often manufacturers publish their MCB tripping characteristics showing the limits set by the standard and guarantee that any breaker that you purchase will operate within these limits. So great care should be taken when working with characteristic curves showing lower and higher limits - on no account should you take a mean point for application design purposes.

For cable protection applications you should take the maximum tripping time and some manufacturers publish single line characteristic curves which show the maximum tripping time. If the design problem is nuisance tripping then the minimum tripping time should be used and for desk top co-ordination studies, both lower and upper limits have to be taken into account.

Energy limiting

Energy is measured in Joules. *James Prescott Joule proved that thermal energy was produced when an electric current flowed through a resistance for a certain time, giving us the formula :

$$\text{Joules} = I^2 \times R \times t \text{ or because we know that watts} = I^2 R$$

$$\text{Joules} = \text{watts} \times \text{seconds}$$

Therefore we can say that :

$$\text{One Joule} = \text{one watt second}$$

$$\text{or energy} = \text{watts} \times \text{seconds} = I^2 R t$$

If the resistance (R) remains constant or is very small compared with the current (I) as in the case of short-circuit current, then energy becomes proportional to $I^2 t$. Which is why the energy let-through of a protective device is expressed in ampere squared seconds and referred to as $I^2 t$

$I^2 t$ (Joule Integral) is the integral of the square of the current over a given time interval (t_0, t_1)

The $I^2 t$ characteristic of a circuit breaker is shown as a curve giving the maximum values of $I^2 t$ as a function of the prospective current.

Manufacturers are required by the Standard to produce the $I^2 t$ characteristic of their circuit breakers.

See previous page.

The energy limiting characteristics of modern MCBs greatly reduce the damage that might otherwise be caused by short-circuits. They protect the cable insulation and reduce the risk of fire and other damage. Knowledge of the energy limiting characteristic of a circuit breaker also helps the circuit designer calculate discrimination with other protective devices in the same circuit.

Because of the importance of the energy limiting characteristic the Standards for circuit breakers for household and similar installations suggests three energy limiting classes based on the permissible $I^2 t$ (let-through) values for circuit breakers up to 32A; class 3 having the highest energy limiting performance.

All Hager MCBs are well within the limits of energy let-through set by IEC 898 for energy limiting class 3.

Breaking capacity according to IEC/EN 60 898 and IEC/EN 60 947-2

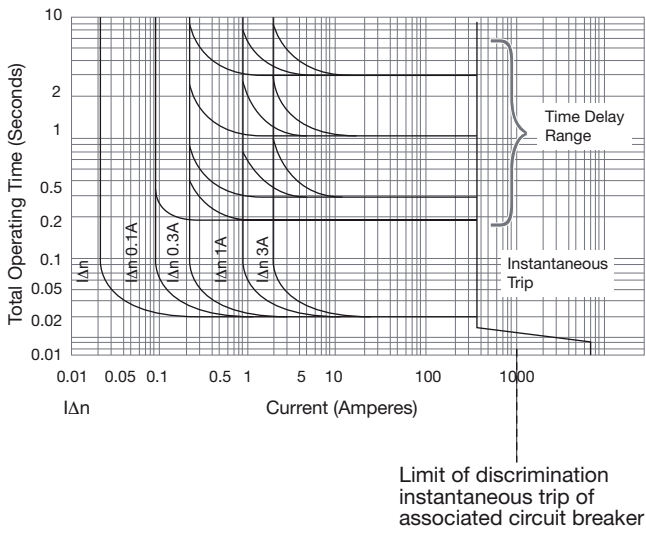
References	MJN MHN	MLN	Ax8xxx	Ax9xxx
poles	Ph+N	Ph+N	Ph+N	Ph+N
nominal current In (A)	2 to 40	2 to 40	6 to 40	6 to 40
breaking capacity to IEC/EN 60 898				
230V	4500A	6000A	4500A	6000A
400V	-	-	-	-
breaking capacity to IEC/EN 60 947-2				
230V	6kA	7,5kA	6kA	10kA
400V	-	-	-	-

References	MV MW		MT MU		MBN MCN		MB MC		NGN				
poles	1	2, 3, 4	1	2, 3, 4	1	2, 3, 4	1	2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1	2, 3, 4
nominal current In (A)	6 to 40	6 to 40	6 to 40	6 to 40	6 to 63	6 to 63	0,5 to 63	0,5 to 63	0,5 to 2	3 to 6	6	10 to 63	10 to 63
breaking capacity to IEC/EN 60 898													
230V	3000A	4500A	6000A	10000A	6000A	10000A	6000A	10000A	-	-	-	6000A	10000A
400V	-	3000A	-	6000A	-	6000A	-	6000A	-	-	-	6000A	6000A
breaking capacity to IEC/EN 60 947-2													
230V	4,5kA	6kA	10kA	20kA	6kA	10kA	10kA	20kA	80kA	50kA	30kA	10kA	20kA
400V	3kA	4,5kA	3kA	10kA	3kA	3kA	3kA	10kA	80kA	50kA	30kA	3kA	10kA

References	NBN, NCN NDN					NQN, NRN, NSN						
poles	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1	2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
nominal current In (A)	0,5 to 2	3 to 6	6	10 to 63	10 to 63	0,5 to 2	3 to 6	6	6 to 25	32 to 40	50 to 63	
breaking capacity to IEC/EN 60 898												
230V	-	-	-	10000A	-	-	-	-	-	-	-	-
400V	-	-	-	-	10000A	-	-	-	-	-	-	-
breaking capacity to IEC/EN 60 947-2												
230V	80kA	50kA	30kA	15kA	20kA	80kA	50kA	30kA	25kA	20kA	15kA	
400V	80kA	50kA	30v	3kA	15kA	80kA	50kA	30kA	25kA	20kA	15kA	

References	HLE HLF		HMB, HMC HMD		HMJ HMK		HMX	
poles	1	2, 3, 4	1	2, 3, 4	1	2, 3, 4	1	2, 3, 4
nominal current In (A)	80 to 125	80 to 125	80 to 125	80 to 125	80 to 125	80 to 125	10 to 63	10 to 63
breaking capacity to IEC/EN 60 898								
230V	15kA	10kA		15kA		-		-
400V	10kA	10kA		15kA		-		-
breaking capacity to IEC/EN 60 947-2								
230V	15kA	15kA		30kA		60kA		100kA
400V	10kA	10kA		15kA		30kA		50kA

Typical RCCB time/current characteristics



Having decided on the type and the limit of discrimination of the circuit breakers in the system, it is very important to consider the discrimination between any add on RCCBs. In theory it is possible to achieve current discrimination between RCCBs but the limit of discrimination is too low for practical purposes. Time discrimination is by far the best method and is achieved by delaying the tripping of the upstream RCCB.

Note that the limit of discrimination is the instantaneous setting of the associated circuit breaker. In other words if the earth fault current is greater than the instantaneous trip setting of the associated circuit breaker, the circuit breaker will trip regardless of the time delay on the RCCB. The table below indicates how time discrimination may be achieved between RCCBs.

		Up-stream RCCB sensitivity IΔn																					
		0,01A				0,03A				0,1A				0,3A				1,0A				3,0A	
Downstream RCCB sensitivity IΔn	Time delay (sec.)	0	0	0	0,2	0	0,2	0,3	1,0	3,0	0	0,2	0,3	1,0	3,0	0	0,3	1,0	3,0	0	0,3	1,0	3,0
0,01A	0																						
	0																						
0,03A	0																						
	0																						
0,1A	0																						
	0,2																						
0,3A	0																						
	0,2																						
	0,3																						
	1,0																						
1,0A	0																						
	0,3																						
	2,0																						
	3,0																						
3,0A	0																						
	0,3																						
	1,0																						
	3,0																						

Discrimination achieved

DC applications

Because of their quick make and break design and excellent arc quenching capabilities, Hager circuit breakers are suitable for use on DC. When selecting a circuit breaker for any DC application it is necessary to consider 2 main points:

a) system voltage

The system voltage and the type of system determines the number of poles required to provide the necessary breaking capacity and arc control. The table gives the maximum DC voltage and breaking capacity for one pole or two poles connected in the series: The positioning of these breaking poles in the system depends on whether the system is earthed or insulated and if it is earthed whether one polarity is earthed or the centre point is earthed.

b) type of DC systems: 3 different types

- Network connected to the earth - one polarity earthed (+ve or -ve): If -ve is earthed, all poles will be placed in series in the +ve leg. If the +ve is earthed, all poles will be placed in the -ve leg. Note: an extra pole will be needed on the earthed polarity to provide isolation.
- Network connected to the earth - middle point earthed: The number of poles required to break I_{sc} should be placed on each polarity.
- Network insulated to the earth: The number of poles required to break I_{sc} should be split between the two polarities.

Information

To disconnect under load, use a DC switch SB432PV (32A - 1000V DC).

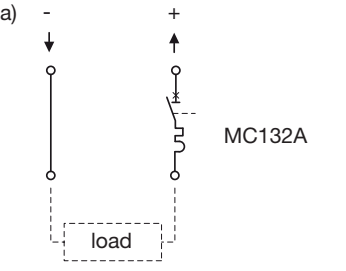
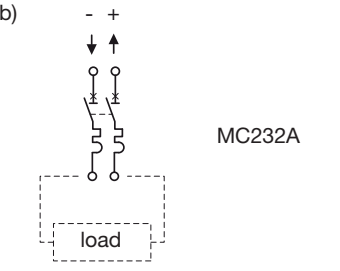
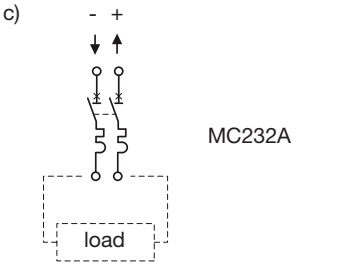
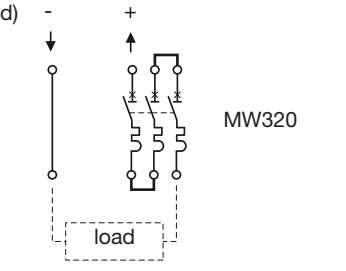
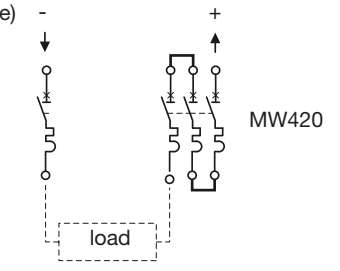
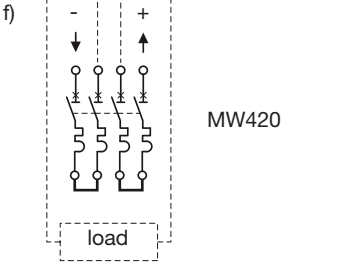
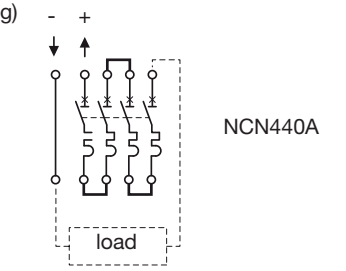
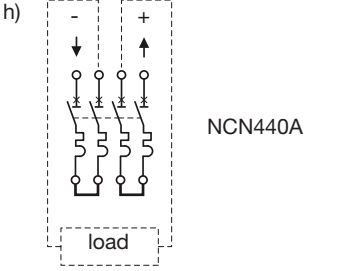
range	I_n	nb of poles in series needed for breaking	breaking capacity (kA) L/R = 15ms				
			≤48V	60V	125V	250V	500V
MT, MU, MB, MC, MV, MW, MBNxxxA, MCNxxxA	0,5 to 63A	1P	15	-	-	-	-
		2P	20	20	-	-	-
		3P	25	25	20	-	-
		4P	35	35	25	-	-
NGN, NBNxxxA, NCNxxxA, NDNxxxA	0,5 to 63A	1P	15	15	10	-	-
		2P	20	20	15	6	-
		3P	25	25	20	10	-
		4P	35	35	25	15	10
NRN, NSN, NQN	0,5 to 20A	1P	25	25	20	-	-
		2P	35	35	25	15	-
		3P	40	40	35	20	-
		4P	45	45	40	25	10
	25 to 40A	1P	20	20	15	-	-
		2P	25	25	20	10	-
		3P	30	30	30	15	-
		4P	35	35	35	20	10
	50 and 63A	1P	15	15	10	-	-
		2P	20	20	15	6	-
		3P	25	25	20	10	-
		4P	35	35	25	15	10
HMB, HMC, HMD, HMK, HMJ	80 to 125A	1P	15	15	10	-	-
		2P	20	20	15	6	-
		3P	30	30	30	15	-
		4P	35	35	35	20	10
HMX	10 to 63A	1P	25	25	20	-	-
		2P	35	35	25	15	-
		3P	40	40	35	20	-
		4P	45	45	40	25	10
HLFxxxS, HLExxxS	80 to 125A	1P	12	12	8	-	-
		2P	15	15	10	4	-
		3P	25	25	25	10	-
		4P	30	30	30	15	5

magnetic trip		①	②	③	④
		I_{t1}	I_{t2}	I_{rm1}	I_{rm2}
curve B	AC ~ 50Hz	1,13 I_n	1,45 I_n	3 I_n	5 I_n
	DC ∴	1,13 I_n	1,45 I_n	4 I_n	7 I_n
curve C	AC ~ 50Hz	1,13 I_n	1,45 I_n	5 I_n	10 I_n
	DC ∴	1,13 I_n	1,45 I_n	7 I_n	15 I_n
curve D	AC ~ 50Hz	1,13 I_n	1,45 I_n	10 I_n	20 I_n
	DC ∴	1,13 I_n	1,45 I_n	15 I_n	30 I_n

c) earthing system types

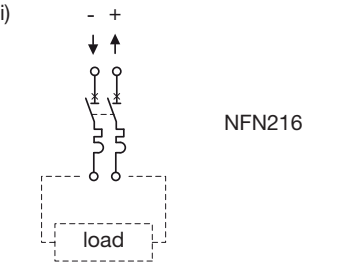
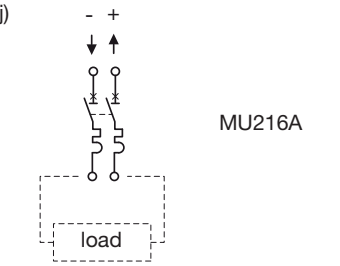
earthing diagrams TT, TNS, TNC		IT system isolated to the earth	
a polarity connected to earth	earthed center point		
<p>- Network connected to the earth - one polarity earthed (+ve or -ve): If -ve is earthed, all poles will be placed in series in the +ve leg. If the +ve is earthed, all poles will be placed in the -ve leg.</p>	<p>- Network connected to the earth - middle point earthed: The number of poles required to break I_{sc} should be placed on each polarity.</p>	<p>- Network insulated to the earth: The number of poles required to break I_{sc} should be split between the two polarities.</p>	<p>- Network connected to the earth - middle point earthed: The number of poles required to break I_{sc} should be placed on each polarity.</p>

Examples of TT, TNS, TNC earthing systems:

<p>24V DC $\leq U \leq 48V$ DC</p>	<p>Protection of a 32A circuit under $U = 48V$ DC voltage with earthed negative polarity and 15kA short circuit current (I_{cc}). a) without negative polarity breaking b) with negative polarity breaking</p>	<p>Protection of a 32A circuit under $U = 48V$ DC voltage with middle point earthed and 15kA short circuit current (I_{cc}). c) I_{cc} under $U/2 = 24V$</p>	
	<p>a) </p>	<p>b) </p>	<p>c) </p>
<p>48V DC $\leq U \leq 125V$ DC</p>	<p>Protection of a 20A circuit under $U = 125V$ DC voltage with earthed negative polarity and 15kA short circuit current (I_{cc}). a) without negative polarity breaking b) with negative polarity breaking</p>	<p>Protection of a 20A circuit under $U = 125V$ DC voltage with middle point earthed and 15kA short circuit current (I_{cc}). c) I_{cc} under $U/2 = 72,5V$</p>	
	<p>d) </p>	<p>e) </p>	<p>f) </p>
<p>125V DC $\leq U \leq 500V$ DC</p>	<p>Protection of a 40A circuit under $U = 500V$ DC voltage with earthed negative polarity and 10kA short circuit current (I_{cc}). a) without negative polarity breaking</p>	<p>Protection of a 40A circuit under $U = 500V$ DC voltage with middle point earthed and 10kA short circuit current (I_{cc}). c) I_{cc} under $U/2 = 250V$</p>	
	<p>g) </p>	<p>h) </p>	

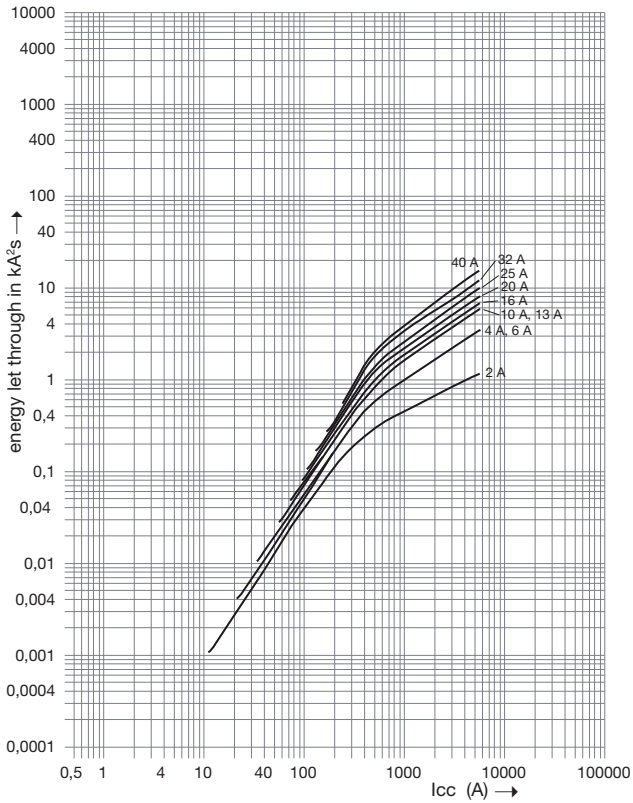
Protection devices

Examples of IT earthing system:

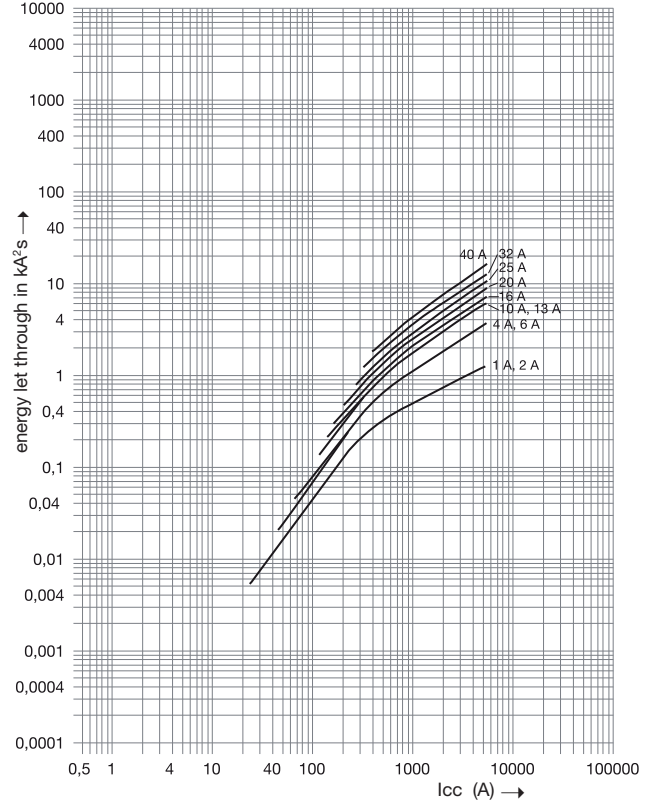
<p>24V DC $\leq U \leq 125V$ DC</p>	<p>Protection of a 16A circuit under $U = 120V$ DC voltage supplied by a 4kA I_{cc} isolated battery.</p>	<p>Protection of a 16A circuit under $U = 120V$ DC voltage supplied by an impedant middle point battery delivering 4kA short circuit current. $U/2 = 60V$</p>
	<p>i) </p>	<p>j) </p>

Energy let through at 230V

MCB range: MHN

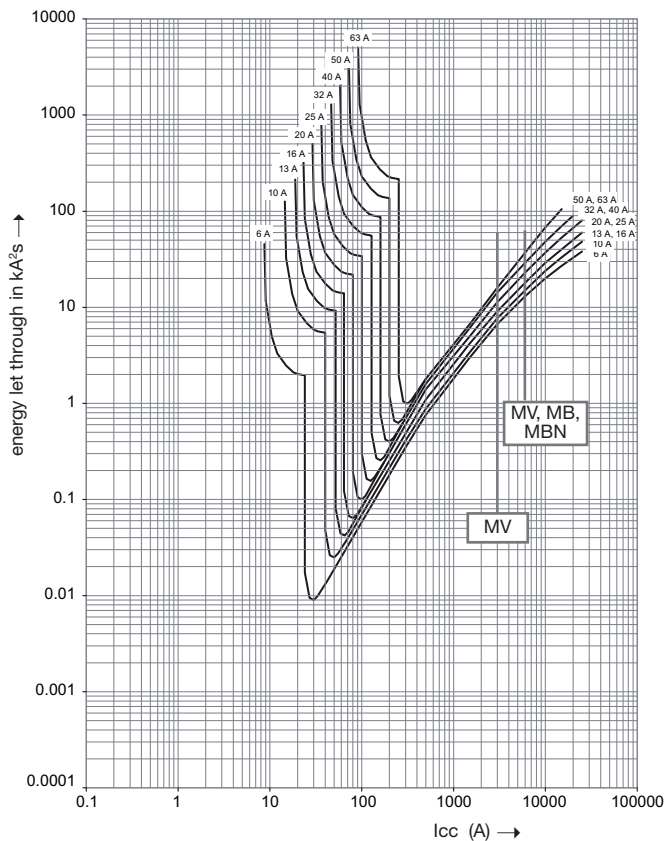


MCB range: MJN, MLN

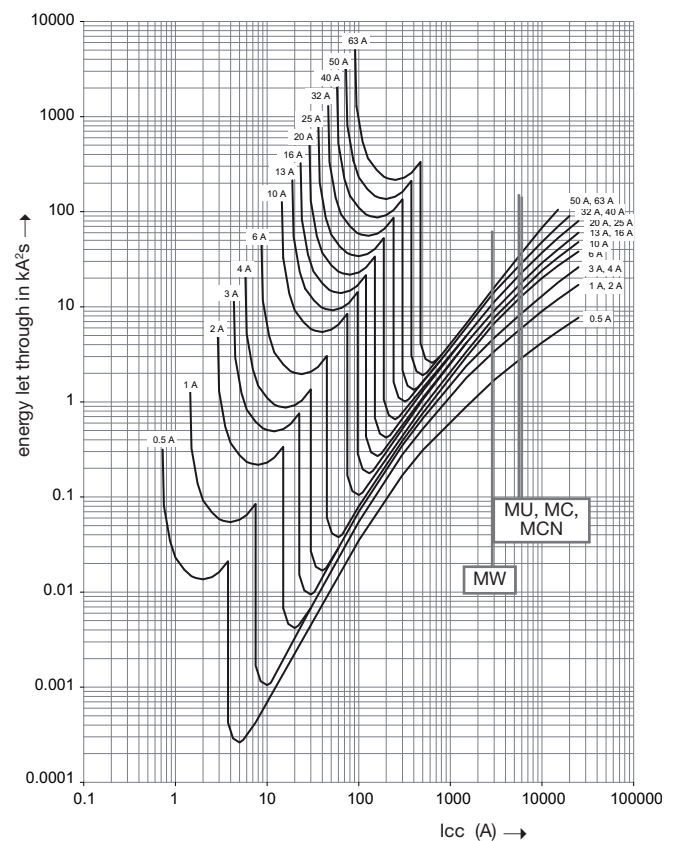


Energy let through at 400V

MCB range: MV, MT, MB, MBN



MCB range: MW, MU, MC, MCN



MCBs 1 module/pole: temperature correction factor according to ambient temperature (nominal values for ref. temperature: 30°C)

In(A)	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
0,5	0,54	0,52	0,5	0,48	0,46	0,44	0,42	-	-	-	-
1	1,08	1,04	1	0,96	0,92	0,88	0,84	0,8	0,76	0,72	0,68
1,5	1,62	1,56	1,5	1,44	1,38	1,32	1,26	1,2	1,14	1,08	1,02
1,6	1,73	1,66	1,6	1,54	1,47	1,41	1,34	1,28	1,22	1,15	1,09
2	2,16	2,08	2	1,92	1,84	1,76	1,68	1,6	1,52	1,44	1,36
3	3,24	3,12	3	2,88	2,76	2,64	2,52	2,4	2,28	2,16	2,04
3,5	3,78	3,64	3,5	3,36	3,22	3,08	2,94	2,8	2,66	2,52	2,38
4	4,32	4,16	4	3,84	3,68	3,52	3,36	3,2	3,04	2,88	2,72
5	5,4	5,2	5	4,8	4,6	4,4	4,2	4	3,8	3,6	3,4
6	6,48	6,24	6	5,76	5,52	5,28	5,04	4,8	4,56	4,32	4,08
7,5	8,1	7,8	7,5	7,2	6,9	6,6	6,3	6	5,7	5,4	5,1
8	8,64	8,32	8	7,68	7,36	7,04	6,72	6,4	6,08	5,76	5,44
10	10,8	10,4	10	9,6	9,2	8,8	8,4	8	7,6	7,2	6,8
13	14,0	13,5	13	12,5	12,0	11,4	10,9	10,4	9,9	9,4	8,8
15	16,2	15,6	15	14,4	13,8	13,2	12,6	12	11,4	10,8	10,2
16	17,3	16,6	16	15,4	14,7	14,1	13,4	12,8	12,2	11,5	10,9
20	21,6	20,8	20	19,2	18,4	17,6	16,8	16	15,2	14,4	13,6
25	27	26	25	24	23	22	21	20	19	18	17
30	32,4	31,2	30	28,8	27,6	26,4	25,2	24	22,8	21,6	20,4
32	34,6	33,3	32	30,7	29,4	28,2	26,9	25,6	24,3	23,0	21,8
35	37,8	36,4	35	33,6	32,2	30,8	29,4	28,0	26,6	25,2	23,8
40	44,8	41,6	40	38,4	36,8	35,2	33,6	32	30,4	28,8	27,2
45	50,4	46,8	45	43,2	41,4	39,6	37,8	36	34,2	32,4	30,6
50	56	52	50	48	46	44	42	40	38	36	34
63	-	-	63	60,5	58,0	55,4	52,9	50,4	47,9	45,4	42,8

Grouping factor (rated current reduce by factor K)

No. of units n	K (grouping factor)
n = 1	1
2 ≤ n < 4	0,95
4 ≤ n < 6	0,9
6 ≤ n	0,85

Note: if the design current of a circuit (I_b) is less than 0,85 times the nominal setting of the circuit breaker (I_n) grouping can be ignored.

Installation

- working position: vertically, horizontally or flat,
- supply: feed from either top or bottom terminals.

MCBs 1,5 module/pole: temperature correction factor according to ambient temperature (nominal values for ref. temperature: 30°C)

In(A)	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
10	10,8	10,4	10	9,6	9,2	8,8	8,4	8	7,6	7,2	6,8
13	14,04	13,52	13	12,48	11,96	11,44	10,92	10,4	9,88	9,36	8,84
15	16,2	15,6	15	14,4	13,8	13,2	12,6	12	11,4	10,8	10,2
16	17,28	16,64	16	15,36	14,72	14,08	13,44	12,8	12,16	11,52	10,88
20	21,6	20,8	20	19,2	18,4	17,6	16,8	16	15,2	14,4	13,6
25	27	26	25	24	23	22	21	20	19	18	17
30	32,4	31,2	30	28,8	27,6	26,4	25,2	24	22,8	21,6	20,4
32	34,56	33,28	32	30,72	29,44	28,16	26,88	25,6	24,32	23,04	21,76
35	37,8	36,4	35	33,6	32,2	30,8	29,4	28	26,6	25,2	23,8
45	43,2	41,6	45	38,4	36,8	35,2	33,6	32	30,4	28,8	27,2
50	54	52	50	48	46	44	42	40	38	36	34
63	68,04	65,52	63	60,48	57,96	55,44	52,92	50,4	47,88	45,36	42,84
80	86,4	83,2	80	76,8	73,6	70,4	67,2	64	60,8	57,6	54,4
100	108	104	100	96	92	88	84	80	76	72	68
125	-	-	125	120	115	110	105	100	95	90	85

HMX MCBs: temperature correction factor according to ambient temperature (nominal values for ref. temperature: 40°C)

In(A)	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C	65°C	70°C
10	11,6	11,2	10,8	10,4	10	9,6	9,2	8,8	8,4	8	7,6
16	18,56	17,92	17,28	16,64	16	15,36	14,72	14,08	13,44	12,8	12,16
20	23,2	22,4	21,6	20,8	20	19,2	18,4	17,6	16,8	16	15,2
25	29	28	27	26	25	24	23	22	21	20	19
32	37,12	35,84	34,56	33,28	32	30,72	29,44	28,16	26,88	25,6	24,32
40	46,4	44,8	43,2	41,6	40	38,4	36,8	35,2	33,6	32	30,4
50	58	56	54	52	50	48	46	44	42	40	38
63	73,08	70,56	68,04	65,52	63	60,48	57,96	55,44	52,92	50,4	47,88
80	92,8	89,6	86,4	83,2	80	76,8	73,6	70,4	67,2	64	60,8
100	116	112	108	104	100	96	92	88	84	80	76
125	-	-	-	-	125	120	115	110	105	100	95

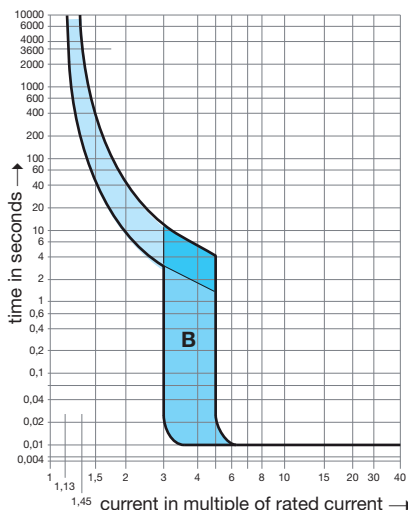
Frequency

- thermal: unchanged
- magnetic: value multiplied by coefficient K

F (Hz)	16 ^{2/3} Hz - 60 Hz	100 Hz	200 Hz	400 Hz
K	1	1,1	1,2	1,5

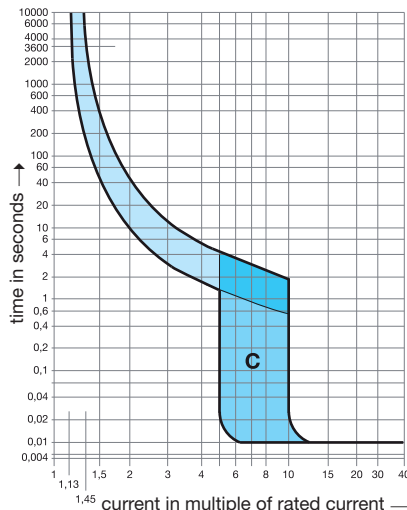
B curve at 30°C (IEC 60 898-1)

MCB range: MHN, MV, MT, MB, MBN, NBN, NQN, HLE, HMB, HMJ



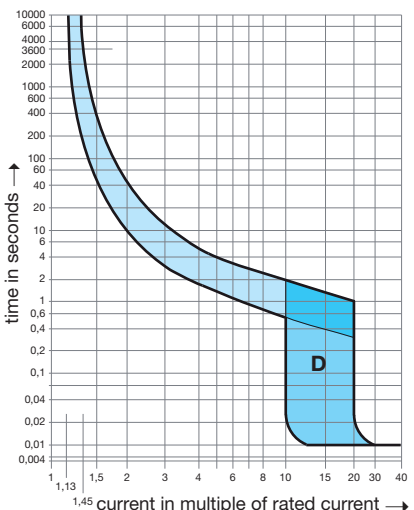
C curve at 30°C (IEC 60 898-1)

MCB range: MLN, MJN, MW, MU, MC, MCN, NRN, HLF, HMC, HMK, HMX, Ax8xxx, Ax9xxx



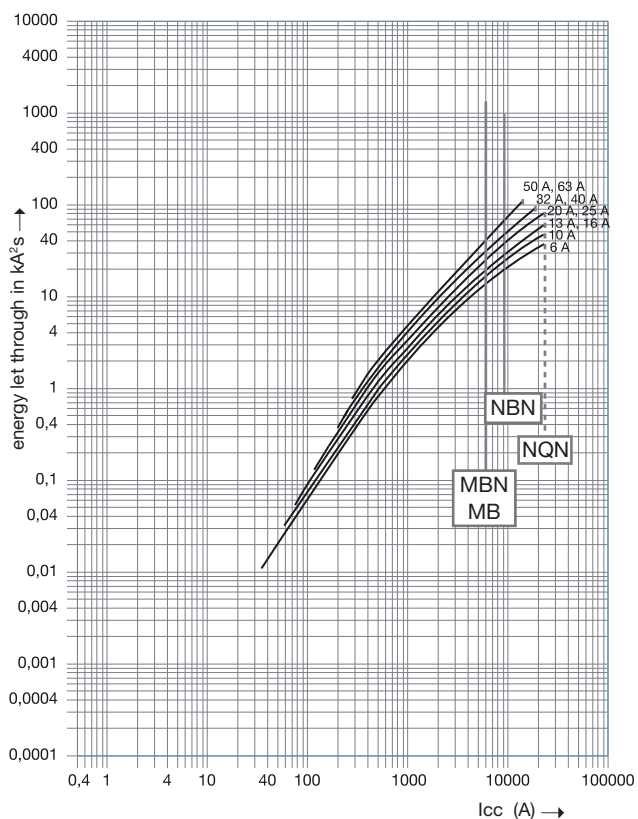
D curve at 30°C (IEC 60 898-1)

MCB range: NGN, NDN, NSN, HMD

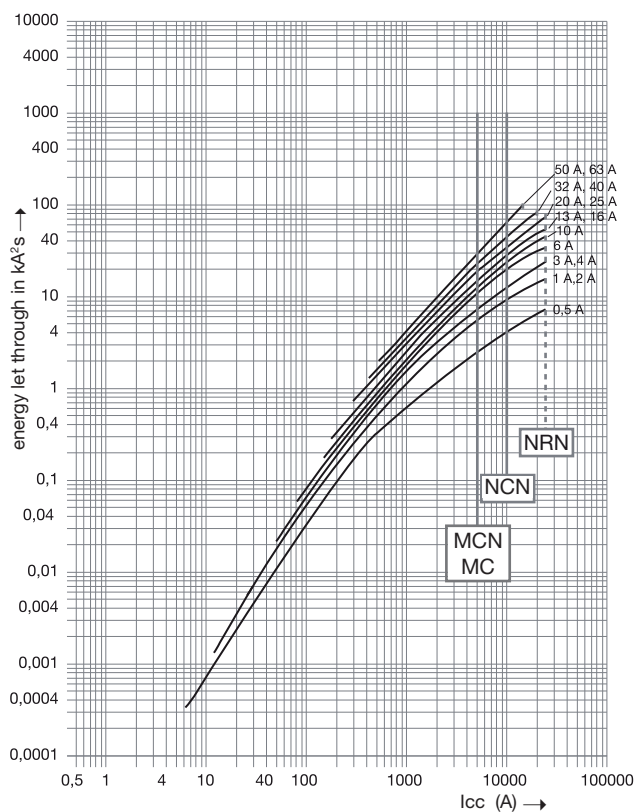


Energy let through at 400V

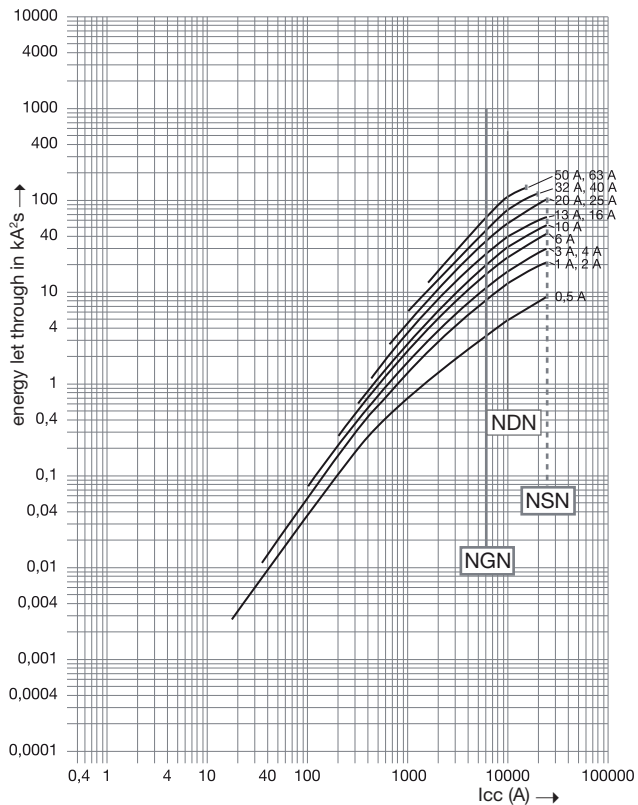
MCB range: NBN, NEN, NQN



MCB range: NCN, NFN, NRN

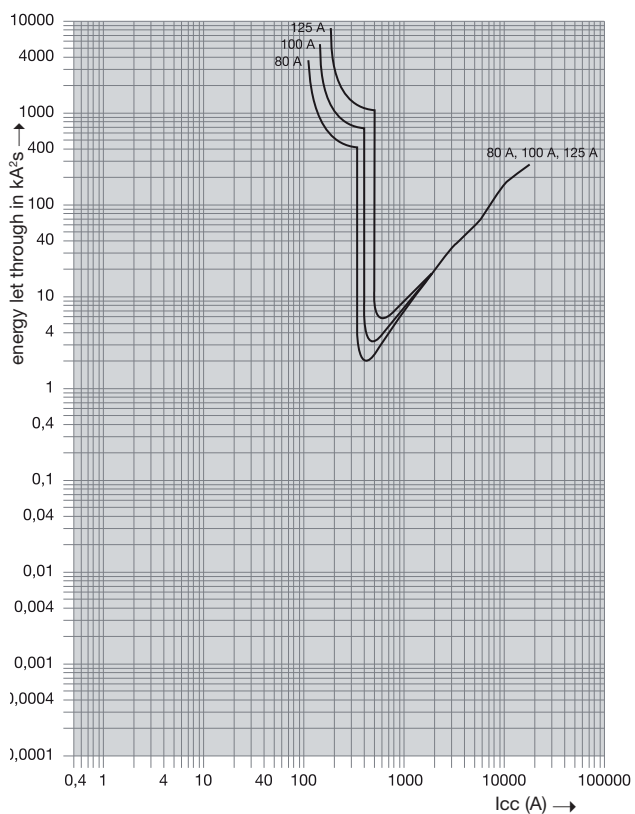


MCB range: NDN, NGN

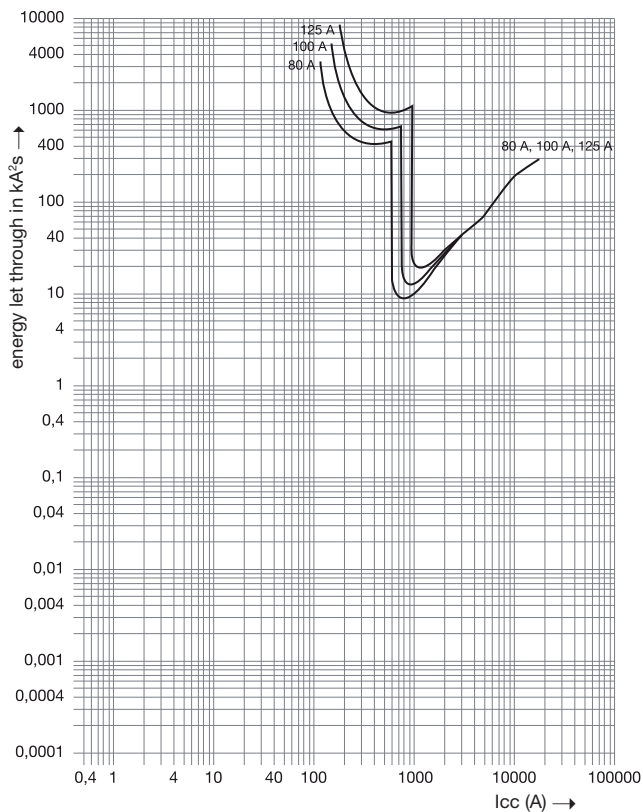


Energy let through at 400V

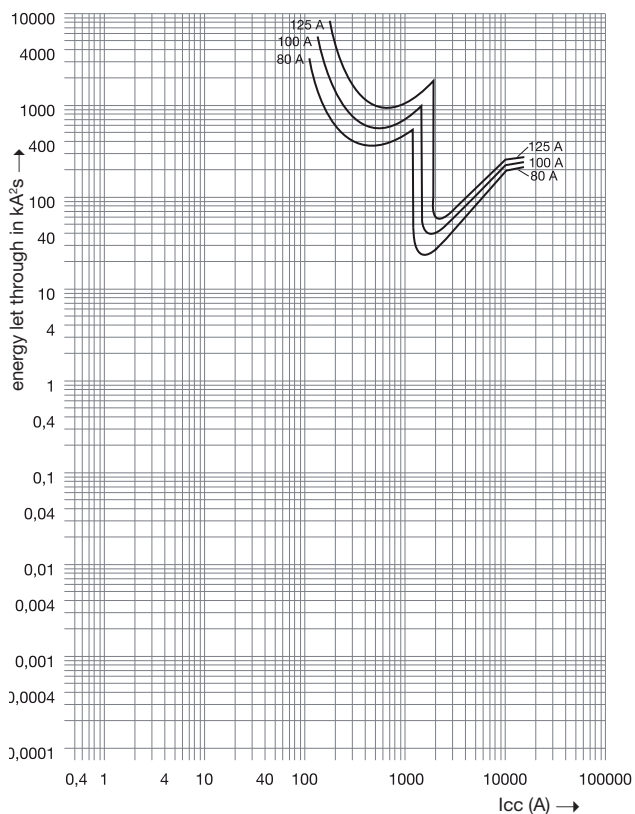
MCB range: HLE, HMB, HMJ



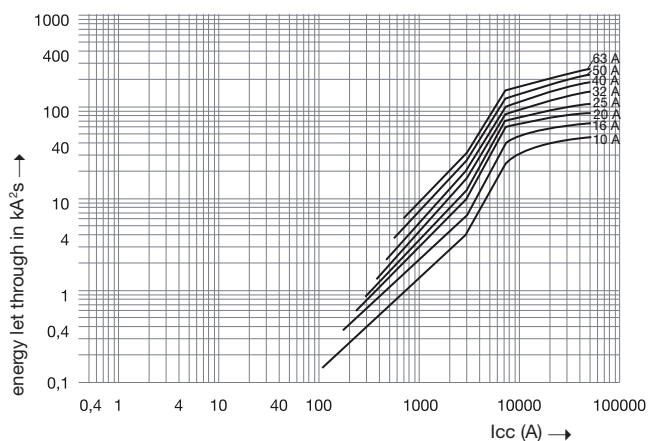
MCB range: HLF, HMC, HMK



MCB range: HMD



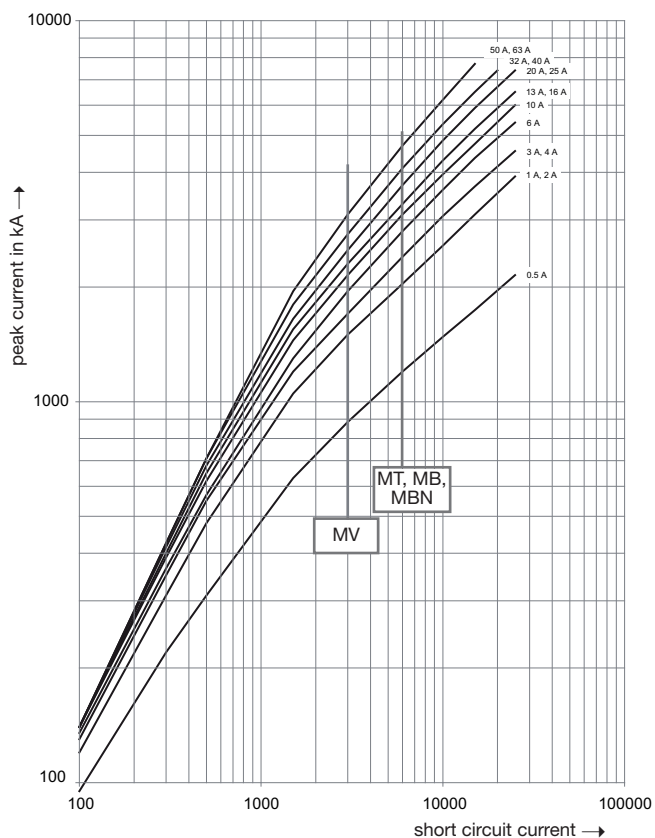
MCB range: HMX



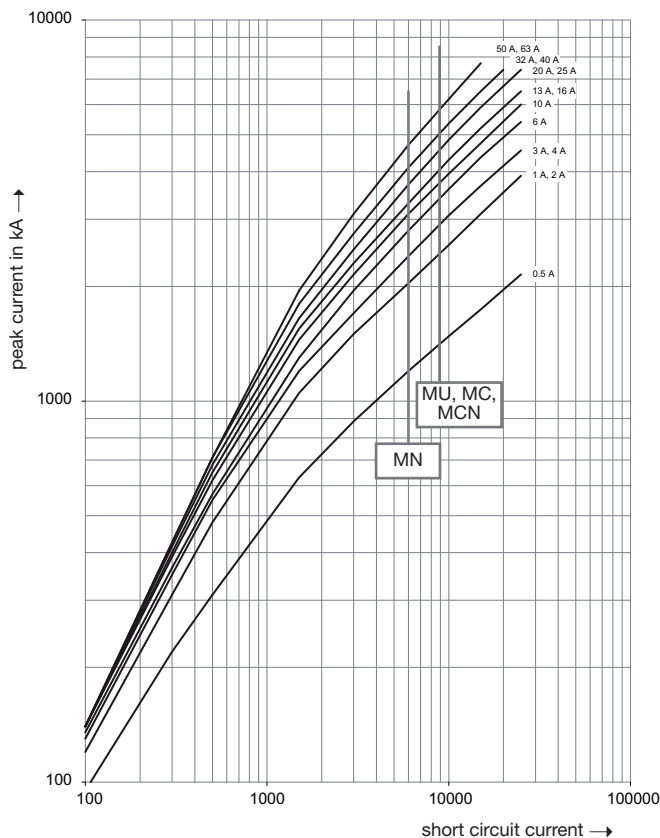
Protection devices

Current limitation at 400V

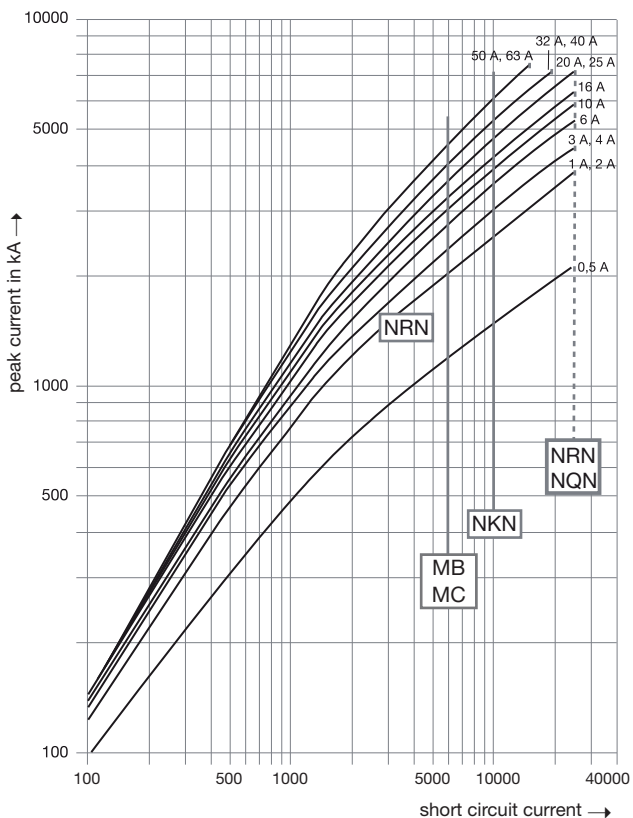
MCB range: MV, MT, MB, MBN



MCB range: MW, MU, MC, MCN

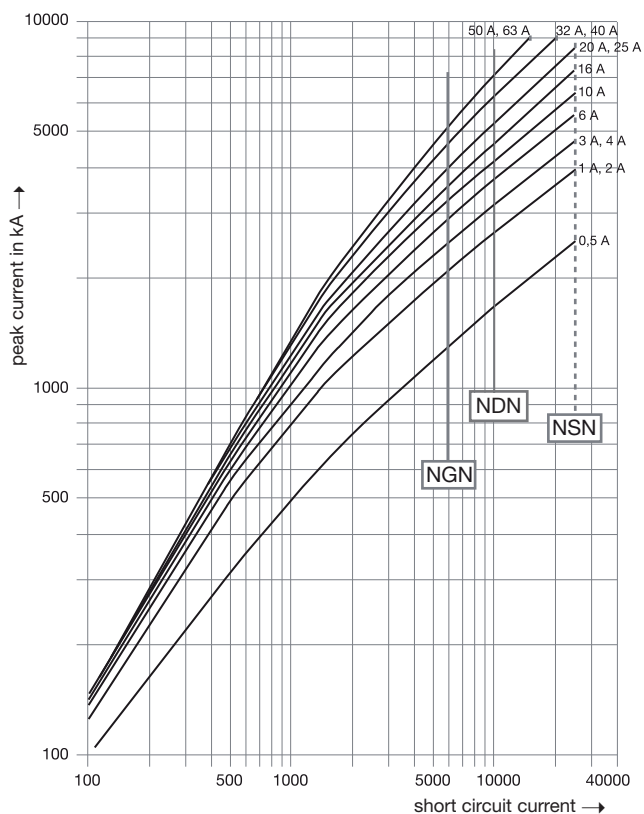


MCB range: NBN, NCN, NQN, NRN, MC, MB

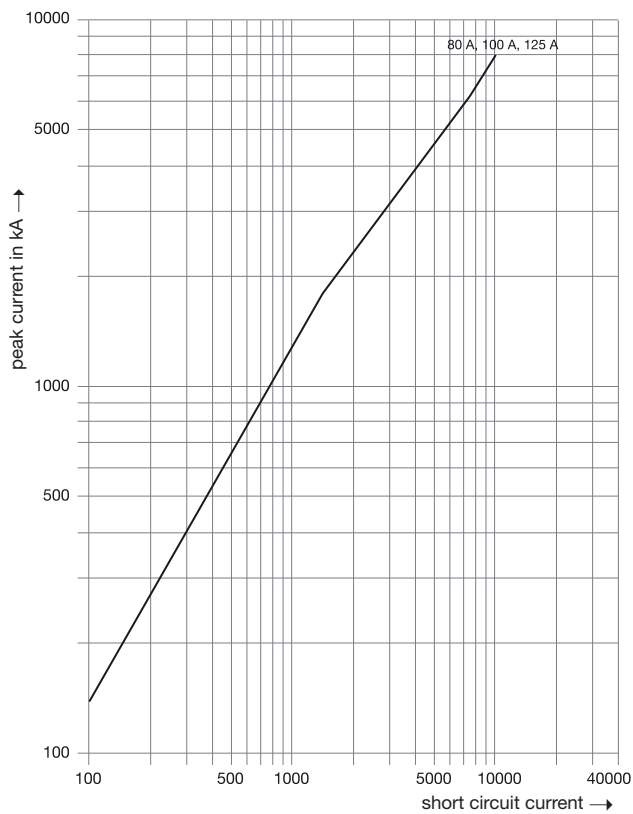


Current limitation at 400V

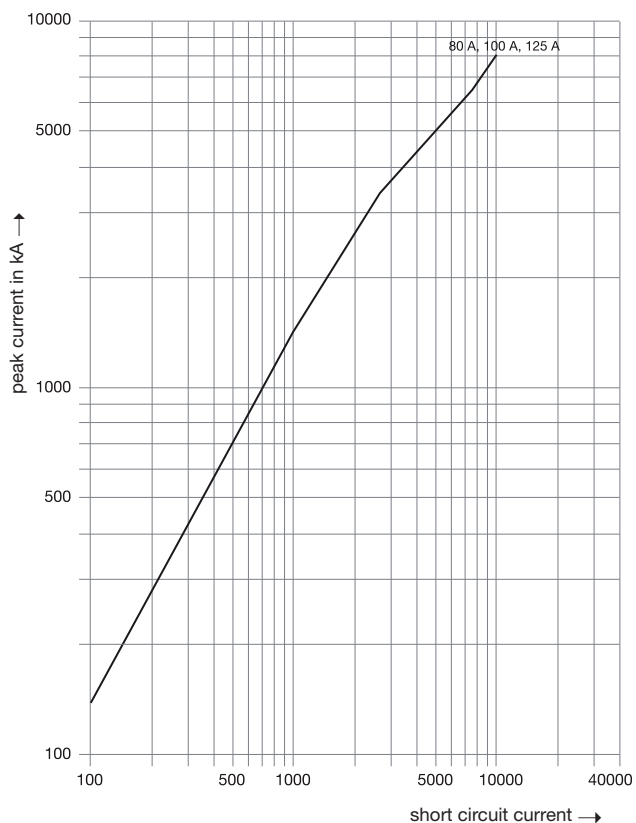
MCB range: NDN, NGN, NSN



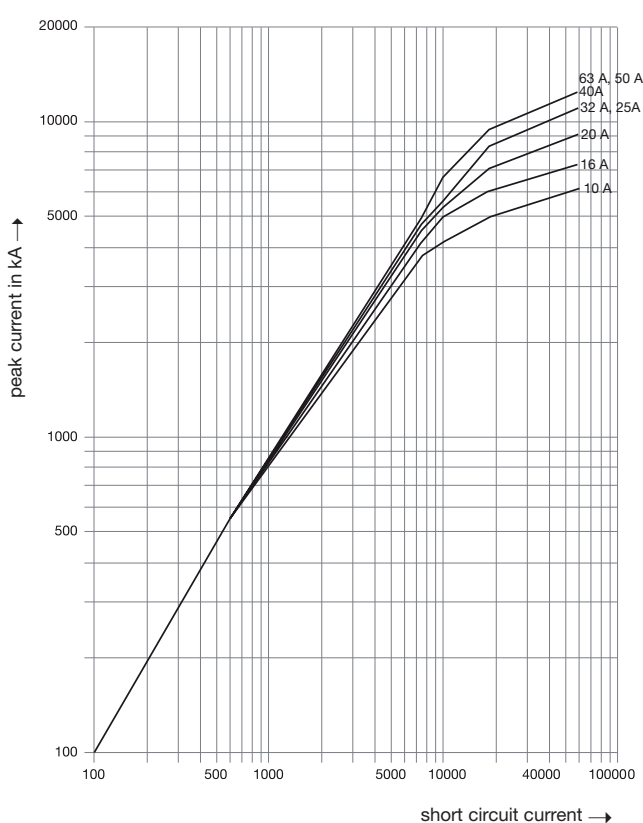
MCB range: HLE, HLF, HMB, HMC, HMJ, HMK



MCB range: HMD



MCB range: HMX



Protection devices

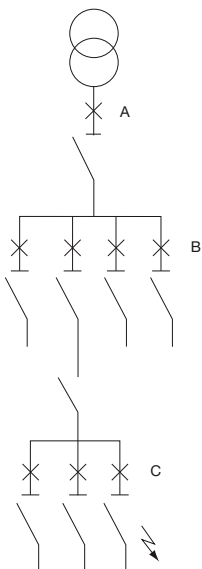
Co-Ordination between circuit protective devices

The proper co-ordination of two circuit protective devices is essential in all installations in order to fulfil the requirements of the Wiring Regulations which set out to ensure the safe continuity of supply of electrical current under all conditions of service. If a fault does occur, the circuit protective device nearest the fault should operate, allowing the device immediately upstream to continue to supply healthy circuits. This is called discrimination.

Sometimes the upstream device is selected to protect the downstream device(s) against high prospective short circuit currents and will operate to provide this protection should the actual short circuit current rise to a level which cannot be handled by the device nearest the fault. This is called back-up protection and devices should be so chosen as to allow discrimination up to the point the back-up device takes over.

Discrimination

Discrimination, which is sometimes called selectivity, is the co-ordination of two automatic circuit protective devices in such a way that a fault appearing at any given point in an installation is cleared by the protective device installed immediately upstream of the fault and by that device alone.



Example

A fault occurs downstream of final sub-circuit device "C". All other protective devices remain closed ensuring continuity of supply to the rest of the installation.

When this ideal situation is achieved under all conditions it is called "total discrimination".

Discrimination between two protective devices can be based on either the magnitude of the fault which is called "current discrimination" or the duration of the time the upstream device can withstand the fault current; this is called "time discrimination".

Current discrimination

In order to achieve "current discrimination" in a distribution system it is necessary for the downstream device to have a lower continuous current rating and a lower instantaneous tripping value than the upstream device. Current discrimination increases as the difference between the continuous current ratings of the upstream and downstream devices increases.

A simple way of checking current discrimination at both overload and short-circuit conditions is to compare the time/current characteristic curves of both devices plotted to the same scale. Transparency overlays, if available, make this task much easier (see diagram on the

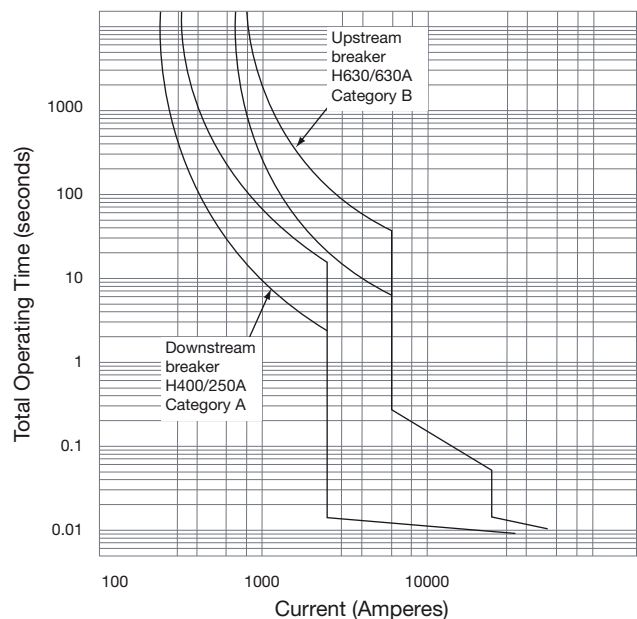
right). For this example the time/current characteristics of a 32A type 'B' circuit breaker complying with BS EN 60898, with a 100A category 'A' circuit breaker to BS EN 60947 Part 2 are checked for current discrimination.

Because the thermal characteristic curve of the upstream circuit breaker clears the knee of the characteristic curve of the smaller downstream breaker, it can be said that overload discrimination is achieved under all conditions. However because the instantaneous characteristic curves cross at 0.01 sec, short-circuit discrimination is limited up to the point they cross, which in this case is approximately 2.7kA. The point at which the two time/current characteristics cross is called the limit of discrimination or selectivity. In this example the level of discrimination I_s is 2.7kA, so we only have partial discrimination between these two devices.

Time discrimination

Time discrimination is achieved by delaying the opening of the upstream circuit breaker until the downstream circuit breaker has opened and cleared the fault. The total clearing time of the downstream circuit breaker must be less than the time setting of the upstream circuit breaker and the upstream circuit breaker must be able to withstand the fault current for the time setting period. Therefore the upstream circuit breaker must be a category 'B' breaker which has been designed and tested for this purpose.

To determine time discrimination it is only necessary to compare the time/current characteristic curves of the two devices to ensure that no overlap occurs.



Short circuit discrimination

A more accurate way of checking the discrimination between two circuit protective devices at short circuit levels is to compare the energy let-through of the downstream device with the no-tripping or pre-arcing energy levels of the upstream device.

In order to check current discrimination at short circuit levels between:

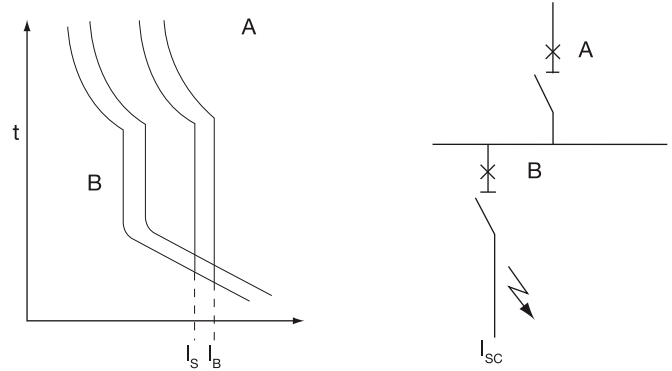
Fuse Upstream - Fuse Downstream

It is only necessary to compare the I^2t values of each fuse. This information is usually available in very simple tabular form (see Table 1 page D.61). If the total let-through energy (I^2t) of the downstream fuse is less than the pre-arcing energy (I^2t) of the upstream fuse, then total discrimination is achieved at short-circuit levels.

Fuse I²t characteristics

Rated current (A)	Pre-arcing I ² t (kA ² s)	Total I ² t (kA ² s)
10	0,07	0,25
16	0,17	0,45
20	0,31	0,90
25	0,62	1,90
32	1,00	3,0
40	2,1	8,0
50	7,0	17
63	11	30
80	22	70
100	39	100
125	62	170
160	101	300
200	190	500
315	480	1100
400	800	2100
500	1100	3100
630	1800	5000

Table 1



Back-up protection co-ordination

Back-up Protection

Sometimes known as cascading, when the energy limiting capacity of an upstream breaker is used to allow the use of a downstream circuit breaker having a short circuit breaking capacity (I_{cu}) lower than the prospective fault level at the point at which it is installed.

It should be noted that when two circuit protective devices are used in association to improve the short-circuit capacity of the downstream device, total selectivity can never be achieved up to the assigned breaking capacity of the association.

The upstream device must at some point operate to provide the necessary protection to the downstream circuit breaker. This point, which is known as the take-over current, must not be greater than the rated short-circuit capacity of the downstream circuit breaker alone. It therefore follows that the limit of selectivity I_s will be less than the take-over current I_B. See Diagram above.

MCB total let-through energy

MCB In	Total let-through energy kA ² s at PSCC		
	3kA	6kA	10kA
6	5,9	10,5	15
10	6,5	12,2	21,5
16	8,0	17,5	30
20	8,8	19,5	34
25	10	21	38
32	11	24	42
40	12,5	29	50
50	15	34	61
63	16	38	72

Table 2

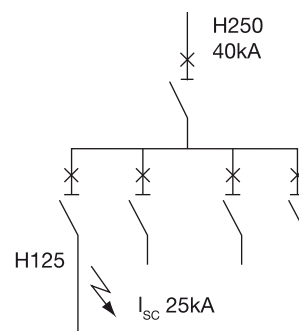
Fuse Upstream - Circuit breaker downstream. The same procedure applies to fuse/circuit breaker as it does to fuse/fuse association to check current discrimination.

While for all practical purposes, a desk top study of time/current and let-through energy (I²t) characteristics are perfectly adequate, the British Standards for circuit breakers do recommend testing to confirm the results. With this in mind hager have prepared a complete list of discrimination levels for all its circuit protective devices.

Example

A panelboard is to be installed at a point where the prospective fault level is 25kA. 250A incoming and 16A TP outgoing circuits. Select the lowest cost circuit breakers which may be used. See diagram below.

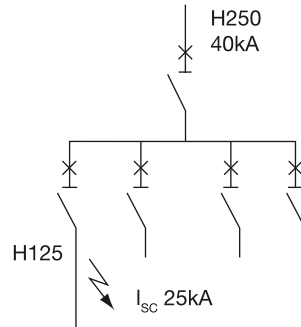
Incoming - Hager H250 MCCB having an I_{cu} of 40kA.



Co-ordination

Definition

This allows circuit breakers of lower breaking capacity than the PSCC to be installed. The principle is that two breakers operating in series will clear a larger fault and that energy let through by the upstream breaker will not damage the down stream device.



Co-ordination upstream MCB / downstream MCB, 1PP+N / 2PP, 230-240 V

references			Ax8xx	Ax9xx	MV, MW	MB, MC MU, MT	MBNxxxA MCNxxxA	NBNxxxA, NCNxxxA, NDNxxxA
	Breaking capacity EN 60898 / 61009-1		4,5kA	6kA	3kA	6kA	6kA	10kA
	Breaking capacity IEC 60947-1		6kA	10kA	10kA	20kA	-	30kA
		calibre						
		curve	B, C	B, C	B, C	B, C	B, C	B, C, D
Ax8xx	4,5kA	6kA	B, C	-	10kA	-	20kA	20kA
Ax9xx	6kA	10kA	B, C	-	-	-	20kA	20kA
AC1xx, AD1xx, AE1xx, AF1xx, ACx1xx, ADx1xx, AEx1xx	6kA	-	B, C	-	-	-	-	30kA
	10kA	-	B, C	-	-	-	-	-
MV, MW	3kA	10kA	B, C	-	-	-	20kA	20kA
MB, MC, MU, MT	6kA	20kA	B, C	-	-	-	-	30kA
MHN, MJN	4,5kA	6kA	B, C	6kA	10kA	-	20kA	20kA
MLN	6kA	7,5kA	B, C	-	10kA	-	20kA	20kA
MBNxxxA, MCNxxxA	6kA	-	B, C	-	-	-	-	30kA
NBNxxxA, NCNxxxA, NDNxxxA	10kA	30kA	B, C, D	-	-	-	-	-
	-	50kA	B, C, D	-	-	-	-	-
NQN, NRN, NSN	-	40kA	B, C, D	-	-	-	-	-
	-	30kA	B, C, D	-	-	-	-	-
MMN2xx, MMN3xx	-	50-40kA	magn.	-	-	-	-	-
HLE, HLF	-	20kA	B, C	-	-	-	-	-
HMB, HMC, HMD	-	30kA	B, C, D	-	-	-	-	-
HMJ, HMK	-	60kA	B, C	-	-	-	-	-
HMX	-	100kA	C	-	-	-	-	-

references			NQN, NRN, NSN			HLE, HLF	HMB, HMC, HMD	HMJ, HMK	HMX
	Breaking capacity EN 60898 / 61009-1		-	-	-	-	-	-	-
	Breaking capacity IEC 60947-1		50kA	40kA	30kA	20kA	30kA	60kA	100kA
		calibre	6-25A	25-40A	50-63A	80-125A	80-125A	80-125A	10-63A
		curve	B, C, D	B, C, D	B, C, D	B, C	B, C, D	B, C	C
Ax8xx	4,5kA	6kA	B, C	20kA	20kA	20kA	15kA	15kA	15kA
Ax9xx	6kA	10kA	B, C	20kA	20kA	20kA	15kA	15kA	15kA
AC1xx, AD1xx, AE1xx, AF1xx, ACx1xx, ADx1xx, AEx1xx	6kA	-	B, C	50kA	40kA	30kA	-	30kA	60kA
	10kA	-	B, C	50kA	40kA	30kA	-	-	60kA
MV, MW	3kA	10kA	B, C	50kA	40kA	30kA	20kA	30kA	30kA
MB, MC, MU, MT	6kA	20kA	B, C	50kA	40kA	30kA	-	30kA	60kA
MHN, MJN	4,5kA	6kA	B, C	20kA	20kA	20kA	15kA	15kA	15kA
MLN	6kA	7,5kA	B, C	20kA	20kA	20kA	15kA	15kA	15kA
MBNxxxA, MCNxxxA	6kA	-	B, C	50kA	40kA	30kA	-	30kA	60kA
NBNxxxA, NCNxxxA, NDNxxxA	10kA	30kA	B, C, D	50kA	40kA	30kA	-	-	60kA
	-	50kA	B, C, D	-	-	-	-	-	60kA
NQN, NRN, NSN	-	40kA	B, C, D	-	-	-	-	-	60kA
	-	30kA	B, C, D	-	-	-	-	-	60kA
MMN2xx, MMN3xx	-	50-40kA	magn.	-	-	-	-	-	60kA
HLE, HLF	-	20kA	B, C	-	-	-	30kA	60kA	-
HMB, HMC, HMD	-	30kA	B, C, D	-	-	-	-	60kA	-
HMJ, HMK	-	60kA	B, C	-	-	-	-	-	-
HMX	-	100kA	C	-	-	-	-	-	-

Co-ordination upstream MCB / downstream MCB, 1PP, 230-240V, 2PP / 3PP / 3PP+N / 4PP, 400-415V

references			Ax8xx	Ax9xx	MV, MW	MB, MC MU, MT	MBNxxxA, MCNxxxA	NBNxxxA, NCNxxxA, NDNxxxA	
		Breaking capacity EN 60898		4,5kA	6kA	3kA	6kA	6kA	10kA
		Breaking capacity IEC 60947-2	6kA	10kA	4,5kA	10kA	-	15kA	
		calibre							
		curve	B, C	B, C	B, C	B, C	B, C	B, C, D, SCP	
MV, MW	3kA	4,5kA	B, C	-	-	-	10kA	10kA	15kA
MB, MC, MU, MT	6kA	10kA	B, C	-	-	-	-	-	15kA
MBNxxxA, MCNxxxA, MTN, MUN	6kA	-	B, C	-	-	-	-	-	15kA
MBA, MCA, NEN, NFN, NGN	6kA	10kA	B, C, D	-	-	-	-	-	15kA
NBNxxxA, NCNxxxA, NDNxxxA	10kA	15kA	B, C, D	-	-	-	-	-	-
NQN, NRN, NSN	-	25kA	B, C, D	-	-	-	-	-	-
	-	20kA	B, C, D	-	-	-	-	-	-
	-	15kA	B, C, D	-	-	-	-	-	-
MMN2xx, MMN3xx	-	25-20kA	magn.	-	-	-	-	-	-
HLE, HLF	10kA	10kA	B, C	-	-	-	-	-	-
HMB, HMC, HMD	15kA	15kA	B, C, D	-	-	-	-	-	-
HMJ, HMK	-	30kA	B, C	-	-	-	-	-	-
HMX	-	50kA	C	-	-	-	-	-	-

references			NQN, NRN, NSN			HLE, HLF	HMB, HMC, HMD	HMJ, HMK	HMX	
		Breaking capacity EN 60898		-	-	-	10kA	15kA	-	-
		Breaking capacity IEC 60947-2	25kA	20kA	15kA	10kA	15kA	30kA	50kA	
		calibre	6-25A	25-40A	50-63A	80-125A	80-125A	80-125A	10-63A	
		curve	B, C, D	B, C, D	B, C, D	B, C	B, C, D	B, C	C	
MV, MW	3kA	4,5kA	B, C	25kA	20kA	15kA	10kA	15kA	15kA	25kA
MB, MC, MU, MT	6kA	10kA	B, C	25kA	20kA	15kA	-	15kA	30kA	50kA
MBNxxxA, MCNxxxA, MTN, MUN	6kA	-	B, C	25kA	20kA	15kA	-	15kA	30kA	50kA
MBA, MCA, NEN, NFN, NGN	6kA	10kA	B, C, D	25kA	20kA	15kA	-	15kA	30kA	50kA
NBNxxxA, NCNxxxA, NDNxxxA	10kA	15kA	B, C, D	25kA	20kA	15kA	-	-	30kA	50kA
NQN, NRN, NSN	-	25kA	B, C, D	-	-	-	-	-	30kA	50kA
	-	20kA	B, C, D	-	-	-	-	-	30kA	50kA
	-	15kA	B, C, D	-	-	-	-	-	30kA	50kA
MMN2xx, MMN3xx	-	25-20kA	magn.	-	-	-	-	-	30kA	50kA
HLE, HLF	10kA	10kA	B, C	-	-	-	-	15kA	30kA	-
HMB, HMC, HMD	15kA	15kA	B, C, D	-	-	-	-	-	30kA	-
HMJ, HMK	-	30kA	B, C	-	-	-	-	-	-	-
HMX	-	50kA	C	-	-	-	-	-	-	-

Co-ordination fuses / MCBs

Cascading fuses / MCBs 1PP+N / 2PP 230V - 240 V IEC 947-2

Range				SOCOMEK fuses 22 x 58 and size 00 (160A) NH00 500 V gL/gI (SIEMENS) fuses			
				≤ 50A	63A	80A	100A
		Breaking capacity IEC 60898 / 61009-1		-	-	-	-
		Breaking capacity IEC 60947-2		100 kA			
				Curve		gG	
Ax8xx	4,5 kA	6 kA	B, C	100 kA	65 kA	40 kA	22 kA
Ax9xx	6 kA	10 kA	B, C	100 kA	100 kA	65 kA	40 kA
AC1xx, AD1xx, AE1xx, AF1xx, ACx1xx, ADx1xx, AEx1xx	6 kA	-	B, C	100 kA	100 kA	100 kA	100 kA
	10 kA	-	B, C	100 kA	100 kA	100 kA	100 kA
MV, MW	3 kA	10 kA	B, C	100 kA	100 kA	100 kA	75 kA
MB, MC, MU, MT	6 kA	20 kA	B, C	100 kA	100 kA	100 kA	100 kA
MHN, MJN	4,5 kA	6 kA	B, C	100 kA	65 kA	40 kA	22 kA
MLN	6 kA	7,5 kA	B, C	100 kA	100 kA	65 kA	40 kA
MBN, MCN	6 kA	-	B, C	100 kA	100 kA	100 kA	100 kA
NBN, NCN, NDN	10 kA	30 kA	B, C, D	100 kA	100 kA	100 kA	100 kA
NQN, NRN, NSN	-	50-30 kA	B, C, D	100 kA	100 kA	100 kA	100 kA
MMN2xx, MMN3xx	-	50-40 kA	magn.	100 kA	100 kA	100 kA	100 kA
HLE, HLF	-	20 kA	B, C	100 kA	100 kA	100 kA	70 kA
HMB, HMC, HMD	-	30 kA	B, C, D	100 kA	100 kA	100 kA	70 kA
HMJ, HMK	-	60 kA	B, C	100 kA	100 kA	100 kA	100 kA
HMX	-	100 kA	C	100 kA	100 kA	100 kA	100 kA

Cascading fuses / MCBs 1PP 230V - 240 V 2PP / 3PP / 3PP+N / 4PP 400 - 415 V IEC 947-2

Range				SOCOMEK fuses 22 x 58 and size 00 (160A) NH00 500 V gL/gI (SIEMENS) fuses			
				≤ 50A	63A	80A	100A
		Breaking capacity IEC 60898 / 61009-1		-	-	-	-
		Breaking capacity IEC 60947-2		100 kA			
				Curve		gG	
MV, MW	3 kA	4,5 kA	B, C	100 kA	100 kA	100 kA	75 kA
MB, MC, MU, MT	6 kA	10 kA	B, C	100 kA	100 kA	100 kA	100 kA
NB, NC, ND	10 kA	15 kA	B, C, D	100 kA	100 kA	100 kA	100 kA
MBN, MCN	6 kA	-	B, C	100 kA	100 kA	100 kA	100 kA
NBN, NCN, NDN	10 kA	15 kA	B, C, D	100 kA	100 kA	100 kA	100 kA
NQN, NRN, NSN	-	25-15 kA	B, C, D	100 kA	100 kA	100 kA	100 kA
MMN2xx, MMN3xx	-	25-20 kA	magn.	100 kA	100 kA	100 kA	100 kA
HLE, HLF	10 kA	10 kA	B, C	100 kA	100 kA	65 kA	35 kA
HMB, HMC, HMD	15 kA	15 kA	B, C, D	100 kA	100 kA	65 kA	35 kA
HMJ, HMK	-	30 kA	B, C	100 kA	100 kA	100 kA	100 kA
HMX	-	50 kA	C	100 kA	100 kA	100 kA	100 kA

	125A	160A	200A	250A	315A	400A	500A	630A	800A
	-	-	-	-	-	-	-	-	-

	15 kA	6,5 kA	6 kA	6 kA	6 kA	6 kA	6 kA	6 kA	6 kA
	25 kA	11 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
	70 kA	35 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
	100 kA	100 kA	70 kA	30 kA	30 kA	30 kA	30 kA	30 kA	30 kA
	50 kA	25 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
	70 kA	35 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
	15 kA	6,5 kA	6 kA	6 kA	6 kA	6 kA	6 kA	6 kA	6 kA
	25 kA	11 kA	7,5 kA	7,5 kA	7,5 kA	7,5 kA	7,5 kA	7,5 kA	7,5 kA
	70 kA	35 kA	9 kA	9 kA	9 kA	9 kA	9 kA	9 kA	9 kA
	100 kA	100 kA	70 kA	30 kA	30 kA	30 kA	30 kA	30 kA	30 kA
	100 kA	100 kA	70 kA	30 kA	30 kA	30 kA	30 kA	30 kA	30 kA
	100 kA	100 kA	70 kA	30 kA	30 kA	30 kA	30 kA	30 kA	30 kA
	45 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA	20 kA
	50 kA	30 kA	30 kA	30 kA	30 kA	30 kA	30 kA	30 kA	30 kA
	100 kA	100 kA	100 kA	60 kA	60 kA	60 kA	60 kA	60 kA	60 kA
	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA	100 kA

	125A	160A	200A	250A	315A	400A	500A	630A	800A
	-	-	-	-	-	-	-	-	-

	50 kA	25 kA	4,5 kA	4,5 kA	4,5 kA	4,5 kA	4,5 kA	4,5 kA	4,5 kA
	70 kA	35 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
	100 kA	100 kA	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA
	70 kA	35 kA	6 kA	6 kA	6 kA	6 kA	6 kA	6 kA	6 kA
	100 kA	100 kA	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA
	100 kA	100 kA	60 kA	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA
	100 kA	100 kA	60 kA	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA
	22 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA	10 kA
	25 kA	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA	15 kA
	100 kA	70 kA	50 kA	30 kA	30 kA	30 kA	30 kA	30 kA	30 kA
	100 kA	100 kA	70 kA	50 kA	50 kA	50 kA	50 kA	50 kA	50 kA

Protection devices

Discrimination chart 240/415V AC according to IEC 60 947-2

Limits (kA)		Upstream: fuses category Gg (SOCOMECC)																			
		2A	4A	6A	8A	10A	12A	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	160A	200A		
Downstream: MCB 1 module / pole, ocean2 and v1 ranges	B curve	6A	-	-	-	0,14	0,17	0,21	0,31	0,42	0,62	1	1,5	2,3	<u>3,8</u>	<u>7,1</u>	T	T	T	T	
		10A	-	-	-	-	-	0,19	0,28	0,38	0,55	0,9	1,3	2	<u>3,3</u>	<u>6</u>	T	T	T	T	
		13A	-	-	-	-	-	-	0,25	0,34	0,47	0,75	1,1	1,7	2,8	<u>5</u>	<u>8,9</u>	T	T	T	
		16A	-	-	-	-	-	-	-	0,34	0,47	0,75	1,1	1,7	2,8	<u>5</u>	<u>8,9</u>	T	T	T	
		20A	-	-	-	-	-	-	-	-	0,41	0,65	0,97	1,3	2,3	<u>4</u>	<u>6,8</u>	T	T	T	
		25A	-	-	-	-	-	-	-	-	-	0,65	0,97	1,3	2,3	<u>4</u>	<u>6,8</u>	T	T	T	
		32A	-	-	-	-	-	-	-	-	-	-	0,84	1,2	1,9	<u>3,1</u>	<u>5,4</u>	<u>9</u>	T	T	
		40A	-	-	-	-	-	-	-	-	-	-	-	-	1,2	1,9	<u>3,1</u>	<u>5,4</u>	<u>9</u>	T	T
		50A	-	-	-	-	-	-	-	-	-	-	-	-	-	1,8	2,8	<u>4,5</u>	<u>6,8</u>	T	T
	63A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,8	<u>4,5</u>	<u>6,8</u>	T	T	
	0,5A	0,07	0,12	0,16	0,22	0,24	0,34	0,61	1	1,6	<u>3,2</u>	<u>6,3</u>	T	T	T	T	T	T	T	T	
	1A	0,055	0,09	0,12	0,15	0,19	0,23	0,38	0,57	0,9	1,5	2,7	<u>4,8</u>	<u>9,3</u>	T	T	T	T	T	T	
	2A	-	0,09	0,12	0,15	0,19	0,23	0,38	0,57	0,9	1,5	2,7	<u>4,8</u>	<u>9,3</u>	T	T	T	T	T	T	
	3A	-	-	0,105	0,13	0,16	0,2	0,32	0,46	0,7	1,1	1,9	<u>3,2</u>	<u>5,9</u>	T	T	T	T	T	T	
	4A	-	-	-	0,13	0,16	0,2	0,32	0,46	0,7	1,1	1,9	<u>3,2</u>	<u>5,9</u>	T	T	T	T	T	T	
	6A	-	-	-	-	-	0,18	0,29	0,42	0,62	1	1,5	2,3	<u>3,8</u>	<u>7,1</u>	T	T	T	T	T	
	10A	-	-	-	-	-	-	0,26	0,37	0,55	0,9	1,3	2	<u>3,3</u>	<u>6</u>	T	T	T	T	T	
	13A	-	-	-	-	-	-	-	0,33	0,46	0,75	1,1	1,7	2,8	<u>5</u>	<u>8,9</u>	T	T	T	T	
	16A	-	-	-	-	-	-	-	-	0,46	0,75	1,1	1,7	2,8	<u>5</u>	<u>8,9</u>	T	T	T	T	
	20A	-	-	-	-	-	-	-	-	-	0,65	0,97	1,3	2,3	<u>4</u>	<u>6,8</u>	T	T	T	T	
	25A	-	-	-	-	-	-	-	-	-	-	0,97	1,3	2,3	<u>4</u>	<u>6,8</u>	T	T	T	T	
	32A	-	-	-	-	-	-	-	-	-	-	-	-	1,2	1,9	<u>3,1</u>	<u>5,4</u>	<u>9</u>	T	T	
	40A	-	-	-	-	-	-	-	-	-	-	-	-	-	1,9	<u>3,1</u>	<u>5,4</u>	<u>9</u>	T	T	
	50A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,8	<u>4,5</u>	<u>6,8</u>	T	T	
	63A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<u>4,5</u>	<u>6,8</u>	T	T	
	0,5A	0,07	0,12	0,16	0,22	0,24	0,34	0,61	1	1,6	<u>3,2</u>	5,7	T	T	T	T	T	T	T	T	
	1A	-	0,09	0,12	0,15	0,19	0,23	0,38	0,54	0,85	1,4	2,3	4	<u>6,9</u>	T	T	T	T	T	T	
	2A	-	-	-	0,15	0,19	0,23	0,38	0,54	0,85	1,4	2,3	4	<u>6,9</u>	T	T	T	T	T	T	
	3A	-	-	-	-	0,16	0,2	0,31	0,44	0,67	1,1	1,6	2,8	<u>5</u>	<u>9,2</u>	T	T	T	T	T	
	4A	-	-	-	-	-	0,2	0,31	0,44	0,67	1,1	1,6	2,8	<u>5</u>	<u>9,2</u>	T	T	T	T	T	
	6A	-	-	-	-	-	-	-	0,37	0,54	0,87	1,3	2,1	<u>3,6</u>	<u>6,4</u>	T	T	T	T	T	
	10A	-	-	-	-	-	-	-	-	0,46	0,74	1,1	1,6	2,8	<u>5</u>	<u>8,6</u>	T	T	T	T	
	13A	-	-	-	-	-	-	-	-	-	0,65	0,99	1,5	2,4	<u>4</u>	<u>6,8</u>	T	T	T	T	
16A	-	-	-	-	-	-	-	-	-	-	0,99	1,5	2,4	<u>4</u>	<u>6,8</u>	T	T	T	T		
20A	-	-	-	-	-	-	-	-	-	-	-	1,1	1,7	2,8	<u>4,7</u>	<u>7,4</u>	T	T	T		
25A	-	-	-	-	-	-	-	-	-	-	-	-	1,7	2,8	<u>4,7</u>	<u>7,4</u>	T	T	T		
32A	-	-	-	-	-	-	-	-	-	-	-	-	-	2,2	<u>3,5</u>	<u>5,5</u>	<u>9,1</u>	T	T		
40A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<u>3,5</u>	<u>5,5</u>	<u>9,1</u>	T	T		
50A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<u>4,5</u>	<u>7,2</u>	T		
63A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<u>7,2</u>	T		
Downstream: MCB 1 module / pole, GDE range	B curve	6A	-	-	-	0,11	0,13	0,16	0,26	0,35	0,5	0,8	1,2	1,8	2,9	<u>5,2</u>	T	T	T	T	
		10A	-	-	-	-	-	0,14	0,22	0,31	0,43	0,68	1	1,5	2,4	<u>4,1</u>	T	T	T	T	
		13A	-	-	-	-	-	-	0,19	0,27	0,37	0,57	0,85	1,2	2	<u>3,4</u>	<u>5,7</u>	T	T	T	
		16A	-	-	-	-	-	-	-	0,26	0,36	0,57	0,85	1,2	2	<u>3,4</u>	<u>5,7</u>	T	T	T	
		20A	-	-	-	-	-	-	-	-	0,31	0,46	0,7	1,05	1,7	2,8	<u>4,7</u>	T	T	T	
		25A	-	-	-	-	-	-	-	-	-	0,46	0,7	1,05	1,7	2,8	<u>4,7</u>	T	T	T	
		32A	-	-	-	-	-	-	-	-	-	-	0,61	0,97	1,5	2,6	<u>4,3</u>	T	T	T	
		40A	-	-	-	-	-	-	-	-	-	-	-	0,97	1,5	2,6	<u>4,3</u>	T	T	T	
		50A	-	-	-	-	-	-	-	-	-	-	-	-	1,4	2,4	<u>3,9</u>	T	T	T	
	63A	-	-	-	-	-	-	-	-	-	-	-	-	-	2,4	<u>3,9</u>	T	T	T		
	0,5A	0,07	0,11	0,15	0,19	0,23	0,28	0,44	0,63	0,96	1,5	2,7	5	T	T	T	T	T	T	T	
	1A	0,055	0,09	0,12	0,16	0,19	0,23	0,35	0,48	0,73	1,1	1,8	3,2	<u>5,9</u>	T	T	T	T	T	T	
	2A	-	0,08	0,12	0,15	0,19	0,23	0,35	0,48	0,73	1,1	1,8	3,2	<u>5,9</u>	T	T	T	T	T	T	
	3A	-	-	0,11	0,13	0,16	0,19	0,29	0,4	0,59	0,94	1,4	2,3	<u>4</u>	T	T	T	T	T	T	
	4A	-	-	-	0,12	0,15	0,19	0,29	0,4	0,59	0,94	1,4	2,3	<u>4</u>	T	T	T	T	T	T	
	6A	-	-	-	-	-	0,16	0,25	0,35	0,5	0,8	1,2	1,8	2,9	<u>5,2</u>	T	T	T	T	T	
	10A	-	-	-	-	-	-	0,22	0,3	0,43	0,68	1	1,5	2,4	<u>4,1</u>	T	T	T	T	T	
	13A	-	-	-	-	-	-	-	0,26	0,37	0,57	0,85	1,2	2	<u>3,4</u>	<u>5,7</u>	T	T	T	T	
	16A	-	-	-	-	-	-	-	-	0,36	0,57	0,85	1,2	2	<u>3,4</u>	<u>5,7</u>	T	T	T	T	
	20A	-	-	-	-	-	-	-	-	-	0,46	0,7	1,05	1,7	2,8	<u>4,7</u>	T	T	T	T	
	25A	-	-	-	-	-	-	-	-	-	-	0,7	1,05	1,7	2,8	<u>4,7</u>	T	T	T	T	
	32A	-	-	-	-	-	-	-	-	-	-	-	0,97	1,5	2,6	<u>4,3</u>	T	T	T	T	
	40A	-	-	-	-	-	-	-	-	-	-	-	-	1,5	2,6	<u>4,3</u>	T	T	T	T	
	50A	-	-	-	-	-	-	-	-	-	-	-	-	-	2,4	<u>3,9</u>	T	T	T	T	
	63A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<u>3,9</u>	T	T	T	T	

T = total discrimination
 Each underlined value must be read as T when it is over the breaking capacity range of MCBs.

Discrimination chart 240/415V AC according to IEC 60 947-2

Limits (kA)		Upstream: fuses category Gg (SOCOMECC)																				
In		2A	4A	6A	8A	10A	12A	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	160A	200A	250A		
Downstream: MCB 1 module / pole, GTE range	B curve	6A	-	-	-	0,14	0,17	0,21	0,31	0,42	0,62	1	1,5	2,3	3,8	<u>7,1</u>	14	T	T	T	T	
		10A	-	-	-	-	-	0,19	0,28	0,38	0,55	0,9	1,3	2	3,3	6	<u>11</u>	21	T	T	T	
		13A	-	-	-	-	-	-	0,25	0,34	0,47	0,75	1,1	1,7	2,8	5	<u>8,9</u>	<u>16</u>	T	T	T	
		16A	-	-	-	-	-	-	-	0,34	0,47	0,75	1,1	1,7	2,8	5	<u>8,9</u>	<u>16</u>	T	T	T	
		20A	-	-	-	-	-	-	-	-	0,41	0,65	0,97	1,3	2,3	4	<u>6,8</u>	<u>12</u>	<u>21</u>	T	T	
		25A	-	-	-	-	-	-	-	-	-	0,65	0,97	1,3	2,3	4	<u>6,8</u>	<u>12</u>	<u>21</u>	T	T	
		32A	-	-	-	-	-	-	-	-	-	-	0,84	1,2	1,9	3,1	5,4	<u>9</u>	<u>15</u>	T	T	
		40A	-	-	-	-	-	-	-	-	-	-	-	-	1,2	1,9	3,1	5,4	<u>9</u>	<u>15</u>	T	T
		50A	-	-	-	-	-	-	-	-	-	-	-	-	-	1,8	2,8	4,5	<u>6,8</u>	<u>10</u>	T	T
	63A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,8	4,5	<u>6,8</u>	<u>10</u>	T	T	
	C curve	0,5A	0,07	0,12	0,16	0,22	0,24	0,34	0,61	1	1,6	3,2	<u>6,3</u>	<u>13</u>	T	T	T	T	T	T	T	
		1A	0,055	0,09	0,12	0,15	0,19	0,23	0,38	0,57	0,9	1,5	2,7	4,8	<u>9,3</u>	21	T	T	T	T	T	
		2A	-	0,09	0,12	0,15	0,19	0,23	0,38	0,57	0,9	1,5	2,7	4,8	<u>9,3</u>	21	T	T	T	T	T	
		3A	-	-	0,105	0,13	0,16	0,2	0,32	0,46	0,7	1,1	1,9	3,2	5,9	12	T	T	T	T	T	
		4A	-	-	-	0,13	0,16	0,2	0,32	0,46	0,7	1,1	1,9	3,2	5,9	<u>12</u>	T	T	T	T	T	
		6A	-	-	-	-	-	0,18	0,29	0,42	0,62	1	1,5	2,3	3,8	<u>7,1</u>	<u>14</u>	T	T	T	T	
		10A	-	-	-	-	-	-	0,26	0,37	0,55	0,9	1,3	2	3,3	6	11	21	T	T	T	
		13A	-	-	-	-	-	-	-	0,33	0,46	0,75	1,1	1,7	2,8	5	<u>8,9</u>	<u>16</u>	T	T	T	
		16A	-	-	-	-	-	-	-	-	0,46	0,75	1,1	1,7	2,8	5	<u>8,9</u>	<u>16</u>	T	T	T	
		20A	-	-	-	-	-	-	-	-	-	0,65	0,97	1,3	2,3	4	6,8	12	21	T	T	
		25A	-	-	-	-	-	-	-	-	-	-	0,97	1,3	2,3	4	6,8	12	21	T	T	
		32A	-	-	-	-	-	-	-	-	-	-	-	1,2	1,9	3,1	5,4	9	15	T	T	
		40A	-	-	-	-	-	-	-	-	-	-	-	-	1,9	3,1	5,4	9	15	T	T	
		50A	-	-	-	-	-	-	-	-	-	-	-	-	-	2,8	4,5	6,8	10	T	T	
		63A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,5	6,8	10	T	T	
	D curve	0,5A	0,07	0,12	0,16	0,22	0,24	0,34	0,61	1	1,6	3,2	5,7	<u>11</u>	24	T	T	T	T	T	T	
		1A	-	0,09	0,12	0,15	0,19	0,23	0,38	0,54	0,85	1,4	2,3	4	6,9	13	T	T	T	T	T	
		2A	-	-	-	0,15	0,19	0,23	0,38	0,54	0,85	1,4	2,3	4	6,9	13	T	T	T	T	T	
		3A	-	-	-	-	0,16	0,2	0,31	0,44	0,67	1,1	1,6	2,8	5	<u>9,2</u>	19	T	T	T	T	
		4A	-	-	-	-	-	0,2	0,31	0,44	0,67	1,1	1,6	2,8	5	<u>9,2</u>	19	T	T	T	T	
		6A	-	-	-	-	-	-	0,37	0,54	0,87	1,3	2,1	3,6	6,4	11	23	T	T	T	T	
		10A	-	-	-	-	-	-	-	0,46	0,74	1,1	1,6	2,8	5	<u>8,6</u>	<u>15</u>	T	T	T	T	
		13A	-	-	-	-	-	-	-	-	0,65	0,99	1,5	2,4	4	6,8	11	24	T	T	T	
16A		-	-	-	-	-	-	-	-	-	0,99	1,5	2,4	4	6,8	11	24	T	T	T		
20A		-	-	-	-	-	-	-	-	-	-	-	1,1	1,7	2,8	4,7	<u>7,4</u>	<u>14</u>	T	T		
25A		-	-	-	-	-	-	-	-	-	-	-	-	1,7	2,8	4,7	<u>7,4</u>	<u>14</u>	T	T		
32A		-	-	-	-	-	-	-	-	-	-	-	-	-	2,2	3,5	5,5	<u>9,1</u>	T	T		
40A		-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,5	5,5	<u>9,1</u>	T	T		
50A		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,5	<u>7,2</u>	13	T		
63A		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<u>7,2</u>	13	T	
Downstream: MMNxxx range	0,63A	-	-	0,105	0,14	0,17	0,21	0,33	0,46	0,66	1,02	1,5	2,3	3,8	7	14	T	T	T	T		
	1,25A	-	-	-	-	0,17	0,21	0,33	0,46	0,66	1,02	1,5	2,3	3,8	7	14	T	T	T	T		
	1,6A	-	-	-	-	-	0,17	0,27	0,38	0,54	0,84	1,2	1,9	3	5,4	10	18	T	T	T		
	2,5A	-	-	-	-	-	-	-	0,38	0,54	0,84	1,2	1,9	3	5,4	10	18	T	T	T		
	4A	-	-	-	-	-	-	-	-	0,43	0,67	1	1,4	2,2	3,5	5,8	9	15	T	T		
	6,3A	-	-	-	-	-	-	-	-	-	-	-	1	1,4	2,2	3,5	5,8	9	15	T	T	
	10A	-	-	-	-	-	-	-	-	-	-	-	-	-	1,7	2,8	4,6	7,2	11	T	T	
	12,5A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,8	4,6	7,2	11	T	T	
	16A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,6	5,6	9,2	T	T		
	20A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,6	9,2	T	T		
25A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9,2	T	T		

Protection devices

Limits (kA)		Upstream: fuses category Gg (SOCOMECC)											
In		80A	100A	125A	160A	200A	250A	315A	400A	500A	630A	800A	
Downstream: MCB 1,5 module / pole, DEF125 range	B curve	80A	-	2,2	3,9	6,2	8,8	13	T	T	T	T	T
		100A	-	-	3,9	6,2	8,8	13	T	T	T	T	T
		125A	-	-	-	6,2	8,8	13	T	T	T	T	T
	C curve	80A	-	-	2,8	5,3	7,8	13	T	T	T	T	T
		100A	-	-	-	5,3	7,8	13	T	T	T	T	T
		125A	-	-	-	-	7,8	13	T	T	T	T	T
	D curve	80A	-	-	-	-	6,6	15	T	T	T	T	T
		100A	-	-	-	-	-	12	T	T	T	T	T
		125A	-	-	-	-	-	-	T	T	T	T	T

T = total discrimination
 Each underlined value must be read as T when it is over the breaking capacity range of MCBs.

Control and signaling

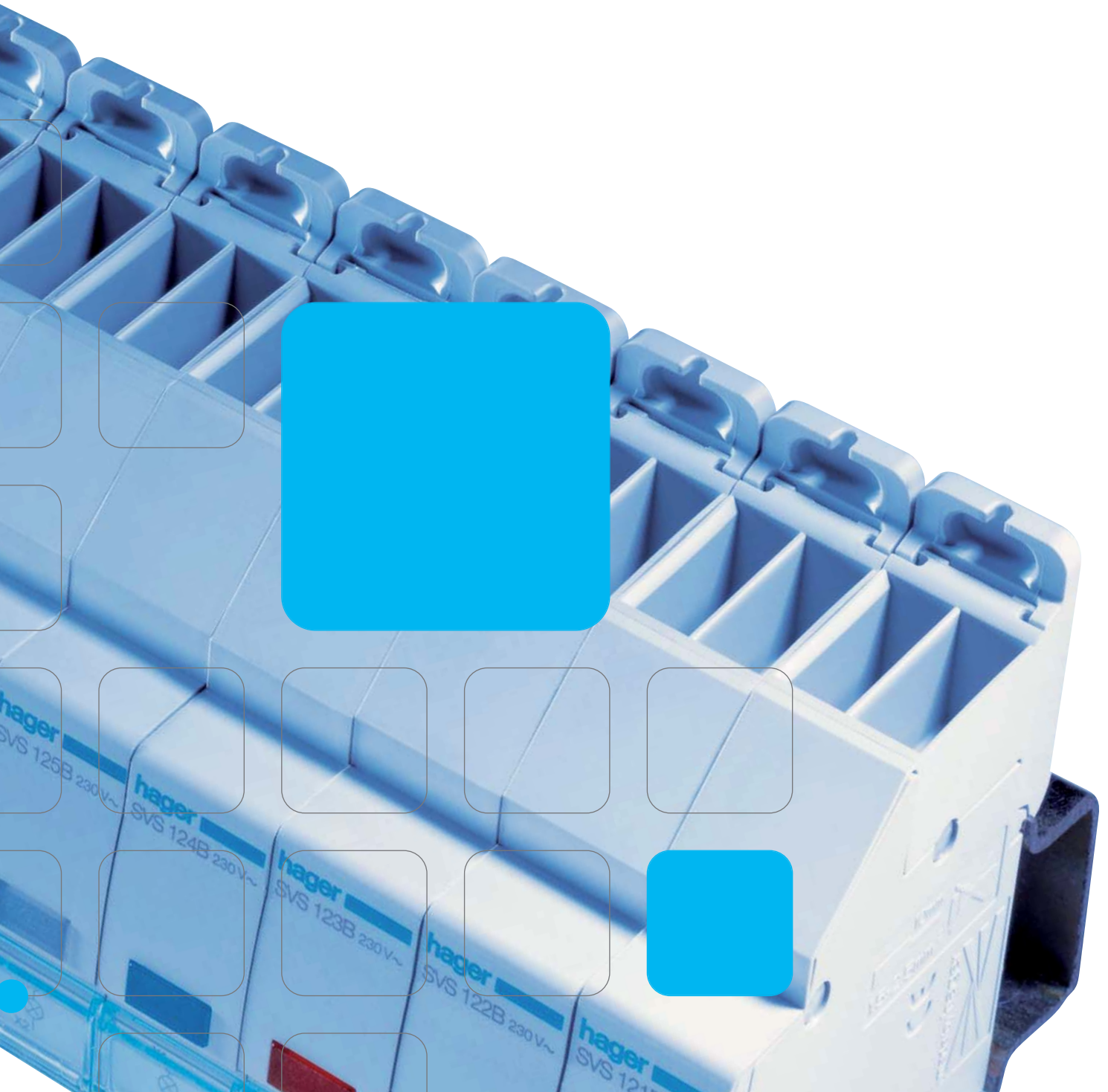
a wide range of devices so easy to use !

Modular push buttons range allows to realize controls with impulse or latching contacts. It offers various combinations integrating control buttons, lights and NO or NC contact types.

Indicator lights range features 5 different colors, 1 to 3 LEDs, 12-48V and 230V.

1 to 4 pole switch disconnectors allows to control circuit breaking in domestic and commercial installations.

To measure common electrical values, a whole range of devices such as ammeters, voltmeters are available.



indicator lights	E.2
push buttons	E.3
switch disconnectors	E.5
modular trip-free switches	E.6
modular changeover switches	E.8
selector switches for voltmeters and ammeters	E.9
voltmeters and ammeters	E.10
multi-function meters	E.14
control relays	E.16
emergency lighting	E.21
transformers, bells and buzzers	E.23



Indicator lights and push buttons

These products are used for remote controlling signalisation of any event in any electric installation (domestic, tertiary & industrial)

LED technology providing longer life, new design, integrated label holder

Comply with IEC 62094-1 (for indicator lights).

Connection capacity :

- 10 mm² rigid,
- 6 mm² flexible

Desigination	Characteristics	Width in ■	Pack qty.	Cat. ref.
<p>SVN122 SVN125 SVN121 SVN123 SVN124</p>	Single indicator light 230 V ~ 	with light : green	1	12 SVN121
		red	1	12 SVN122
		orange	1	12 SVN123
		blue	1	12 SVN124
		clear	1	12 SVN125
<p>SVN126</p>	Double indicator light 230 V ~ 	with light: green and red	1	12 SVN126
		clear	1	12 SVN128
<p>SVN127</p>	Triple indicator light 	with light: red	1	12 SVN127
		red/orange/green	1	12 SVN129
		green	1	12 SVN221
		red/orange/blue	1	12 SVN222
Low voltage indicator lights 12 to 48 V AC/DC 	with light	green	1	12 SVN131
	red	1	12 SVN132	
	orange	1	12 SVN133	
	blue	1	12 SVN134	
	clear	1	12 SVN135	
	green/red	1	12 SVN136	

Push buttons

2 versions :
 - impulse push buttons
 - latching push buttons





























These versions with indicator

lights are equipped with green or red diffuser. (led technology)

Connection capacity :

- 10 mm² rigid,
 - 6 mm² flexible.

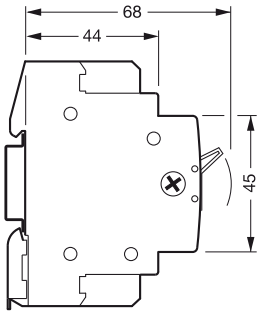
Comply with IEC 60947-5-1 for push buttons and IEC 62094-1 for indicator lights

	Designation	Characteristics	Width in ■ 17,5 mm	Pack qty.	Cat. ref.
 SVN311	Impulse push buttons				
		16 A - 250 V AC without indicator light contact: 1NO	1	12	SVN311
		contact: 1NC	1	12	SVN321
		contacts: 2NO	1	12	SVN331
		contacts: 2NC	1	12	SVN341
		contacts: 1NO+1NC	1	12	SVN351
		contacts: 2NO	1	12	SVN371
 SVN391		contacts: 2NO + green push button	1	12	SVN373
		contacts: 1NO+1NC	1	12	SVN391
	with indicator light :				
		contact: 1NO green	1	12	SVN411
		contact: 1NC red	1	12	SVN422
		contacts: 2NO red	1	12	SVN432
		contacts: 2NC green	1	12	SVN441
 SVN411		contacts: 1NO+1NC red	1	12	SVN452
	16 A - 12/48 V AC/DC				
		contacts: 2NO green	1	12	SVN461
	contacts: 2 NO red	1	12	SVN462	
 SVN422	Latching push buttons				
		16 A - 250 V AC without indicator light contact: 1NO	1	12	SVN312
		contact: 1NC	1	12	SVN322
		contacts: 2NO	1	12	SVN332
		contacts: 2NC	1	12	SVN342
		contacts: 1NO+1NC	1	12	SVN352
	with indicator light :				
		16 A - 250 V AC contact: 1 NO green	1	12	SVN413
		contacts: 2 NO green	1	12	SVN433
		16 A - 12/48 V AC contacts: 2NO green	1	12	SVN463
		contacts: 2 NO red	1	12	SVN464

Electrical and mechanical characteristics

General features			
Brand	Hager		
Part number	SVN1... / SVN2...	SVN4...	SVN3...
Designation	indicator lights	indicator lights + push buttons	push buttons
		indicator lights	
Standard	IEC62094-1		IEC60947-5-1
Light technology	LED light		
Electrical characteristics			
Rated insulation voltage	250V		
Rated impulse withstand voltage	4kV (2kV for 12-48V version)	4kV	
Operational voltage	230V AC (1)		
Frequency	50/60Hz		
Operational thermal current	n/a	16A	
Operational current @ 230V AC12	n/a	16A	
Operational current @230V AC14	n/a	10A	
LED power	0,8W (230V) 0,33W (48V) 0,08W (24V) 0,018W (12V)		
LED consumption	3,45mA (230V) 6,9mA (48V) 3,3mA (24C) 1,5mA (12C)	9,7mA (48VDC)4,6mA (24VDC) 2,1mA (12VDC)	
Conditional short circuit current	n/a	1000A with gl 10A fuse	
IP class	IP2X		
Degree of pollution	3		
Connecting			
Type of connection	cage terminals		
Connection capacity with flexible cable	0,75mm ² to 6mm ²		
Connction capacity with rigid cable	0,75m ² to 10m ²		
Terminal tightening torque	mini : 1,3Nm ; Max 2Nm : advised 1,65Nm rigid and 1,8Nm suppl		
Case material	Thermoplastic (Polyamide) comply with IEC 695-2-2		
Mechanical characteristics			
Electric endurance in number of cycles	n/a	15000 (AC12); 6000 (AC14)	
Mechanical endurance in no. of operations	n/a	15000	
Life time	100000 h		
Operating temperature	-20 to +50°C		
Storage temperature	-40 to +80°C		
Climat environment	all climates		
Protection index IP	20		
Height	2000 m		
Installation			
Mounting	DIN rail EN50.022-35		
Mounting position	performances not affected if installed vertically, horizontally or flat		

(1) except 12 to 48V indicator light (SVN131, SVN132, SVN133, SVN134, SVN135)



Description
For use as a switch disconnector in all types of circuit.

Technical data utilisation category
AC 22B (AC21B for 125A)

In : 16, 25, 32A
shrouded cable clamps
connection capacity:
16mm² rigid conductor




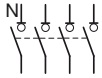
10mm² flexible conductor

In : 40, 63, (1 pole)
cable clamps, connection capacity:
25mm² rigid conductor
16mm² flexible conductor
In : 80A, 125A
cable clamps connection capacity:
50mm² rigid conductor
35mm² flexible conductor

All switches have a green / red indication on the handle giving positive contact indication.

Use MZN175 as locking device.

Comply with BS EN 60 947-3 all ratings.

Designation	Characteristics	Width in 17.5mm	Pack qty.	Cat. ref.		
 SB140	Single pole	1 x 16A 250V~	1	12		
		1 x 16A 250V~ with pilot light	1	1		
		1 x 25A 250V~	1	12		
		1 x 25A 250V~ with pilot light	1	1		
		1 x 32A 250V~	1	1		
		1 x 32A 250V~ with pilot light	1	1		
		1 x 40A 250V~	1	1		
		1 x 63A 250V~	1	1		
		1 x 80A 250V~	1	1		
		1 x 100A 250V~	1	1		
		1 x 125A 250V~	1	1		
	 SB232 SB240	Double pole	2 x 16A 250V~	1	12	
			2 x 16A 250V~ with pilot light	1	1	
			2 x 25A 250V~	1	12	
		2 x 25A 250V~ with pilot light	1	1		
		2 x 32A 250V~	1	1		
		2 x 32A 250V~ with pilot light	1	1		
		2 x 40A 250V~	1	1		
		2 x 63A 250V~	1	6		
		2 x 80A 250V~	1	1		
		2 x 100A 250V~	1	1		
		2 x 125A 250V~	1	1		
 SB363		Triple pole	3 x 16A 400V~	2	1	
		3 x 25A 400V~	2	1		
		3 x 32A 400V~	2	1		
		3 x 32A 400V~ large terminals	3	1		
		3 x 40A 400V~	3	1		
		3 x 63A 400V~	3	1		
		3 x 63A 400V~ large terminals	3	1		
		3 x 80A 400V~	3	1		
		3 x 100A 400V~	3	1		
		3 x 125A 400V~	3	1		
	Designation	Characteristics	Width in 17.5mm	Pack qty.	Cat. ref. neutral left	Cat. ref. neutral right
 SB412F SB416F	Four pole	4 x 16A 400V~	2	1	SB416F	SB416
		4 x 25A 400V~	2	1	SB425F	SB425
		4 x 32A 400V~	2	1	SB432F	SB432
		4 x 40A 400V~	4	1	SB440F	SB440
		4 x 63A 400V~	4	1	SB463F	SB463
		4 x 80A 400V~	4	1	SB480F	SB480
		4 x 100A 400V~	4	1	SB499F	SB499
		4 x 125A 400V~	4	1	SB412F	SB412

Control and signaling

Trip-free switches

Allows remote control* tripping via voltmetric tripping relay to associate on the left side of product associated auxiliary : auxiliary contact (AC).

For the main protection in general or sub-switchboard

* emergency stop

Connection capacity for switch :

- 6 to 16 mm² flexible
- 6 to 25 mm² rigid

Associated auxiliary :

- 0,5 to 6 mm² flexible
- 1 to 10 mm² rigid

Comply with IEC 947-1 and 947-3.
AC 23 A

Designation	Characteristics	Width in 17,5 mm	Pack qty.	Cat. ref.
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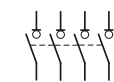
2 pole switches



$U_i = 690 V \sim$

2 x 40 A	250 V ~	2,5	1	SA240
2 x 63 A	250 V ~	2,5	1	SA263
2 x 80 A	250 V ~	2,5	1	SA280

4 pole switches



$U_i = 690 V \sim$

4 x 40 A	400 V ~	4,5	1	SA440
4 x 63 A	400 V ~	4,5	1	SA463
4 x 80 A	400 V ~	4,5	1	SA480



SA263

Shunt trip



allows remote tripping of the trip free switch.

230 - 415V~ 110 - 130V=		1	1	MZ203
24 - 48V~ 12 - 48V=		1	1	MZ204



MZ203

Under voltage release



allows trip free switch to be closed only when voltage is above 70% of U_n . trip free switch will automatically trip when voltage falls by 35% of U_n

48V =		1	1	MZ205
230V ~		1	1	MZ206



MZ205

Over voltage release

allows trip free switch to be closed only when voltage between Ph and N is above 280V.

230V ~		1	1	MZ209
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Important: The switch should also be protected against overloads.
The switch calibration needs to be at least equal to the calibration of the upstream MCB.

Product type	In/A	Un/V 50/60Hz	N° of poles	mechanical endurance in n° of operations	electrical endurance in n° of operations In-Un Cosφ=0,6	Short circuit withstand (kA presumed) - Upstream protection														
						Fuse links										MCB				
						gG fuse (A)										MV, MW -3kA (EN 60898-1) (A)				
						16A	25A	32A	40A	63A	80A	100A	125A	16A	20A	25A	32A	40A		
SB	16	230/400V	1,2,3,4	300 000	30 000	10									3					
	25	230/400V	1,2,3,4	300 000	30 000	10	10								3	3	3			
	32	230/400V	1,2,3,4	300 000	30 000	10	10	10							3	3	3	3		
	40	230/400V	1,2,3,4	150 000	30 000	10	10	10	10						3	3	3	3	3	
	63	230/400V	1,2,3,4	150 000	10 000	10	10	10	10	10					3	3	3	3	3	
	80	400V	1,2,3,4	90 000	7500	10	10	10	10	10	10	6			3	3	3	3	3	
	100	400V	1,2,3,4	90 000	7500	10	10	10	10	10	10	6			3	3	3	3	3	
	125	400V	1,2,3,4	40 000	2000	10	10	10	10	10	10	6	3		3	3	3	3	3	

Product type	In/A	Un/V 50/60Hz	n° of poles	mechanical endurance in n° of operations	electrical endurance in n° of operations In-Un Cosφ=0,6	Short circuit withstand (kA presumed) - Upstream protection																		
						MCB										HLF - 10kA HMB, HMC - 15kA (IEC 60947-2) (A)								
						MBN, MCN - 6kA (EN 60898-1) MB, MT, MC, MU - 6kA (EN 60898-1) (A)					NBN, NCN - 10 kA (IEC 60947-2) NRN - 15 à 25 kA (IEC 60947-2) (A)													
						16A	25A	32A	40A	63A	80A	100A	125A	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	
SB	16	230/400V	1,2,3,4	300 000	30 000	3									3									
	25	230/400V	1,2,3,4	300 000	30 000	3	3	3							3	3	3							
	32	230/400V	1,2,3,4	300 000	30 000	3	3	3	3						3	3	3	3						
	40	230/400V	1,2,3,4	150 000	30 000	6	6	6	6	6					6	6	6	6	6	6	6			
	63	230/400V	1,2,3,4	150 000	10 000	6	6	6	6	6	6	6			6	6	6	6	6	6	6			
	80	400V	1,2,3,4	90 000	7500	6	6	6	6	6	6	6			6	6	6	6	6	6	6	6	6	
	100	400V	1,2,3,4	90 000	7500	6	6	6	6	6	6	6			6	6	6	6	6	6	6	6	6	
	125	400V	1,2,3,4	40 000	2000	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6

Product type	In/A	Un/V 50/60Hz	Im IDL alone	Short circuit withstand (kA presumed) - Upstream protection														
				Fuse links										MCB				
				gG fuse (A)										MV, MW -3kA (EN 60898-1) (A)				
				16A	25A	32A	40A	63A	80A	100A	16A	20A	25A	32A	40A			
IDL 2P under 230 V	40	230V	1500 A	80	80	80	80					3	3	3	3	3		
	63	230V	1500 A	80	80	80	80	32				3	3	3	3	3		
	80	230V	1500 A	80	80	80	80	32	10			3	3	3	3	3		
IDL 4P under 230 V	40	400V	1500 A	80	80	80	80					3	3	3	3	3		
	63	400V	1500 A	80	80	80	80	32				3	3	3	3	3		
	80	400V	1500 A	80	80	80	80	32	10			3	3	3	3	3		

Product type	In/A	Un/V 50/60Hz	Im IDL alone	Short circuit withstand (kA presumed) - Upstream protection															
				MCB										HLF - 10kA HMB, HMC - 15kA (IEC 60947-2) (A)					
				MBN, MCN - 6kA (EN 60898-1) MB, MT, MC, MU - 6kA (EN 60898-1) (A)					NBN, NCN - 10 kA (IEC 60947-2) NRN - 15 à 25 kA (IEC 60947-2) (A)										
				16A	25A	32A	40A	63A	80A	100A	16A	20A	25A	32A	40A	50A	63A	80A	100A
IDL 2P under 230 V	40	230V	1500 A	6	6	6	6	6			10	10	10	10	10				
	63	230V	1500 A	6	6	6	6	6	6	6	10	10	10	10	10	10	10		
	80	230V	1500 A	6	6	6	6	6	6	6	10	10	10	10	10	10	10	15	
IDL 4P under 230 V	40	400V	1500 A	6	6	6	6	6			10	10	10	10	10				
	63	400V	1500 A	6	6	6	6	6	6	6	10	10	10	10	10	10	10		
	80	400V	1500 A	6	6	6	6	6	6	6	10	10	10	10	10	10	10	10	

Control and signaling

Description
AC22 modular manual changeover switch is a solution for the control and insulation between two power supplies or circuits.

Connection capacity for switch :
- 16 mm² rigid
- 10 mm² flexible

Comply with IEC 60 669-1 and IEC 60 947-3 .
AC 22



SF118F

Designation	Characteristics	Width in 17.5mm	Pack qty.	Cat. ref.
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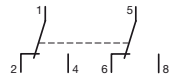
2 ways single pole	1 x 25A 250V~	1	12	SF118F
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2 ways changeover 1NO + 1 NC	1 x 25A 250V~	1	12	SF115
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Double 2 ways double pole	2 x 25A 250V~	2	6	SF218F
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SF219F

Switches, center-off changeover single pole	1 x 25A 250V~	1	12	SF119F
	1 x 40A 250V~	1	12	SF119G

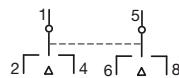


double pole	2 x 25A 250V~	2	6	SF219F
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	2 x 40A 250V~	2	6	SF219G
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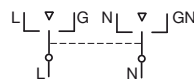
	3 x 40A 400V~	3	4	SF319G
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	4 x 40A 400V~	4	3	SF419G
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Changeover switches with centerpoint	2 x 63A 250V~	4	1	SF263
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	4 x 63A 400V~	8	1	SF463
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SZ010

Handle link pin for switch handles	1 set includes 5 pins 2 mod width 5 pins 3 mod width 5 pins 4 mod width		1 set	SZ010
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Description

To provide command signals or program selection in electrical control schemes.

Application :


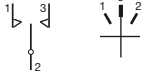
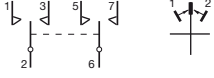

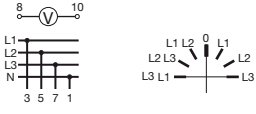
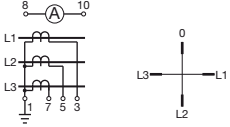


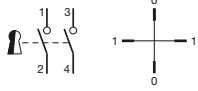

For domestic and commercial installations.

Connection capacity :

- rigid conductor : 1.5 to 10 mm²
- flexible conductor : 1 to 6 mm²

Isolating voltage : 500V~
Nominal current : 10-20A

Comply with IEC 947-3 and IEC 60 947-3.

	Designation	Characteristics	Width in ■ 17.5mm	Pack qty.	Cat. ref.
 SK600	1 pole selector switch 	20A 400V~ non spring return	3	1	SK600
	2 pole selector switch 	20A 400V~ non spring return	3	1	SK601
 SK602	Voltmeter selector 3Ph&N 3 readings between phases 3 readings between phase & neutral null position (no reading) 	20A 400V~	3	1	SK602
	Ammeter selector 4 positions use in 3Ph&N reading by phase 0 position (no reading) should be used with current transformer (CT) 	20A 400V~	3	1	SK603
 SK603	Step selector switch 	20A 400V~	3	1	SK604
	Key selector switch 	10A 400V~	3	1	SK606
 SK606					

Analogue voltmeters

For commercial and industrial installations.

- single phase : direct connection
- three phase : use of a voltmeter selector switch SK602 - see page E.9

Frequency : 50/60Hz

Analogue ammeters

For commercial and industrial installations.

Direct reading :
up to 30A

Indirect reading via current transformers - see page F.22 from 50 to 600A

Connection capacity :
- rigid conductor 10 mm²
- flexible conductor 6 mm²

Comply with IEC 60 054-1.

Designation	Characteristics	Width in ■ 17.5mm	Pack qty.	Cat. ref.
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SM500

Voltmeter	accuracy : 1,5% (full scale) consumption : 3VA 0 - 500V	4	1	SM500
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Analog ammeters direct	0 - 5A	4	1	SM005
	0 - 15A	4	1	SM015
	0 - 30A	4	1	SM030



SM030

Ammeters current transformer (CT) operated	accuracy : 1,5% (full scale)			
- reading via CT SR051	scale : 0 - 50A	4	1	SM050
- reading via CT SR101	scale : 0 - 100A	4	1	SM100
- reading via CT SR150	scale : 0 - 150A	4	1	SM150
- reading via CT SR250	scale : 0 - 250A	4	1	SM250
- reading via CT SR400	scale : 0 - 400A	4	1	SM400
- reading via CT SR600	scale : 0 - 600A	4	1	SM600
- reading via CT SR800	scale : 0 - 800A	4	1	SM800
- reading via CT SR850	scale : 0 - 1000A	4	1	SM850
- reading via CT SR900	scale : 0 - 1500A	4	1	SM900
- reading via CT SR910	scale : 0 - 2000A	4	1	SM910

Digital voltmeters SM501
For domestic and commercial installations.

- three phase :
use of a voltmeter selector
switch SK602

Digital ammeters

- from SM020 to SM911 :
SM020 : direct reading
- from SM151 to SM911 :
reading via a current transformer
(see below)

Connection capacity :

Rigid conductor 10 mm²
Flexible conductor 6 mm²

Comply with IEC 60 054-1.

Designation	Characteristics	Width in ■ 17.5mm	Pack qty.	Cat. ref.
Digital voltmeter	voltage rating : 220/230V; 50/60Hz accuracy : ±1% consumption : 4VA scale : 0 -500V	4	1	SM501
Digital ammeters	voltage rating : 220/230V; 50/60Hz accuracy : ±1% consumption : 4VA			
- direct	scale : 0-20A	4	1	SM020
- reading via CT 150/5A (SR150)	scale : 0-150A	4	1	SM151
- reading via CT 400/5A (SR400)	scale : 0-400A	4	1	SM401
- reading via CT 600/5A (SR600)	scale : 0-600A	4	1	SM601
- reading via CT 800/5A (SR800)	scale : 0-800A	4	1	SM801
- reading via CT 1500/5A (SR900)	scale : 0-1500A	4	1	SM901
- reading via CT 2000/5A (SR910)	scale : 0-2000A	4	1	SM911



SM501



SM020

Digital multimeters

Multimeter

For monitoring the electrical
network : single, two or three
phases (with or without neutral).
Connection on current
transformer (not provided).
Enables to display 3 electrical
values at the same time, in type

instantaneous, average or
maximum (voltage and intensity
per phase in RMS value).

For monitoring of power
generator, it measures the
frequency and working time.

Connection capacity :

Rigid conductor 10 mm²
Flexible conductor 6 mm²

Comply with IEC 60 054-1.

Designation	Characteristics	Width in ■ 17,5 mm	Pack qty.	Cat. ref.
Multimeter	- 3 voltmeters : 35 to 480 V - 3 ammeters per transformer 0-5 A : 5 to 6000 A - mesure of frequency : 40 to 80 Hz - hourly metering	4	1	SM001



SM001

Analogue voltmeter and ammeter

Technical specifications

Electrical characteristics

- direct reading voltmeter : 500V for 50/60Hz
- direct reading ammeter : 5, 15, 30A
- ammeter with CT : CT/5A
- consumption : voltmeter: 1.5VA/ammeter : 1,5VA
- isolating voltage : 2kV

Environment

- working T°: -23°C ± 2°C class = 2
- working T°: -25°C to +50°C class > 2
- storage T°: -40°C to +80°C

Connection capacity

- flexible : 1 to 6 mm²
- rigid : 1.5 to 10 mm²

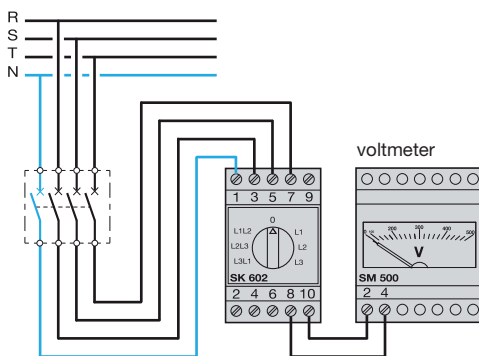
Voltmeters range

ref.	scale	reading
SM500	0-500V	direct

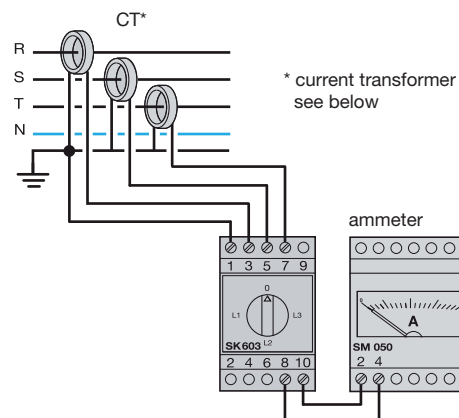
Ammeters range

ref.	scale	reading
SM005	0-5A	direct
SM015	0-15A	direct
SM030	0-30A	direct
SM050	0-50A	via CT/5A
SM100	0-100A	via CT/5A
SM150	0-150A	via CT/5A
SM250	0-250A	via CT/5A
SM400	0-400A	via CT/5A
SM600	0-600A	via CT/5A
SM800	0-800A	via CT/5A
SM850	0-1000A	via CT/5A
SM900	0-1500A	via CT/5A
SM910	0-2000A	via CT/5A

Electrical connection



Electrical connection



Digital voltmeter and ammeter

Technical specifications

Electrical characteristics

- Working voltage: 220/230V~ 50/60Hz
- Consumption: 4VA

Environment

- Working T°: -5 to +40°C
- Storage T°: -10°C to +55°C

Connection

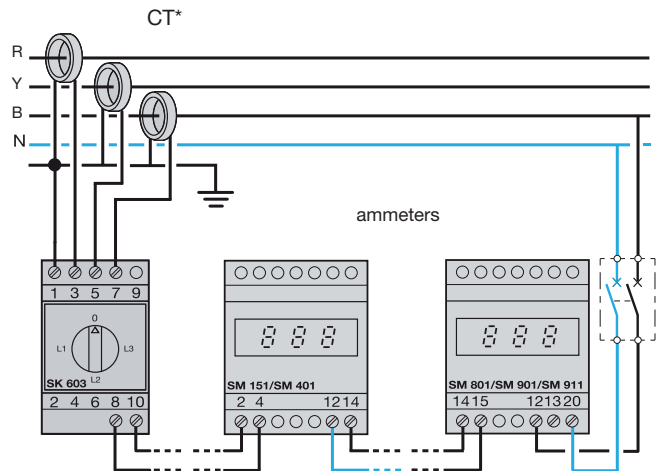
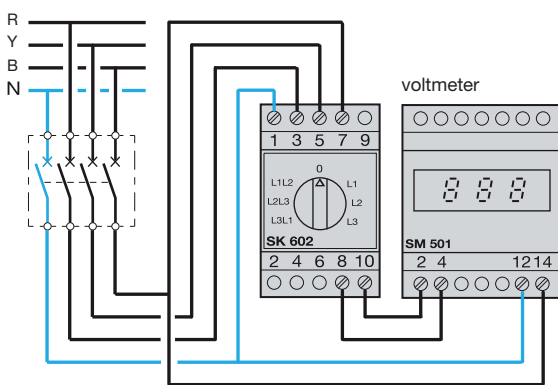
- Connection capacity:
flexible: 6 mm²
rigid: 10 mm²

Overload withstand of ammeters

- 1,2 x I_n continuous
 - 2 x I_n for 5 seconds
- These values are to allow for starting currents

ref.	product	range	consumption	accuracy %	reference temp. °C	accuracy variation	max permanent overload	momentary overload	frequency Hz	isolating voltage
SM501	voltmeter	500 V	≤ 4,5 VA	± 1	23 ± 1°C	± 0,03% / °C	1,2 Un	2 Un/5 sec.	45 - 65	2 kV/50 Hz-1 min
SM020	direct ammeter	0 - 20 A	≤ 4,5 VA	± 1	23 ± 1°C	± 0,03% / °C	1,2 In	10 In/5 sec.	45 - 65	2 kV/50 Hz-1 min
SM151 SM401 SM601 SM801 SM901 SM911	ammeter with CT	0 - 150 A 0 - 400 A 0 - 600A 0 - 800A 0 - 1500A 0 - 2000A	≤ 4,5 VA	± 1	23 ± 1°C	± 0,03% / °C	1,2 In	10 In/5 sec.	45 - 65	2 kV/50 Hz-1 min
SM001	Multimeter	35 to 480V~ 5 o 8000 A 40 to 80 Hz	< 0,5 VA ≤ 0,5 VA	0,5% ±digit 0,5% ±digit ± 2 Hz			1,2 In	5 In/1 sec.	40 - 80	

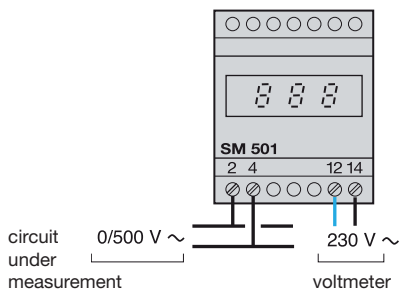
Electrical connection



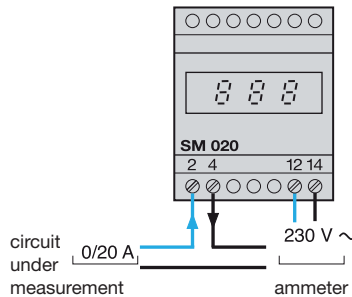
connection: SM151/401/601 or : SM801/SM901/SM911
* CT rating of your choice

Operating principle

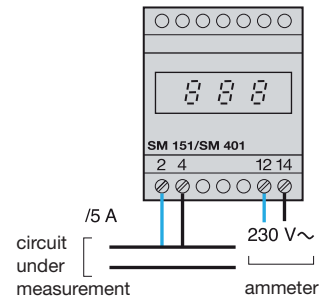
For SM501



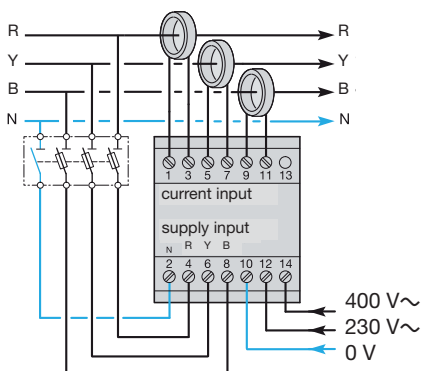
For SM020



For SM151, SM401, SM601

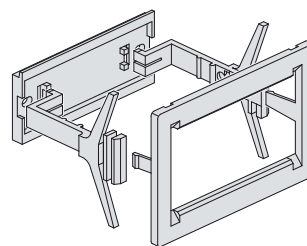


Operating principle for SM001



SM002

Door flush mounting kit for SM001



Description

Multi-function meter measures the extent of electrical values for all LV or LV/HV networks. It allows starting from the front panel to configure and display all the electric parameters and to exploit the functions of measurement, metering and energies management, harmonics analysis, remote control and control state of control devices, communication and detection of high voltages, peaks and voltage disconnections. This device is a multi-function meter for measuring electrical values for single, two and three phase low and high voltage networks.

SM102E:

measurement in real effective values (TRMS) of:
 - current per phase and neutral in instant and maximum value,
 - phase-to-neutral and phase-to-phase voltages, In instant,
 - frequency, In instant,
 - active positive power total in

instant and maximum value,
 - reactive positive power total in instant and maximum value,
 - apparent positive power total in instant and maximum value,
 - power factor (PF) total with inductive or capacitive indication
 - harmonic distortion rate (THD) up to 51 on phase-to-neutral and phase-to-phase voltages and currents (THD 3U, THD 3V, THD 3I)

Energies meters

- positive active energy meter
 - positive reactive energy meter
 - programmable hour run meter

SM103E:

- Same measures as for SM102E with average values,
 - active and reactive power on 4 quadrants (\pm),
 - harmonic distortion rate (THD) up to 51 on phase-to-neutral and phase-to-phase voltages and currents (THD 3U, THD 3V, THD 3I, THD In),

Metering:

- active and reactive power meter on 4 quadrants,
 - apparent power meter,
 - programmable hour run meter.

Common equipments:

- backlit LCD screen,
 - direct access key for currents (instantaneous and max. values), current THD and set up wiring correction,
 - direct access key for voltages, frequency and voltage THD,
 - direct access key for active, reactive and apparent power (instantaneous and max. values) and power factor,
 - direct access key for energies and hour meters.

Connection capacity:

- voltage: rigid or flexible conductors 2,5 mm²
 - current: rigid or flexible conductors 6 mm²

Comply with IEC 61 557-12, IEC 62 053-22 class 0.5 S and IEC 62 053-23 class II

Designation	Characteristics	Cat. ref.
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SM102E

Low voltage multi-function meters	measures of instantaneous and maximum values	SM102E
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Low and high voltage multi-function meters and network analyser	measures of instantaneous, average and maximum values	SM103E
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Pulse output module 2 pulse outputs cable for configuration (kWh, kvarh, kVah)	for meter SM102E with 1 adjustable output	SM200
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	for meter SM103E with 2 adjustable outputs	SM201
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SM103E

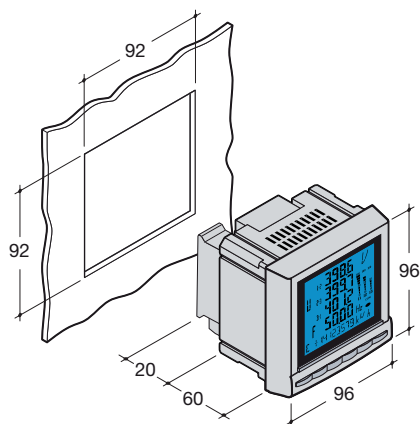
Input / output module 2 inputs, 2 outputs cable for configuration on various measures	for meter SM103E (3 modules max. can be connected)	SM202
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Analogue outputs module 2 outputs cable for configuration on various measures	for meter SM103E (2 modules max. can be connected)	SM203
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Technical characteristics

	SM102E	SM103E
Current measurement on insulated inputs (TRMS)		
CT primary	10 000 A	10 000 A
CT secondary	5 A	1 and 5 A
Measurement range	0-11 kA	
Input consumption	0,6 VA	≤ 0,1 VA
Accuracy	0,2 %	
Sustained overload	6 A	
Intermittent overload	10 x In for 1 s	
Voltage measurement (TRMS)		
Direct measurement between phases	50 - 500 V	18 - 700 V
Direct measurement between phases and neutral	28 - 289 V	11 - 404 V
Frequency	50/60 Hz	
Input consumption	≤ 0,1 VA	
Accuracy	0,2 %	
Power measurement accuracy	0,5 %	
Power factor measurement accuracy	0,5 %	
Frequency measurement range	45 - 65 Hz	
Frequency measurement accuracy	0,1 %	
Active energy accuracy	class 0,5 S	
Reactive energy accuracy	class 2	
Measurement updating period	1 s	
Copper conductor connection capacity	flexible or rigid: 2,5 mm ² flexible or rigid: 6 mm ²	
Auxiliary		
Power supply	110 - 400 V AC ± 10 % 120 - 350 V DC ± 20 %, 12 - 48 V DC -6 to +20 %	
Frequency	50/60 Hz	
Consumption	≤ 10 VA	

Dimensions



Description

Control relays are used in installations where the current or the voltage fluctuation may damage equipments.

The range is composed of modular devices :

EU100/101/301

Voltage control relays dedicated to protect air conditioning equipments :

EU100, EU101 single phase
EU301 three phase

They monitor the compressor power supply and disconnect the compressor when the voltage is faulty.

EU102/302

Voltage control relay used to survey DC or AC voltage :
EU102 single phase product to monitor DC or AC

EU302 three phase control relay used to check AC voltage
They survey a voltage and close contact as soon as the measurement is not ok.

EU103

Current control relay used to survey DC or AC current :
EU103 single phase product to monitor DC or AC current direct via current transformer

It surveys a current and closes a contact as soon as the measurement is not ok.

Phase control relay EU300 to verify phase parameters (asymmetry, loss of phase, undervoltage)

The two digital control relays EU102 and EU103 are equipped with an LCD indicator. During normal operation, the LCD displays the measured voltage (EU102) or current (EU103). The LCD and the local push buttons are also used to enter the parameter settings (type of signal, monitored levels,...)

In case of an error, the relay will close a contact (changeover contact 8A)

Designation	characteristics	Width in 17.5mm	Pack qty.	Cat. ref.
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EU100

Single phase compressor control relay	Power supply 230V AC 50/60 Hz Under/over voltage control Umin : 0,75 Un - Umax : 1,2 Un Restart duration (5 or 10 minutes) selected via bridge Output : changeover contact 8A AC1 250V~	2	1	EU100
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EU300

Single phase compressor control relay	Power supply 230V AC 50/60 Hz Under/over voltage control Umin/Umax : +/-5% to +/-20% Un set via potentiometer Restart duration (5 or 10 minutes) selected via switch Output : changeover contact 8A AC1 250V~	2	1	EU101
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Three phase compressor control relay	Power supply 400V AC 50/60 Hz Under/over voltage control Umin/Umax : +/-5% to +/-20% Un set via potentiometer Restart duration (5 or 10 minutes) selected via switch Output : changeover contact 8A AC1 250V~	2	1	EU301
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Phase control relay	Power supply 400V AC 50/60 Hz Under / over voltage control Loss of phase, phase order control Asymetry control : +/-5% to +/-20% set via potentiometer Output : changeover contact 8A AC1 250V~	2	1	EU300
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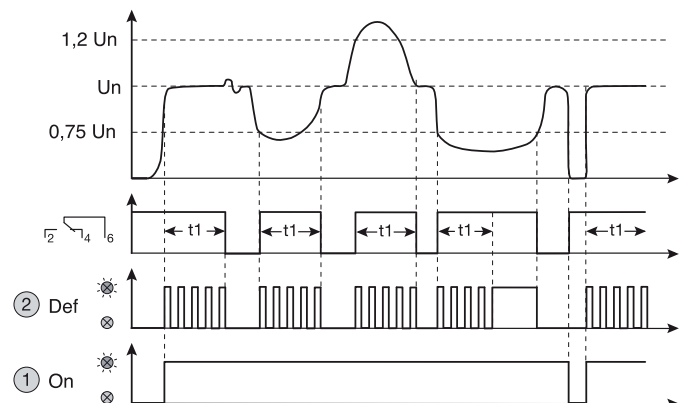
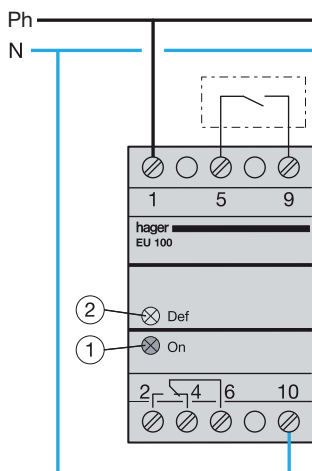


EU102

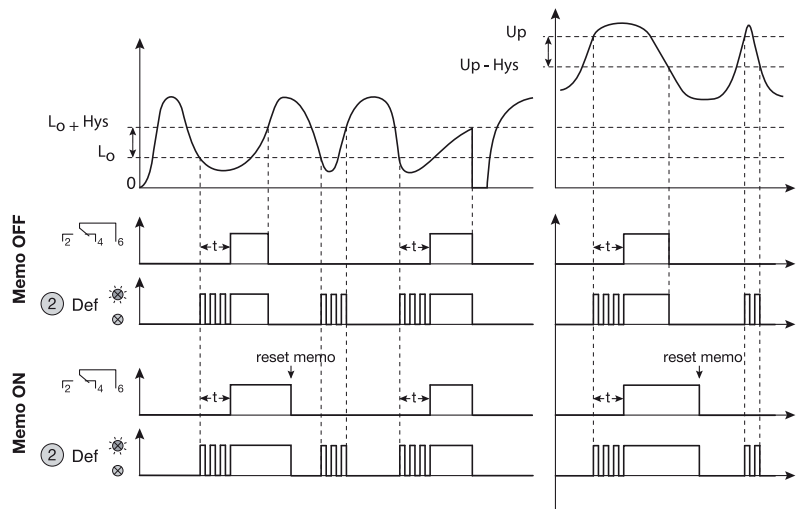
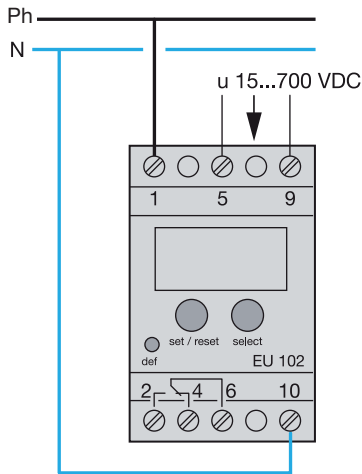
Designation	characteristics	Width in I 17.5mm	Pack qty.	Cat. ref.
Voltage control relay with LCD	Power supply 230V~ 50/60 Hz Voltage monitored DC 15 to 700V or AC 15 to 480V~ Under / over voltage or both control bands Parameter setting via push button and LCD indicator Output : changeover contact 8A AC1 250V~	2	1	EU102
Three phase voltage control relay	Power supply U_n 400V~ 50/60 Hz Under/over voltage control U_{min}/U_{max} : +/-5% to +/-20% U_n set via potentiometer Output : changeover contact 8A AC1 250V~	2	1	EU302
Current control relay single phase with LCD	Power supply U_n 230V~ 50/60 Hz Current control DC or AC, direct 0,1A to 10A or via current transformer Under / over current or both control bands Parameter setting via push button and LCD indicator Output : changeover contact 8A AC1 250V~	2	1	EU103

Ref.	EU 100	EU 101	EU 301	EU 302	EU 300	EU 102	EU 103
Function	single phase compressor control relay	single phase compressor control relay	three phase compressor control relay	three phase voltage control relay	phase control relay	voltage control relay with LCD	current control relay with LCD
LCD indicator	No					measured voltage	measured current
Power supply	230 V AC +10% -15% 50/60Hz +/-2%		230 V AC +10% -15% 50/60Hz +/-2%		230 V AC +10% -15% 50/60Hz +/-2%		
Power consumption	< 5 VA						
Output contact	8A - AC1 - 250V closed : normal status opened : default status						
Disconnection time	5min / 10min				-		
Response time	200 ms			0,1..12s set via potentiometer	200 ms	200 ms	
Monitoring function	monitoring function over/under voltage				monitor. funct. under voltage loss of phase	over voltage over current under voltage band	under current band
Monitoring levels	Umin : 0.75Un Umax : 1.2Un	Umin/Umax : +/-5% to +/-20%Un set via potentiometer		Umin : +/-5 to +/-20% Un Umax : 1.15Un	asymmetry +/-5% to +/-20% Umin : 0.70Un	DC : 15V to 700V AC : 15V rms to 480V rms	DC : 0.1 to 10A AC : direct : 0.1to10A or via transformer : X/5
Hysteresis						5 to 50%	
Latching function	no			yes	no	yes	
Supervised voltage	the power supply						
Width	2 modules					2 modules	
LED power supply : green	lights when powered						
LED default information : red	lights in case of fault, flashing during time elapses, off during normal status						
LED asymmetry information : yellow					asymmetry fault		
IK	3						
ingress protection	IP 20						
Working temperature	-20 to +55°C						
Storage temperature	-40 to +70°C						
Connexion flexible	0.75 to 4mm ²						
Connexion rigid	1 to 6 mm ²						

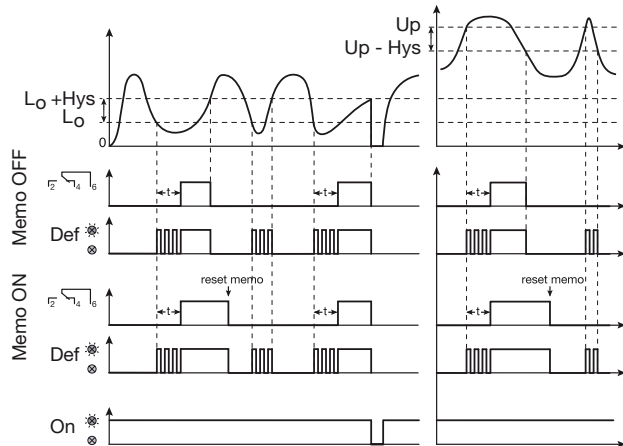
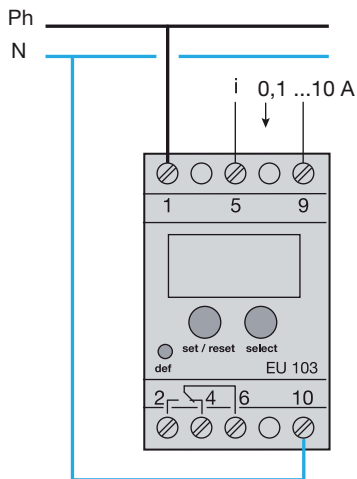
Air conditioning control relay single phase EU 100



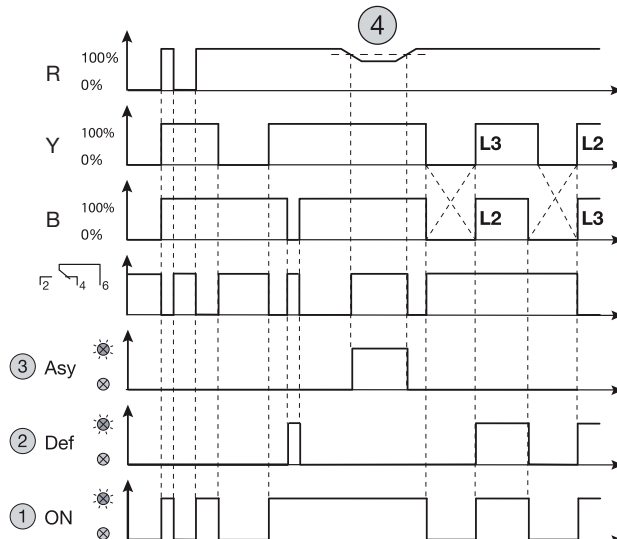
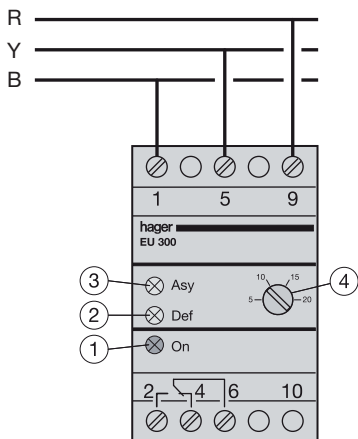
Voltage control relay single phase EU 102



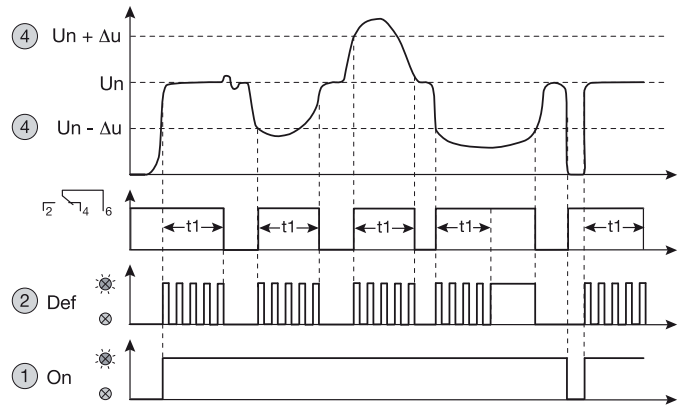
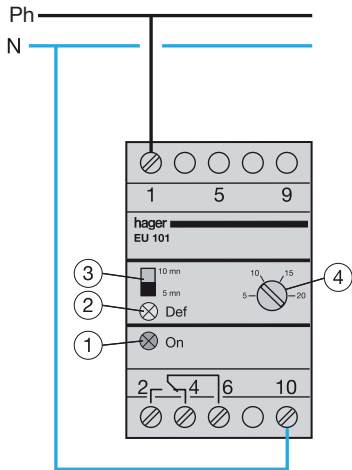
Current control relay single phase EU 103



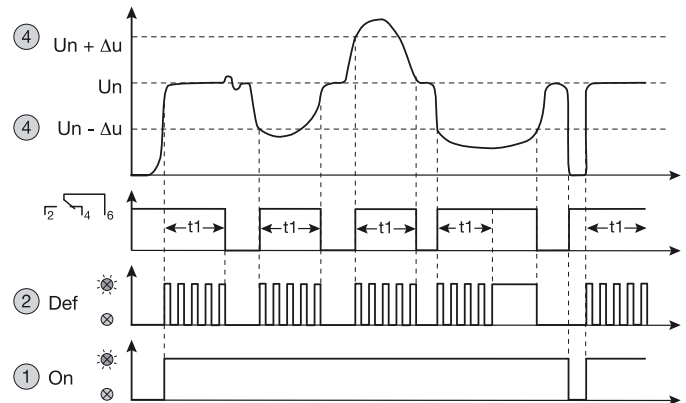
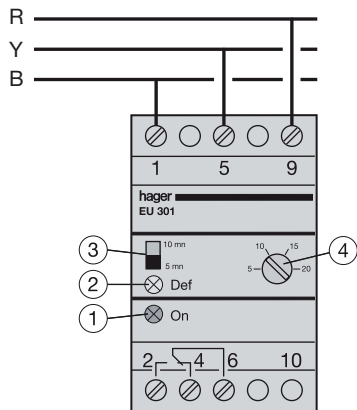
Phase control relay EU 300



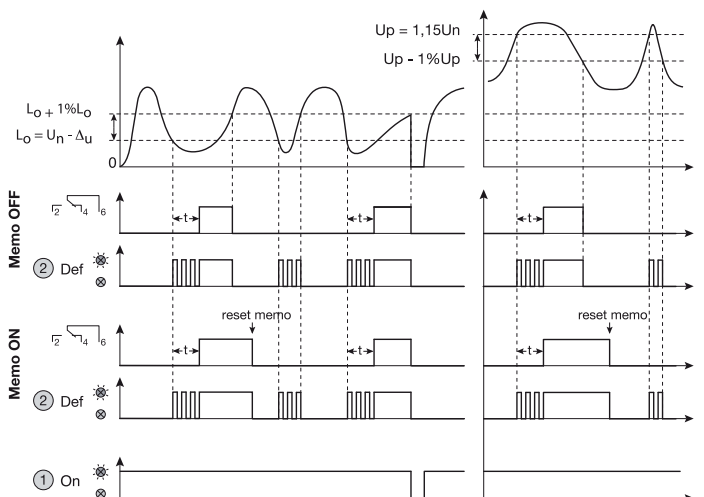
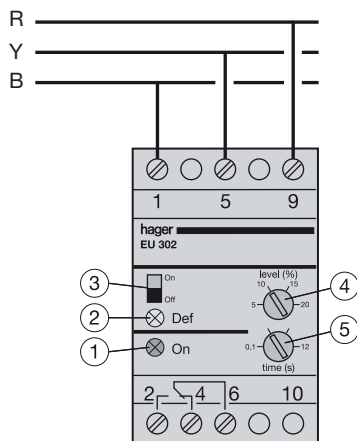
Air conditioning control relay single phase EU 101



Air conditioning control relay three phase EU 301



Voltage control relay three phase EU 302



Application
for residential and commercial premises.

Installed in a consumer unit or distribution board, the lamp can be configured to light

automatically in case of power failure.
It can also be withdrawn from its base, thereby acting as a mini torch with an operating duration of 1 hour 30min.

Connection capacity :
4 mm² flexible/rigid wire

Designation	Width in ■ 17.5mm	Pack qty.	Cat. ref.
Emergency lighting module	3	1	EE960



EE960

Remote controls for emergency light blocks

The remote control device switches self contained emergency lighting into neutral position or into working position.

It permits each day after closing down of premises, to switch off self contained emergency lighting to avoid the discharge of battery.

The remote control is recommended in premises for public and in industrial or commercial premises.

The device is a 2 position changeover switch, with automatic recall for switching off or on, of self contained

emergency lighting, by delivering polarized current impulses on the remote control circuits (+ or -)

Connection capacity :
6 mm² flexible wire
10 mm² rigid wire

Designation	Characteristics	Width in ■ 17.5mm	Pack qty.	Cat. ref.
-------------	-----------------	----------------------	-----------	-----------

Remote control
to control up to 60 self contained,
with an average consumption of 0,1 mA / 6 V

power supply :
230 V ~ 50/60 Hz

output supply : 8,4 V ...
time delay for power supply :
24 hours before activation of remote control

4 1 **EE905**

Remote control
to control up to 120 self contained,
with an average consumption of 0,1 mA / 6 V

power supply :
230 V ~ 50/60 Hz

output supply : 12 V ...
time delay for power supply :
24 hours before activation of remote control

4 1 **EE910**



EE910

Technical specifications

Electrical characteristics

- supply voltage : 230 V
- load time : 36 h

Functional characteristics

- autonomy / load 24 hours : 1 hour
- autonomy / load 36 hours : 1,5 hours
- working life : 500 cycles
- illumination at 1 m : 4 lumens
- illumination at 0,5 m : 16 lumens

Environment

- working temperature : 0 to +40 °C
- storage temperature : -5 to +50 °C

Connection capacity :

1 to 4 mm²

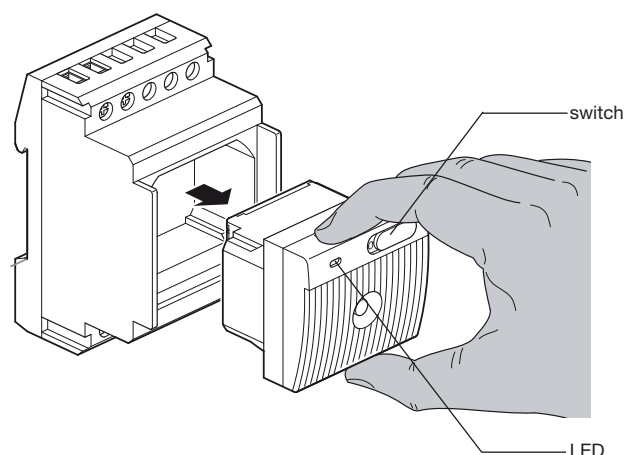
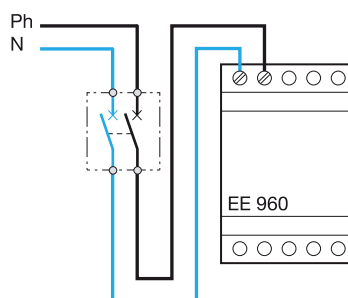
With emergency light EE960, you will always have a small pocket lamp :

- easy to find : the device is always on the board
- battery always loaded

Functional chart

voltage supply 230V	position of switch	state of LED	state of lamp
supply 230V	« 0 »	on red	off
	« 1 »	on green	off
no supply 230V or lamp removed from socket	« 0 »	off	off
	« 1 »	off	on

Electrical connection



Remote controls for emergency light blocks

Technical specifications

Electrical characteristics

- supply voltage : 230 V +10 -15% 50/60 Hz
- output impulse for control
EE905 : 8,4 V ... , EE910 : 12 V ...
- consumption : EE905 = 3 VA
EE910 = 4 VA

Functional characteristics

- number of remotable blocks
EE905 : 60
EE910 : 120

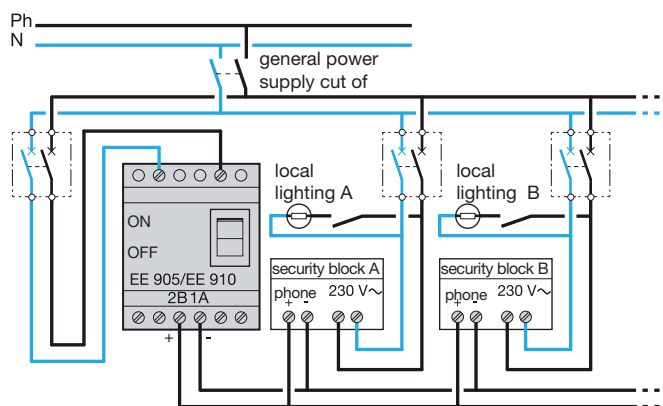
Environment

- working temperature: -10 to +40 °C
- storage temperature : -20 à +80 °C

Connection capacity :

- flexible: 1 to 6 mm²
- rigid : 1,5 to 10 mm²

Electrical connection



Description

Provide extra safety low voltage
8, 12, 24V~.

Technical data

Secondary voltages:
8, 12, 24V~
Bell transformers are short-circuit protected.
Bells/buzzers:
Max. continuous duty ≤ 30 minutes.

Connection capacity :

6 mm² rigid wire
4 mm² flexible wire
Cable clamp type

Sound level :

Bells: 85 dBA
Buzzers: 78 dBA

When a bell transformer is installed in an enclosure with mains voltage equipment, 230V

cable should be used on the secondary side of the transformer or extra low voltage cable should be sheathed within the enclosure.

Note:

The transformers have a higher no load voltage. The stated voltages correspond to the voltages on nominal load.

Designation	Characteristics	Width in 17.5mm	Pack qty.	Cat. ref.
-------------	-----------------	-----------------	-----------	-----------



ST313

Safety transformers	16VA 50/60Hz	4	1	ST313
	230V 12-24V~ 50/60Hz	4	1	ST312
	40VA 50/60Hz	4	1	ST314
	63VA 50/60Hz	6	2	ST315



ST301

Bell transformers	230V/8-12V~ 50/60Hz 4VA - 8-12V : 0.33A	2	6	ST301
	230V/8-12V~ 50/60Hz 8VA - 8V : 1A 12V : 0.67A	2	6	ST303
	230V/8-12V~ 50/60Hz 16VA - 8V : 2A 12V : 1.33A 24V : 0.67A	3	1	ST305



SU212

Bells	8/12V~ 5VA - 0.33A	1	12	SU212
	230V~ 6.5VA - 0.03A	1	12	SU213



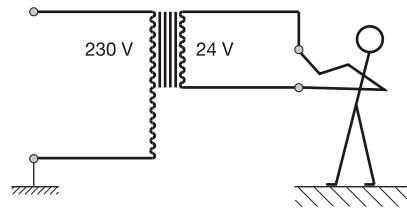
SU214

Buzzers	8/12V~ 4VA - 0.35A	1	12	SU214
	230V~ 6.5VA - 0.03A	1	12	SU215



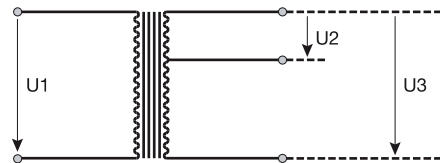
Safety transformers

These transformers are designed to ensure personal safety, their primary winding are electrically separated from their secondary windings and they are intended to feed safety extra low voltage circuits $U \leq 50V$. A thermal overload, in the primary windings, ensures that if a short circuit or an overload occurs in the output it will not damage the device.



Bell transformers

Bell transformers are similar to safety transformers but the secondary voltages do not exceed 24 volts, they are also similarly protected against short circuits and overloads, by thermal protection in the primary winding.



Compliance with the standards

The bell and safety transformers comply with EN 60742 (BS 3535).

Technical specification

reference	ST301	ST303	ST305	ST312	ST313	ST314	ST315
nominal power	4VA	8VA	16VA	25VA	16VA	40VA	60VA
designation	bell	bell	bell	safety	safety	safety	safety
primary voltage	230 volts	230 volts	230 volts	230 volts	230 volts	230 volts	230 volts
secondary voltage	U_2	12 volts $I_n = 0.33A$	8 volts $I_n = 1A$	8 volts $I_n = 2A$	12 volts $I_n = 2.08A$	12 volts $I_n = 1.33A$	12 volts $I_n = 5.25A$
	U_3	12 volts $I_n = 0.5A$	12 volts $I_n = 0.67A$	12 volts $I_n = 1.33A$	24 volts $I_n = 1.04A$	24 volts $I_n = 0.67A$	24 volts $I_n = 2.63A$
no load secondary voltage	U_2	12 volts	15 volts	12.4 volts	14 volts	15.5 volts	13.6 volts
	U_3	18 volts	21.8 volts	18.5 volts	29 volts	29.7 volts	27 volts
galvanic insulation	4kV	4kV	4kV	4kV	4kV	4kV	4kV
max functional temperature	35°C	35°C	35°C	35°C	35°C	35°C	35°C
overload and S/C protection	thermal cut out in the primary winding						

Number of products that can be operated simultaneously by a transformer

transformer	reference	ST301		ST303		ST305		ST312		ST313		ST314		ST315	
		8V	12V	8V	12V	8V	12V	12V	24V	12V	24V	12V	24V	12V	24V
power		4	4	8	8	16	16	25	25	16	16	40	40	63	63
bell	SU212 8/12V	1	1	3	2	5	3	-	-	-	-	-	-	-	-
buzzer	SU214 8/12V	1	1	3	2	5	3	-	-	-	-	-	-	-	-
relays	ER124 12V	-	-	-	-	-	-	4	-	2	-	7	-	8	-
	ER139 12V	-	-	-	-	-	-	2	-	1	-	3	-	4	-
	ER123 24V	-	-	-	-	-	-	-	2	-	2	-	7	-	8
	ER138 24V	-	-	-	-	-	-	-	2	-	1	-	3	-	4
contactors	ES224 24V	-	-	-	-	-	-	5	-	3	-	11	-	12	
	ES424 24V	-	-	-	-	-	-	3	-	2	-	7	-	8	
latching relays	EPN519 12V	-	-	-	1	-	2	3	-	2	-	4	-	4	-
	EPN513 24V	-	-	-	-	-	-	-	2	-	2	-	3	-	3
	EPN518 24V	-	-	-	-	-	-	-	4	-	3	-	7	-	8
	EPN525 24V	-	-	-	-	-	-	-	4	-	3	-	4	-	6
	EPN528 24V	-	-	-	-	-	-	-	2	-	1	-	3	-	4
	EPN541 24V	-	-	-	-	-	-	-	2	-	1	-	3	-	4

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contactors	F.2
relays	F.4
delay timers	F.10
latching relays	F.13
auxiliaries for latching relays	F.16
roller shutter and motorized blind controls	F.18
energymeters	F.20
current transformers	F.22

Description

For the remote switching and control of power circuits (25A-63A AC1)

Override contactors

allows : - permanent ON
- permanent OFF

Technical data

The choice of contactor depends upon a number of parameters, e.g.
- the nature of the supply,

- the power it is switching,
- the characteristics of the load,
- the control voltage required,
- number of operations.
All contactors ratings are for AC1 loads only if the load differs from AC1 the contactor may need de-rating. The use of LZ060 (heat dissipation inserts) between all contactors installed or between contactors and adjacent devices is recommended.

Options

Contact choice
- normally open (NO)
- normally closed (NC)
LZ060 heat dissipation inserts.



ES230



ES320

Designation	Type	Coil AC 50Hz	Power Circuit 50Hz	Width in 17.5mm	Pack qty.	Cat. ref. standard	low noise	override
Contactors	1NO	230V	25A-250V	1	1/1	ES110		ES110A
	1NO+1NC	230V	25A-250V	1	1	ES210		
		110V	25A-250V	1	1	ES216		
		24V	25A-250V	1	1	ES239		
	2NO	230V	25A-250V	1	12/12/12	ES220	ESN220B	ES220A
			40A-400V	3	1/4	ES240	ESN240B	
			63A-400V	3	1/4	ES263	ESN263B	
		110V	25A-250V	1	1	ES226		
		24V	25A-250V	1	1/1	ES224		ES224A
			40A-400V	3	1	ES252		
		63A-400V	3	1	ES262			
	2NC	230V	25A-250V	1	12/12	ES230		ES230A
		110V	25A-250V	1	1	ES236		
	3NO	230V	25A-400V	2	6/6/6	ES320	ESN320B	ES320A
		230V	40A-400V	3	1/4	ES340	ESN340B	
	3NO+1NC	230V	25A-400V	2	1/6/1	ES444	ESN444B	ES444A
			40A-400V	3	1	ES345		
			63A-400V	3	1	ES365		

Auxiliary

25A contactors (except ESN220B) will accept auxiliary, EP071 contact or ESN071B depending on the contactor type.

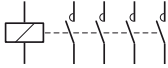
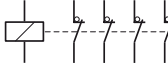
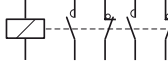

Connection capacity

control: 6mm² rigid cable
4mm² flexible cable
power: 10mm² rigid cable
6mm² flexible cable

Complies to IEC 61 095.



ES463

Designation	Type	Coil AC 50Hz	Power Circuit 50Hz	Width in 17.5mm	Pack qty.	Cat. ref. standard	low noise	override
Contactors 	4NO	230V	25A-400V	2	6/6/6	ES420	ESN420B	ES420A
			40A-400V	3	1/4	ES440	ESN440B	
			63A-400V	3	1/4	ES463	ESN463B	
		110V	25A-400V	2	1	ES426		
			40A-400V	3	1	ES446		
			63A-400V	3	1	ES466		
		24V	25A-400V	2	1/1	ES424		ES424A
			40A-400V	3	1	ES442		
			63A-400V	3	1	ES462		
			4NC	230V	25A-400V	2	6/6/6	ES430
40A-400V	3				1	ES480		
63A-400V	3				1	ES490		
110V	25A-400V			2	1	ES426		
	40A-400V			3	1	ES436		
	63A-400V			3	1	ES496		
24V	25A-400V			2	1	ES432		
	63A-400V			3	1	ES492		
				2NO+2NC	230V	25A-250V	2	1/1
63A-250V		3	1			ES470		
24V		25A-250V	2		1	ES242		
Auxiliary 			2A-250V	1/2	1	EP071		
			6A - 250V		1		ESN071B	
Heat dissipation insert				1/2	12	LZ060	LZ060	
Cover for 1-module contactors				1	10/10		ESN001B	
Cover for 2-module contactors				2	10/10	ES001	ESN002B	
Cover for 3-module contactors				3	10/10	ES002	ESN003B	

Description

To provide command of low power circuits max 16A; associated with push buttons switches, time switches etc to provide for remote control applications.

The relays will accept an auxiliary contact for remote signalling

applications (EP071).

For the command of VLV circuits use interface relays EN145 and EN146.

For the command of high power circuits (25, 40, 63Amps) use contactors as shown on page F.2.

Connection capacity

10mm² rigid cable
6mm² flexible cable

Complies to IEC 61 095.



ER120



ER138

Designation	Type	Coil	Power Circuit AC1	Width in 17.5mm	Pack qty.	Cat. ref.
Relays 	2NC	230V 50Hz	16A-250V	1	12	ER111
		24V 50Hz	16A-250V	1	12	ER125
		12V 50Hz	16A-250V	1	12	ER109
	1NC+1NO	230V 50Hz	16A-250V	1	12	ER120
		24V 50Hz	16A-250V	1	12	ER123
		12V 50Hz	16A-250V	1	12	ER124
	2NC+2NO	230V 50Hz	16A-250V	2	1	ER135
		24V 50Hz	16A-250V	2	1	ER138
		12V 50Hz	16A-250V	2	1	ER139
Auxiliary contact			2A-250V	1/2	1	EP071

Description

To interface between low voltage and very low voltage circuits to ensure galvanic isolation between LV and VLV to 4kV.

Connection capacity

6 mm² rigid cables
4 mm² flexible cables

Application

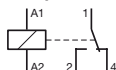
Interface between fire alarm, burglar alarm and other VLV systems and main distribution circuits.



EN145

Designation	Characteristics	Width in ■ 17.5mm	Pack qty.	Cat. ref.
-------------	-----------------	----------------------	--------------	-----------

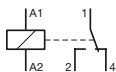
Interface relays VLV/LV 1 way



coil voltage :
10 to 26V AC/DC
output : 1 changeover contact
max. 5A 230V~ -
min. 10mA - 12V DC

1 1 **EN145**

VLV/LV 1 way



coil voltage :
230V~ 50Hz
output : 1 changeover contact
max. 5A 230V~
min. 10mA - 12V DC

1 1 **EN146**

Choice of contactors :

The choice of the contactor depends on the type of load (lighting etc.) and on the requirements (number of operations, working temperature).

Lighting :

A contactor can control a maximum number of lights between 1Ph Neutral as per the table below.

Type		1 module		2 module		3 module		3 module	
		25A / 20A		25A		40A		63A	
		Standard ESxxx	Low Noise ESNxxxB	Standard ESxxx	Low Noise ESNxxxB	Standard ESxxx	Low Noise ESNxxxB	Standard ESxxx	Low Noise ESNxxxB
Incandescent lamps									
tungsten & halogen lamps	40 W	50	50	50	50	125	100	175	125
	60 W	33	33	33	33	83	65	116	85
	75 W	26	26	26	26	66	53	93	66
	100 W	20	20	20	20	50	40	70	50
	150 W	13	13	13	13	33	26	46	33
	200 W	10	10	10	10	25	20	35	25
	300 W	6	6	6	6	16	13	23	16
	500 W	4	3	4	3	10	8	14	10
	1000 W	2	1	2	1	5	4	7	5
Fluorescent tubes									
energy saving lamp	11 W	90	67	90	67	125	93	180	135
	15 W	66	49	66	49	92	69	133	99
	20 W	50	37	50	37	69	51	100	75
	23 W	43	32	43	32	60	45	86	64
single - non compensated	18 W	30	22	30	24	85	90	120	140
	36 W	23	17	23	20	54	65	83	95
	58 W	13	14	13	17	35	45	51	70
single - parallel compensation	18 W	18	7	18	8	45	48	60	73
	36 W	15	7	15	8	40	48	55	73
	58 W	13	4	13	5	30	31	40	47
duo series - non compensated or series compensation	2 x 18 W	30	22	30	24	85	90	120	140
	2 x 36 W	23	17	23	20	54	65	83	95
	2 x 58 W	13	14	13	17	35	45	51	70
duo series parallel compensation	2 x 18 W	18	7	18	8	45	48	60	73
	2 x 36 W	15	7	15	8	40	48	55	73
	2 x 58 W	11	4	11	5	30	31	40	47
single - electronic ballast	18 W	35	25	35	35	66	100	103	140
	36 W	30	15	30	20	56	52	85	75
	58 W	17	12	17	19	31	50	47	72
double - electronic ballast	2 x 18 W	17	12	17	17	33	50	51	70
	2 x 36 W	15	7	15	10	28	26	42	38
	2 x 58 W	8	7	8	9	15	25	23	36
Discharge lamps									
low pressure sodium-vapour lamps (uncompensated)	35 W	9	7	9	9	14	23	24	30
	55 W	9	7	9	9	14	23	24	30
	90 W	6	4	6	5	9	14	19	19
	135 W	4	3	4	4	6	10	10	13
	180 W	4	3	4	4	6	10	10	13
low pressure sodium-vapour lamps (compensated)	35 W	5	1	5	1	10	11	15	11
	55 W	5	1	5	1	10	11	15	11
	90 W	4	1	4	1	8	8	11	8
	135 W	2	-	2	-	5	5	7	5
	180 W	2	-	2	-	4	4	6	4
high pressure sodium-vapour lamps (uncompensated)	50 W	20	15	20	15	28	21	44	33
	70 W	12	9	12	9	20	15	32	24
	110 W	9	7	9	7	16	12	24	18
	150 W	7	5	7	6	13	17	18	22
	250 W	4	3	4	4	8	10	11	13
	400 W	3	2	3	2	5	6	8	8
	1000 W	1	1-	1	1	2	3	3	3
high pressure sodium-vapour lamps (compensated)	50 W	8	6	8	6	25	18	35	26
	70 W	6	4	6	4	18	13	25	19
	110 W	5	4	5	4	15	11	18	13
	150 W	4	1	4	1	13	11	15	16
	250 W	2	-	2	1	8	6	10	10
	400 W	2	-	2	-	6	4	8	6
	1000 W	1	-	1	-	4	2	5	3
halogen metal vapour lamps (uncompensated)	35 W	20	18	20	22	40	43	60	60
	70 W	12	10	12	12	20	23	32	32
	150 W	7	5	7	7	13	12	18	18
	250 W	4	3	4	4	8	7	11	10
	400 W	3	3	3	3	5	6	8	9
halogen metal vapour lamps (compensated)	35 W	8	5	8	6	31	36	42	50
	70 W	6	2	6	3	15	18	20	25
	150 W	3	1	3	1	9	11	16	15
	250 W	2	0	2	1	5	6	7	9
	400 W	1	0	1	1	3	6	5	8

Heating

The choice of the contactor depends on the mechanical endurance (number of operations) and on the electrical heating load i.e. resistive elements, infra-red element, convectors.

Choice of contactors

The choice of contactor is dependant upon many parameters i.e. operating voltage, size of contacts, number of operations, ambient temperature, type of load supplied etc.

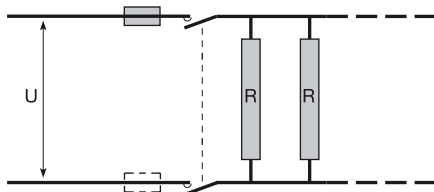
Type of load

Loads are categorised into various AC ratings, (AC1, AC2, AC3 etc.) and the higher the AC rating the more inductive the load becomes. All Hager contactor ratings are given at AC1, therefore they must be de-rated if used on other types of AC load.

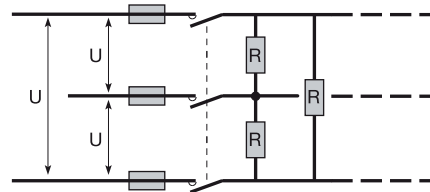
Heat dissipation inserts

The ambient temperature around a contactor can affect its life expectancy, therefore, we strongly recommend that heat dissipation inserts (LZ060) are fitted between all contactors and adjacent devices.

Single phase



Three phase



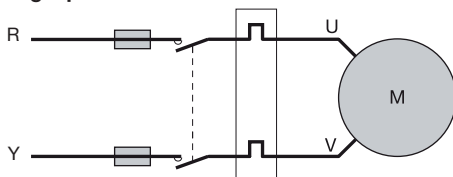
Number of operations	50 000	100 000	150 000	200 000	300 000	single phase 230V	three phase*400V
Maximum load* in kW	4,4	4,4	3,9	3,5	2,9	ES220 - ES230 ESN220B - ESN230B	
	7,8	5,9	5	4,4	3,7	ES240 - ESN240B	
	12	8,8	7,7	6,6	5,9	ES263 - ESN263	
	12	10,5	8,5	6,5	5,8		ES320 - ES430 ESN320B - ESN430B
	23,2	17,7	15	13,1	10,8		ES340 - ESN340B
	35	26,3	23	19,7	5,8		ES463 - ESN463B

* On three phase configuration the maximum load per phase corresponds to the values states divided by 3.

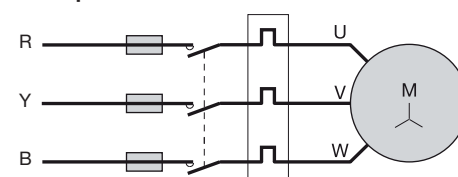
Example:

Function of a heating installation 200 days/annum, 100 operations per day (1 opening + 1 closing = 2 operations)
 Mechanical life = 10 years
 Total number of operations: 200 x 100 x 10 = 200,000
 in that case select an ES240 to control a load of 4.4 kW (single phase 230V)

Motors (AC3) Single phase 230V



Three phase 400V



	Single phase with capacitor 230V	Three phase (AC3 cat.) 400V	Choice of contactor according to control diagram	
			2 wires	3 wires
Maximum load in kW	1.1		ES220 - ESN220B	
	2.2		ES240 - ESN240B	
		4		ES320 - ES420 - ESN320B - ESN420B
		7.5		ES340 - ES345 - ES440 - ESN340B - ESN440B
		15		ES365 - ES463 - ESN463B

Requirements of use influence of working temperature:

Derating factor between 40°C and 50°C : 0.9

Example: heating with convector

The maximum load of ES220 is 4.4kW for 50 000 operations and for a temperature <40°C.

between 40°C and 50°C, the load is 4.4 x 0.9 i.e. 3.96kW

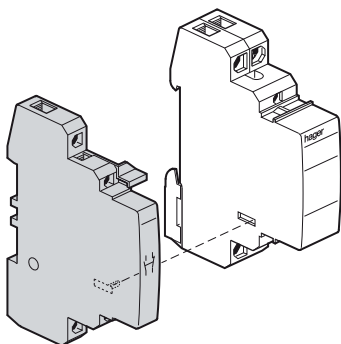
Close fitting:

It is necessary to put a heat dissipation insert (reference LZ060) between each contactor.

Electrical characteristics :						
type	ESxxx, ERxxx					
description	modular contactor					auxiliary contact
standard conformity	NF EN 61095					
number of modules	1	2	3	3	1/2	
thermal current I _{th} (40°C)	25 A	25 A	40 A	63 A		
rated frequency	50 - 60 Hz					
rated insulation voltage (U _i)	250 V	440 V	440 V	440 V	500 V	
rated impulse withstand voltage (U _{imp})	4 kV	4 kV	4 kV	4 kV	4 kV	
Rated operating currents and power ratings in AC :						
AC-1 / AC-7a	rated operating currents I _e	20 A	20 A	40 A	63 A	
	rated operating power	230 V	4 kW	4 kW	8,5 kW	13 kW
		400 V	-	13 kW	25 kW	40 kW
AC-3 / AC-7b	rated operating currents I _e	9 A	9 A	22 A	32 A	
	rated operating power	230 V	1,4 kW	1,4 kW	3,5 kW	5 kW
		400 V	-	4 kW	10 kW	15 kW
AC-15	rated operating currents I _e at 230V					6 A
	rated operating currents I _e at 400V					4 A
Mechanical and electrical endurances :						
mechanical endurance (number of operation)	1 000 000		1 000 000	1 000 000	1 000 000	
electrical endurance at 5A AC-1 / AC-7A (number of operation)	200 000		200 000	200 000	200 000	
Power dissipation :						
power dissipation per current path	1,2 W		1,2 W	3,2 W	5 W	
Magnetic system :						
pick-up	15 VA		20 VA	50 VA	50 VA	
coil consumption	5 VA		5 VA	7 VA	7 VA	
closing delay	30 ms		30 ms	20 ms	30 ms	
opening delay	10 ms		10 ms	20 ms	20 ms	
Connection :						
main contact cable section	rigid	1,5 ... 10 mm ²	1,5 ... 10 mm ²	4 ... 25 mm ²	4 ... 25 mm ²	
	flexible	1 ... 6 mm ²	1 ... 6 mm ²			
main contact connection screw	type	M3,5	M3,5	M5	M5	
	posidrive	PZ1	PZ1	PZ2	PZ2	
	max. tight. torque	1,2 Nm	1,2 Nm	2 Nm	2 Nm	
coil connection cable section	rigid	1 ... 6 mm ²	1 ... 6 mm ²	1,5 ... 4 mm ²	1,5 ... 4 mm ²	-
	flexible	0,5 ... 4 mm ²	0,5 ... 4 mm ²	1 ... 2,5 mm ²	1 ... 2,5 mm ²	-
coil connection screw	type	M3,5	M3	M3	M3	-
	posidrive	PZ1	PZ1	PZ1	PZ1	-
	max. tight. torque	1,2 Nm	1,2 Nm	1,2 Nm	0,6 Nm	1,2 Nm
Working temperature	-10°C to +50°C		-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C
Storage temperature	-40°C to +80°C		-40°C to +80°C	-40°C to +80°C	-40°C to +80°C	-40°C to +80°C

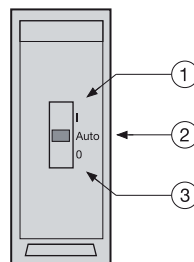
Auxiliary contacts

auxiliary contacts are available for the range of relays and 25A contactors.



Relays and 25A contactors with manual override

- ① permanent ON
- ② automatic
- ③ permanent OFF



Electrical characteristics :						
type	ESNxxxB					
description	modular contactor					auxiliary contact
number of modules	1	2	3	3	1/2	
thermal current I _{th}	20 A	25 A	40 A	63 A		
rated frequency	50 - 60 Hz					
rated insulation voltage (U _i)	230 V	440 V	440 V	440 V	500 V	
rated impulse withstand voltage (U _{imp})	4 kV	4 kV	4 kV	4 kV	4 kV	
Rated operating currents and power ratings in AC :						
AC-1 / AC-7a	rated operating currents I _e	20 A	25 A	40 A	63 A	
	rated operating power	230 V	4 kW	5,4 kW	8,7 kW	13,3 kW
		400 V	-	16 kW	26 kW	40 kW
AC-3 / AC-7b	rated operating currents I _e	9 A	8,5 A	22 A	30 A	
	rated operating power	230 V	1,3 kW	1,3 kW	3,7 kW	5 kW
		400 V	-	4 kW	11 kW	15 kW
AC-15	rated operating currents I _e at 230V					6 A
	rated operating currents I _e at 400V					4 A
Mechanical and electrical endurances :						
mechanical endurance (number of operation)	3 000 000	3 000 000	3 000 000	3 000 000		
electrical endurance at AC-1 / AC-7a (number of operation)	200 000	200 000	100 000	100 000		
electrical endurance at AC-3 / AC-7b (number of operation)	300 000	500 000	150 000	150 000		
maximum operation frequency (number of operation/hour)	600	600	600	600	600	
Power dissipation :						
power dissipation per current path	1,7 W	2,2 W	4 W	8 W		
Magnetic system :						
coil consumption	2,1 W	2,6 W	5 W	5 W	-	
closing delay	15-45 ms	15-45 ms	15-20 ms	15-20 ms	-	
opening delay	15-45 ms	20-70 ms	35-45 ms	35-45 ms	-	
Connection :						
main contact cable section	rigid	1 ... 10 mm ²	1 ... 10 mm ²	1,5 ... 25 mm ²	1,5 ... 25 mm ²	1 ... 2,5 mm ²
	flexible	1 ... 6 mm ²	1 ... 6 mm ²	1,5 ... 16 mm ²	1,5 ... 16 mm ²	1 ... 2,5 mm ²
main contact connection screw	type	M3,5	M3,5	M5	M5	M3
	posidrive	PZ1	PZ1	PZ2	PZ2	PZ1
	max. tight. torque	1,2 Nm	1,2 Nm	3,5 Nm	3,5 Nm	0,6 Nm
coil connection cable section	rigid	1 ... 2,5 mm ²	1 ... 2,5 mm ²	1 ... 2,5 mm ²	1 ... 2,5 mm ²	-
	flexible	1 ... 2,5 mm ²	1 ... 2,5 mm ²	1 ... 2,5 mm ²	1 ... 2,5 mm ²	-
coil connection screw	type	M3	M3	M3	M3	-
	posidrive	PZ1	PZ1	PZ1	PZ1	-
	max. tight. torque	0,6 Nm	0,6 Nm	0,6 Nm	0,6 Nm	-
Working temperature	-5°C to +55°C					
Storage temperature	-30°C to +80°C					

Description

To provide all types of automatic control i.e. lighting, ventilation, watering, machine pre-heating, automatic door and visual audible indication, cycle control etc.

Applications

For timing and automation in domestic and commercial premises. The input signal can be via various switching devices

(push button, latching switch, timeclock etc.) and the timed output used to control the application.

Technical data

Voltage range :
 12 & 24 to 48V DC
 12 & 24 to 230V AC
 Adjustable time delay from 0.1s to 10 hours.
 LED indicator

Comply with EN 60 669-2-1.

Connection capacity :

- flexible 6 mm²
- rigid 10 mm²

Complies to IEC 60 669.



EZN 001



EZN 006

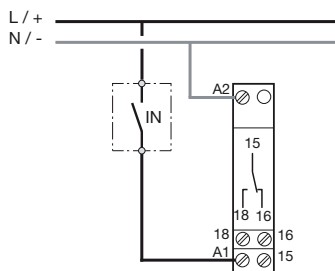
Designation	Characteristics	Width in 17.5mm	Pack qty.	Cat. ref.
Delay ON 	1NC + 1NO contact 8A / 230V~ AC1 time delay T : 0.1s to 10hr	1	1	EZN001
1 Delay OFF 	1NC + 1NO contact 8A / 230V~ AC1 time delay T : 0.1s to 10hr	1	1	EZN002
Adjustable time ON 	1NC + 1NO contact 8A / 230V~ AC1 time delay T : 0.1s to 10hr	1	1	EZN003
Timer 	1NC + 1NO contact 8A / 230V~ AC1 time delay T : 0.1s to 10hr	1	1	EZN004
Symmetrical flasher 	1NC + 1NO contact 8A / 230V~ AC1 time delay T : 0.1s to 10hr	1	1	EZN005
Multifunction 6 individual functions including : D - delay on C - delay off E - adjustable time ON B - adjustable time OFF A - timer F - symmetrical flasher - ON - OFF	1NC + 1NO contact 8A / 230V~ AC1 time delay T : 0.1s to 10hr	1	1	EZN006

Technical specifications

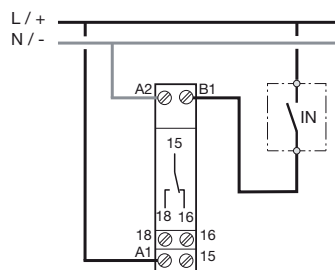
	EZN001 - EZN002 - EZN003 - EZN004 - EZN005 - EZN006
Electrical characteristics	
Supply voltage	12 - 230 V AC (±10%), 50Hz/60Hz 12 - 48 V DC (±10%)
Output	1 volt free C/O contact
Life expectancy max load AC1 incandescent fluorescent non comp. inductive load 0.6pf	8A / 230V~ 50,000 cycles 450W~ 50,000 cycles 600W~ 50,000 cycles 5A ~ 100,000 cycles
Min power AC DC	100mA at 230V 100mA at 12V
Galvanic isolation	2kV
Standard / norm	EN60669-2-1
Functional characteristics	
Timer range	0.1s - 10 hours
Min. command period AC DC	50ms 30ms
Operating temperature working storage	-10°C to +50°C -40°C to +50°C
Connection capacity flexible rigid	1 - 6 mm ² 1.5 - 10 mm ²

Wiring diagrams

EZN001, EZN003, EZN005, EZN006 (functions D,E,F)



EZN002, EZN004, EZN006 (functions A,B,C)



Power interface
and programming

Delay timers

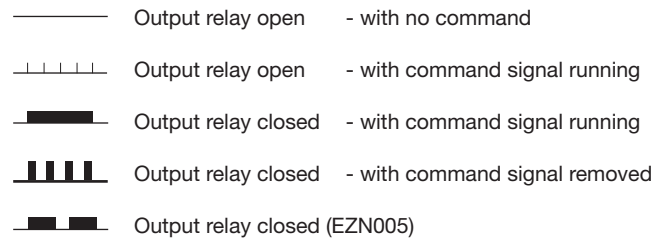
Delay timer devices are used to control a variety of processes where the requirement is for switching circuits on, off or delaying the on or off switching for a pre-set period of time. Typical device types are:

- delay on: intended to delay the starting or switching of a circuit for a set period of time following the command signal e.g. to delay the starting of motor loads where a large number of motors are to be started by the same switch to reduce the effects of the starting currents.
- delay off: intended to delay the stopping or switching off of a circuit for a set period of time following the removal of the command signal e.g. to overrun an extractor following the switching off of a process that creates fumes.
- Adjustable time on: intended to switch on for a set period, the command must remain on throughout the set period e.g. to switch on two sets of heaters with one set (the boost) switching off after the set period.
- Impulse timer: intended to switch on for a set period, the command signal length is not important e.g. to boost a time clock controlled circuit such as a water storage heater.
- Symmetrical timer: intended to toggle a circuit on and off in regular time patterns e.g. to run an extractor intermittently.

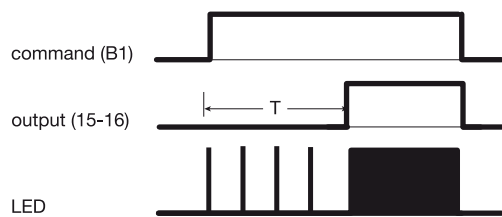
Multifunction timer - 8 individual functions

- A = timer.
- B = delay off (output relay opens either at end of command or after set time period - whichever is shorter).
- C = delay off.
- D = delay on.
- E = delay on (output relay closes either at end of command or after set time period - whichever is shorter).
- F = Symmetrical timer.

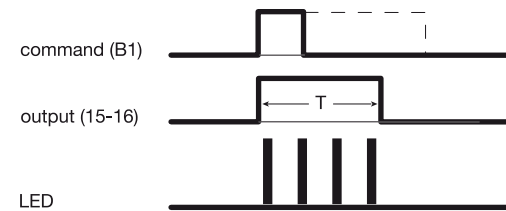
On selection - contact permanently closed
 Off selection - contact permanently open



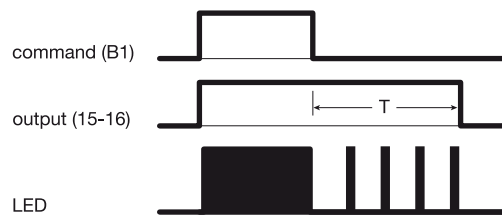
Delay on
 EZN001 and EZN006 function D



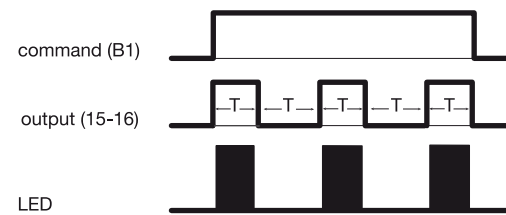
Impulse timer
 EZN004 and EZN006 function A



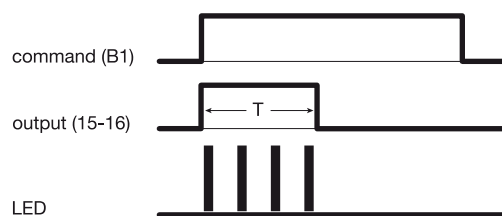
Delay off
 EZN002 and EZN006 function C



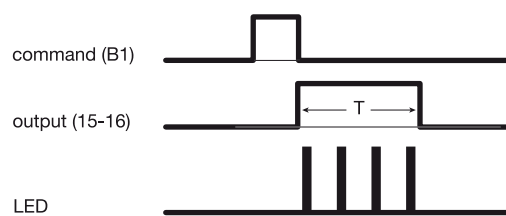
Symmetrical flasher
 EZN005 and EZN006 function F



Adjustable time on
 EZN003 and EZN006 function E



Multifunction timer
 EZN006 function B



Description

For the control of lighting circuits in private buildings, small industry buildings and administration buildings. Latching relays - operate when impulsed by a signal voltage. The impulse can be provided via a push button or switch. The first pulse operates the relay and latches it into its set (opposite)

state, the next operation of the push button returns the relay into its reset (original) state.

The latching relays are built to add on optionally the following auxiliaries :

- an auxiliary for centralised ON/OFF control EPN050
- an auxiliary contact for remote signalling EPN051

- an auxiliary for multi levelled centralised control EPN052
- an auxiliary for control by maintained contact EPN053.

Connection capacity

- rigid 10 mm²
- flexible 6 mm²

Comply with IEC 60 669-1 and IEC 60 669-2-2.



EPN510

Designation	Type	Coil VAC 50/60Hz	Coil VDC	Power Circuit AC1	Width in 17.5mm	Pack qty.	Cat. ref.
Latching relays 	1NO	230	110	16A-250V	1	12	EPN510
		48	24	16A-250V	1	1	EPN501
		24	12	16A-250V	1	1	EPN513
		12	-	16A-250V	1	1	EPN511

	2NO	230	110	16A-250V	1	1	EPN520
		110	48	16A-250V	1	1	EPN523
		48	24	16A-250V	1	1	EPN526
		24	12	16A-250V	1	1	EPN524
		12	-	16A-250V	1	1	EPN521



EPN540

	1NC+1NO	230	110	16A-250V	1	1	EPN515
		110	48	16A-250V	1	1	EPN516
		48	24	16A-250V	1	1	EPN503
		24	12	16A-250V	1	1	EPN518
		12	-	16A-250V	1	1	EPN519

	4NO	230	110	16A-400V	2	1	EPN540
		48	24	16A-400V	2	1	EPN548
		24	12	16A-400V	2	1	EPN541

	2NC+2NO	230	110	16A-250V	2	1	EPN525
		24	12	16A-250V	2	1	EPN528

	3NO+1NC	230	110	16A-400V	2	1	EPN546
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Technical characteristics

	EPN510 EPN515 EPN520	EPN516 EPN523	EPN501 EPN503 EPN526	EPN513 EPN518 EPN524	EPN511 EPN519 EPN521	EPN525 EPN540 EPN546	EPN548	EPN528 EPN541
Coil in AC								
voltage rating	230V	110V	48V	24V	12V	230V	48V	24V
tolerance	+10/-20%							
frequency	50/60Hz							
start consumption	25VA					55VA		
Coil in DC								
voltage rating	110V	48V	24V	12V	-	110V	24V	12V
tolerance	+10/-20%							
start consumption	12VA				-	25w		
Contacts								
max. perm. Current AC1	16A							
voltage	250V AC						400V AC	
electrical endurance	150 000 operations							
mechanical endurance	500 000 operations							
ohmic loss per current path	1.2W							
minimum duration of impulse	50 ms							
maximum time under voltage	1 H							
push button with signal lamp without condensator	6 (1mA / lamp)							
push button with signal lamp with condensator = 1uF parrallel *	10 (1mA / lamp)							
push button with signal lamp with condensator = 2.2uF parrallel *	44 (1mA / lamp)							
ingress protection	IP20							
working temperature	-5 to +40°C							
storage temperature	-40 to 80°C							
Connection								
flexible	6 mm ²							
rigid	10 mm ²							

Auxiliaries + latching relays, possible combinations :

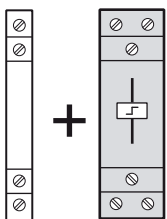
EPN050 : auxiliary for centralised control

EPN051 : auxiliary contact

EPN052 : auxiliary for multi levelled centralised control

EPN053 : auxiliary for control by maintained contact

...with 1 auxiliary

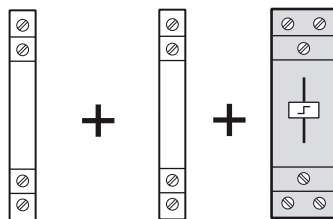


EPN050 + 24 to 230V AC

EPN051 + 12 to 230V AC
12 to 110V DC

EPN053 + 24 to 230V AC

...with 2 auxiliaries



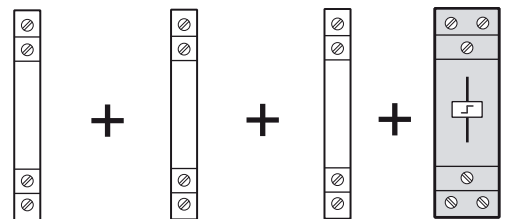
EPN051 + EPN050 + 24 to 230V AC

EPN052 + EPN050 + 24 to 230V AC

EPN051 + EPN053 + 24 to 230V AC

EPN051 + EPN051 + 12 to 230V AC
12 to 110V DC

...with 3 auxiliaries



EPN052 + EPN051 + EPN050 + 24 to 230V AC

Technical characteristics

The following table shows the number of lamps which can be connected per phase at 230V 50Hz.

Incandescent lamps 230V lamps with and without halogen									
load :	40W	60W	75W	100W	150W	200W	300W	500W	1000W
number :	45	30	24	18	12	9	5	3	2
Low voltage halogen									
load :	20W	50W	75W	100W	150W	300W			
number :	70	28	19	14	9	3			
Fluorescent lamps uncompensated									
load :	15W	18W	30W	36W	58W				
number :	29	25	25	24	14				
Parallel compensation									
load :	15W	18W	30W	36W	58W				
number :	27	27	25	25	16				
C total max _(a) :	121 μ F	121 μ F	112 μ F	112 μ F	72 μ F				
Two lamp circuit, series compensation									
load :	2x18W	2x20W	2x36W	2x40W	2x58W	2x65W			
number :	40	40	22	22	12	12			
C :	2.7 μ F	2.7 μ F	3.4 μ F	3.4 μ F	5.3 μ F	5.3 μ F			
load :	18W	36W	58W						
number :	30	28	15						
Two lamp circuit with electronics power supply units									
load :	2x18W	2x36W	2x58W						
number :	15	13	8						
Fluo compact uncompensated									
load :	7W	10W	18W	26W					
number :	50	45	40	25					
Fluo compact electronic power supply unit									
load :	11W	15W	20W	23W					
number :	80	60	50	40					
High intensity discharge metal halogen lamps, uncompensated									
load :	50W	80W	125W	250W	400W				
number :	11	9	7	3	2				
Metal halogen lamps, parallel compensation									
load :	50W	80W	125W	250W	400W				
number :	9	8	6	3	2				
C total max _(a) :	63 μ F	58 μ F	60 μ F	54 μ F	50 μ F				
High pressure sodium vapour lamps, uncompensated									
load :	70W	150W	250W	400W					
number :	9	5	3	2					
High pressure sodium vapour lamps, parallel compensated									
load :	70W	150W	250W	400W					
number :	5	3	2	1					
C total max _(a) :	60 μ F	54 μ F	64 μ F	50 μ F					

(a) : these values must not be exceeded

Auxiliaries for centralised control

The EPN050 allows the centralised control of several light sources which can be turned on or off simultaneously the separate switching by pushing the pushbuttons, which are connected with the latching relay, remains possible.

The EPN052 allows a generic central control of individual central on/off EPN050.

Auxiliary contact

A remote signalling can be realised with the auxiliary contact EPN051.

Auxiliary for control by maintained contact

When control devices with permanent impulse are externally driven, e.g. time switches or limit switches, an impulse control directly to the latching relay's coil is possible with the auxiliary contact EPN053.

Connection latching relay + auxiliary

Several auxiliaries can be combined with the latching relay.

Connection capacity

- rigid 10 mm²
- flexible 6 mm²

Designation	Voltage supply	Width in ■ 17.5mm	Pack qty.	Cat. ref.
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EPN050

Auxiliary for centralised control



24 to 230V AC	1/2	1	EPN050
---------------	-----	---	---------------



EPN051

Auxiliary contact



2A - 250 V AC	1/2	1	EPN051
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EPN052

Auxiliary for multi levelled centralised control



24 to 230V AC	1/2	1	EPN052
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EPN053

Auxiliary for control by maintained contact



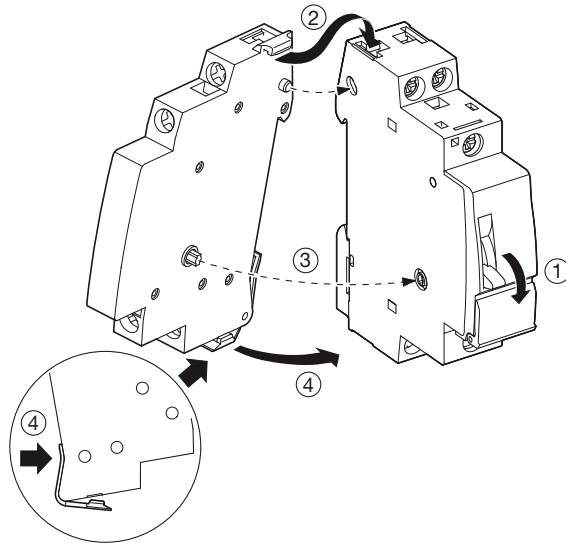
24 to 230V AC	1/2	1	EPN053
---------------	-----	---	---------------

Auxiliaries for latching relays

	EPN050	EPN051	EPN052	EPN053
voltage rating	(a)	-	-	(a)
	24 to 230V AC			
	12 to 110V DC			
nominal load	-	2A/250V AC	-	-
I _{min} /230V AC	-	15mA	-	-
working temperature	-5 to +40°C			
storage temperature	-40 to 80°C			
Connections : flexible	6 mm ²			
rigid	10 mm ²			

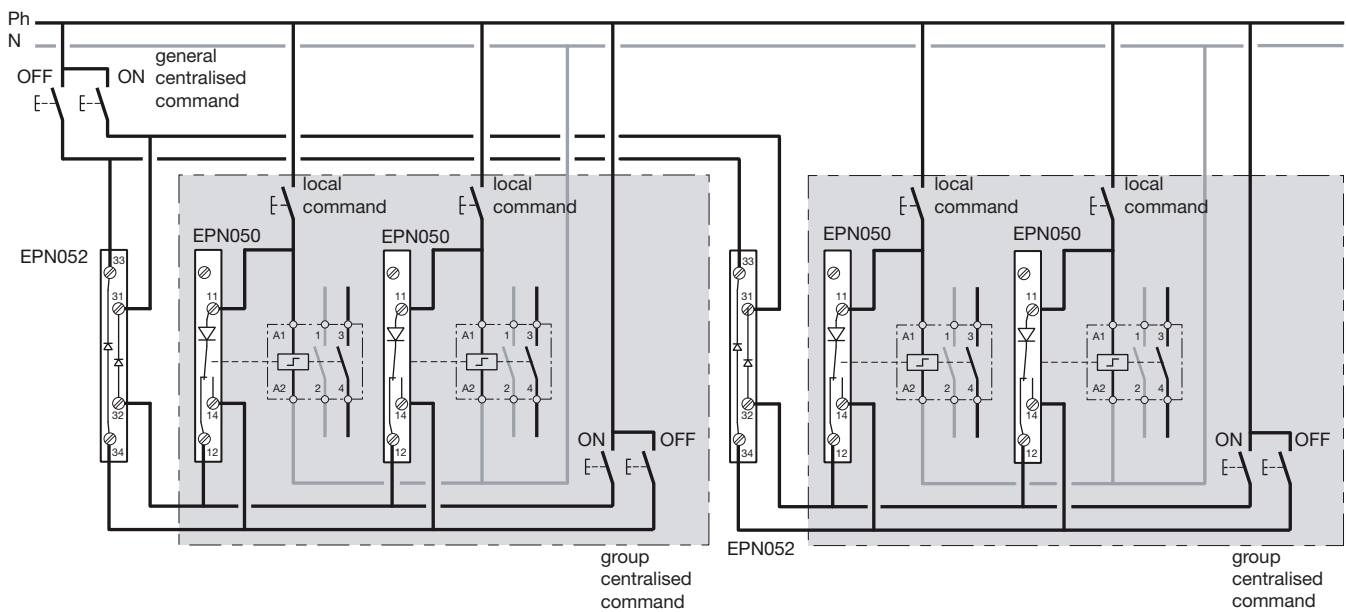
(a) : according to a latching relay connected with an auxiliary

Installation of the auxiliaries

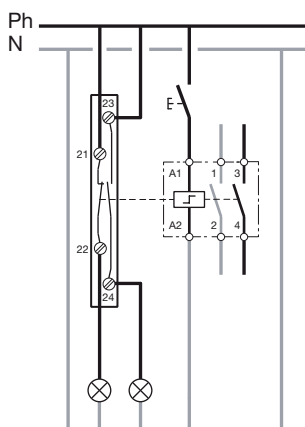


Application diagram

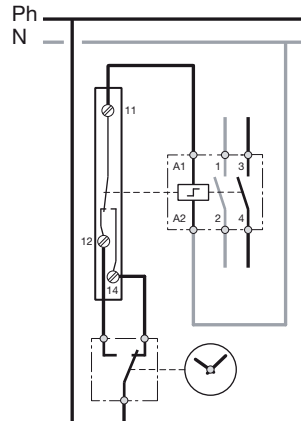
centralised command (EPN050 - EPN052)



Remote signalling (EPN051)



Maintained command (EPN053)



Description

The devices of the system allow to do a general, individual and group controls.

EL001 module allows to control shutter or blind and disposed and auto/manual input to control independently or general mode.




EL003 module allows to group control (with EL001 connected on the right side).

EL004 module allows the power supply continuity and control between 2 rows in electrical boards.

Compatible with SOMFY roller shutters.

Connection capacity

- rigid 6 mm²
- flexible 10 mm²

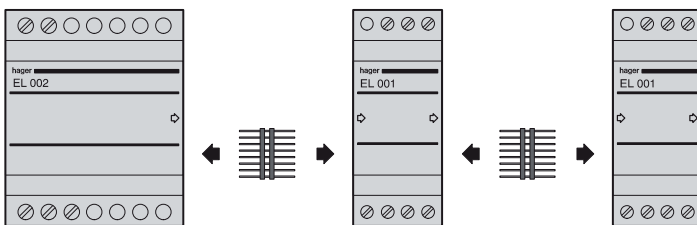
	Designation	Characteristics	Width	Cat. ref.
 <p>EL002</p>	Power supply and general command unit	triac output	4 ■	EL002
 <p>EL001</p>	Individual motor control unit	2 x NC contact (to open and close)	2 ■	EL001
	Shutter group control		2 ■	EL003
 <p>EL004</p>	Link module		1 + 1 ■	EL004

Technical characteristics

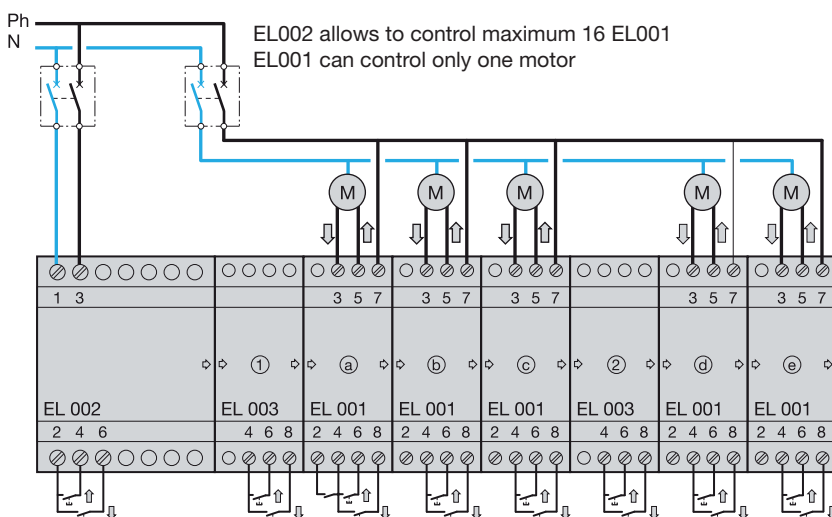
	EL002	EL001	EL003
Supply voltage	230V	provided by EL002 (12V DC)	
Output	16 EL001 supply max.	2 NC contacts	-
Breaking capacity	-	8A/250V AC (max.) 10mA/250V AC	-
Up / Down control	Double push button, NC contact		
General/Individual mode input	-	1NO/NC	-
Link module / push button	50m max.		
Link module / module	with delivered connection		
Nr of modules	4 ■	2 ■	2 ■

Installation

Modules interconnection



General command of installation, command of 2 groups (2 areas and individual control)



General command consists in push buttons associated to EL002.

The group command EL003 ① controls all the EL001 on its right (a, b, c) until the next EL003 ②; that controls all the EL001 on its right (d, e).

Each blind or shutter is individually controlled by a EL001.

On the module a, the push button connected on terminals 2 and 4 allows an individual functioning.

Description

Energymeters are aimed to measure the active energy consumed by an installation. They permit to have under control the real cost of an installation and to divide the consumption between the different appliances.

Characteristics






- class B
- accuracy 1%
- energy readout: 7 digits
- backlighted display
- indication of instantaneous power consumption
- total / partial counter (excepted MID references)
- pulsed output
- unlimited saving of measures
- LED flashing according to consumption

- option: tariff 1 / tariff 2.
- three phases energymeters are adapted to all kind of networks
- display indication in case of bad wiring.

Connection capacity :

- flexible 6 mm²
- rigid 4 mm²

Complies to EN 50 470-3

Designation	Characteristics	Width	Pack qty.	Cat. ref.
	Single phase - direct 32A	voltage 230V AC 50 / 60Hz		
	single tariff without pulsed output	1 I	1	EC050
	single tariff with pulsed output	1 I	1	EC051
	Single phase - direct 63A	voltage 230V AC 50 / 60Hz starting current = 40mA base current = 10A max current = 63A		
	with pulsed output and total / partial	3 I	1	EC150
	with pulsed output, total / partial counter and 2 tariffs	3 I	1	EC152
	Three phase - direct 63A	voltage 230/400V AC 50 / 60Hz starting current = 40mA base current = 10A max current = 63A		
	with pulsed output and total / partial	4 I	1	EC350
	with pulsed output, total / partial counter and 2 tariffs	4 I	1	EC352
	Three phase - direct 100A	voltage 230/400V AC 50 / 60Hz starting current = 80mA base current = 20A max current = 100A		
	with pulsed output and total / partial	7 I	1	EC360
	with pulsed output, total / partial counter and 2 tariffs	7 I	1	EC362
	Three phase - connection via current transformers	to be connected with CT with on the secondary voltage 230/400V AC 50 / 60Hz starting current = 10mA max current on CT secondary = 6A		
	with pulsed output and total / partial	4 I	1	EC370
	with pulsed output, total / partial counter and 2 tariffs	4 I	1	EC372
Hour counters	250V 50Hz	2 I	1	EC100

EC050

EC350

EC370

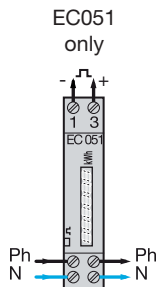
EC100

Technical characteristics

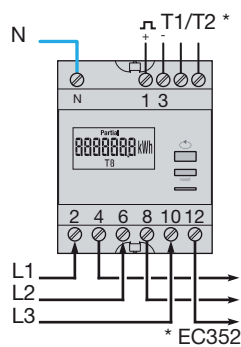
	EC050	EC051	EC150	EC152	EC350	EC352	EC360	EC362	EC370	EC372
Electrical characteristics										
Voltage	230V AC +/- 15%				230V AC +/- 15%, 400V AC +/- 15%					
Frequency	50 / 60Hz									
Consumption	7VA, 1W		< 10VA and 1W			< 10VA and 3W				
Metrological data										
Connection	direct								via current transformer	
Display	5 + 1 digits		6 + 1 digits			7 + 1 digits				
Accuracy	1%, class 1 IEC1036		1%, class B EN 50 470-3							
I max	32A direct		63A direct				100A direct		6A on sec. of CT	
I starting	20mA		40mA				80mA		10mA on sec. of CT	
Base current	10A		10A				20A		5A	
Metrological LED										
LED					1000 blinking / hr			500 blinking / hr		1000 blinking / hr
Pulsed output										
Pulsed output	no		1 pulse = 100Wh / 100ms / 20 - 30V DC max (except on KNX meters)							
Tariff										
Tariff	1	1	1	2	1	2	1	2	1	2
Mechanical characteristics										
Width	1 ■		3 ■			4 ■		7 ■		4 ■
Protection degree	IP20		IP20, IP51 (front part)							
Storage temperature	-25 to +70°C		-20 to +70°C							
Operating temperature	-10 to +45°C		-10 to +55°C							
Connection capacity	rigid: 1 to 6 mm ² flexible: 1 to 4 mm ²		rigid: 1,5 to 16 mm ² flexible: 1 to 16 mm ²				rigid: 2,5 to 35 mm ² flexible: 2 to 35 mm ²		rigid: 1,5 to 10 mm ² flexible: 1 to 6 mm ²	

Connection diagram

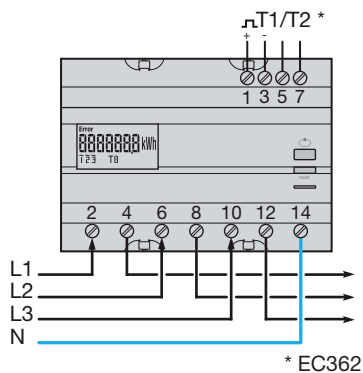
EC050, EC051



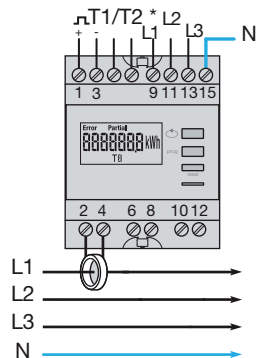
EC350, EC352



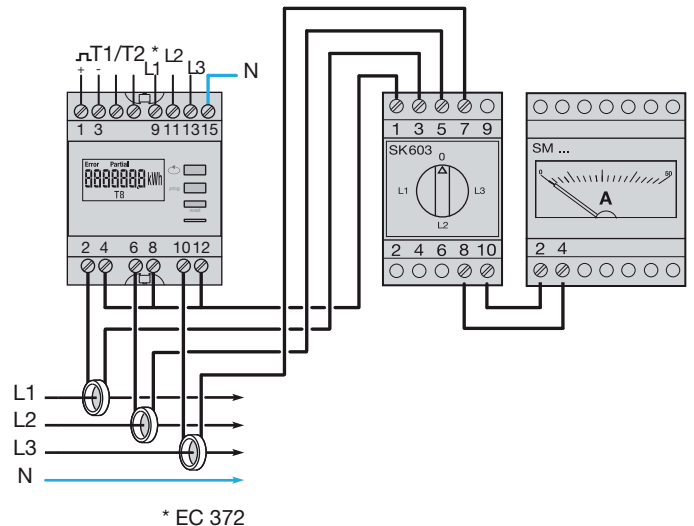
EC360, EC362



EC370, EC372



Metering for 3 phase network associated with an ammeter and its phase switch 230 / 400V AC



Power interface and programming

Description

Current transformers are used to feed analogue and digital ammeters. As well as kWh meters.

Their current on secondary circuit (0-5A) is proportional to

the current on primary circuit class : 1

can be mounted on copper bar or on cable

can be mounted on DIN rail with adaptors

Connection capacity :

- flexible 6 mm²
- rigid 4 mm²



SR 051



SR 300

Designation	Characteristics	Width in 17.5mm	Pack qty.	Cat. ref.
Current transformers (CT)				
	ratio : 50/5	2,5	1	SR051
	100/5	2,5	1	SR101
	150/5	3,5	1	SR150
	200/5	3,5	1	SR200
	250/5	3,5	1	SR250
	300/5	4,5	1	SR300
	400/5	4,5	1	SR400
	600/5	4,5	1	SR600
	800/5	5,5	1	SR800
	1000/5	6	1	SR850
	1500/5	6	1	SR900
	2000/5	6	1	SR910

Electrical characteristics

- primary current: from 50 to 2000 A
- secondary current: 0 - 5 A
- frequency : 50/60 Hz
- max. permanent overload: 1,2 Un

Connection

- flexible cable: 1 to 4 mm²
- rigid cable: 1 to 6 mm²

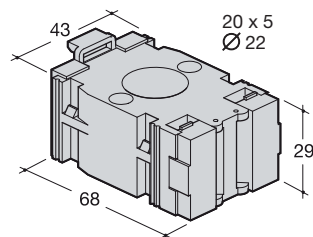
Working temperature : from -25 to +50 °C
Storage temperature : from -40 to +80 °C

Current transformers

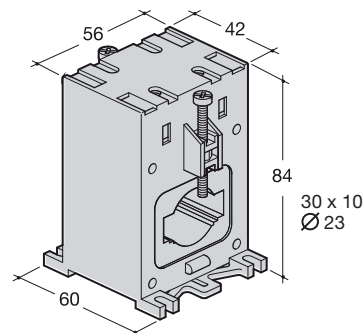
Catalogue reference		SR051/SR101/SR151			SR200/SR250			SR300/SR400/SR600			SR800/SR850			SR900/SR910		
for cable		Ø 21			Ø 23			Ø 35								
Busbars		20 x 5			30 x 10			40 x 10			2 x 10 x 60			2 x 80 x 10		
Ref.	A	Potential (VA)						Potential (VA)								
		Accuracy %			Accuracy %			Accuracy %			Accuracy %			Accuracy %		
		0,5	1	3	0,5	1	3	0,5	1	3	0,5	1	3	0,5	1	3
SR 051	50	-	1,25	1,5	-	-	-	-	-	-	-	-	-	-	-	-
SR 101	100	2	2,5	3,5	-	-	-	-	-	-	-	-	-	-	-	-
SR 151	150	3	4	5	-	-	-	-	-	-	-	-	-	-	-	-
SR 200	200	-	-	-	4	7	8,5	-	-	-	-	-	-	-	-	-
SR 250	250	-	-	-	6	9	11	-	-	-	-	-	-	-	-	-
SR 300	300	-	-	-	-	-	-	4	8	12	-	-	-	-	-	-
SR 400	400	-	-	-	-	-	-	8	12	15	-	-	-	-	-	-
SR 600	600	-	-	-	-	-	-	12	15	15	-	-	-	-	-	-
SR 800	800	-	-	-	-	-	-	-	-	-	12	15	20	-	-	-
SR 850	1000	-	-	-	-	-	-	-	-	-	15	20	25	-	-	-
SR 900	1500	-	-	-	-	-	-	-	-	-	-	-	-	15	20	25
SR 910	2000	-	-	-	-	-	-	-	-	-	-	-	-	10	12	15

Range of all CT's

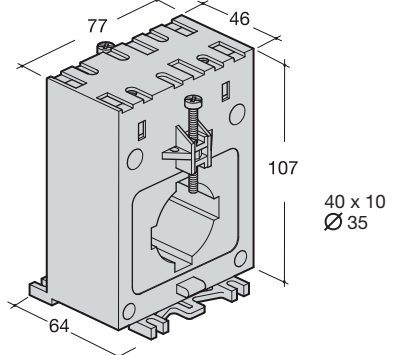
SR 051, SR 101, SR 151



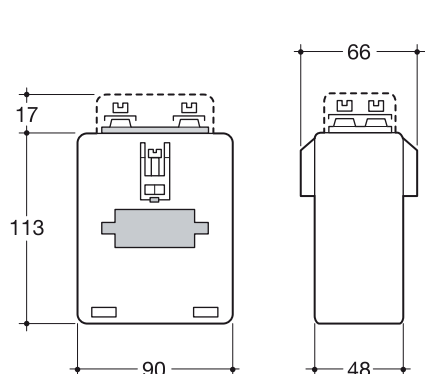
SR 200, SR 250 for cable Ø 23 max. for busbar 30 x 10 max.



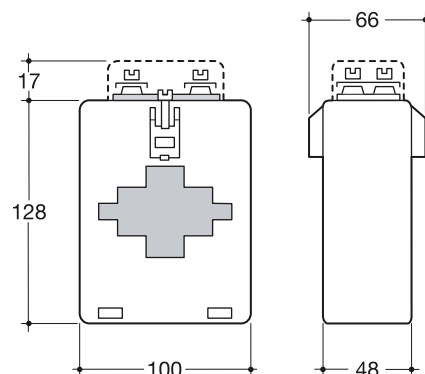
SR 300, SR 400, SR 600 for cable Ø 35 for busbar 40 x 10 max.



SR 800 max. busbar 63 x 10 or 2 x 50 x 10



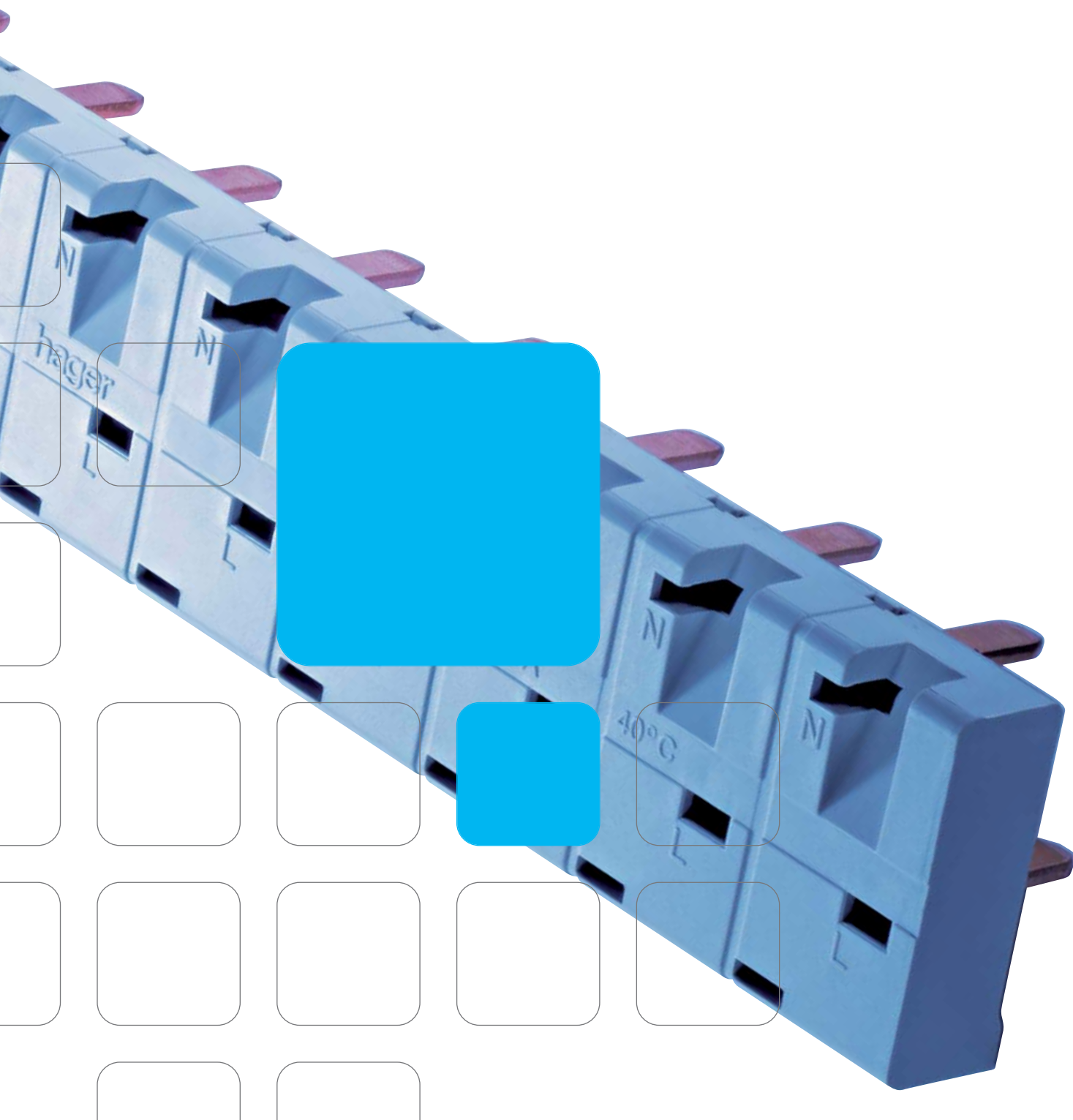
SR 850, SR 900, SR 910 max busbar 80 x 10 or 2 x 63 x 10



Connection

up to 250 A

Insulated busbars, junction blocks, distribution blocks, terminals, all that is needed to quickly and efficiently mount devices in enclosures and distribution boards.












insulated busbars	G.2
distribution blocks	G.4
junction blocks	G.6
brass terminals	G.10
Quick Connect and cage terminals	G.12
anti-shear terminals	G.15

Brown or blue insulated busbars

For MCBs Ph+N and fuse carriers 1 module spacing.

Single, double, three and four pole busbars

- for multipolar MCB from 0,5 to 63A
- for multipolar, single pole fuse carriers and SB switches.











	Designation	Section	In	Width	Cat. ref.
 KB163P	Single pole 63A to be equipped with protection profiles - brown (phase)	10 mm ²	63A	13 ■	KB163P
		10 mm ²	63A	13 ■	KB163N
 KB163N	- blue (neutral)	10 mm ²	63A	13 ■	KB163N
		10 mm ²	63A	13 ■	KB163N
 KB190C	Single pole 100A	20 mm ²	100A	24 ■	KB190C
		20 mm ²	100A	57 ■ (1 m)	KB190B
 KB263A	Double pole	10 mm ²	63A	12 ■	KB263A
		10 mm ²	63A	24 ■	KB263C
		16 mm ²	80A	56 ■ (1 m)	KB280B
 KB363C	Three pole	10 mm ²	63A	12 ■	KB363A
		10 mm ²	63A	24 ■	KB363C
		16 mm ²	80A	57 ■ (1 m)	KB380B
 KB463A	Four pole to be equipped with busbar ends	10 mm ²	63A	12 ■	KB463A
		10 mm ²	63A	24 ■	KB463C
		16 mm ²	80A	56 ■ (1 m)	KB480B
 KZ021	End caps to insulate the ends of the busbars	for single busbars KB163P, KB163N			KZ021
		for double busbars KB263A, KB263C			KZ022
		for double / three pole busbars KB280B, KB363A, KDN263B, KB363C, KB380B, KDN363B			KZ023A
		for four pole busbars KB463A, KB463C, KB480B, KDN463B			KZ024
 KZ023A					
 KZ059	Protection profiles to insulate the spare prongs				KZ059
					5 ■

Fork insulated busbars

For modular devices equipped with biconnect terminals
 - multipolar MCBs from 0,5 to 63A (without Ph+N)
 - RCCBs.

Connection terminals

KF83A, KF83C and KF83D are compatible with aluminium and copper conductors.

	Designation	Section	In	Width	Cat. ref.	
	KDN190B	Fork insulated busbars - single pole, 1 step insulated	20 mm ²	100A	57 (1 m)	KD190B
	KDN263B	- double pole, 2 step insulated	10 mm ²	63A	56 (1 m)	KDN263B
	KDN363B	- three pole, 3 step insulated	10 mm ²	63A	57 (1 m)	KDN363B
	KDN463B	- four pole, 1 step insulated	10 mm ²	63A	56 (1 m)	KDN463B
	KF84A	Fork connection terminals for fork busbars terminals	- cable incoming : lateral - connection capacity: 1 x 25 mm ² - cable tightening with 2 screws			KF84A
	KF82A	Prong connection terminals for devices with screw terminal	- cable incoming : top - connection capacity: 2 x 16 mm ² - cable tightening with 2 screws			KF82A
	KF83A	Connection terminals for KB163P and KB83B	- cable incoming : lateral - connection capacity: 1 x 25 mm ² - cable tightening with 1 screw			KF83A
	KF83B		- cable incoming : lateral - connection capacity: 2 x 25 mm ² - cable tightening with 1 screw			KF83B
	KF83C	Connection terminals for busbars KB190B for KB263 to KB463	- cable incoming : lateral or top - connection capacity: 1 x 25 mm ² (35 mm ² rigid)			KF83C
	KF83D	Connection terminals for KBN663A to KBN663C	- cable incoming : lateral or top - connection capacity: 2 x 25 mm ² flexible (35 mm ² rigid)			KF83D

Single pole distribution blocks

Monoblocs, insulated for copper conductor
 Ui: 500V
 Fixing on DIN rail, mounting plate and main devices plate kits.

Stepped distribution blocks

Modular, monobloc for copper conductors
 Removable front cover
 Ui: 500V
 Fixing on DIN rail

Equipped with an insulated rear plate.

Comply with IEC 60 998-1 and IEC 60947-7-1.

Designation	Characteristics	Width	Cat. ref.
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4 x KJ02A

Single pole distribution blocks

125A Isc peak: 30kA incoming: 1 x 35 + 1 x 16 mm ² outgoing: 6 x 16 mm ²	27 mm	KJ02D
160A Isc peak: 50kA incoming: 1 x 70 mm ² outgoing: 6 x 16 mm ²	35 mm	KJ02C
250A Isc peak: 50kA incoming: 1 x 95 mm ² outgoing: 2 x 25 + 5 x 16 + 4 x 10 mm ²	45 mm	KJ02A
400A Isc peak: 50kA incoming: 1 x 150 mm ² outgoing: 2 x 25 + 5 x 16 + 4 x 10 mm ²	45 mm	KJ02B



KJ02E

Modular distribution monobloc fixing on DIN rail, on mounting plate

100A - four pole Isc peak: 20kA - Ui: 500V phase: 1 x 25 + 2 x 10 + 5 x 6 mm ² flexible neutral: 1 x 25 + 6 x 10 + 4 x 6 mm ² flexible h. 74,5 x d. 45 mm	98 mm (5,5 I)	KJ02E
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KJ01B

Stepped distribution blocks fixing on DIN rail, on mounting plate

100A - double pole bars without IP2X cover Isc peak: 29kA connection capacity per bar: 2 x 25 + 10 x 6 mm ² flexible	129 mm (7,5 I)	KJ01A
125A - double pole bars with IP2X cover Isc peak: 20kA connection capacity per bar: 2 x 25 + 2 x 16 + 9 x 10 mm ² flexible	129 mm (7,5 I)	KJ01AN
80A - four pole bars without IP2X cover Isc peak: 21kA connection capacity per bar: 1 x 16 + 8 x 10 mm ² flexible	88 mm (5 I)	KJ01B
bars with IP2X cover Isc peak: 25kA connection capacity per bar: 2 x 16 + 7 x 10 mm ² flexible	88 mm (5 I)	KJ01BN
125A - four pole bars without IP2X cover Isc peak: 29kA connection capacity per bar: 2 x 25 + 10 x 16 mm ² flexible	129 mm (7,5 I)	KJ01C
bars with IP2X cover Isc peak: 25kA connection capacity per bar: 2 x 25 + 2 x 16 + 9 x 10 mm ² flexible	129 mm (7,5 I)	KJ01CN
160A - four pole bars without IP2X cover Isc peak: 29kA connection capacity per bar: 1 x 50 + 3 x 35 + 8 x 16 mm ² flexible	162 mm (9,5 I)	KJ01D



KJ01C



KJ01D

Four pole multi-connection system 250A

To supply 2, 3 and 4 pole devices.
For quadro enclosures 620 or 700 mm wide.
Incoming connection with 4 screw lugs.

Outcoming connection with insulated flexible connectors.

Delivered with:
- 6 insulated blue cables (6 x 6 mm²),
- 12 insulated brown cables (12 x 6 mm²),

- 2 fixation lugs for quadro system.

Designation	Characteristics	Cat. ref.	
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KJ03A

Four pole multi-connection system 250A

60 outgoing connections:
- 25 neutral outgoing
- 12 outgoing per phase section: 6 and 10 mm²
withstand current under 40°C:
- per pole: 250A
- 40A with connector 6 mm²
- 63A with connector 10 mm²
Isc peak: 60kA
Un: 500 V AC - 50Hz

without connectors

KJ03A

with connectors

KJ03B



KZ007

Connector terminals

to crimp flexible wire of 6 mm²

KZ007

Designation	Characteristics	Cat. ref.	
		blue	brown



KZ001 / KZ002

Cables with connector for KJ03A

40A	6 mm ²	KZ001	KZ002
40A	6 mm ²	KZ051	KZ052
63A	10 mm ²	KZ004	KZ005
63A	10 mm ²	KZ074	KZ075

Junction blocks

For 16 to 35 mm² copper conductors.

In max: 125A

To facilitate incoming cables connection and deviations in distribution boards and enclosures:

- fixing on DIN rail

- for K024 and K025 blocks, the mounting can be horizontal or vertical.

Junction terminals

For 25 to 150 mm² copper or aluminium conductors.

	Designation	Characteristics	Width	Cat. ref.
 K018	Junction blocks connection per pole: incoming: 2 x 25 mm ² outgoing: 4 x 16 mm ² delivered with front protection covers	1 pole w. 40 x h. 55 x d. 40 mm	2,5 ■	K018
		2 pole w. 65 x h. 55 x d. 35 mm	4 ■	K023
		4 pole w. 120 x h. 55 x d. 45 mm	7 ■	K024
 K024		5 pole w. 150 x h. 55 x d. 45 mm	8,5 ■	K025
		Junction blocks connection per pole: incoming: 2 x 35 mm ² outgoing: 4 x 16 mm ²	1 pole w. 41 x h. 55 x d. 53 mm	2,5 ■
 KR95P KR15P	Junction terminals fixing on DIN rails can be mounted in univers and quadro enclosures	tightening by hexagonal wrench 25 to 95 mm ²	25 mm	KR95P
		35 to 150 mm ²	31 mm	KR15P
 K010	Connecting bars fixing on DIN rails	2 x 5 connecting for 2,5 mm ² cables		K010
		Grounding connection separate wedges	section 50 mm ² delivered with 2 plates equipped with 70 mm ² cable clamps	

Junction terminals

For 0,5 to 70 mm² copper conductors.



In max: 24 to 192A

Screw connection terminals

Fixing on DIN rails.

The earth terminals are equipped with a metallic mounting base to allow the electrical continuity with the DIN rail.

Comply with IEC 60947-7-1.

Designation	Connection section		In	Width (mm)	Cat. ref.		
	flexible	rigid			phase	neutral	earth PE
 KX04F							
 KX04H							
Phase terminals - grey	0,5-2,5 mm ²	0,5-4 mm ²	24A	5	KX04F	KX04N	KX04H
Neutral terminals - blue	0,5-4 mm ²	0,5-6 mm ²	32A	6	KX06F	KX06N	KX06H
Earth terminals PE green/yellow	1-10 mm ²	1,5-16 mm ²	57A	10	KX16F	KX16N	KX16H
	4-16 mm ²	4-25 mm ²	76A	12	KX25F	KX25N	KX25H
	16-35 mm ²	16-50 mm ²	125A	16	KX50F	KX50N	KX50H
		70 mm ²	192A	24	KX70F		
Designation	Characteristics		Width (mm)		Cat. ref.		
Insulated end plate beige, in insulating material	for the terminals: KX04F/N KX06F/N		1,5		KW025		
	KX16F/N KX25F/N		1,5		KW026		
	KX50F/N		2		KW031		
Blocking brackets black, in insulating material	for all the terminals of 4 to 50 mm ² :		8		KW033		
	for terminal KF70F		10		KW034		
Equipotential bridgings can be cut	for 10 terminals: KF04F/N				KW035		
	KF06F/N				KW036		
	KF16F/N				KW037		
Marking strips	plexiglas box with 550 label sheets numbered from 0 to 9				KW001		
	set of 25 label sheets numbered from 1 to 100				KW002		
	set of 25 label sheets numbered from 101 to 200				KW003		



KX04F



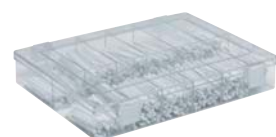
KX04H



KX04N



KW033



KW001

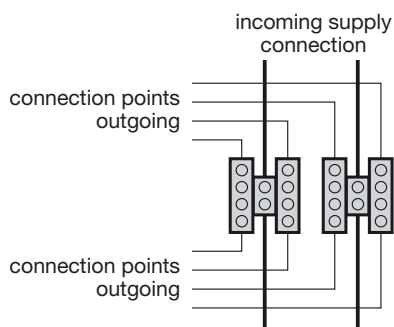
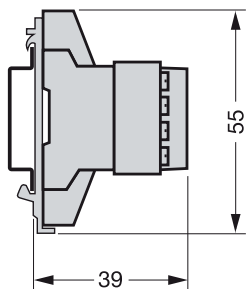
Mini-junction terminals
 For copper conductors.
 In max: 15A
 Spring collar connection.
 Adapts automatically to the
 conductor section, reliable
 contact, good resistance to
 vibrations.

Connection capacity:
 0,14 to 2,5 mm²

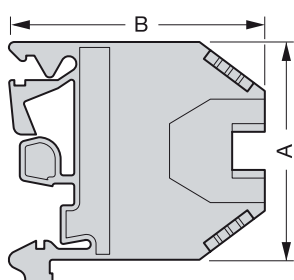
Designation	Characteristics	Width	Cat. ref.	
 <p>K890</p> <p>K891</p> <p>K892</p> <p>K893</p>	<p>Mini-junction blocks delivered with marking labels</p> <p>blue color</p> <p>grey color</p> <p>green color</p> <p>orange color</p>	<p>6 ■</p> <p>6 ■</p> <p>6 ■</p> <p>6 ■</p>	<p>K890</p> <p>K891</p> <p>K892</p> <p>K893</p>	
	<p>End plates allow to close a row of mini-junction terminals delivered with: 100 screws with head 2,9 x 9,5 mm</p>			K894
	<p>Adaptors for symmetrical DIN rail allow to mount mini-junction terminals on symmetrical DIN rails delivered with fixing screws.</p>			K895
	 <p>K895</p>			

Dimensions (in mm)

Junction blocks : K018, K023, K024, K025, K037

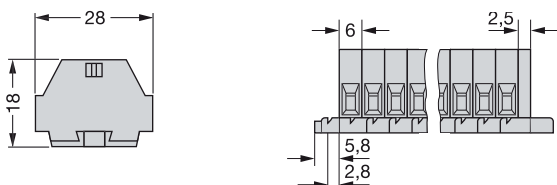


Junction terminals



terminals	A (mm)	B (mm)
KX04F, KX04N, KX04H, KX06F, KX06N, KX06H	44,5	48,5
KX16F, KX16N, KX16H, KX25F, KX25N, KX25H, KX50F, KX50N, KX50H	58	51,5
KX70F	76	79
KR15P	184	100
KR95P	83	83

Mini-junction terminals
















Brass terminals

For earth, neutral, phase copper conductors.
In max: 60A

Version without base:
Can be mounted using KZ bases
or rail.
Delivered with screws.

Version with base:
To be clipped on 12 x 2 mm rails.

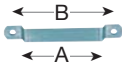
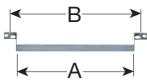


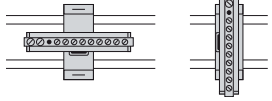

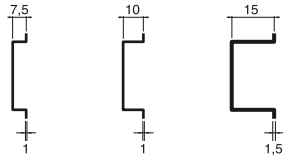


Earth: green/yellow base
Neutral: blue base
Phase: beige base

Designation	Connection section	Cat. ref. with base			without base
		neutral	earth	phase	
 KM04L	Brass terminals with base 2x 6 + 2x10 mm ² 4 connections plot length 30 mm	-	-	KM04L	K140
 KM08L	4x16 + 4x10 mm ² 8 connections 2 plot length 30 mm	-	-	KM08L	-
 KM07N	3x16 + 4x10 mm ² 7 connections plot length 49 mm	KM07N	KM07E	KM07L	K142
 KM10B	5x16 + 5x10 mm ² 10 connections plot length 67 mm	KM10A	KM10B	KM10C	K143
 KM10E	5x16 + 6x10 mm ² 11 connections plot length 73 mm	KM11N	KM11E	KM11L	K144
 KM13N	2x16 (double drive) + 8x10 mm ² 10 connections plot length 69 mm	KM10N	KM10E	KM10L	K145
 KM11B	6x16 + 7x10 mm ² 13 connections plot length 85 mm	KM13N	KM13E	-	K148
 K151	1x25 + 5x16 + 5x10 mm ² 11 connections plot length 85 mm	-	KM11B	-	K151
 KM25N	1x25 + 8x16 + 8x10 mm ² 17 connections plot length 121 mm	KM17N	KM17E	-	K156
 K158	1x25 + 11x16 + 13x10 mm ² 25 connections plot length 169 mm	KM25N	KM25E	-	K158
 K159					
 KZ012	Brass terminals without base 1x25 + 8x16 + 29x10 mm ²				242 K159
 KZ014	1x25 + 16x16 + 61x10 mm ²				482 K160
	1x25 + 33x16 + 129x10 mm ²				992 K162
	Bases for brass terminals K140 to K162 insulated material M4 x 8 fixing screws	blue base, for neutral			KZ012
		green/yellow base, for earth			KZ013
		beige base, for phase			KZ014

Bases for brass terminals
For the mounting of the KM
brass
terminals without base.
Material: flat bar 12 x 2 mm.

Mounting rails
For the mounting of junction
blocks and terminals into
enclosures.

Electro-zinc coated and
bichromated.
Length: 2m











	Designation	Characteristics	Dimensions	Cat. ref.
 <p>A089</p>	<p>Flat bar supports for terminal strips for brass terminals with base</p>	for one brass terminal	A = 55 mm B = 74 mm	A089
 <p>UT91A</p>	<p>Pinch carriers for brass terminals with base</p>	1 span (250 mm)	A = 205 mm	UT91A
 <p>A090</p>	<p>Brass terminals supports for brass terminals with base</p>	for mounting in all boards	length: 2 m	A090
 <p>KZ060F</p>	<p>Rail fixing clips to fix brass terminals on DIN rails with bases KZ012, KZ013 and KZ014</p>	<p>mounting on DIN rail</p>  <p>horizontally vertically</p>	width: 20 mm	KZ060F
 <p>A099</p>	<p>Symmetrical rails DIN 46277/3 width: 35 mm</p>	<p>1 span (250 mm)</p>  <p>A088 A098 A099</p>	<p>depth: 7,5 mm</p> <p>depth: 10 mm</p> <p>depth: 15 mm</p>	<p>A088</p> <p>A098</p> <p>A099</p>
 <p>A050</p>	<p>Asymmetrical rails DIN 46277/1</p>	<p>1 span (250 mm)</p> 	depth: 7,5 mm	A050

Quick Connect and cage terminals

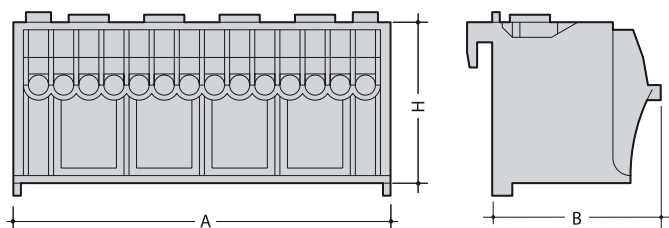
For earth, neutral, phase copper conductors.
The terminals are equipped with direct plug-in Quick Connect terminals for 1,5 to 4 mm²

plug-in wires and cage terminals for 1,5 to 25 mm² standard wires.
Can be clipped on premounted bases for volta, vector, vega D, gala and gamma enclosures.
Available as accessories.

Comply with EN 60998.

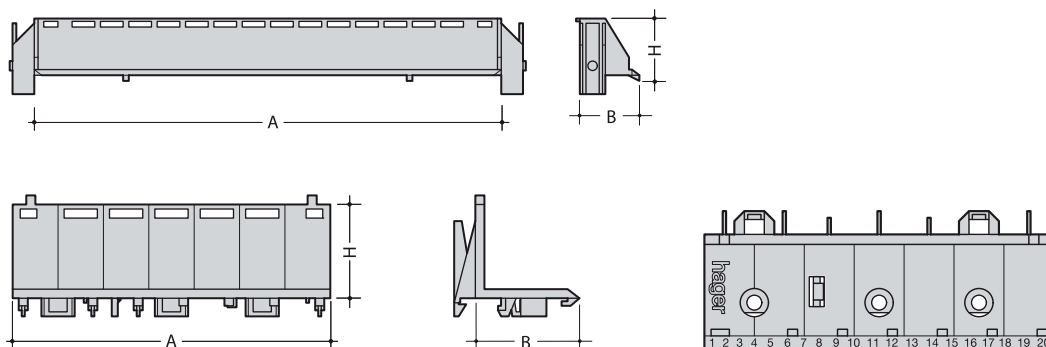
	Designation	Terminal qty		Cat. ref.		
		Quick Connect 1,5 to 4 mm ²	cage 1,5 to 25 mm ²	blue neutral	brown phase	green/yellow earth
 KN06P  KN22N  KN26E	Quick Connect and cage	5	1	KN06N	KN06P	KN06E
		8	2	KN10N	KN10P	KN10E
		11	3	KN14N	KN14P	KN14E
		14	4	KN18N	KN18P	KN18E
		17	5	KN22N	KN22P	KN22E
	20	6	KN26N	KN26P	KN26E	
	Designation	Characteristics			Cat. ref.	
 KN99P/N/E	Equipotential bridgings to connect 2 Quick Connect terminals	for neutral terminals			KN99N	
		for phase terminals			KN99P	
		for earth terminals			KN99E	
 VZ710  VZ711  GZ30A  KN00A	Bases for Quick Connect terminals	for volta, vector, gala, vega 18 surface, vega D			VZ710	
		vega 18 flush			VZ711	
		gamma			GZ30A	
	Universal bases for terminals to be fixed on 12 x 2 mm flat bars of DIN rails in quadro and univers enclosures	length: 105 mm pre-cut base to fit with the terminals dimensions			KN00A	
 KN07N  KN04P	Incoming cage terminals allow the connection of cables up to 25 mm ² U _i = 630V, 90A can be clipped on Quick Connect bases	neutral terminals: 4 x 25 mm ²		KN04N		
		7 x 25 mm ²		KN07N		
		phase terminals: 4 x 25 mm ²		KN04P		
		7 x 25 mm ²		KN07P		

Neutral, earth and phase terminals



	Quick Connect terminals						Cage terminals	
	KN06N KN06P KN06E	KN10N KN10P KN10E	KN14N KN14P KN14E	KN18N KN18P KN18E	KN22N KN22P KN22E	KN26N KN26P KN26E	KN04N KN04P	KN07N KN07P
H	33	33	33	33	33	33	33	33
A	30	45	60	75	90	105	45	75
B	34	34	34	34	34	34	18	18

Terminal supports

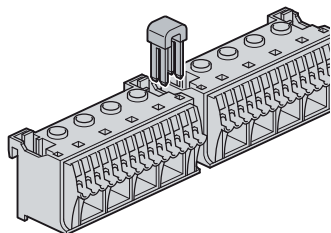


	VZ711 volta, vector	VZ710 vega, vega D	GZ30A gamma	KN00A universal supports
H	32	35	30	35
A	240	315	195	105
B	42	42	42	42
Number	47	62	38	20

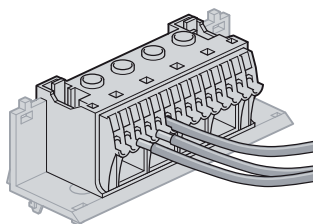
The number indicates the quantity of Quick Connect terminals on the support.

Connection

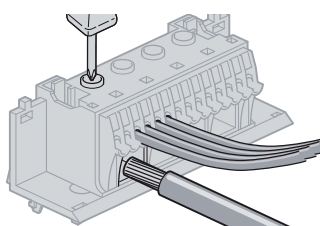
Bridge for 2 terminals



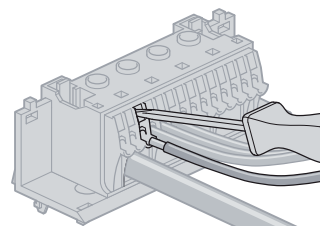
Quick Connect 1,5 to 4 mm² wires



max. 25 mm² wires in a cage terminal

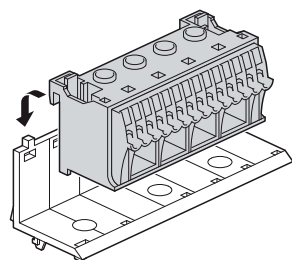


disconnecting with screwdriver

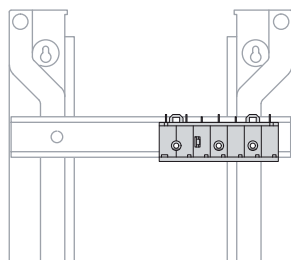


Mounting

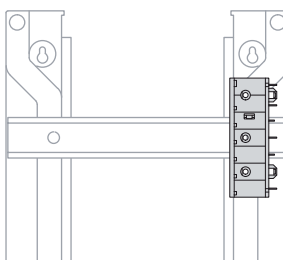
clipping on terminal bases and universal bases



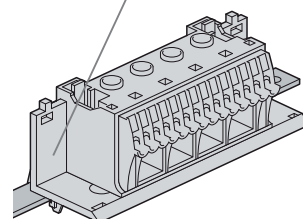
universal support : horizontal mounting on DIN rail



vertical mounting on DIN rail



divisible universal support



Combinations: quantity of Quick Connect terminals on the bases

Quick Connect terminals	KN06N/P/E	KN10N/P/E KN04N/P	KN14N/P/E	KN18N/P/E KN07N/P	KN22N/P/E	KN26N/P/E
number of blocks	1	1,5	2	2,5	3	3,5

Quick Connect terminals bases	VZ710 vega 18 surface, vega D	GZ30A gamma	VZ711 vector, volta, gala, vega 18 flush	KN00A universal support
number of blocks	10,5	6,5	8	3,5

The bases above accept blocks combinations (neutral, phase and earth).
Connection between same terminals is done using equipotential bridgings (KN99x).

Anti-shear terminals

For copper and aluminium conductors.

Terminal crimping: an anti-shear plate auto-insert on the screw during the tightening and allows the good resistance of the cap before blocking.

Version without fixing lugs:
for individual use.

Version with fixing lugs:
snap-on lugs to form 4 to 6
brass terminals.
To form bigger brass terminals,
use K098 or K099 profiles.

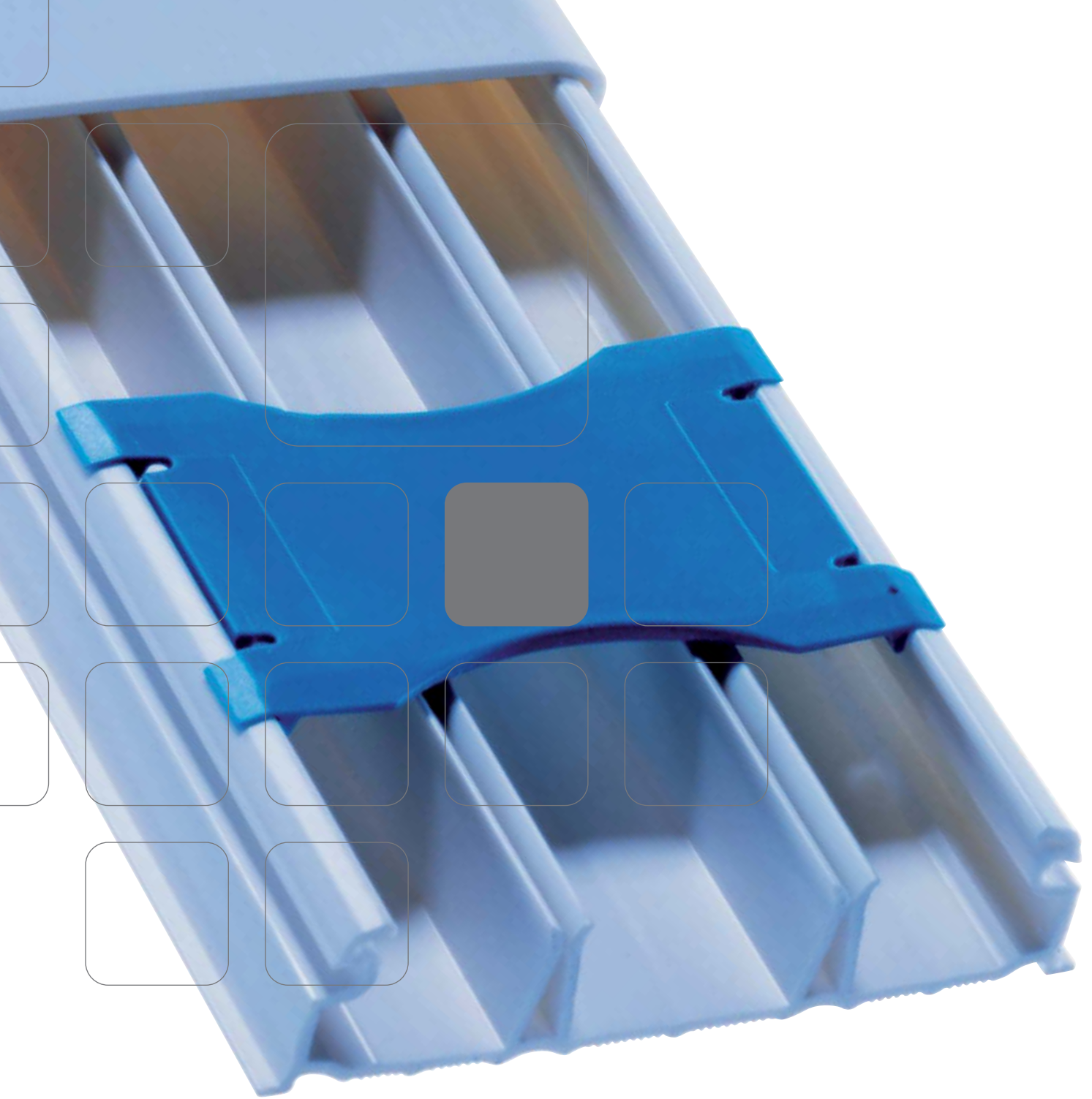
Comply with BS 60 685-2-2.

Equipped connection boxes

For 10 to 25 mm² copper and aluminium conductors.

Insulated material.
Equipped with 5 anti-shear terminals with lugs.
Sealable cover.
Capacity: 2 wires per terminal.
Can be replaced by K206 to K2150.

Designation	Characteristics	In (max.)	Cat. ref.		
			with lugs	without lugs	
 K106 K110  K235	Anti-shear terminals with or without fixing lugs in unbreakable insulated material	2 x 6 mm ²	25A	K106	K206
		2 x 10 mm ²	32A	K110	K210
		2 x 16 mm ²	40A	K116	K216
		2 x 25 mm ²	63A	K125	K225
		2 x 35 mm ²	80A	K135	K235
		2 x 70 mm ²	160A	-	K270
		2 x 150 mm ²	250A	-	K2150
	Profiles for terminals with fixing lugs length: 1 m	for terminals with fixing lugs: 6 to 25 mm ²	-	-	K098
		35 mm ²	-	-	K099
Designation	Characteristics	Cat. ref.			
 S007	Equipped connection boxes type 1 w. 95 x h. 70 x d. 35 mm	with 5 terminals 2 x 10 mm ²	S007		
	Equipped connection boxes type 2 w. 115 x h. 90 x d. 45 mm	with 5 terminals 2 x 16 mm ²	S021		
	Equipped connection boxes type 3 w. 145 x h. 105 x d. 45 mm	with 5 terminals 2 x 25 mm ²	S038		



Residential trunking

tehalit.ateha

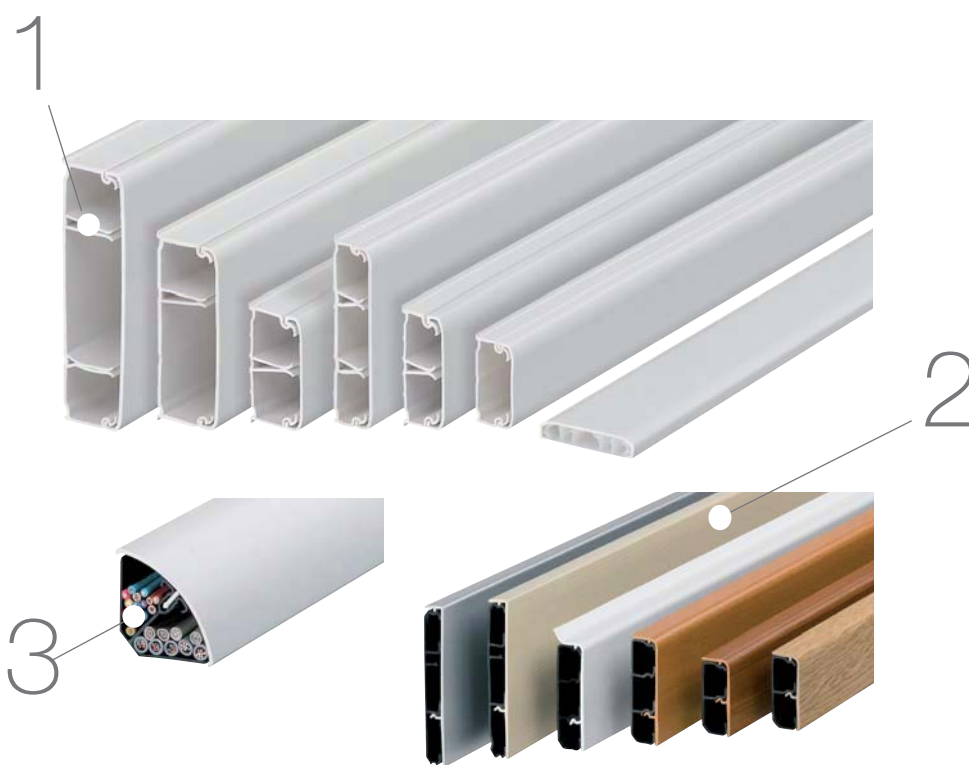
Easy to install and offering great finishes, the tehalit.ateha range is suitable for renovation or extension of the installations in houses and small professional premises.

tehalit.atoha skirting systems	
- skirting systems and plinths	H.4
- skirting systems for corners	H.6
<hr/>	
tehalit.SL plinths system	H.10
<hr/>	
accessories for skirting and plinths	H.12
<hr/>	
technical data	H.13
<hr/>	

Skirting systems and plinths tehalit.ateha

Quality and easy to fix

Skirting systems and plinths from the tehalit.ateha range combine nice design, great quality and easy fixing for your building projects.



Your benefits

- Nail guide partitions which facilitates fixing.
- Clever cable retainers integrated in the trunking to retain the cables before putting the lid in place.
- A new material, flexible and easy to handle.
- Covers of corners with 10 mm overlapping to allow quick and approximate cutting of lids.

Your benefits

- Adjustable corners (83 to 140°) to fit any angle.
- Surface protected by film (wood decor)

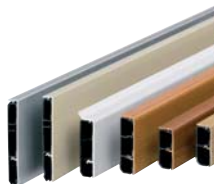
Expert tips

1



Clever nail guide
Facilitates fixing

2



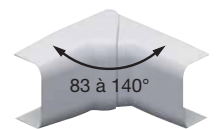
Huge finishes choice
Plinths are available in 6 colours and 4 sections.



Cable guide retainers
For skirting systems.



Pieces with shapes combined
To skirting systems and plinths for an impeccable result.



Adjustable corners
To fit in on any angle.

3



Skirting system for corners
Complete the tehaliit.ateha offer.



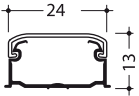



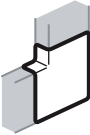
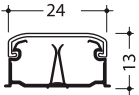

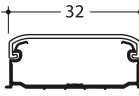

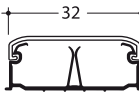

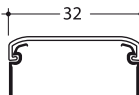

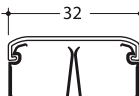

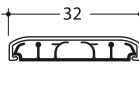



Multi-function piece
To adapt to all configurations.

Skirting systems and plinths tehali.ateha

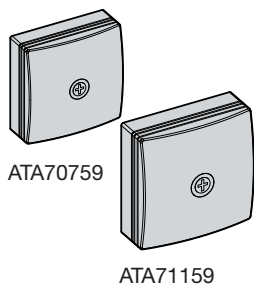
Delivery information : Base and lid together (lid opening with screwdriver) and 2 cables retainers/m (except 12x20).


Standard length : 2m, except for sizes: 12x20, 12x30, 16x30 and 6x30 (2,10 m). Other length on demand, max. 6 m.

Material : Rigid PVC, protection category : IP 40, IK 07.



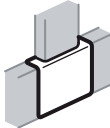
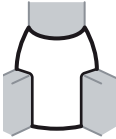
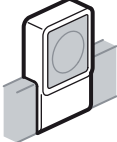
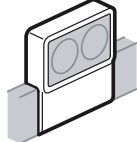
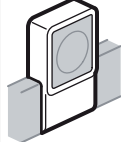
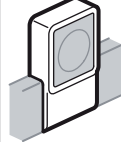
 - For skirting dimensions and capacity, see page H.14 - Accessories, see page H.12	Note : The colour code indicates compatibility between accessories and trunkings.	Base and lid	Adjustable external corner	Adjustable internal corner	Flat corner	
		 Cat. ref.	 Cat. ref.	 Cat. ref.	 Cat. ref.	
		pure white	ATA122009010	ATA122039010	ATA122049010	ATA122059010
		brown	ATA122008014	ATA122038014	ATA122048014	ATA122058014
		packaging	84 m	40 pieces	40 pieces	40 pieces
		pure white	ATA122019010	ATA122039010	ATA122049010	ATA122059010
		brown	ATA122018014	ATA122038014	ATA122048014	ATA122058014
		packaging	84 m	40 pieces	40 pieces	40 pieces
		pure white	ATA123009010	ATA123039010	ATA123049010	ATA123059010
		brown	ATA123008014	ATA123038014	ATA123048014	ATA123058014
		packaging	60 m	40 pieces	40 pieces	40 pieces
		pure white	ATA123019010	ATA123039010	ATA123049010	ATA123059010
		brown	ATA123018014	ATA123038014	ATA123048014	ATA123058014
		packaging	60 m	40 pieces	40 pieces	40 pieces
		pure white	ATA163009010	ATA163039010	ATA163049010	ATA163059010
		brown	ATA163008014	ATA163038014	ATA163048014	ATA163058014
		packaging	50 m	20 pieces	20 pieces	20 pieces
		pure white	ATA163019010	ATA163039010	ATA163049010	ATA163059010
		brown	ATA163018014	ATA163038014	ATA163048014	ATA163058014
		packaging	50 m	20 pieces	20 pieces	20 pieces
		pure white	ATA630009010			
		packaging	46 m			

Designation	Pack qty.	Colour	Cat. ref.
Connection boxes 75 x 75 x 32	10	pure white	ATA707599010
		brown	ATA707598014
Connection boxes 115 x 115 x 52	8	pure white	ATA711599010
		brown	ATA711598014



Colours :  pure white (9010)

 brown (8014)

End cap	Joint cover	T, and deviation piece	Adaptator ATA / SL with EK	Socket plinth box 1-gang empty for Legrand outlet (1x45mm)	Socket plinth box 2-gang empty for Legrand outlet (2x45mm)	Socket plinth box 1-gang empty for profil 2™ outlet (1x45mm)	Socket plinth box 1-gang empty for Alrea™ outlet (1x45mm)
							
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
ATA122069010 ATA122068014	ATA122079010 ATA122078014	ATA122089010 ATA122088014	M55609010	ATA122199010 ATA122198014	ATA122499010	ATA122299010 ATA122298014	ATA122399010 ATA122398014
40 pieces	40 pieces	20 pieces	5 pieces	20 pieces	10 pieces	20 pieces	20 pieces
ATA123069010 ATA123068014	ATA123079010 ATA123078014	ATA123089010 ATA123088014	M55609010	ATA123199010 ATA123198014	ATA123499010	ATA123299010 ATA123298014	ATA123399010 ATA123398014
40 pieces	40 pieces	20 pieces	5 pieces	20 pieces	10 pieces	20 pieces	20 pieces
ATA163069010 ATA163068014	ATA163079010 ATA163078014	ATA163089010 ATA163088014	M55609010	ATA123199010 ATA123198014	ATA123499010	ATA123299010 ATA123298014	ATA123399010 ATA123398014
20 pieces	20 pieces	10 pieces	5 pieces	20 pieces	10 pieces	20 pieces	20 pieces
ATA163069010 ATA163068014	ATA163079010 ATA163078014	ATA163089010 ATA163088014	M55609010	ATA123199010 ATA123198014	ATA123499010	ATA123299010 ATA123298014	ATA123399010 ATA123398014
20 pieces	20 pieces	10 pieces	5 pieces	20 pieces	10 pieces	20 pieces	20 pieces

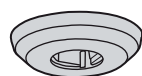
Designation

Characteristics

 Pack
qty.

Colour

Cat. ref.



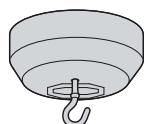
ATA63059

Ceiling rose

 used with plinths :
ATA122009010
ATA630009010

6

pure white

ATA630599010


ATA63069

Ceiling rose DCL

 delivered with connector
and ceiling hook

 used with plinths :
ATA122009010
ATA123009010
ATA630009010

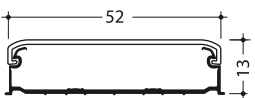


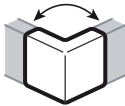

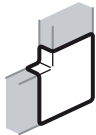
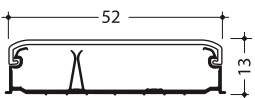

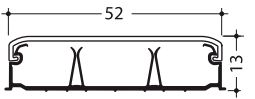

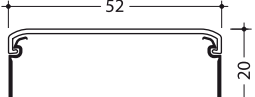

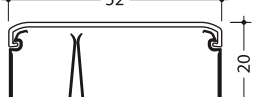



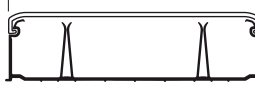



6

pure white

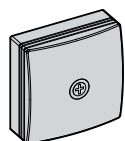
ATA630699010

Skirting systems tehali.teha

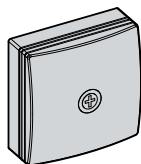
Delivery information : Base and lid together (lid opening with screwdriver) and 2 cables retainers/m (except 12x20).
Standard length : 2m, except for sizes: 12x20, 12x30, 16x30 and 6x30 (2,10 m). Other length on demand, max. 6 m.
Material : Rigid PVC, protection category : IP40, IK07.

		Note : The colour code indicates compatibility between accessories and trunkings.				
			Base and lid	Adjustable external corner	Adjustable internal corner	Flat corner
			Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
		pure white	ATA125009010	ATA125039010	ATA125049010	ATA125059010
		brown	ATA125008014	ATA125038014	ATA125048014	ATA125058014
		packaging	48 m	20 pieces	20 pieces	20 pieces
		pure white	ATA125019010	ATA125039010	ATA125049010	ATA125059010
		brown	ATA125018014	ATA125038014	ATA125048014	ATA125058014
		packaging	48 m	20 pieces	20 pieces	20 pieces
		pure white	ATA125029010	ATA125039010	ATA125049010	ATA125059010
		brown	ATA125028014	ATA125038014	ATA125048014	ATA125058014
		packaging	48 m	20 pieces	20 pieces	20 pieces
		pure white	ATA205009010	ATA205039010	ATA205049010	ATA205059010
		brown	ATA205008014	ATA205038014	ATA205048014	ATA205058014
		packaging	32 m	20 pieces	20 pieces	20 pieces
		pure white	ATA205019010	ATA205039010	ATA205049010	ATA205059010
		brown	ATA205018014	ATA205038014	ATA205048014	ATA205058014
		packaging	32 m	20 pieces	20 pieces	20 pieces
		pure white	ATA205029010	ATA205039010	ATA205049010	ATA205059010
		brown	ATA205028014	ATA205038014	ATA205048014	ATA205058014
		packaging	32 m	20 pieces	20 pieces	20 pieces
		pure white	ATA207529010	ATA207539010	ATA207549010	ATA207559010
		brown	ATA207528014	ATA207538014	ATA207548014	ATA207558014
		packaging	24 m	20 pieces	20 pieces	20 pieces


Designation	Pack qty.	Colour	Cat. ref.
Connection boxes 75 x 75 x 32	10	pure white	ATA707599010
		brown	ATA707598014
Connection boxes 115 x 115 x 52	8	pure white	ATA711599010
		brown	ATA711598014





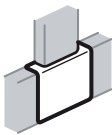
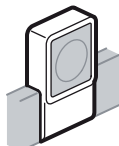
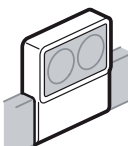
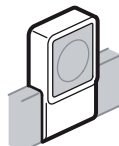
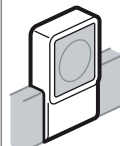
ATA70759



ATA71159

Colours :  pure white (9010)

 brown (8014)

End cap	Joint cover	T, and deviation piece	Socket plinth box 1-gang empty for Legrand outlet (1x45mm)	Socket plinth box 2-gang empty for Legrand outlet (2x45mm)	Socket plinth box 1-gang empty for profil 2™ outlet (1x45mm)	Socket plinth box 1-gang empty for Alrea™ outlet (1x45mm)
						
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
ATA125069010 ATA125068014	ATA125079010 ATA125078014	ATA125089010 ATA125088014	ATA125199010 ATA125198014	ATA125499010	ATA125299010 ATA125298014	ATA125399010
20 pieces	20 pieces	10 pieces	20 pieces	10 pieces	20 pieces	20 pieces
ATA125069010 ATA125068014	ATA125079010 ATA125078014	ATA125089010 ATA125088014	ATA125199010 ATA125198014	ATA125499010	ATA125299010 ATA125298014	ATA125399010
20 pieces	20 pieces	10 pieces	20 pieces	10 pieces	20 pieces	20 pieces
ATA125069010 ATA125068014	ATA125079010 ATA125078014	ATA125089010 ATA125088014	ATA125199010 ATA125198014	ATA125499010	ATA125299010 ATA125298014	ATA125399010
20 pieces	20 pieces	10 pieces	20 pieces	10 pieces	20 pieces	20 pieces
ATA205069010 ATA205068014	ATA205079010 ATA205078014	ATA205089010 ATA205088014	ATA125199010 ATA125198014	ATA125499010	ATA125299010 ATA125298014	ATA125399010
20 pieces	20 pieces	10 pieces	20 pieces	10 pieces	20 pieces	20 pieces
ATA205069010 ATA205068014	ATA205079010 ATA205078014	ATA205089010 ATA205088014	ATA125199010 ATA125198014	ATA125499010	ATA125299010 ATA125298014	ATA125399010
20 pieces	20 pieces	10 pieces	20 pieces	10 pieces	20 pieces	20 pieces
ATA205069010 ATA205068014	ATA205079010 ATA205078014	ATA205089010 ATA205088014	ATA125199010 ATA125198014	ATA125499010	ATA125299010 ATA125298014	ATA125399010
20 pieces	20 pieces	10 pieces	20 pieces	10 pieces	20 pieces	20 pieces
ATA207569010 ATA207568014	ATA207579010 ATA207578014	ATA207589010 ATA207588014				
20 pieces	20 pieces	10 pieces				

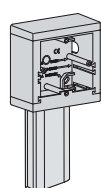
Designation

Characteristics

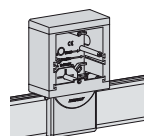
 Pack
qty.

Colour

Cat. ref.



ATA80619



ATA80619

**Universal boxes
for socket**
60 mm for ATA/LF

90 x 90 x 42 mm

5

pure white

ATA806099010
**Universal boxes for
socket**
60 mm + adaptator ATA

90 x 90 x 42 mm


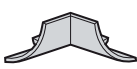
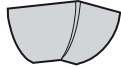
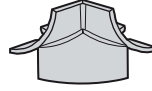


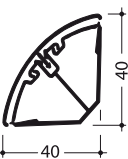

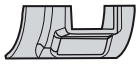


5

pure white

ATA806199010

Delivery information : base, lid and cable retainers. Lid opening with screwdriver.
Standard length : 2,5 m. Other length on demand, max. 6 m.
Material : Rigid PVC, protection category : IP40, IK07.

Colour : pure white (9010)

		Base and lid	Internal corner Flat corner	External corner	T piece	End cap	Joint cover
- For skirting dimensions and capacity, see page H.14		 Cat. ref.	 Cat. ref.	 Cat. ref.	 Cat. ref.	 Cat. ref.	 Cat. ref.
	pure white	EK4004009010	L27719010	L27729010	L27799010	L27739010	L27749010
	packaging	16 pieces	20 pieces	20 pieces	20 pieces	20 pieces	20 pieces
Systems interconnection		ateha skirting and SL plinths on EK skirting for corners	Deviation on ATA 12 x 20 ATA 12 x 30 ATA 6 x 30	Adaptator ATA / SL with EK			
- For skirting dimensions and capacity, see page H.14		 Cat. ref.	 Cat. ref.	 Cat. ref.			
	pure white		L27809010	M55609010			
	packaging		15 pieces	5 pieces			

SL plinths

trendy trunking



For commercial premises and home

The SL plinth brings a design touch to your project and fits in all kind of tertiary or residential environment. Its new up-to-date and discreet profile, with neat finishes suits to any style.

The main easthetic innovation is the socket box. Its "mirror" side create a transparent effect that stretch the plinth perspective.

The logo for Hager, featuring a stylized orange and blue symbol to the left of the word 'hager' in a bold, lowercase, sans-serif font.



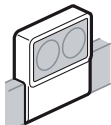
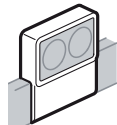
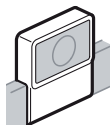
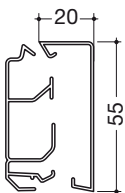
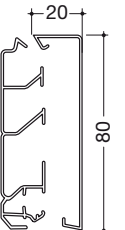
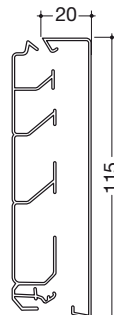
www.near-east.hager.com

tehalit.SL: plinth systems heights 55, 80 and 115 mm

Delivery information : base pre-drilled and lid (opening with screwdriver) sold separately.

Standard length : 2 m. Other length on demand, max. 6 m.

Matériau : Rigid PVC, protection category : IP40, IK07.

	Base	Lid	Socket plinth box 2-gang empty for systo outlet (2x45mm)	Socket plinth box pre-equipped w/ 2-gang power outlet (2P+T)	Socket plinth box universal for 60mm outlets
					
	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
					
pure white (9010)		SL2005529010	SL200559039010	SL200559609010	SL200559119010
graphite black (9011)	SL200551	SL2005529011	SL200559039011	SL200559609011	SL200559119011
alu (D1)		SL200552D1	SL20055903D1	SL20055960D1	SL20055911D1
beech (D2)		SL200552D2			
maple (D3)		SL200552D3			
cherry (D4)		SL200552D4			
oak (D5)		SL200552D5			
sucupira (D6)		SL200552D6			
with carpet border pure white (9010)		SL20055229010			
with soft components pure white (9010)		SL20055219010			
graphite black (9011)		SL20055219011			
packaging	36 m	white/black: 36 m D1 to D6: 18 m	4 pieces	4 pieces	4 pieces
					
pure white (9010)		SL2008029010	SL200809039010	SL200809609010	SL200809119010
graphite black (9011)	SL200801	SL2008029011	SL200809039011	SL200809609011	SL200809119011
alu (D1)		SL200802D1	SL20080903D1	SL20080960D1	SL20080911D1
beech (D2)		SL200802D2			
maple (D3)		SL200802D3			
cherry (D4)		SL200802D4			
oak (D5)		SL200802D5			
sucupira (D6)		SL200802D6			
with carpet border pure white (9010)		SL20080229010			
with LED alu (D1)		SL2008024D1			
with soft components pure white (9010)		SL20080219010			
graphite black (9011)		SL20080219011			
packaging	36 m	white/black: 36 m D1 to D6: 18 m	4 pieces	4 pieces	4 pieces
					
pure white (9010)		SL2011529010	SL201159039010	SL201159609010	SL201159119010
graphite black (9011)	SL201151	SL2011529011	SL201159039011	SL201159609011	SL201159119011
packaging	24 m	24 m	4 pieces	4 pieces	4 pieces

	Description	Characteristics	Packaging	Cat. Ref.
 AFOUTILPISTOLET	Glue guns for rigid glue		6 pieces	AFOUTILPISTOLET
 ATACOLLE	Pure white glue cartridges	capacity : 0,3 L color : RAL 9010	12 pieces	ATACOLLE
 AFCLOUSM118	Flat head nails	(compatible with the nail device BM 2C) L = 18 mm, Ø = 2,5 mm	4 boxes	AFCLOUSM118
 AFTH1520CLOUS		L = 25 mm, Ø = 2,5 mm	1 box	AFCLOUSM125
 AFTH1520CLOUS	Nails	(incompatible with the nail BM 2C) L = 20 mm, Ø = 1,5 mm	1 box	AFTH1520CLOUS
		L = 25 mm, Ø = 1,5 mm	1 box	AFTH1525CLOUS
		L = 30 mm, Ø = 1,5 mm	1 box	AFTH1530CLOUS
 AFVISTC6023	Pack of 250 polyamide wall screws	L = 23 mm, Ø = 6 mm for fixing in BA 13 type hollow partition	4 pieces	AFVISTC6023
 L5561	Cutting pliers maximum length of cut 85 mm	to cut up mouldings to 45° and 90° up to 10 mms of depth	1 piece	L5561
 L5562	Pliers for exit of cable Ø 20 mm	to cut up the lateral partition of a trunking and to drill a cable hole.	1 piece	L5562
	Pack of 50 cable retainers Color : blue	for ATA 12300/12301 ATA 16300/16301	1 set	ATA99030
	Pack of 30 cable retainers Color : blue	for ATA 12500 ATA 12501 ATA 12502 ATA 20500 ATA 20501 ATA 20502	1 set	ATA99050
 ATA99030	Pack of 20 cable retainers Color : blue	for ATA 20752	1 set	ATA99075

Wires and cables diameter and section

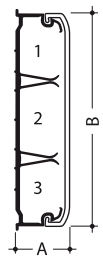
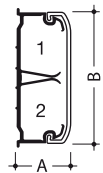
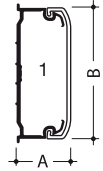
for power and very low voltage

	approx. external Ø in mm	section in mm ²
wire : H 07 V		
1,5	2,8	6,2
2,5	3,4	9,1
4	3,9	11,9
6	4,7	17,3
telephone cable - STY1		
1 pair	3,8	11,3
2 pairs	4,9	18,9
3 pairs	5,2	21,2
4 pairs	5,7	25,5
5 pairs	6,1	29,2
data cable - Cat 5		
FTP 100 Ω 4 pairs	6,0	28,3
L 120 120 Ω 4 pairs	8 x 5	40,0
L 120 120 Ω 8 pairs	10,5 x 8	84,0
TV cable		
coax 75 Ω	7,0	38,5

	approx. external Ø in mm	section in mm ²
cable U1000R02V - H07RNF		
2 x 1,5	8,4	55,4
2 x 2,5	9,6	72,4
2 x 4	10,5	86,6
2 x 6	11,8	109,4
3 x 1,5	8,8	60,8
3 x 2,5	10,0	78,5
3 x 4	11,0	95,0
3 x 6	12,9	130,7
4 x 1,5	9,6	72,4
4 x 2,5	11,0	95,0
4 x 4	12,2	116,9
4 x 6	14,2	158,4
5 x 1,5	10,0	78,5
5 x 2,5	11,6	105,7
5 x 4	13,5	143,1
5 x 6	15,5	188,7

tehalit.ateha moulding and plinths wire capacities

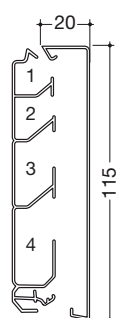
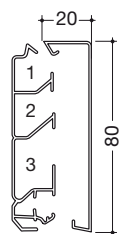
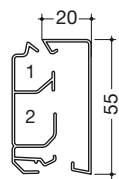
mouldings



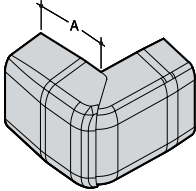
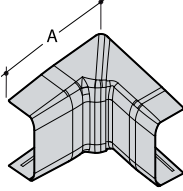
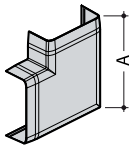
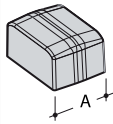
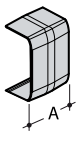
	compartments	measurements A x B	wire number in mm ²				cable number		section by compartment in mm ²	
			1,5	2,5	4	6	3x2,5mm ²	Ø max.	nominal	useful*
references										
ATA12200	1	13 x 24	18	13	9	6	1	11,5	226	113
ATA12201	1	13 x 24	7	5	3	2	0	7,5	90	45
	2		7	5	3	2	0	7,5	90	45
ATA12300	1	13 x 32	24	19	15	10	2	11,5	281	141
ATA12301	1	13 x 32	10	8	6	4	1	11,5	128	64
	2		10	8	6	4	1	11,5	128	64
ATA12500	1	13 x 52	44	36	23	16	4	11,5	551	276
ATA12501	1	13 x 52	29	24	15	11	3	11,5	313	157
	2		11	8	5	4	1	11,5	127	64
ATA12502	1	13 x 52	11	8	5	4	1	11,5	128	64
	2		15	12	7	6	1	11,5	162	81
	3		11	8	5	4	1	11,5	128	64
ATA16300	1	16 x 32	32	26	17	12	3	12,5	372	186
ATA16301	1	16 x 32	14	11	7	5	1	12,5	160	80
	2		14	11	7	5	1	12,5	160	80
ATA20500	1	20 x 52	69	51	37	30	6	16,5	817	409
ATA20501	1	20 x 52	46	34	25	16	4	16,5	546	273
	2		19	14	9	6	1	16,5	227	114
ATA20502	1	20 x 52	19	14	9	6	1	16,5	227	114
	2		23	17	12	9	1	16,5	274	137
	3		19	14	9	6	1	16,5	227	114
ATA20752	1	20 x 74	19	14	9	6	1	16,5	227	114
	2		51	43	32	21	5	16,5	613	307
	3		19	14	9	6	1	16,5	227	114
skirting systems for corners EK references										
EK400400	1	40 x 40	24	16	12	8	2	16	300	150
	2		24	16	12	8	2	16	300	150

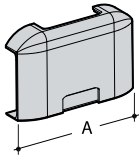
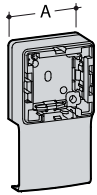
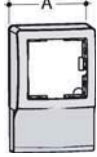
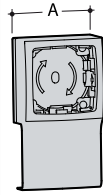
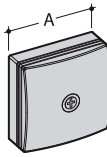
* section acting as base of calculation to define the countenance according to the different section of cables.

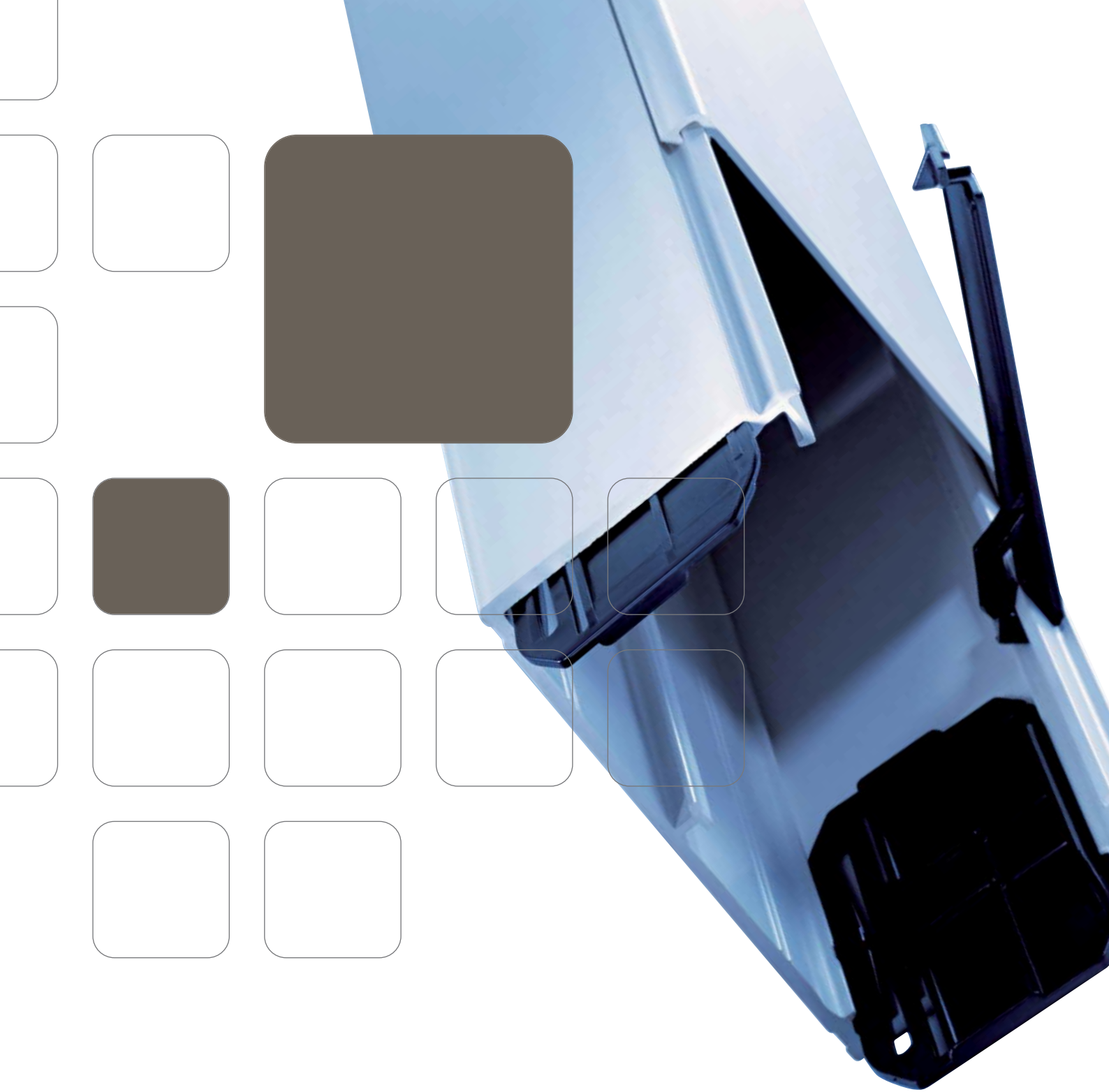
plinths



	Compartments	wire				cable		
		1,5 mm ²	2,5 mm ²	4 mm ²	6 mm ²	3 x 1,5 mm ²	3 x 2,5 mm ²	Ø max
SL20055	1	14	11	7	4	2	1	15
	2	30	21	15	9	3	2	15
SL20080	1	14	11	8	6	1	1	15
	2	23	14	10	7	2	2	15
	3	35	21	15	11	4	2	15
SL20115	1	14	11	7	5	1	1	15
	2	18	14	9	6	2	2	15
	3	35	27	19	12	5	3	15
	4	52	33	23	15	5	3	15

profile types	 external corner size in mm	 internal corner size in mm	 flat corner size in mm	 end cap size in mm	 joint cover size in mm
ATA12200/12201	26,5	48	50	24	24
ATA12300/12301	26,5	48	58	24	24
ATA12500/12501/12502	26,5	48	78	24	24
ATA16300/16301	26,5	49,5	58	24	24
ATA20500/20501/20502	26,5	54	78	24	24
ATA20752	26,5	54	100	24	24

profile types	 T and deviation piece size in mm	 box for socket Legrand equipment protrusion simple double		 box for socket Alréa™ size in mm	 box for socket profil 2™ size in mm	 connection box size in mm
ATA12200/12201	72	66	128	62	66	-
ATA12300/12301	80	66	128	62	66	-
ATA12500/12501/12502	102	66	128	62	66	-
ATA16300/16301	85	66	128	62	66	-
ATA20500/20501/20502	114	66	128	62	66	-
ATA20752	140	66	128	62	66	-
ATA70759	-	-	-	-	-	77
ATA71159	-	-	-	-	-	114



Line distribution

lifea, LFH, LFS, LFG and FWK

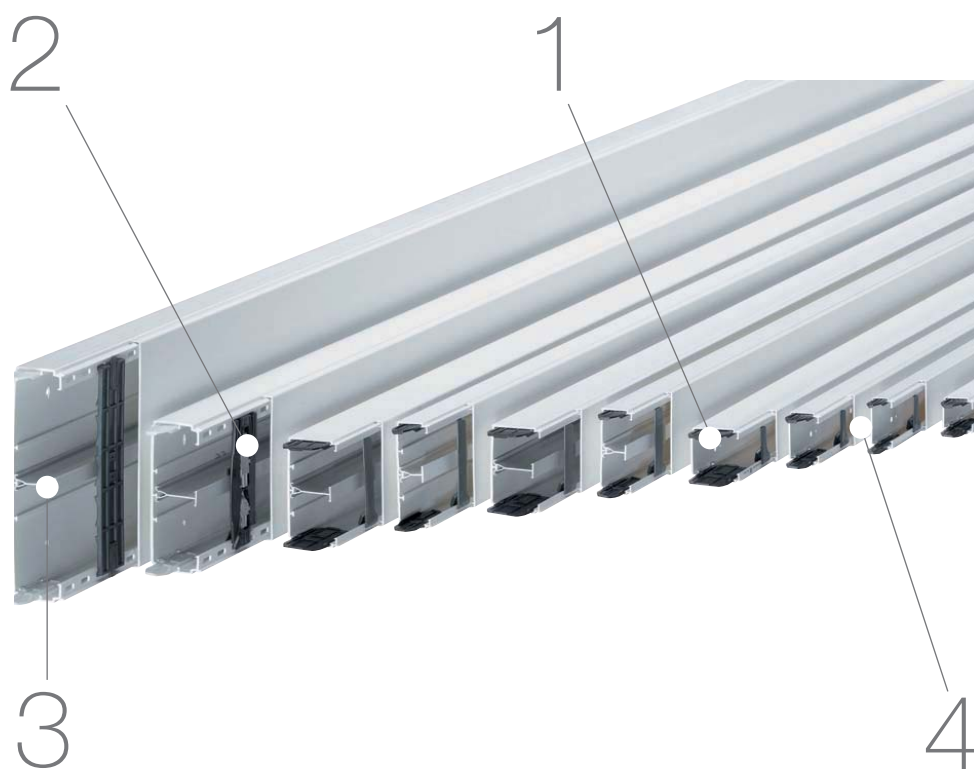
The tehalit.lifea, LFH, LFS, LFG and FWK trunking ranges are suitable with all kind of conductor controls and cables in housing and tertiary premises thanks to their several types of profiles.

tehalit.lifea	
- uPVC trunking	I.4
- for AC and heat pump	I.14
- accessories	I.16
- trunking on a roll	I.17
- mini-snaps and 10x10	I.18
<hr/>	
tehalit.LFH halogen free trunking	I.24
<hr/>	
tehalit.LFS steel trunking	I.26
<hr/>	
tehalit.LFG fiberglass reinforced polyester trunking	I.28
<hr/>	
tehalit.FWK fire resistant trunking	I.30
<hr/>	

PVC general purpose trunking tehalit.lifea

Solution for trunking in housing and tertiary premises.

PVC general purpose trunking tehalit.lifea is the ideal product for line distribution in new or renovated building, housing or tertiary premises.



Your benefits

- Pre-drilled base for an easy fixing.
- Retractable coupling pieces, sliding and rotary cable retainers, cover with double lock (LFF).
- Fixed and adjustable partitions to separate power and low voltage currents.

Technical characteristics

- 8 depths (from 10 to 100 mm) and 12 widths (from 10 to 230 mm) most are divisible.
- 3 colours : pure white and brown for small sizes mainly installed in houses (up to LFF20035 / 20036), pure white and grey for bigger sizes.
- 5 types of pieces ensure continuity of mechanical protection (IP40) all the circuit along, according to standard NF C 15-100.

Expert tips

1



Easy mounting

Each tehalit.lifea profile - from size 30 x 30 - is delivered with 2 coupling pieces to facilitate base alignment and mounting.

3



Divided trunking

In case of several types of current trunking (power current, IT network...) tehalit.lifea can be divided into compartments thanks to removable partitions.

2



Practical installation

Cable retainers are pre-mounted in the bases and are easily placed. As they slide, these cable retainers can be placed in an optimal way. It allows an easy lid mounting.

4



Perfect retaining







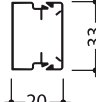
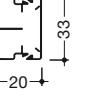
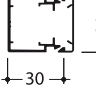
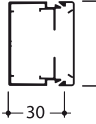

Lids are equipped with a double lock closing ensuring ideal retaining in any circumstances.

tehalit.lifea: uPVC general purpose trunking from 10 to 30 mm depth

Delivery information : Base pre-drilled (except LF100100), lid (opening with screwdriver) and cable retainers (from 60 mm width).

Standard length : 2 m, other lengths on demand, max 6 m.

Material : Rigid PVC. protection category : IP40, IK07.

		Base and lid		Internal corner	External corner
					
		Cat. ref.		Cat. ref.	Cat. ref.
	pure white brown	LF1001009010 LF1001008014			
	packaging	84 m			
	pure white brown	LF1501509010 LF1501508014			
	packaging	44 m			
	pure white brown	LF2002009010 LF2002008014			
	packaging	36 m			
	pure white brown	LFF2003509010 LFF2003508014		M61419010 M61418014	M61429010 M61428014
	packaging	40 m		20 pieces	20 pieces
	pure white brown	LFF2003609010 LFF2003608014		M61419010 M61418014	M61429010 M61428014
	packaging	40 m		20 pieces	20 pieces
	pure white grey	LFF3003009010 LFF3003007030	delivered with 2 coupling pieces	M59619010 M59617030	M59629010 M59627030
	packaging	56 m		5 pieces	5 pieces
	pure white grey	LFF3004509010 LFF3004507030	delivered with 2 coupling pieces	M61819010 M61817030	M61829010 M61827030
	packaging	32 m		8 pieces	8 pieces
	pure white grey	LFF3006009010 LFF3006007030	delivered with 4 cable retainers M7239 and 2 coupling pieces	LFF300649010 LFF300647030	LFF300639010 LFF300637030
	packaging	32 m		5 pieces	5 pieces


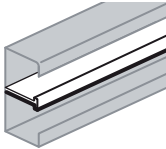

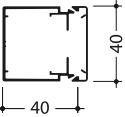
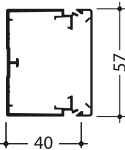
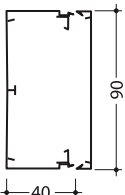
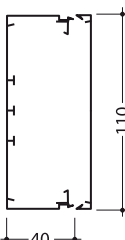
* Adjustable corners only for LFF300600

tehalit.lifea: uPVC general purpose trunking 40 mm depth

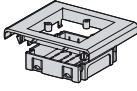
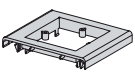
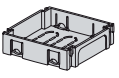
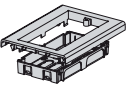
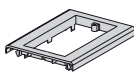
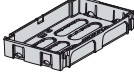

Delivery information : Base pre-drilled (except LFF400400), lid (opening with screwdriver), cable retainers and coupling pieces.

Standard length : 2 m, other length on demand, max. 6 m.

Material : Rigid PVC. Protection category : IP40, IK07.

		Base and lid		Partition	Internal corner*
					
		Cat. ref.		Cat. ref.	Cat. ref.
- Diameter and wire section capacities, see page I.19					
	pure white grey	LFF4004009010 LFF4004007030	delivered with 2 coupling pieces		M58019010 M58017030
	packaging	32 m			5 pieces
	pure white grey	LFF4006009010 LFF4006007030	delivered with 4 cable retainers M7239 and 2 coupling pieces	M2024	LFF400649010 LFF400647030
	packaging	24 m		50 m	5 pieces
	pure white grey	LFF4009009010 LFF4009007030	delivered with 4 cable retainers M7248 and 2 coupling pieces	M2024	LFF400949010 LFF400947030
	packaging	24 m		50 m	5 pieces
	pure white grey	LFF4011009010 LFF4011007030	delivered with 4 cable retainers M7249 and 2 coupling pieces	M2024	LFF401149010 LFF401147030
	packaging	20 m		50 m	5 pieces
		* except for LFF400400			

BS wiring accessories for LFF 4011009010

	Kit 1 gang	1 gang support	1 gang insulation	Kit 2 gang	2 gang support	2 gang insulation
						
	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
	pure white	LFF71BZ1109010	LFF71B1109010	LFF79B1	LFF72BZ1109010	LFF72B1109010
	packaging	5 pieces	5 pieces	5 pieces	5 pieces	5 pieces
						LFF79B2

Colours : pure white (9010)

grey (7030)

External corner*	Flat corner	End cap*	Cover joint	Joint cover base	T and cross deviation	Cable retainer
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
M58029010 M58027030	M58059010 M58057030	M58039010 M58037030		LFF60J9010	M58069010 M58067030	
8 pieces	5 pieces	5 pieces		10 pieces	10 pieces	
LFF400639010 LFF400637030	LFF400659010 LFF400657030	LFF600669010 LFF600667030	LFF600679010	LFF60J9010	M54069010 M54067030	M7239
5 pieces	5 pieces	10 pieces	10 pieces	10 pieces	10 pieces	10 pieces
LFF400939010 LFF400937030	LFF400959010 LFF400957030	LFF600969010 LFF600967030	LFF600979010	LFF60J9010	M54569010 M54567030	M7248
5 pieces	5 pieces	10 pieces	10 pieces	10 pieces	5 pieces	10 pieces
LFF401139010 LFF401137030	LFF401159010 LFF401157030	LFF601169010 LFF601167030	LFF601179010	LFF60J9010	M54169010 M54167030	M7249
5 pieces	5 pieces	10 pieces	10 pieces	10 pieces	10 pieces	10 pieces

Designation

Characteristics

 Pack
qty.

Colour

Cat. ref.



LFF71H099

Extension for support frame 45 x 45 accessories
(set of 10 pieces)

 for support frame :
LFF71H090

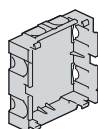
4 sets

pure white

LFF71H099010

LFF71H110

4 sets

LFF71H1199010


LFF79U

Insulation box

 for 45 x 45 support frame
(assembly for multiple support)

10 pieces

black

LFF79H

for 60mm fixing centres support frame

10 pieces

LFF79U

Designation

Characteristics

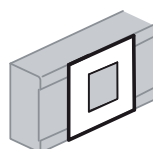
 Pack
qty.

Colour

Cat. ref.

 dist. between
axes 60

CEE17


Box for sockets

for LFF40090

10 pcs

 pure white
(9010)

LFF71H090
LFF71U090

for LFF40110

10 pcs

 pure white
(9010)

LFF71H110
LFF71U110
LFF71Z110*


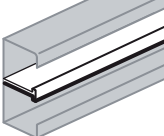

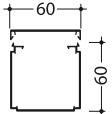
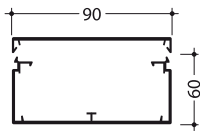
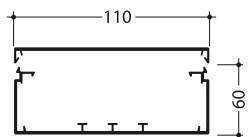
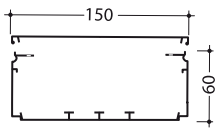
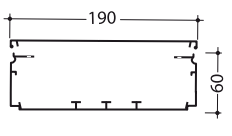
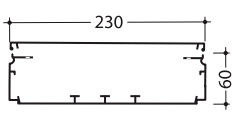
* 4 pcs

tehalit.lifea: uPVC general purpose trunking 60 mm depth

Delivery information : Base pre-drilled, lid (opening with screwdriver), cable retainers and coupling pieces.

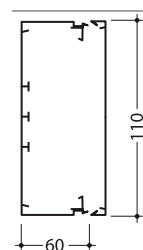
Standard length : 2 m, other length on demand, max. 6 m.

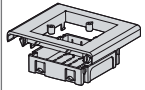
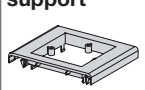
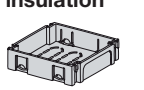
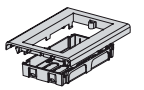
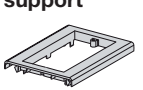
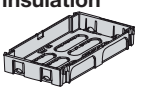
Material : Rigid PVC. Protection category : IP40, IK07.

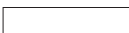
		Base and lid		Partition	Internal corner*
					
		Cat. ref.		Cat. ref.	Cat. ref.
	pure white	LFF6006009010	delivered with 4 cable retainers M7239 and 2 coupling pieces		LFF600649010
	grey	LFF6006007030			LFF600647030
	packaging	16 m			8 pieces
	pure white	LFF6009009010	delivered with 4 cable retainers M7248 and 2 coupling pieces		LFF600949010
	grey	LFF6009007030			LFF600947030
	packaging	16 m		M2026	5 pieces
	pure white	LFF6011009010	delivered with 4 cable retainers M7249 and 2 coupling pieces		LFF601149010
	grey	LFF6011007030			LFF601147030
	packaging	16 m		M2026	5 pieces
	pure white	LFF6015009010	delivered with 4 cable retainers M7250 and 2 coupling pieces		M55219010
	grey	LFF6015007030			M55217030
	packaging	8 m		M2026	5 pieces
	pure white	LFF6019009010	delivered with 4 cable retainers M7251 and 2 coupling pieces		M55319010
	grey	LFF6019007030			M55317030
	packaging	8 m		M2026	8 pieces
	pure white	LFF6023009010	delivered with 4 cable retainers M7252 and 2 coupling pieces		M55419010
	grey	LFF6023007030			M55417030
	packaging	8 m		M2026	8 pieces

* except for LFF601500, LFF601900 and LFF602300


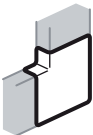


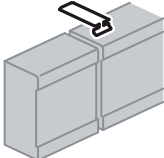
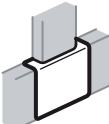
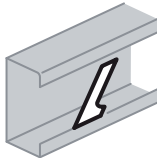
BS wiring accessories for LFF 601100 9010



	Kit 1 gang	1 gang support	1 gang insulation	Kit 2 gang	2 gang support	2 gang insulation
						
	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
pure white	LFF71BZ1109010	LFF71B1109010	LFF79B1	LFF72BZ110 9010	LFF72B1109010	LFF79B2
Packaging	5 pieces	5 pieces	5 pieces	5 pieces	5 pieces	5 pieces

Colours :  pure white (9010)

 grey (7030)

External corner *	Flat corner	End cap*	Cover joint	Joint cover base	T and cross deviation	Cable retainer
						
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
LFF600639010 LFF600637030	LFF600659010 LFF600657030	LFF600669010 LFF600667030	LFF600679010	LFF60J9010	M54469010 M54467030	M7239
5 pieces	5 pieces	10 pieces	10 pieces	10 pieces	5 pieces	10 pieces
LFF600939010 LFF600937030	LFF600959010 LFF600957030	LFF600969010 LFF600967030	LFF600979010	LFF60J9010	M54669010 M54667030	M7248
5 pieces	5 pieces	10 pieces	10 pieces	10 pieces	8 pieces	10 pieces
LFF601139010 LFF601137030	LFF601159010 LFF601157030	LFF601169010 LFF601167030	LFF601179010	LFF60J9010	M55069010 M55067030	M7249
5 pieces	5 pieces	10 pieces	10 pieces	10 pieces	5 pieces	10 pieces
M55229010 M55227030	M55259010 M55257030	M55239010 M55237030		LFF60J9010	M55269010 M55267030	M7250
5 pieces	12 pieces	5 pieces		10 pièces	10 pieces	20 pieces
M55329010 M55327030	M55359010 M55357030	M55339010 M55337030		LFF60J9010	M55369010 M55367030	M7251
8 pieces	10 pieces	5 pieces		10 pieces	8 pieces	20 pieces
M55429010 M55427030	M55459010 M55457030	M55439010 M55437030		LFF60J9010	M55469010 M55467030	M7252
5 pieces	6 pieces	5 pieces		10 pieces	8 pieces	20 pieces

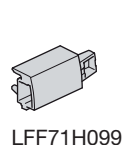
Designation

Caractéristiques

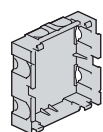
Pack qty.

Colour

Cat. ref.



LFF71H099



LFF79U

Extensions for support frame 45 x 45 accesories

for support frame : LFF71H090
(set of 10 pieces) LFF71H110

4 sets
4 sets

pure white

LFF71H099
LFF71H119

Insulation box

for 45 x 45 support frame (assembly for multiple support)
for 60mm fixing centres support frame

10
10

black

LFF79H
LFF79U

Designation

Characteristics

Pack qty.

Colour

Cat. ref.

45 x 45

dist. between axes 60

CEE17

Box for sockets

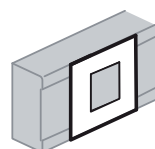
for LFF40090
for LFF40110

10
10
* 4 pcs

pure white
pure white

LFF71H090 LFF71U090
LFF71H110 LFF71U110

LFF71Z110*


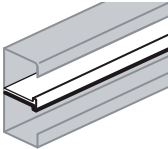

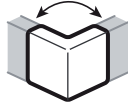





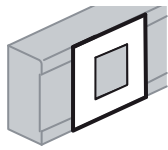
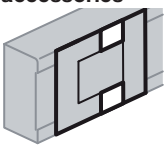
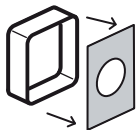






tehalit.lifea uPVC general purpose trunking with supports

Delivery information : Base pre-drilled, lid (opening with screwdriver), 4 cable retainers and 2 coupling pieces per length.

Standard length : 2 m. Other length on demand, max. 6 m.

Material : Rigid PVC. Protection category : IP40, IK07.

		Base and lid	Partition	Internal corner	External corner
- Diameter and wire sections, see page I.20		 Cat. ref.	 Cat. ref.	 Cat. ref.	 Cat. ref.
	pure white	LFF4009009010	M2024	LFF400949010	LFF400939010
	grey	LFF4009007030		LFF400947030	LFF400937030
	packaging	24 m	50 m	5 pieces	5 pieces
	pure white	LFF4011009010	M2024	LFF401149010	LFF401139010
	grey	LFF4011007030		LFF401147030	LFF401137030
	packaging	20 m	50 m	5 pieces	5 pieces
	pure white	LFF6009009010	M2026	LFF600949010	LFF600939010
	grey	LFF6009007030		LFF600947030	LFF600937030
	packaging	16 m	50 m	5 pieces	5 pieces
	pure white	LFF6011009010	M2026	LFF601149010	LFF601139010
	grey	LFF6011007030		LFF601147030	LFF601137030
	packaging	12 m	50 m	5 pieces	5 pieces
		Base and lid	Support frame 45x45 accessories	Extension for support frame 45x45 accessories	Insulation box for 45x45 support frame
		 Cat. ref.	 Cat. ref.	 Cat. ref.	 Cat. ref.
	pure white	LFF4009009010	LFF71H0909010	LFF71H0999010	LFF79H
	packaging	24 m	10 pieces	4 sets of 10 pcs	10 pieces
	pure white	LFF4011009010	LFF71H1109010	LFF71H1199010	LFF79H
	packaging	20 m	10 pieces	4 sets of 10 pcs	10 pieces
	pure white	LFF6009009010	LFF71H0909010	LFF71H0999010	LFF79H
	packaging	16 m	10 pieces	4 sets of 10 pcs	10 pieces
	pure white	LFF6011009010	LFF71H1109010	LFF71H1199010	LFF79H
	packaging	12 m	10 pieces	4 sets of 10 pcs	10 pieces

Colours : pure white (9010)


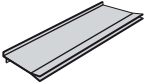

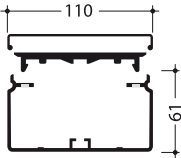
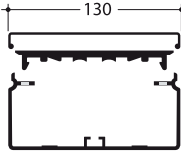
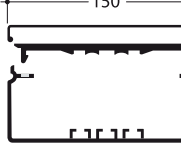
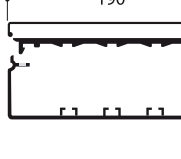
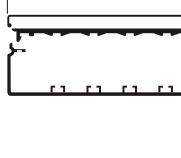
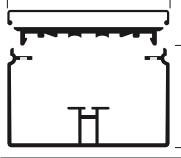
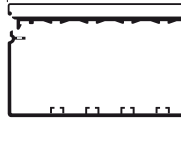
Flat corner	End cap	Cover joint	Joint cover base	T and cross deviation	Cable retainer	Mounting frame
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
LFF40095 9010 LFF40095 7030	LFF600969010 LFF600967030	LFF600979010 LFF600977030	LFF60J9010	M54569010 M54567030	M7248	L4770
5 pieces	10 pieces	10 pieces	10 pieces	5 pieces	10 pieces	5 pieces
LFF40115 9010 LFF40115 7030	LFF601169010 LFF601167030	LFF601179010 LFF601177030	LFF60J9010	M54169010 M54167030	M7249	L4770
5 pieces	10 pieces	10 pieces	10 pieces	10 pieces	10 pieces	5 pieces
LFF60095 9010 LFF60095 7030	LFF600969010 LFF600967030	LFF600979010 LFF600977030	LFF60J9010	M54669010 M54667030	M7248	L4770
5 pieces	10 pieces	10 pieces	10 pieces	8 pieces	10 pieces	5 pieces
LFF60115 9010 LFF60115 7030	LFF601169010 LFF601167030	LFF601179010 LFF601177030	LFF60J9010	M55069010 M55067030	M7249	L4770
5 pieces	10 pieces	10 pieces	10 pieces	5 pieces	10 pieces	5 pieces
Support frame double 45x45 accessories	Support frame triple 45x45 accessories	Support frame quadruple 45x45 accessories	Support frame for 60mm fixing centres	Insulation box for 60mm fixing centres support frame	CEE 17 support frame	
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	
LFF71H0909010+ 2x LFF71H0999010	LFF71H0909010+ 4x LFF71H0999010	LFF71H0909010+ 6x LFF71H0999010	LFF71U0909010	LFF79U		
			10 pieces	10 pieces		
LFF71H1109010+ 2x LFF71H1199010	LFF71H1109010+ 4x LFF71H1199010	LFF71H1109010+ 6x LFF71H1199010	LFF71U1109010	LFF79U		
			10 pieces	10 pieces		
LFF71H0909010+ 2x LFF71H0999010	LFF71H0909010+ 4x LFF71H0999010	LFF71H0909010+ 6x LFF71H0999010	LFF71U0909010	LFF79U		
			10 pieces	10 pieces		
LFF71H1109010+ 2x LFF71H1199010	LFF71H1109010+ 4x LFF71H1199010	LFF71H1109010+ 6x LFF71H1199010	LFF71U1109010	LFF79U	LFF71Z110	
			10 pieces	10 pieces	4 pieces	

tehalit.lifea: uPVC general purpose trunking 60, 80 and 100 mm depth

Delivery information : Base pre-drilled, lid (opening with screwdriver), cable retainers and coupling pieces.


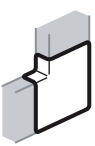
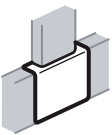

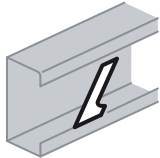
Standard length: 2 m. Other length on demand, max. 6 m.

Material : Rigid PVC, protection category: IP40, IK09.

		Base and lid		Partition	Internal corner
					
		Cat. ref.		Cat. ref.	Cat. ref.
- Diameter and wire section capacities, see page I.19.					
	pure white grey	FB6011009010 FB6011007030	delivered with 4 cable retainers M5280		M55019010
				M1346	
	packaging	16 m		50 m	5 pieces
	pure white grey	FB6013009010 FB6013007030	delivered with 4 cable retainers M5281		M55119010 M55117030
				M1346	
	packaging	12 m		50 m	5 pieces
	pure white grey	FB6015009010 FB6015007030	delivered with 4 cable retainers M5282		M55219010 M55217030
				M1346	
	packaging	12 m		50 m	5 pieces
	pure white grey	FB6019009010 FB6019007030	delivered with 4 cable retainers M5283		M55319010 M55317030
				M1346	
	packaging	8 m		50 m	8 pieces
	pure white grey	FB6023009010 FB6023007030	delivered with 4 cable retainers M5284		M55419010 M55417030
				M1346	
	packaging	12 m		50 m	8 pieces
	pure white grey	FB8013009010 FB8013007030	delivered with 4 cable retainers M5281		L87619010 L87617030
				M1346	
	packaging	16 m		50 m	6 pieces
	pure white grey	FB9923009010 FB9923007030	delivered with 4 cable retainers M5284		L96819010 L96817030
				M1629	
	packaging	6 m		50 m	1 piece


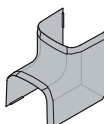
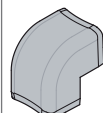


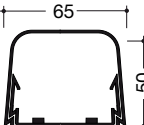
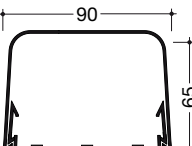
Colours :  pure white (9010)

 grey (7030)


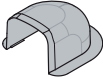

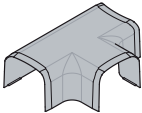


External corner	Flat corner	T and cross deviation	End cap	Cable retainer
				
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
M55029010	M55059010	M55069010	M55039010	
M55027030	M55057030	M55067030	M55037030	M5280
5 pieces	6 pieces	5 pieces	5 pieces	50 pieces
M55129010	M55159010	M55169010	M55139010	
M55127030	M55157030	M55167030	M55137030	M5281
8 pieces	8 pieces	14 pieces	5 pieces	50 pieces
M55229010	M55259010	M55269010	M55239010	
M55227030	M55257030	M55267030	M55237030	M5282
5 pieces	12 pieces	10 pieces	5 pieces	50 pieces
M55329010	M55359010	M55369010	M55339010	
M55327030	M55357030	M55367030	M55337030	M5283
8 pieces	10 pieces	8 pieces	5 pieces	50 pieces
M55429010	M55459010	M55469010	M55439010	
M55427030	M55457030	M55467030	M55437030	M5284
5 pieces	6 pieces	8 pieces	5 pieces	50 pieces
L87629010	L87659010		M53039010	
L87627030	L87657030		M53037030	M5281
7 pieces	8 pieces		6 pieces	50 pieces
L96829010	L96859010		M58339010	
L96827030	L96857030		M58337030	M5284
2 pieces	1 piece		6 pieces	50 pieces

tehalit.lifea: general purpose trunking for air-conditioning and heat pump

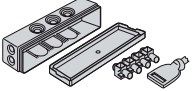




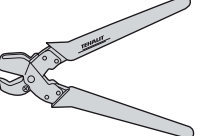
Delivery information : Base with lugs for collars, cover.
Standard length : 2 m. Other length on demand, max. 6 m.
Material : Rigid PVC pure white (RAL 9010).

		Base and lid	Internal corner	External corner	Flat corner
					
		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
	pure white	CLM30035	CLM300354	CLM300353	CLM300355
	packaging	52 m	10 pieces	10 pieces	10 pieces
	pure white	CLMU50065	CLM500654	CLM500653	CLM500655
	packaging	24 m	10 pieces	10 pieces	10 pieces
	pure white	CLMU65090	CLM650904	CLM650903	CLM650905
	packaging	16 m	10 pieces	10 pieces	10 pieces

Colours : pure white (9010)

End cap	Wall derivation	Cover joint	T-piece	Wall duct	Cable clip
					
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
CLM300356	CLM3003561	CLM300357	CLM300358	CLM300359	
10 pieces	10 pieces	10 pieces	5 pieces	10 pieces	
CLM500656	CLM5006561	CLM500657	CLM500658	CLM500659	CLM65
10 pieces	10 pieces	10 pieces	5 pieces	10 pieces	25 pieces
CLM650906	CLM6509061	CLM650907	CLM650908	CLM650909	CLM90
10 pieces	10 pieces	10 pieces	5 pieces	10 pieces	25 pieces

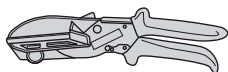
Line distribution

	Description	Characteristics	Pack qty.	Cat. ref.
 L5111	Connector boxes		10	L5111
 M5159/1/2	Spacers	height 12 mm Ø 25 mm	50	M51592
		height 20 mm Ø 25 mm	50	M5159
 M5164	Screw collars	for M3 - M5	100	M5164
	Fire barriers		1	L6565
 L5804	Sound insulation barriers	15 mineral fibers braids, L= 300mm, Ø 30mm, damping = about 40dB, noncombustible, M1 category material	1	L5804
 L5561	Cutting pliers maximum length of cut 85 mm	to cut up mouldings to 45° and 90° up to size 20 x 35	1	L5561
 L5562	Pliers for exit of cable Ø 20 mm	to cut up the lateral partition of a trunking and to drill a cable hole.	1	L5562

Delivery information : As a roll in a box with double sided tape and prepunched holes. **Colour :** pure white (9010)
Standard length : 20 m.
Material : PVC.

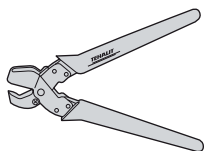
		Base and lid	
		Cat. ref.	wire section capacity
	pure white (9010T2)	LFR701209010T2	1 phone cable 4 pairs STY 1
	packaging	20 m	
	pure white (9010T2)	LFR1501509010T2	2 phone cables 4 pairs STY 1 1 cable 3 x 2,5 mm ²
	packaging	20 m	
	pure white (9010T2)	LFR2003509010T2	4 phone cables 4 pairs STY 1 3 cables 3 x 2,5 mm ²
	packaging	20 m	

Designation	Characteristics	Pack qty.	Cat. ref.
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L5561

Cutting pliers maximum length of cut 85 mm	to cut up mouldings to 45° and 90° up to size 20 x 35	1	L5561
--	---	---	--------------



L5562

Pliers for exit of cable Ø 20 mm	to cut up the lateral partition of a trunking and to drill a cable hole.	1	L5562
--	--	---	--------------

Delivery information : Self-adhesive base
Standard length : 2 m.
Material : Rigid PVC.

Colours : transparent (**TRAN**)
 cream white (**9001**)

Self-adhesive mini-snaps



Cat. ref.

Wire section capacity

Dimensions	Colours	Cat. ref.	Wire section capacity
	transparent (TRAN)	M1647TRAN	1 cable ø 4,5 to 6 m
	cream white (9001)	M16479001	
	packaging	150 m	
	transparent (TRAN)	M1648TRAN	1 cable ø 5,5 to 7 m
	cream white (9001)	M16489001	
	packaging	150 m	
	transparent (TRAN)	M1673TRAN	1 cable ø 6,5 to 8 m
	cream white (9001)	M16739001	
	packaging	150 m	
	transparent (TRAN)	M1659TRAN	1 cable ø 7,5 to 10 m
	cream white (9001)	M16599001	
	packaging	150 m	

Delivery information : Self-adhesive base.
Standard length: 2m.
Material : Rigid PVC.

Colour : pure white (**9010**)

General purpose trunking 10x10 self-adhesive

Base and lid

Cat. ref.

Wire section capacity

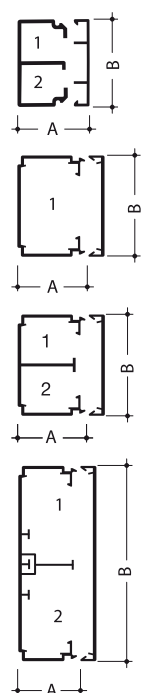
Dimensions	Colours	Cat. ref.	Wire section capacity
	pure white (9010A)	LF1001009010A	1 cable ø 7 max.
	packaging	84 m	
	pure white (9010A)	LFC100159010A	
packaging	148 m		
	pure white (9010A)	LF1501509010A	1 cable ø 10 max.
	packaging	88 m	
	pure white (9010A)	LF2002009010A	
packaging	54 m		

Wires and cables diameter and section for power and very low voltage

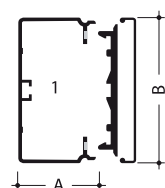
	approx. external Ø in mm	section in mm ²		approx. external Ø in mm	section in mm ²
wire : H 07 V			cable U1000R02V - H07RNF		
1,5	2,8	6,2	2 x 1,5	8,4	55,4
2,5	3,4	9,1	2 x 2,5	9,6	72,4
4	3,9	11,9	2 x 4	10,5	86,6
6	4,7	17,3	2 x 6	11,8	109,4
telephone cable - STY1			3 x 1,5	8,8	60,8
1 pair	3,8	11,3	3 x 2,5	10,0	78,5
2 pairs	4,9	18,9	3 x 4	11,0	95,0
3 pairs	5,2	21,2	3 x 6	12,9	130,7
4 pairs	5,7	25,5	4 x 1,5	9,6	72,4
5 pairs	6,1	29,2	4 x 2,5	11,0	95,0
data cable - Cat 5			4 x 4	12,2	116,9
FTP 100 Ω 4 pairs	6,0	28,3	4 x 6	14,2	158,4
L 120 120 Ω 4 pairs	8 x 5	40,0	5 x 1,5	10,0	78,5
L 120 120 Ω 8 pairs	10,5 x 8	84,0	5 x 2,5	11,6	105,7
TV cable			5 x 6	13,5	143,1
Coax 75 Ω	7,0	38,5	5 x 4	15,5	188,7

LF, LFF and FB wire capacities

tehalit.lifea mouldings



tehalit.FB mouldings

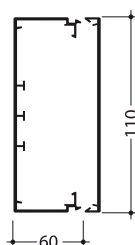
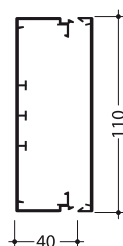
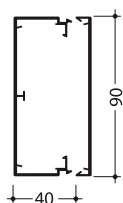


	compartments	dimensions A x B	nominal section in mm ²	useful section* in mm ²	max B in mm	cable capacity 3 x 2,5 ²
references						
LF150150	1	15 x 15	150	75	10	1
LF200200	1	20 x 19	228	114	12	1
LFF200350	1	20 x 33	440	220	15	2
LFF200360	1	20 x 33	210	105	10	1
	2		210	105	10	1
LFF300300	1	30 x 30	620	310	15	4
LFF300450	1	30 x 45	970	485	25	6
LFF300600	1	30 x 57	1250	625	25	8
LFF400400	1	40 x 40	1200	600	23	8
LFF400600	1	40 x 57	1700	850	29	11
LFF400610	1	40 x 57	830	415	15	5
	2		830	415	15	5
LFF400900	1	40 x 90	2650	1325	32	17
LFF400900 + M2024	1	40 x 90	1300	650	24	8
	2		1300	650	24	8
LFF401100	1	40 x 110	3250	1625	32	21
LFF401100 + M2024 ⁽¹⁾	1	40 x 110	1600	800	32	10
	2		1600	800	32	10
LFF600600	1	60 x 57	2860	1430	54	18
LFF600900	1	60 x 90	4550	2275	54	29
LFF600900 + M2026	1	60 x 90	2200	1100	29	14
	2		2200	1100	29	14
LFF601100	1	60 x 110	5500	2750	54	35
LFF601100 + M2026 ⁽¹⁾	1	60 x 110	2600	1300	29	19
	2		2600	1300	29	19
LFF601500 + M2026 ⁽¹⁾	1	61 x 150	3600	1790	54	24
	2		3600	1790	54	24
LFF601900 + M2026 ⁽¹⁾	1	61 x 190	4590	2280	54	29
	2		4590	2280	54	29
LFF602300 + M2026 ⁽¹⁾	1	61 x 230	5610	2790	54	35
	2		5610	2790	54	35
references						
FB601100	1	61 x 110	4680	2340	54	30
FB601300	1	61 x 130	5580	2790	54	36
FB601500	1	61 x 150	6450	3225	54	41
FB601900	1	61 x 190	8280	4140	54	53
FB602300	1	61 x 230	9800	4900	54	62
FB801300	1	82 x 130	7700	3850		49
FB992300	1	100 x 230	18500	9250		118

* section acting as base of calculation to define the countenance according to the different section of cables.

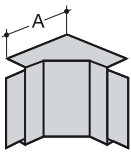
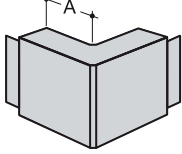
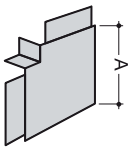
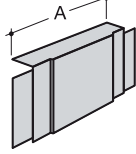
⁽¹⁾ capacity with partition in central position.

tehalit.LFF



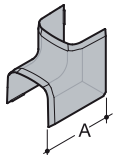
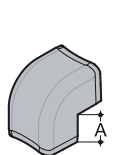
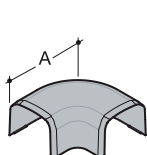
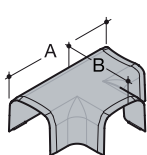
LFF400900			with socket	centre to		without socket
			45 x 45	centre 60	CEE 17	
number of cables	power current 3 x 2,5 mm ²	area 1 ⁽¹⁾	10	8		17
		area 1/2 ⁽²⁾	5 / 5	4 / 4		8 / 8
	weak current L 120 - 4 pairs	area 1	24	19		35
		area 1/2	12 / 12	9 / 9		17 / 17
nominal section / useful* per area		area 1	1850 / 925	1420 / 710		2650 / 1325
		area 1/2	900 / 450	685 / 342		1300 / 650
LFF401100						
number of cables	power current 3 x 2,5 mm ²	area 1	14	11		21
		area 1/2	6 / 6	5 / 5		10 / 10
	weak current L 120 - 4 pairs	area 1	31	26		42
		area 1/2	15 / 15	13 / 13		21 / 21
nominal section / useful* per area		area 1	2350 / 1175	1900 / 950		3250 / 1625
		area 1/2	1150 / 575	925 / 463		1600 / 800
LFF600900						
number of cables	power current 3 x 2,5 mm ²	area 1	21	19		29
		area 1/2	10 / 10	9 / 9		14 / 14
	weak current L 120 - 4 pairs	area 1	47	44		58
		area 1/2	23 / 23	21 / 21		29 / 29
nominal section / useful* per area		area 1	3550 / 1775	3320 / 1660		4550 / 2200
		area 1/2	1750 / 875	1635 / 817		2200 / 1100
LFF601100						
number of cables	power current 3 x 2,5 mm ²	area 1	26	24	12	35
		area 1/2	12 / 12	11 / 11	6 / 6	19 / 19
	weak current L 120 - 4 pairs	area 1	58	53	26	70
		area 1/2	28 / 28	25 / 25	12 / 12	35 / 35
nominal section / useful* per area		area 1	4400 / 2200	4000 / 2000	1960 / 980	5500 / 2600
		area 1/2	2150 / 1075	1950 / 975	930 / 450	2600 / 1300
⁽¹⁾ area 1 = capacity without partition ⁽²⁾ area 1/2 = capacity with partition in central position						

tehalit.LFF, tehalit.FB

				
references	internal corner size in mm	external corner size in mm	flat corner size in mm	t and deviation piece size in mm
LFF200350 / 200360	35	35	43	92
LFF300300	60	30	60	130
LFF300450	60	30	60	130
LFF300600 *	75	55	85	170
LFF400400	85	45	65	170
LFF400900 *	115	70	128	170
LFF401100 *	115	70	148	190
LFF600600 *	130	69	91	170
LFF600900 *	138	50	128	170
LFF601100 *	138	50	148	190
LFF601500	130	69	180	250
LFF601900	130	69	220	290
LFF602300	130	69	260	290
FB601100	130	69	140	190
FB601300	130	69	160	210
FB601500	130	69	180	250
FB601900	130	69	220	290
FB602300	130	69	260	290
FB801300	240	160	176	-
FB992300	250	250	300	-

* Adjustable internal and external corners

tehalit.CLM

				
references	internal corner size in mm	external corner size in mm	flat corner size in mm	t-piece size in mm
CLM30035	60	18	65	-
CLMU50065	95	30	110	A = 160 / B = 110
CLMU65090	110	30	135	A = 180 / B = 130
references	end cap size in mm	wall derivation size in mm	cover joint size in mm	wall duct size in mm
CLM30035	50	A = 65 / B = 60	20	A = 44 / B = 60
CLMU50065	90	A = 110 / B = 100	25	A = 100 / B = 70
CLMU65090	105	A = 125 / B = 125	60	A = 125 / B = 85

Halogen free trunking system

Safety and design

In case of fire the key issue is the security of people and equipment. Indeed the combustion of the tehalit.LFH trunking does not generate any toxic or corrosive gas.

The properties of tehalit.LFH make it the ideal product for public buildings, high rise buildings as well as tertiary and industrial premises where sensitive and costly equipment is installed.



Your benefits

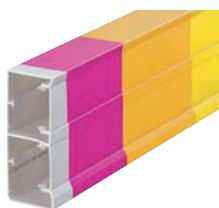
- The trunking is manufactured out of halogen free material: PC ABS,
- Large thermal operating range, from -30 to +90°C,
- The material does not generate toxic or corrosive gas and does not propagate the flame,

Your benefits

- Different accessories ensure continuity of the protection,
- The bottom of the base is drilled to facilitate fixing,
- Cable retainers are delivered with the trunking.

Expert tips

1



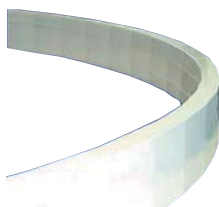
**lacquered, filmed,
mass-coloured ...**
an answer to each particular need.

3



Neat finishes...
whatever their length, shape or
pre-mounting, finishes are always
faultless.

2



Original shapes...
to fit everywhere.





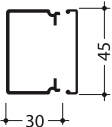
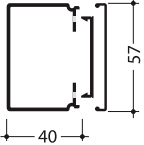
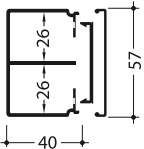
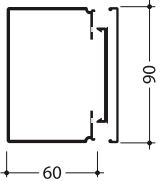
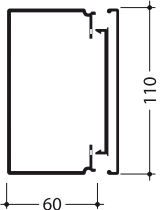
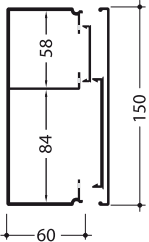
tehalit.LFH

halogen free trunking system

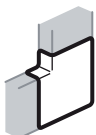

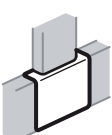
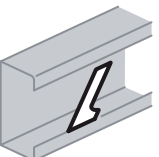
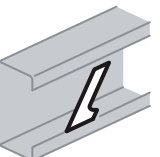
Delivery information : Base pre-drilled, lid and cable retainers.

Standard length : 2 m. Other length on demand, max. 6 m.

Material : PC / ABS trunking and cable retainers, protection category : IP40, IK08.

		Base and lid		Internal corner	External corner
- Diameter and wire section, see page I.19 - Accessories, see page I.16 - Dimensions, see page I.35		 Cat. ref.		 Cat. ref.	 Cat. ref.
	pure white packaging	LFH2002009010 72 m			
	pure white packaging	LFH3004509010 32 m		M66519010 8 pieces	M66529010 8 pieces
	pure white packaging	LFH4006009010 24 m	delivered with 4 cable retainers M6660	M66619010 1 piece	M66629010 1 piece
	pure white packaging	LFH4006109010 24 m	delivered with 4 cable retainers M6660	M66619010 1 piece	M66629010 1 piece
	pure white packaging	LFH6009009010 12 m	delivered with 4 cable retainers M6670	M66719010 1 piece	M66729010 1 piece
	pure white packaging	LFH6011009010 24 m	delivered with 4 cable retainers M6680	M66819010 1 piece	M66829010 5 pieces
	pure white packaging	LFH6015109010 12 m	delivered with 4 cable retainers M6660 and 4 cable retainers M6680	M66919010 1 piece	M66929010 1 piece

Colour : pure white (9010)

Flat corner	End cap	T and cross deviation	Cable retainer	Cable retainer
				
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
	M66139010			
	5 pieces			
M66559010	M66539010	M66569010		
1 piece	5 pieces	8 pieces		
M66659010	M66639010	M66669010	M6660	
8 pieces	5 pieces	10 pieces	50 pieces	
M66659010	M66639010	M66669010	M6660	
8 pieces	5 pieces	10 pieces	50 pieces	
M66759010	M66739010	M66769010	M6670	
1 piece	5 pieces	8 pieces	50 pieces	
M66859010	M66839010	M66869010	M6680	
1 piece	1 piece	1 piece	50 pieces	
M66959010	M66939010	M66969010	M6660	M6680
12 pieces	5 pieces	10 pieces	50 pieces	50 pieces

Line distribution





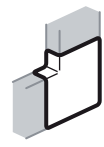
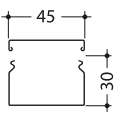

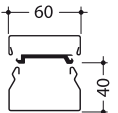

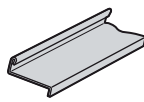


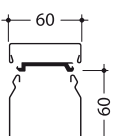

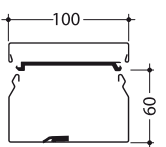

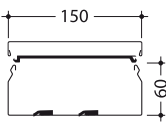

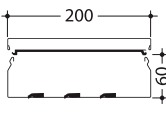

tehalit.LFS

general purpose steel trunking


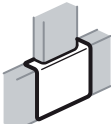

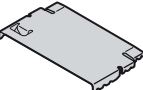
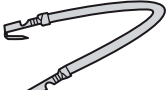
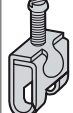
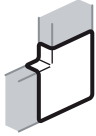

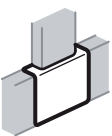
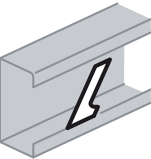
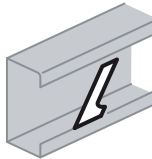
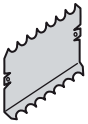
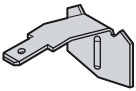
Delivery information : Base pre-drilled, lid and cable retainers (except LFS200200 and LFS300450).

Standard length : 2 m. Other length on demand, max. 6 m.

Material : Galvanised steel. Group 3 DIN 17162. 275 g/m². Protection category : IP40 IK09.

20 to 30 mm depth		Base and lid		Internal corner	External corner	Flat corner
		 Cat. ref.		 Cat. ref.	 Cat. ref.	 Cat. ref.
	galvanized	LFS200200VERZ				
	lacquered pure white	LFS2002009010				
	packaging	72 m				
		 Cat. ref.		L2751VERZ L27519010	L2752VERZ L27529010	L2755VERZ L27559010
	galvanized	LFS300450VERZ		5 pieces	5 pieces	5 pieces
	lacquered pure white	LFS3004509010				
	packaging	32 m				
40 to 60 mm depth		Base and lid		Steel partition	Internal corner	External corner
		 Cat. ref.		 Cat. ref.	 Cat. ref.	 Cat. ref.
	galvanized	LFS400600VERZ	delivered with 4 cable retainers			
	lacquered pure white	LFS4006009010	M6290		R2551VERZ R25519010	R2552VERZ R25529010
	packaging	12 m			4 pieces	4 pieces
		 Cat. ref.			R2581VERZ R25819010	R2582VERZ R25829010
	galvanized	LFS600600VERZ	delivered with 4 cable retainers		4 pieces	4 pieces
	lacquered pure white	LFS6006009010	M6290			
	packaging	8 m				
		 Cat. ref.		TWS70VERZ	R2661VERZ R26619010	R2662VERZ R26629010
	galvanized	LFS601000VERZ	delivered with 4 cable retainers		4 pieces	2 pieces
	lacquered pure white	LFS6010009010	M6291			
	packaging	6 m				
		 Cat. ref.		TWS70VERZ	R2701VERZ R27019010	R2702VERZ R27029010
	galvanized	LFS601500VERZ	delivered with 4 cable retainers		5 pieces	8 pieces
	lacquered pure white	LFS6015009010	M6292			
	packaging	6 m				
		 Cat. ref.		TWS70VERZ	R2731VERZ R27319010	R2732VERZ R27329010
	galvanized	LFS602000VERZ	delivered with 4 cable retainers		4 pieces	4 pieces
	lacquered pure white	LFS6020009010	M6293			
	packaging	6 m				

Colours :  laquered pure white (9010)
 galvanised (VERZ)

End cap	T and cross junction	Earth junction base / base	Earth junction lid / base		Earth strap with terminal	Earth connector
						
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.		Cat. ref.	Cat. ref.
L2733UNLA L27339010 1 piece		R2320VERZ	R4320VERZ		L4181GNGE L = 150 mm L4182GNGE L = 300 mm L4183GNGE L = 600 mm	L4187CHRO
		1 pair	10 pieces			
L2753UNLA L27539010	L2756VERZ L27569010	R2330VERZ	R4330VERZ		25 pieces	10 pieces
1 piece	5 pieces	1 pair	5 pieces			
Flat corner	End cap	T and cross junction	Steel cable retainer	PC / ABS cable retainer	Earth junction base / base	Earth junction lid / base
						
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
R2555VERZ R25559010	R2573VERZ R25739010	R2566VERZ R25669010	R2290VERZ	M6290	R2504VERZ	L4180VERZ
8 pieces	5 pieces	8 pieces	100 pieces	50 pieces	5 pairs	50 pieces
R2585VERZ R25859010	R2603VERZ R26039010	R2606VERZ R26069010	R2290VERZ	M6290	R2604VERZ	L4180VERZ
6 pieces	10 pieces	1 piece	100 pieces	50 pieces	5 pairs	50 pieces
R2665VERZ R26659010	R2693VERZ R26939010	R2646VERZ R26469010	R2291VERZ	M6291	R2604VERZ	L4180VERZ
4 pieces	6 pieces	4 pieces	100 pieces	50 pieces	5 pairs	50 pieces
R2705VERZ R27059010	R2723VERZ R27239010	R2696VERZ R26969010	R2292VERZ	M6292	R2604VERZ	L4180VERZ
4 pieces	5 pieces	6 pieces	100 pieces	50 pieces	5 pairs	50 pieces
R2735VERZ R27359010	R2753VERZ R27539010	R2736VERZ R27369010	R2293VERZ	M6293	R2604VERZ	L4180VERZ
4 pieces	6 pieces	6 pieces	100 pieces	50 pieces	5 pairs	50 pieces

Line distribution


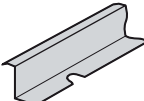

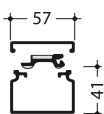
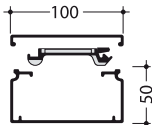
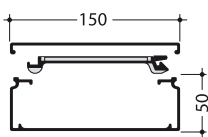
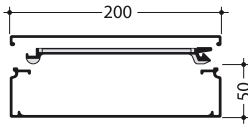
Delivery information : Base pre-drilled, lid and cable retainer.

Standard length : 2 m. Other length on demand, max. 6 m.

Material : profiles in PRV (halogen free). Accessories and cable retainers in PC/ABS. Protection category : IP40, IK10.


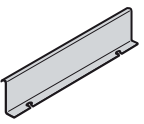

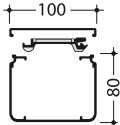
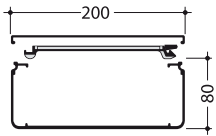
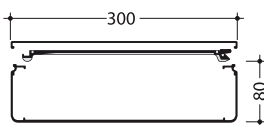
40 to 50 mm depth

- Diameter and wire section, see page I.19
- Accessories, see page I.16


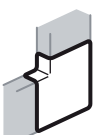

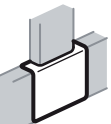
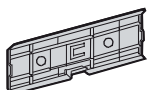
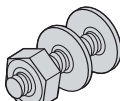
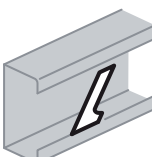

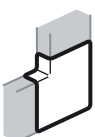

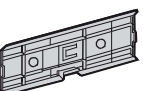
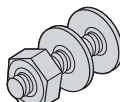
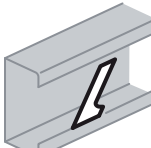
		Base and lid (incl. cable retainers) 		Partition 	Internal corner 
		Cat. ref.		Cat. ref.	Cat. ref.
	grey grey	LFG400600GRAU	delivered with 4 cable retainers M6014		M59317032
	packaging	24 m			1 piece
	grey grey	LFG501000GRAU	delivered with 4 cable retainers M6015	M1657GRAU	M59017032
	packaging	14 m		60 m	1 piece
	grey grey	LFG501500GRAU	delivered with 4 cable retainers M6016	M1657GRAU	M59117032
	packaging	10 m		60 m	1 piece
	grey grey	LFG502000GRAU	delivered with 4 cable retainers M6017	M1657GRAU	M59217032
	packaging	10 m		60 m	1 piece

80 mm depth

for dimensions, see page I.34

		Base and lid (incl. cable retainers) 		Partition 	Internal corner 
		Cat. ref.		Cat. ref.	Cat. ref.
	grey	LFG801000GRAU	delivered with 4 cable retainers M6015	M1607GRAU	R7811GRAU
	packaging	12 m		40 m	1 piece
	grey	LFG802000GRAU	delivered with 4 cable retainers M6017	M1607GRAU	R7821GRAU
	packaging	6 m		40 m	1 piece
	grey	LFG803000GRAU	delivered with 4 cable retainers M6019	M1607GRAU	R7831GRAU
	packaging	4 m		40 m	1 piece

Colours :  grey (GRAU)
close to pebble grey RAL7032

External corner	Flat corner	End cap	T and cross junction	Coupling piece junction	Stainless fixing screw	Cable retainer
						
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
M59327032	M59357032	M59337032	M59367032	M6250	L7109	M6014
1 piece	1 piece	1 piece	1 piece	10 pieces	100 pieces	50 pieces
M59027032	M59057032	M59037032	M59067032	M6250	L7109	M6015
1 piece	1 piece	1 piece	1 piece	10 pieces	100 pieces	50 pieces
M59127032	M59157032	M59137032	M59167032	M6250	L7109	M6016
1 piece	1 piece	1 piece	1 piece	10 pieces	100 pieces	50 pieces
M59227032	M59257032	M59237032	M59267032	M6250	L7109	M6017
1 piece	1 piece	1 piece	1 piece	10 pieces	100 pieces	50 pieces
External corner	Flat corner	End cap	Couping piece junction	Stainless fixing screw	Cable retainer	
						
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	
R7812GRAU	R7815GRAU	R7813GRAU	M1614	L7109	M6015	
1 piece	1 piece	1 piece	10 pieces	100 pieces	50 pieces	
R7822GRAU	R7825GRAU	R7823GRAU	M1614	L7109	M6017	
1 piece	1 piece	1 piece	10 pieces	100 pieces	50 pieces	
R7832GRAU	R7835GRAU	R7833GRAU	M1614	L7109	M6019	
1 piece	1 piece	1 piece	10 pieces	100 pieces	50 pieces	


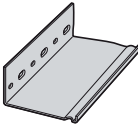
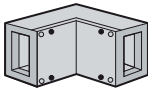
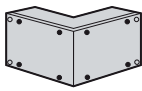
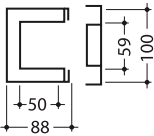
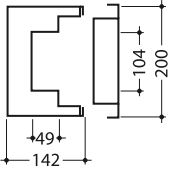
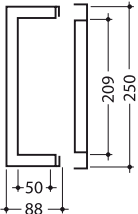
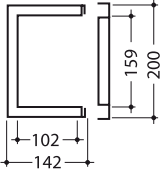
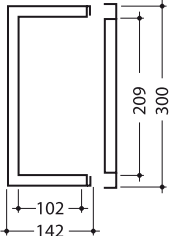
Line distribution

Fire resistant trunking system

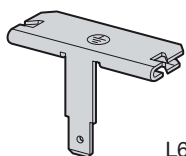
Delivery information : Base and lid.

Standard length : 1,50m or 1m.

Material : Plasterplates, zinc coated steel.

	Fire resistance I90	Base and lid	Partition	Internal corner	External corner
					
		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
- Diameter and wire section, see page I.19					
- Dimensions, see page I.35					
	zinc coated	FWK3500600VERZ	L6664VERZ	L6811VERZ	L6812VERZ
	PVC		L6632		
	weight per piece / length	13,8 kg / 1,50m		3,42 kg	3,46 kg
	packaging	1 piece		1 piece	1 piece
	zinc coated	FWK3501100VERZ	L6664VERZ	L6821VERZ	L6822VERZ
	PVC		L6632		
	weight per piece / length	18,2 kg		4,51 kg	4,54 kg
	packaging	1 piece		1 piece	1 piece
	zinc coated	FWK3502100VERZ	L6664VERZ	L6851VERZ	L6852VERZ
	PVC		L6632		
	weight per piece / length	26,8 kg / 1,50m		6,69 kg	6,72 kg
	packaging	1 piece		1 piece	1 piece
	zinc coated	FWK3991600VERZ	L6665VERZ	L6861VERZ	L6862VERZ
	PVC		L6633		
	weight per piece / length	17,8 kg / 1m		7,71 kg	7,76 kg
	packaging	1 piece		1 piece	1 piece
	zinc coated	FWK3992600VERZ	L6665VERZ	L6871VERZ	L6872VERZ
	PVC		L6633		
	weight per piece / length	23,7 kg / 1m		10,2 kg	10,25 kg
	packaging	1 piece		1 piece	1 piece

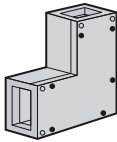
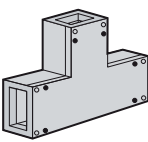
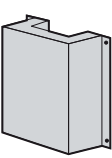
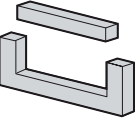
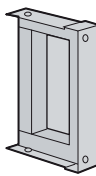
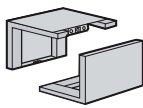
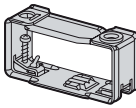
Designation	Characteristics	Pack qty.	Colour	Cat. ref.
Earth junction	material : sheet steel	20	chromed steel	L6681GCHR



L6681

Zinc coated (VERZ)

Line
distribution

Flat corner	T-piece	Sliding sleeve (wall mounting)	Sealing fitting	End cap	Sliding sleeve (slung mounting on trunking)	Cable retainer FWK
						
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
L6815VERZ	L6816VERZ	L6818VERZ	L6819	L6813VERZ	L6810VERZ	
3,97 kg	6,13 kg	3,9 kg	0,1 kg	0,4 kg	0,7 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	
L6825VERZ	L6826VERZ	L6828VERZ	L6829	L6823VERZ	L6820VERZ	L5732 288057
5,67 kg	7,76 kg	4,5 kg	0,14 kg	0,5 kg	0,85 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	15 pieces
L6855VERZ	L6856VERZ	L6858VERZ	L6859	L6853VERZ	L6850VERZ	L5733 288064
9,95 kg	11,03 kg	5,6 kg	0,22 kg	0,8 kg	1,22 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	15 pieces
L6865VERZ	L6866VERZ	L6868VERZ	L6869	L6863VERZ	L6860VERZ	L5734 288071
9,18 kg	11,06 kg	6,3 kg	0,25 kg	1 kg	1,23 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	10 pieces
L6875VERZ	L6876VERZ	L6878VERZ	L6879	L6873VERZ	L6870VERZ	L5735 288088
14,32 kg	14,18 kg	7,5 kg	0,3 kg	1,4 kg	1,6 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	25 pieces


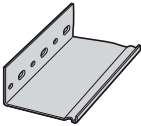
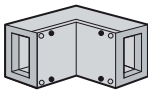
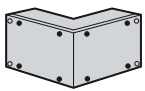
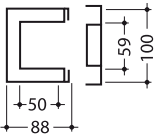
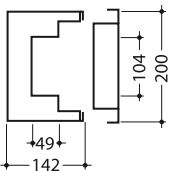
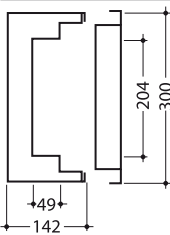
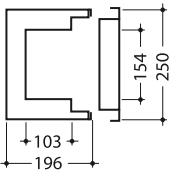
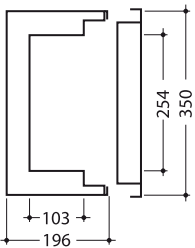
Designation	Characteristics	Pack qty.	Cat. ref.
Fire proof mastic	cartridge content: 310 ml	1	L6682
	bucket content: 5 kg	1	L6683

tehalit.FWK fire resistant trunking system

Delivery information : Base and lid.

Standard length : 0,75 m, 0,50 m.

Material : Plasterplates, zinc coated steel.

		Base and lid	Partition	Internal angle	External corner
					
		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
- Diameter and wire section, see page I.19					
- Accessories, see pages I.30 and I.31					
- Dimensions, see page I.35					
					
	zinc coated	FWK9500600VERZ	L6664VERZ	L6911VERZ	L6912VERZ
	PVC		L6632		
	weight per piece/length	18,8 kg/0,75 m		10,66 kg	10,74 kg
	packaging	1 piece		1 piece	1 piece
					
	zinc coated	FWK9501100VERZ	L6664VERZ	L6921VERZ	L6922VERZ
	PVC		L6632		
	weight per piece/length	23,3 kg/0,75 m		13,24 kg	13,32 kg
	packaging	1 piece		1 piece	1 piece
					
	zinc coated	FWK9502100VERZ	L6664VERZ	L6951VERZ	L6952VERZ
	PVC		L6632		
	weight per piece/length	32,3 kg/0,75 m		18,41 kg	18,48 kg
	packaging	1 piece		1 piece	1 piece
					
	zinc coated	FWK9991600VERZ	L6665VERZ	L6961VERZ	L6962VERZ
	PVC		L6633		
	weight per piece/length	21,7 kg/0,50m		20,92 kg	21,02 kg
	packaging	1 piece		1 piece	1 piece
					
	zinc coated	FWK9992600VERZ	L6665VERZ	L6971VERZ	L6972VERZ
	PVC		L6633		
	weight per piece/length	27,6 kg/0,50 m		26,73 kg	26,83 kg
	packaging	1 piece		1 piece	1 piece

Service continuity validated by tests according to DIN 4102/2.

Wall mounting (wall, floor, ceiling) :

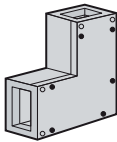
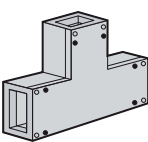
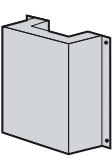
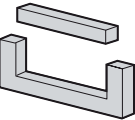
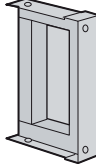
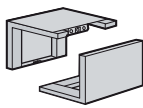
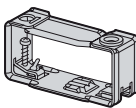
- 60 minutes for FWK9500600 / 9501100 / 9502100
- 90 minutes for FWK9991600 / 9992600.

Slung mounting :

- 30 minutes for all FWK90 trunking.

Zinc coated (VERZ)

Line distribution

Flat corner	T-piece	Sliding sleeve (wall mounting)	Sealing fitting	End cap	Sliding sleeve (slung mounting on trunking)	FWK cable retainer
						
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
L6915VERZ	L6916VERZ	L6918VERZ	L6919	L6913VERZ	L6910VERZ	
11,9 kg	15,1 kg	13,2 kg	0,3 kg	1,4 kg	1,41 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	
L6925VERZ	L6926VERZ	L6928VERZ	L6929	L6923VERZ	L6920VERZ	L5732VERZ
16,04 kg	18,65 kg	14,4 kg	0,4 kg	1,9 kg	1,69 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	15 pieces
L6955VERZ	L6956VERZ	L6958VERZ	L6959	L6953VERZ	L6950VERZ	L5733VERZ
26,12 kg	25,72 kg	16,8 kg	0,6 kg	2,7 kg	2,29 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	15 pieces
L6965VERZ	L6966VERZ	L6968VERZ	L6969	L6963VERZ	L6960VERZ	L5734VERZ
24,26 kg	25,66 kg	18,2 kg	0,6 kg	3,2 kg	2,31 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	10 pieces
L6975VERZ	L6976VERZ	L6978VERZ	L6979	L6973VERZ	L6970VERZ	L5735VERZ
26,17 kg	32,42 kg	20,6 kg	0,8 kg	4,4 kg	2,9 kg	
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	25 pieces

Designation

Characteristics

Pack
qty.

Cat. ref.



L6565

Junction pins

for wall and ceiling mounting
with specified fire resistance
(F90 according to DIN 4102)

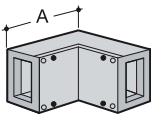
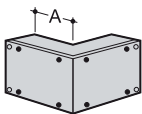
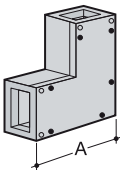
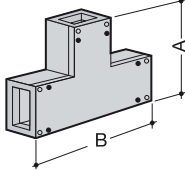
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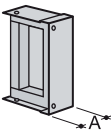
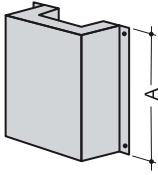
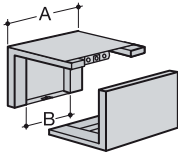
L6565

tehalit.LFS - tehalit.LFG

references	internal corner size in mm	external corner size in mm	flat corner size in mm	t and deviation piece size in mm
LFS200200	A = 150 / B = 140	A = 150 / B = 200	A = 170 / B = 150	A = 340 / B = 170
LFS300450	A = 150 / B = 140	A = 150 / B = 200	A = 170 / B = 150	A = 340 / B = 170
references	internal corner size in mm	external corner size in mm	flat corner size in mm	t and deviation piece size in mm
LFS400600	50	50	50	50
LFS600600	50	50	50	50
LFS601000	50	50	50	50
LFS601500	50	50	50	50
LFS602000	50	50	50	50
references	internal corner size in mm	external corner size in mm	flat corner size in mm	t and deviation piece size in mm
LFG400600	A = 85	A = 85	A = 85	A = 170
LFG501000	A = 130	A = 130	A = 135	A = 210
LFG501500	A = 130	A = 130	A = 181	A = 260
LFG502000	A = 130	A = 130	A = 231	A = 260
references	internal corner size in mm	external corner size in mm	flat corner size in mm	
LFG801000	A = 250 / B = 250	A = 250 / B = 250	A = 250 / B = 250	
LFG802000	A = 250 / B = 250	A = 250 / B = 250	A = 250 / B = 250	
LFG803000	A = 250 / B = 250	A = 250 / B = 250	A = 250 / B = 250	

tehalit.FWK

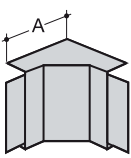
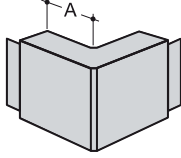
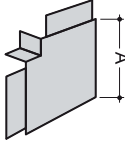
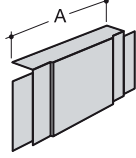
				
references	internal corner size in mm	external corner size in mm	flat corner size in mm	t and deviation piece size in mm
FWK3500600	240	150	250	A = 250 / B = 500
FWK3501100	240	150	300	A = 300 / B = 500
FWK3502100	240	150	400	A = 400 / B = 500
FWK3991600	293	150	350	A = 350 / B = 500
FWK3992600	293	150	450	A = 450 / B = 500
FWK9500600	293	150	300	A = 300 / B = 500
FWK9501100	293	150	350	A = 350 / B = 500
FWK9502100	293	150	450	A = 450 / B = 500
FWK9991600	347	150	400	A = 400 / B = 500
FWK9992600	347	150	500	A = 500 / B = 500

			
references	end cap size in mm	sliding sleeve * size in mm	sliding sleeve ** size in mm
FWK3500600	20	400	A = 120 / B = 60
FWK3501100	20	400	A = 120 / B = 60
FWK3502100	20	400	A = 120 / B = 60
FWK3991600	20	400	A = 120 / B = 60
FWK3992600	20	400	A = 120 / B = 60
FWK9500600	50	400	A = 120 / B = 60
FWK9501100	50	400	A = 120 / B = 60
FWK9502100	50	400	A = 120 / B = 60
FWK9991600	50	400	A = 120 / B = 60
FWK9992600	50	400	A = 120 / B = 60

* wall mounting

** cable trunking

tehalit.LFH

				
references	internal corner size in mm	external corner size in mm	flat corner size in mm	t and deviation piece size in mm
LFH300450	85	45	85	170
LFH400600 / 400610	85	45	85	170
LFH600900	130	69	120	170
LFH601100	130	69	140	190
LFH601510	130	69	180	250

Line distribution

Earthing of tehalit.LFS steel sheet trunking

• Use of wires :

The earthing of every metallic part is compulsory.

• LFS200200 and 300450 :

Junctions are mounted on the bottom of the base and are equipped with a screw / ring system which permits the connection of an earth conductor. The earthing of the bases can be done only on one point (junction ensuring the electric continuity).

For the covers, the reported tabs allowing the earthing (R4320 for LFS200200 and R4330 for LFS300450) are mounted under the cover.

A conductor must be connected between those tabs and an earthing point (for example: junctions of the bottoms).

• LFS depth 40 and 60 mm :

Junctions are mounted on the side panels of the base and are equipped with a tab which permits to connect an earth terminal. The earthing of the bases can be done only at one point (junctions ensure electrical continuity).

For LFS covers, depth 40 and 60, reported tabs (L4180) to be mounted on the side of the covers, allow the earthing. A conductor must be connected between those tabs and an earthing point (for example: junctions of the bottoms). The same tab (L4180) allow the earthing of the metallics.

Finishing accessories are equipped with tabs to link with a conductor to an earthing point (for example: bottom junctions).

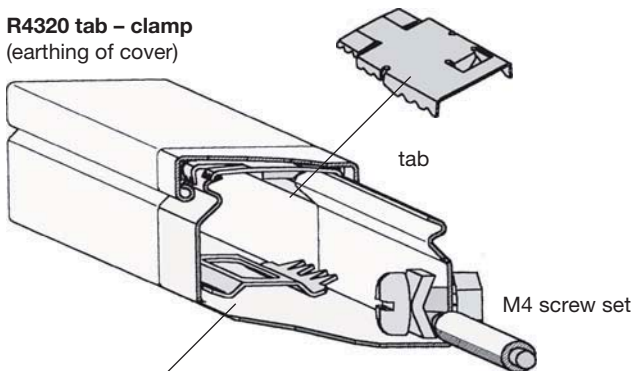
• Use of cables :

No earthing is required for the trunking systems.

LFS200200 / LFS300450 trunkings

LFS200200

R4320 tab – clamp (earthing of cover)

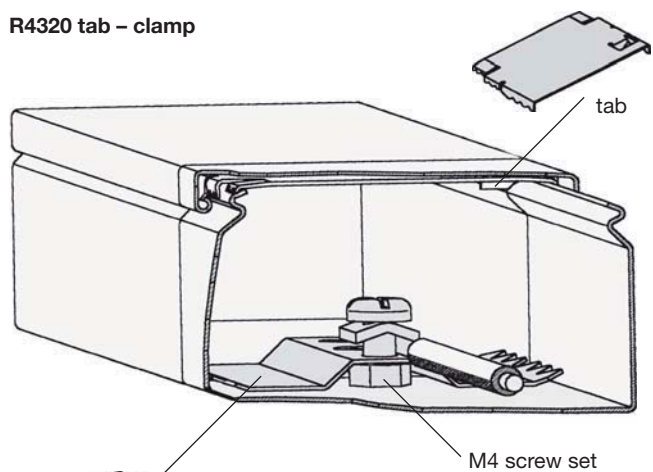


Junction

R2320 – junction kit
(earthing of base)
- junction
- M4 screw set: hexnut, lockwasher, M4 screw with domed washer

LFS300450

R4320 tab – clamp

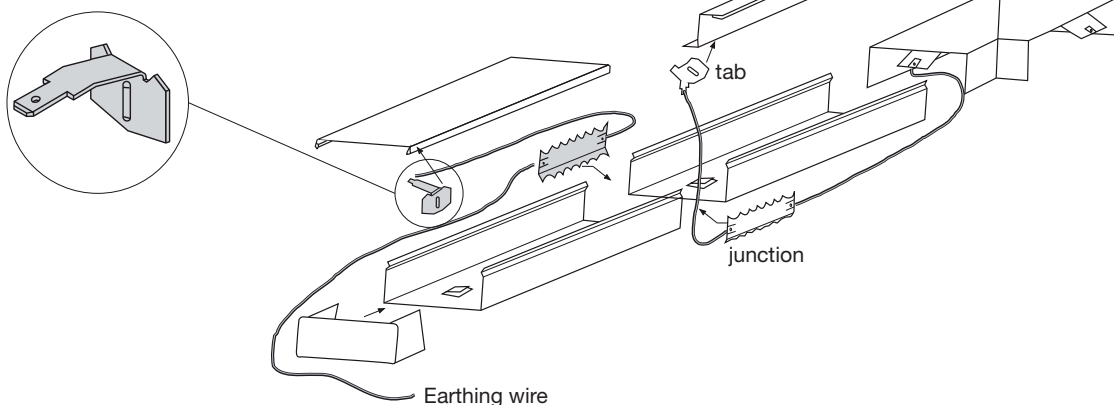


Junction

R2330 – junction kit
(earthing of base)
- junction
- M4 screw set: hexnut, lockwasher, M4 screw with domed washer

LFS400600 / LFS600600 / 1000 / 1500 / 2000 trunkings

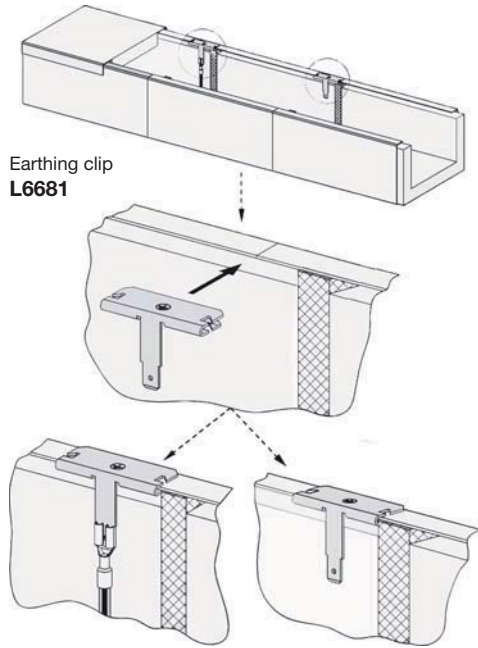
Zinc plated earthing tab for cover and panel **L4180**



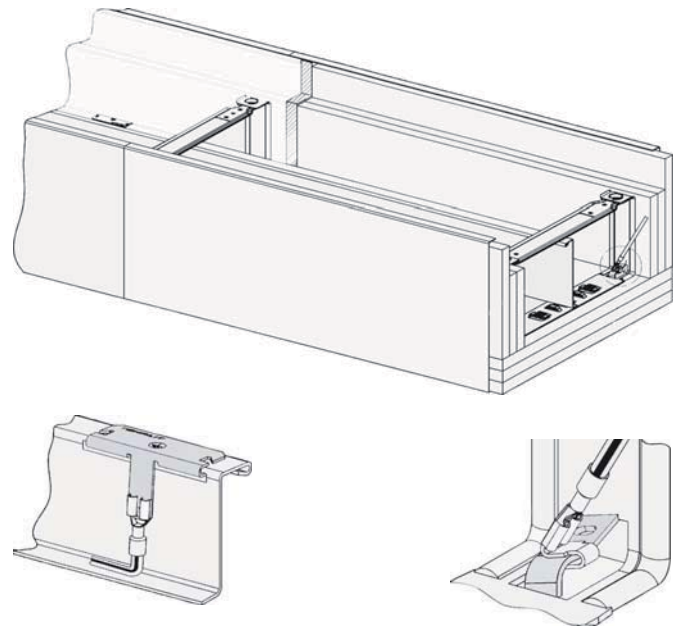
Finishing accessories are basically equipped with an earthing terminal.

tehalit.FWK trunking

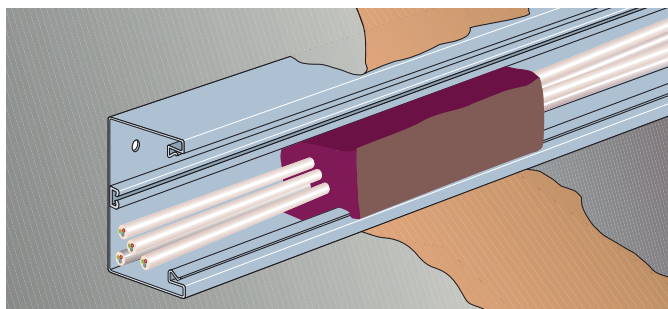
Earthing lids and bases



Earthing cable retainers and sides



Implementation



Mastic quantity in number of packs

trunking references	max.	min.
FB601100	1,4	0,6
FB601300	1,7	0,7
FB601500	1,9	0,8
FB601900	2,5	1,0
FB602300	3,0	1,2
FB801300	2,2	0,9
FB992300	5,0	2,0
LFF400600	0,5	0,2
LFF400610	0,5	0,2
LFF400900	0,8	0,3
LFF401100	1,0	0,4
LFF600600	0,8	0,3
LFF600900	1,3	0,5
LFF601100	1,5	0,6
LFF601500	2,0	0,8
LFF601900	2,6	1,0
LFF602300	3,1	1,2
LFH400600	0,5	0,2
LFH400610	0,5	0,2
LFH600900	1,3	0,5
LFH601100	1,5	0,6
LFH601510	2,0	0,8
LFS400600	0,5	0,2
LFS600600	0,8	0,3
LFS601000	1,4	0,6
LFS601500	2,0	0,8
LFS602000	2,7	1,1
LFG400600	0,5	0,2
LFG501000	1,1	0,4
LFG501500	1,7	0,7
LFG502000	2,3	0,9
LFG801000	1,8	0,7
LFG802000	3,6	1,4
LFG803000	5,4	2,1

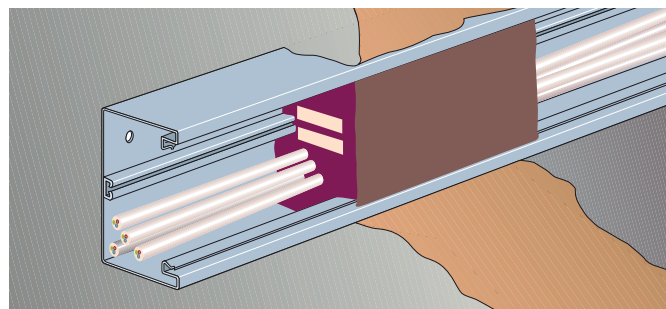
max : trunking without cable
min. : 60% full trunking

Protection against fire

For wall and ceiling mounting with specified fire resistance (F 90 according to DIN 4102).

Mounting

1. Install trunkings end to end.
2. Pass cables.
3. Put fire proof mastic **L6565** inside the trunking, on about 200 mm, on the fire protection area.
Uniformly space the cables in the mastic.
(if necessary, use lid as formwork).
4. Stuff holes in the wall.
5. Fill in the specification sheet and stick it on the upper part of the trunking. Slide the lids on the right and on the left of the fire protection.



Quantity in number of braids

trunking references	nr of braids
FB601100	9
FB601300	11
FB601500	12
FB601900	15
FB602300	19
FB801300	14
FB992300	31
LFF400600	2
LFF400610	3
LFF400900	4
LFF401100	6
LFF600600	5
LFF600900	6
LFF601100	9
LFF601500	13
LFF601900	15
LFF602300	19
LFH400600	2
LFH400610	2
LFH600900	6
LFH601100	9
LFH601510	12
LFS400600	2
LFS600600	5
LFS601000	8
LFS601500	13
LFS602000	16
LFG400600	2
LFG501000	6
LFG501500	10
LFG801000	13
LFG802000	22
LFG803000	33

- Braid length : 300 m, diameter : 30 mm, damping : about 40 dB,
material : A1 category.

!! Do not use as a protection against fire !!



L6565

systo

modularity for professional premises



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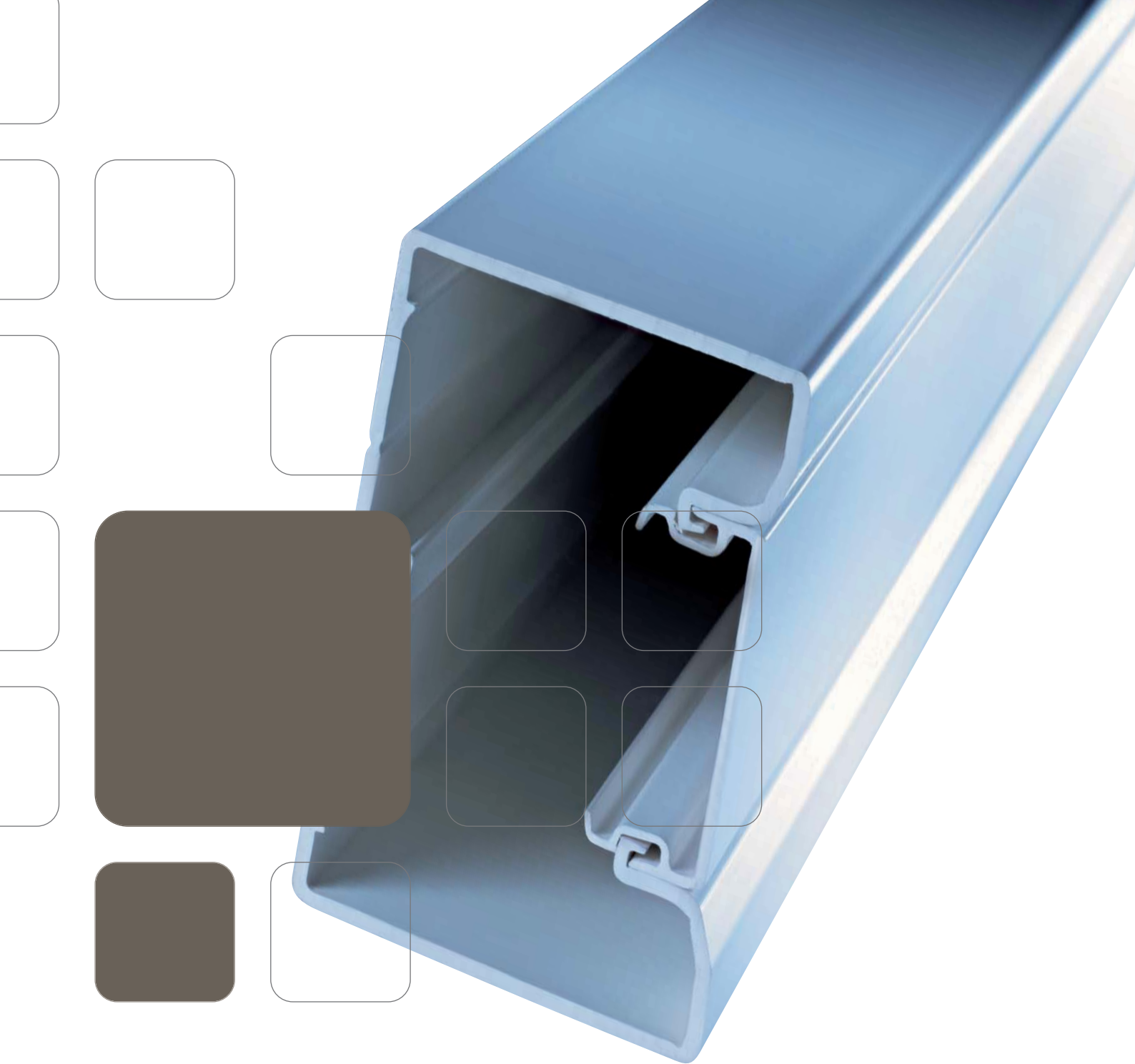


Choose your own

Because there are many ways to supply high and low voltage in the office, systo brings you the modularity you need, for new building as well as for renovation.

www.near-east.hager.com

 **hager**



Installation trunking tehalit.queraz

In PVC or aluminium, small or large, tehalit.queraz trunking range for installation is compatible with all the sockets 45 x 45.

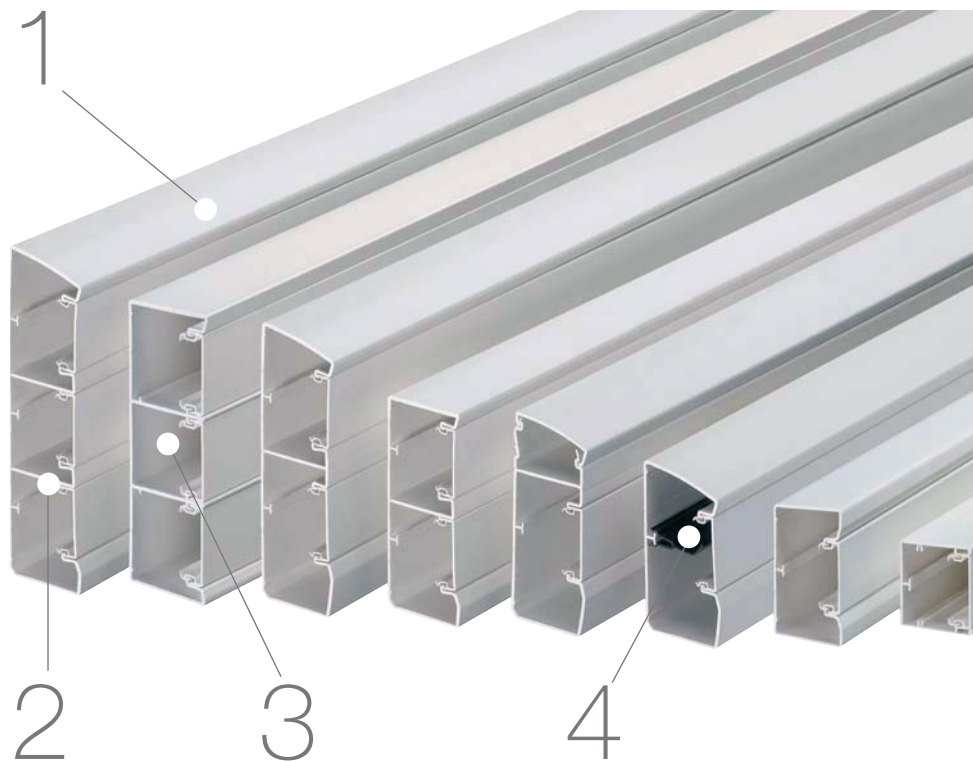
tehalit.queraz is the ideal solution for the electric installation in professional premises and tertiary buildings.

tehalit.queraz installation trunking	
- PVC trunking	J.4
- aluminium trunking	J.6
- sockets and accessories	J.8
<hr/>	
tehalit.BRP/BRAP/BRS trunking	
- BRP PVC trunking	J.16
- BRAP aluminium trunking	J.18
- BRS steel trunking	J.20
- accessories	J.22
<hr/>	
technical data queraz and BRP/BRAP/BRS	J.27
<hr/>	
tehalit.c60	J.38
<hr/>	
poles and posts	J.40
<hr/>	
post "the tower"	J.52
<hr/>	
multi outlet modules and blocs	J.58
<hr/>	
pull out multi outlet modules	J.68
<hr/>	
floor trunking	J.72
<hr/>	

Trunking for installation, PVC or alu tehalit.queraz

The must solution

tehalit.queraz trunking for installation in PVC or aluminium is ideal for electrical equipments in tertiary premises.



Your benefits

- Compatible with all the sockets 45 x 45 of the market.
- Lots of accessories and adjustable corners for a perfect fitting.
- Upper part is curved or flat and can be mounted as plinth or apron, horizontally or vertically.

Technical characteristics

- 8 sizes in PVC (54 x 54 to 56 x 207 mm) and 4 sizes in aluminium (54 x 54 to 56 x 162 mm).
- 13 accessories ensure mechanical protection continuity for all the circuit (IP40) according to NF C 15-100.
- Available in several colours and materials: pure white (PVC) and anodized aluminium or white lacquered (aluminium).

Expert tips

1



A complete range

1 to 3 compartments, PVC or aluminium.

3



High capacity

Profiles are designed for a higher capacity wiring in a compact space.

2



Pre-cut partitions

Partitions are pre-cut to ease wiring.

4



Handy accessories


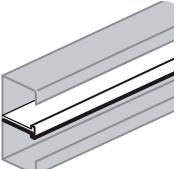

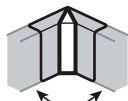

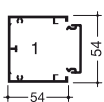
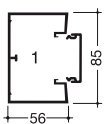
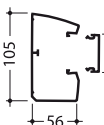
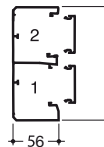
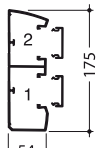
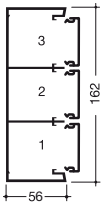
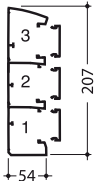
Adjustable partition (from size 56 x 85 mm).

tehalit.queraz PVC: trunking for installation with direct locking system

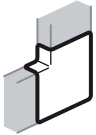
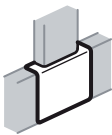

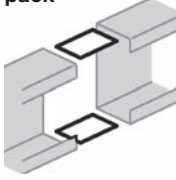


Delivery information : Base pre-drilled (except GBD500500), lid (opening with screwdriver).

Standard length : 2 m. Other length on demand, max. 6 m.

Material : Rigid PVC, accessories in ABS. Protection category: IP40, IK07.

		Base and lid	Partition	Adjustable internal corner 83° to 97°	Extension for internal corner 97° to 140°	Adjustable external corner 83° to 140°
						
		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
For trunking dimensions and capacities, see pages J.28 and J.29						
	pure white	GBD5005009010				
	black		L4369			
	packaging	16 m	72 m			
	pure white	GBD5008509010		L44719010		L44729010
	black		L4369			
	packaging	16 m	72 m	5 pieces		5 pieces
	pure white	GBD5010009010		L43619010	L43649010	L43629010
	black		L4369			
	packaging	16 m	72 m	5 pieces	5 pieces	5 pieces
	pure white	GBD5013109010		L43919010	L43949010	L43929010
	black		L4369			
	packaging	12 m	72 m	5 pieces	5 pieces	5 pieces
	pure white	GBD5016009010		L43819010	L43849010	L43829010
	black		L4369			
	packaging	8 m	72 m	4 pieces	4 pieces	4 pieces
	pure white	GBD5016109010		L43419010	L43459010	L43429010
	black					
	packaging	8 m		4 pieces	4 pieces	4 pieces
	pure white	GBD5019009010		L44119010	L44149010	L44129010
	black		L4369			
	packaging	8 m	72 m	4 pieces	4 pieces	4 pieces

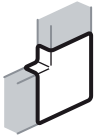

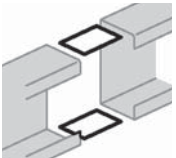
Colour :

Flat corner	T-piece	3D internal corner	Coupling piece pack	End cap	Joint cover
					
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
				L44339010	L43119010
				5 pieces	10 pieces
L44789010	L44779010		L44669010	L44739010	L43119010
4 pieces	4 pieces		10 pieces	5 pieces	10 pieces
L43689010	L43519010	L43529010	L44609010	L43639010	L43119010
4 pieces	4 pieces	2 pieces	10 pieces	5 pieces	10 pieces
L43989010	L43579010	L43549010	L44639010	L43939010	L43119010
4 pieces	4 pieces	2 pieces	10 pieces	5 pieces	10 pieces
L43889010	L43559010	L43569010	L44629010	L43839010	L43119010
2 pieces	2 pieces	2 pieces	10 pieces	5 pieces	10 pieces
L43489010	L43479010	L43569010	L44659010	L43439010	L43119010
2 pieces	2 pieces	2 pieces	10 pieces	5 pieces	10 pieces
L44189010	L43599010		L44649010	L44139010	L43119010
2 pieces	2 pieces		10 pieces	5 pieces	10 pieces

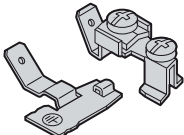
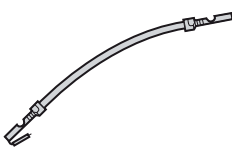
Installation trunking

Colour :  natural anodized (ALU)

 pure white (9010)

Flat corner	End cap	Junction coupling piece
		
Cat. ref.	Cat. ref.	Cat. ref.
	L4433ALU L44339010	
	5 pieces	
L4478ALU L44789010	L4473ALU L44739010	L4467
4 pieces	5 pieces	2 pieces
L4398ALU L43989010	L4393ALU L43939010	L4467
4 pieces	5 pieces	2 pieces
L4348ALU L43489010	L4343ALU L43439010	L4467
2 pieces	5 pieces	2 pieces

Installation trunking

	Designation	Characteristics	Pack qty.	Cat. ref.
	Base and lid earthing kit Accessories: 25 base terminals and 25 lid terminals	material : steel	1	L5802
	Earth strap	length 150 mm	25	L4181GNGE
		length 300 mm	25	L4182GNGE
		length 600 mm	25	L4183GNGE

L5802

L4183







Connection capacity
Quick Connect mounting :
- mini : 2 x 1 mm² rigid wire
- maxi : 2 x 2,5 mm² rigid wire
Screw mounting :
- maxi : 1 x 4 mm² rigid wire
or 2 x 2,5 mm² flexible wire

Comply with NF C 60-314
(WS100, WS101, WS102,
WS103, WS105, WS106)

IP2XC products equipped with
supports and plates.



Glow wire test
according to
NF EN 60 695-2.

	Designation	Characteristics	Pack qty.	Cat. ref. 2 modules
Sockets from 16 A - 250 V				
	2P + E deconnection control accessible behind the switch	Quick Connect	10	WS100
WS100, WS101	2P + E	screw connection	10	WS101
	2P	screw connection	10	WS102
WS102	2P + E with indicator to be associated with WUZ694	Quick Connect	10	WS103
	2P + E with keying pin deconnection control accessible behind the switch	Quick Connect	10	WS105
WS105, WS106	2P + E with keying pin	screw connection	10	WS106
	double socket 2P + E	Quick Connect, white	10	WS122
WS122	2 gang socket 2P + E	screwless, black	10	WS122N
	double socket 2P + E	Quick Connect, white	84	WS122SCF
WS123	2 gang socket 2P + E	screwless, alu	10	WS122T
	2 gang socket 2P + E	screwless, alu	84	WS122TSCF
WS120	double socket 2P + E with keying pin	Quick Connect	10	WS132
	triple socket 2P + E	Quick Connect	10	WS123
	3 gang socket 2P + E	screwless, black	10	WS123N
	3 gang socket 2P + E	screwless alu	10	WS123T
	triple socket 2P + E with keying pin	Quick Connect	10	WS133
	junction accessories for multiple sockets		10	WS120
	junction accessories for multiple sockets		150	WS120SCF
	cable clamp for multi sockets		10	WS130
	switch 16AX for multi sockets, for french sockets		10	WS136
	surge for multi sockets		1	WS137
	filter for multi sockets		1	WS138

systo confort

45 x 45 standard modular sockets



Designation	Characteristics	Pack. qty.	Cat. ref. 1 module	Pack. qty. 2 modules	Cat. ref. 2 modules
Cable outlet	for cables : Ø1,5 à 12 mm				
Monobloc extra slim (18 mm flush) (no multistation)	Delivered with specific support. Screws or removable claws mounting.			10	WE155
Modular 45 x 45 (multistation possible)				10	WS155
Accessories					
- cable outlet	Ø 8 mm	10	WS687	-	-
- blank plate		10	WS688	10	WS689
- red LED for socket WS103		-	-	10	WUZ694
- keying pin for socket		-	-	10	WS697
- removable short claws		-	-	50	WK696
- removable long claws		-	-	50	WK697

German standard modular Schuko socket



Designation	Characteristics	Pack. qty.	Cat. ref.
Schuko socket	Quick Connect	10	WS160
Systo for multi Schuko sockets	switch 16AX	10	WS166
	surge	1	WS167
	filter	1	WS168
	surge protection cartridge	1	WS169
Systo double socket Schuko with childprotection for trunking	white	10	WS172
	black	10	WS172N
Systo triple socket Schuko with childprotection for trunking	white	10	WS173
	black	10	WS173N
Systo double socket Schuko with keying pin and childprotection for trunking	red	10	WS182
Systo triple socket Schuko with keying pin and childprotection for trunking	red	10	WS183
Systo double socket Schuko for trunking	red	10	WS185
Systo triple socket Schuko for trunking	red	10	WS186

TV sockets

For the reception of the terrestrial hertzian TV, analog and digital;
Is also appropriate for the reception by cable.
TV + FM + SAT sockets for the TV reception by satellite.








Wiring of plugs in cascade : final stopper 75 Ω to be gone up systematically on the last socket.

Wiring of plugs in star local area network: use direct socket.

Comply with ISO 11801 2nd ed., EN 50173 (WS210 to WS227) NF EN 50083 UTE 90123 UTE 90125 (WS250 to WS257)



Glow wire test according to NF EN 60 695-2.

	Designation	Characteristics	Pack qty.	Cat. ref. 1 module	Pack qty.	Cat. ref. 2 modules
	T phone socket	8 screw contacts	-	-	10	WS200
WS200	Data socket	direct connection with no need for tools according to normalized colour code EIA/TIA 568 A or B all plugs are supplied with front label plate and non-dust valve. Compatible with plugs RJ11 and RJ12.				
	- RJ45 category 5E : D class, 100 MHz	UTP, 8 pins	10	WS210	1	WS211
WS213		FTP, 9 pins	10	WS213	10	WS214
		STP or SFTP 8 shielded pins	10	WS216	1	WS217
	- RJ45 category 6 : E class, 250 MHz	UTP, 8 pins	10	WS219	1	WS220
WS214		FTP, 9 pins	10	WS222	10	WS223
		STP or SFTP 8 shielded pins	10	WS225	1	WS226
	Speakers socket	fast connection	10	WS290	10	WS291
WS290	TV socket	connection terminal with screw for a good hold of the coaxial cable				
	- TV	direct			10	WS250
WS250		F type			10	WS259
		insertion loss 10 dB delivered with stopper 75 Ω			1	WS251
	- TV + FM	insertion loss 15 dB delivered with stopper 75 Ω			1	WS252
WS254		direct			1	WS253
		insertion loss 10 dB delivered with stopper 75 Ω			1	WS254
	- TV + FM + SAT	insertion loss 15 dB delivered with stopper 75 Ω			1	WS255
WS256		direct 1 input			1	WS256
		direct 2 inputs			1	WS257

Flush mounting

In a 40mm depth box. For an easy mounting, use a 50mm depth box for motion detectors and dimmers.

Connection capacity

Quick Connect mounting :
- mini : 2 x 1 mm² rigid wire





- maxi : 2 x 2,5 mm² rigid wire
- Screw mounting :
- maxi : 1 x 2,5 mm² rigid wire
- maxi : 2 x 1,5 mm² flexible wire

Comply with NF EN 60-669-1 (WS048, WS063, WS064, WS065, WS066, WS067).



Glow wire test : according to NF EN 60 695-2

IP2XC products equipped with supports and plates.

	Designation	Characteristics	Pack qty.	Cat. ref.
	CMV control push and pull CMV	10 A - 250 V~ 2 speeds without OFF position	1	WS048
	Motion detectors • without neutral (2 wires) replace simple switch (renovation) for - incandescent and halogen lamps 230 V~, - halogen ELV lamp via electronic transformer Can be used as "master" module when linked to several switches. • with neutral (3 wires) for - incandescent and halogen lamps 230 V~, - halogen ELV lamps via electronic or ferromagnetic transformer - fluorescent lamps - CMV, fan... Can be used as "master" or "slave" module when linked to several switches.	230 V~ / 50 Hz 60 ... 320 W/VA incandescent and halogen 230 V~ : 0 ... 1000 W other loads : 0 ... 500 VA	1 1	WS050 WS051
	Dimmers - incandescent and halogen lamps 230 V~ and halogen ELV lamps with ferromagnetic transformer • rotative 400 VA - variation by rotation - ON/OFF by press • pushbutton 400 VA - variation by long press - ON/OFF by short press	230 V~ / 50 Hz 60 ... 400 W/VA 60 ... 400 W/VA	1 1	WS063 WS066
	- incandescent and halogen lamps 230 V~ and halogen ELV lamps with electronic transformer • rotative 320 VA - variation by rotation - ON/OFF by press - all loads (universal dimmer) • rotative 350 VA - variation by rotation - ON/OFF by press • pushbutton 350 VA - variation by long press - ON/OFF by short press	60 ... 320 W/VA 40 ... 350 W/VA 40 ... 350 W/VA	1 1 1	WS064 WS065 WS067

Flush mounting

In a 40mm depth box. For an easy mounting, use a 50mm depth box for thermostats.

Connection capacity

Quick Connect mounting :
- mini : 2 x 1 mm² rigid wire
- maxi : 2 x 2,5 mm² rigid wire
Screw mounting :
- maxi : 1 x 2,5 mm² rigid wire
- maxi : 1 x 1,5 mm² flexible wire








Comply with NF EN 60-669-1 (WS300, WS301).

NF EN 60-730-2,
NF EN 60-335-1
NF EN 55-014-1,
NF EN 61-000-3 (WS310, WS311, WS314).



Glow wire test : according to NF EN 60 695-2

IP2XC products equipped with supports and plates.

	Designation	Characteristics	Pack qty.	Cat. ref.
	Rolling shutter controls	10 A - 250 V~		
WS300	- double push and pull rolling shutter permits direct control of a motor	reversed trigger with fixed position	1	WS300
	- double push and pull rolling shutter permits to control individual or grouped motors via an automatism box	trigger with temporary position	1	WS301
	Electronic rolling shutter controls			
WS304	- programmable electronic rolling shutter control	daily programming	1	WS304
	- centralised electronic rolling shutter control with display	weekly programming and centralised control	1	WS305
	Electronic thermostats			
WS310	- room thermostat adjustability : +5° C to +30°C accuracy ± 0,5°C - potential free 8 A - 250 V~ for cos φ=1	supply voltage : 230 V~ /50 Hz output : 1 changeover contact	1	WS310
	- thermostat pilote wire - input pilote wire 6 controls adjustability : +5° C to +30°C accuracy ± 0,5°C - potential free 8 A - 250 V~ pour cos φ=1	supply voltage : 230 V~ /50 Hz output : 1 changeover contact	1	WS314
	- programmable room thermostat - adjustability : +10° C to +30°C accuracy ± 0,5°C - power reserve : 30 days - potential free 8 A - 250 V~ for cos φ=1	supply voltage : 230 V~ /50 Hz output : 1 changeover contact	1	WS311

LPT

surface mounting boxes for outlets



Delivery information : complete box (base, cover, support)

Material : ABS







Colour :

pure white (9010)

System benefits

- boxes of 2, 4, 6 and 8 outlets for mechanism 45 x 45 ...
- surface mounting box with modular structure giving the possibility to install the needed number of modules
- modules to install DIN 1 or 2 modules products: a flexible use

- with a minimum of references
- the outlets are clipped directly on the support which is pivoting to allow an easy connection and installation in the box
- accessories: front and side adaptors for mini trunking 20x50 and tension indicator (red).

Designation	Characteristics	Pack qty.	Cat. ref.
 LPT04H  LPT06H  LPT20H  LPT21D  LPT23  LPT24	Surface mounting boxes 2 outlets 4 outlets 6 outlets 8 outlets	3 1 1 1	LPT02H LPT04H LPT06H LPT08H
	Modules with DIN rail 2 outlets for modular protection	1 3	LPT20H LPT21D
	Front adaptor mini trunking ATA 20 x 50 for LPT box	1	LPT23
	Lateral adaptor mini trunking ATA 20 x 50 for LPT box	1	LPT24
Voltage presence indicator 230 V		10	LPT25

Installation trunking

PVC, aluminium and steel trunking BRP, BRAP and BRS

Modern design

Combined with new 45mm wiring frames, 60mm boxes CEE and ecoline sockets, these ranges are the ideal solution for electrical installation in the offices, laboratories, production sites, shops,...

The profiles are available in PVC (BRP), aluminium (BRAP) and steel (BRS) and can be equipped with 80mm width lids. This allows to adapt the system to your needs, with a modern design and a neat finish.



Your benefits

- Robust and stable trunkings.
- Modern, rectangular design with flush cover.
- Pieces are available in various shapes.
- Easy front mounting of frames for 45mm wiring accessories and standard 60mm mounting boxes.
- 80mm width lids with perfect fit.
- Quick and safe integrated earthing system for BRS range.

Technical characteristics

- Materials: PVC (BRP), aluminium (BRAP) and steel (BRS).
- Dimensions: from 65 x 100mm to 80 x 200mm.
- Colours: RAL9010 (BRP and BRS); anodised aluminium (BRAP)
- Delivery: base and lid are delivered separately.
- Length: 2m.
- Pieces: adjustable internal and external corners, flat corner, cap and joint cover (BRS).
- Accessories: 45mm, 60mm, ecoline and CEE sockets (BRAP and BRS).

Expert tips

1



Finishing frames

For 45mm wiring accessories, they can be easily clipped on front of the profile.

5



Quick and safe

Allows to save 30% time and is really safe thanks to the new earthing system integrated in BRS trunking.

2



New outlet boxes

Used to ease standard 60mm wiring mounting.

6



Adjustable pieces

Can be used for all PVC, aluminium and steel profiles. Allow an easy and neat mounting.

3



Ecoline sockets

This range combines quick mounting and modern design.

7



Joint covers

Allows to hide aluminium profile cuttings (BRS).

4



80mm width lids


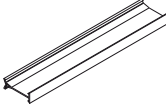
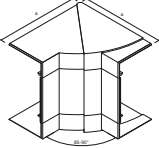
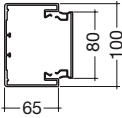
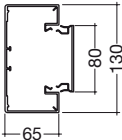
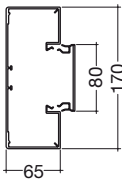
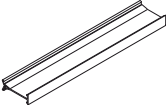
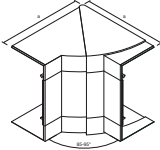
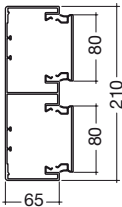
Avoid to use more frames for the socket mounting.

tehalit.BRP: PVC trunking system for installation

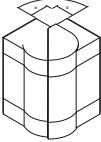
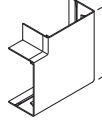
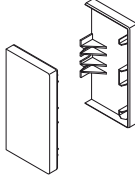
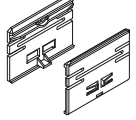
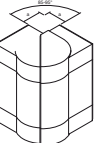
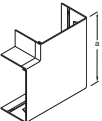
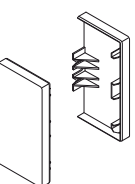
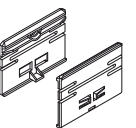
Delivery information : Base pre-drilled and lid to be ordered separately (lid opening with screwdriver).

Standard length : 2 m. Other length on demand, max. 6 m.

Material : Rigid PVC. Protection category : IP40, IK07.

		PVC base	PVC lid	PVC simple cable divider	Internal corner
					
- Wiring capacities and measurements, see page J.31 - Accessories, see page J.33		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
	pure white (9010)	BRP6510019010	BRP08029010	M2026	BRP651004H9010
	packaging	8 m	24 m	50 m	1 piece
	pure white (9010)	BRP6513019010	BRP08029010	M2026	BRP651304H9010
	packaging	8 m	24 m	50 m	1 piece
	pure white (9010)	BRP6517019010	BRP08029010	M2026	BRP651704H9010
	packaging	8 m	24 m	50 m	1 piece
BRP double lid 65 mm depth		PVC base	PVC lid	PVC simple cable divider	Internal corner
					
		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
	pure white (9010)	BRP65210D19010	BRP08029010 (x2)	M2026	BRP652104DH9010
	packaging	8 m	24 m	50 m	1 piece

Colour : pure white (9010)

External corner  Cat. ref.	Flat corner  Cat. ref.	End cap  Cat. ref.	Coupling piece pack  Cat. ref.
BRP651003H9010	BRP651005H9010	BRP6510069010	BRP65xxx9
1 piece	1 piece	1 piece	10 pieces
BRP651303H9010	BRP651305H9010	BRP6513069010	BRP65xxx9
1 piece	1 piece	1 piece	10 pieces
BRP651703H9010	BRP651705H9010	BRP6517069010	BRP65xxx9
1 piece	1 piece	1 piece	10 pieces
External corner  Cat. ref.	Flat corner  Cat. ref.	End cap  Cat. ref.	Coupling piece pack  Cat. ref.
BRP652103DH9010	BRP652105DH9010	BRP652106D9010	BRP65xxx9
1 piece	1 piece	1 piece	10 pieces


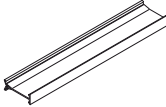
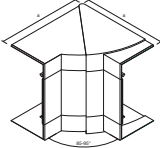
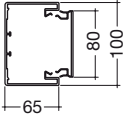
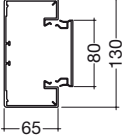
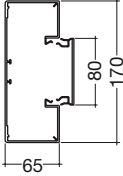
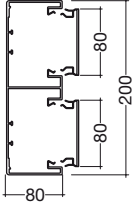
Installation trunking

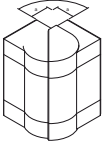
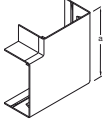
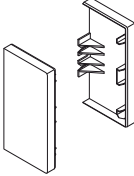
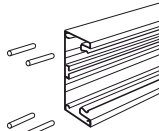

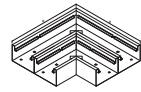

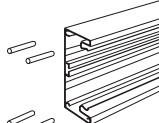
tehalit.BRAP: aluminium trunking system for installation

Delivery information : Base pre-drilled and lid to be ordered separately (lid opening with screwdriver).

Standard length : 2 m. Other length on demand, max. 6 m.

Material : Natural anodized aluminium. Protection category : IP40, IK07.

		Aluminium base	Aluminium lid	PVC simple cable divider	Internal corner
					
- Wiring capacities and measurements, see page J.31 - Accessories, see page J.33		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
	nat. anodized alu	BRAP651001ELN	BRAP0802ELN	M1043	BRP651004HLAN
	packaging	8 m	16 m	40 m	1 piece
	nat. anodized alu	BRAP651301ELN	BRAP0802ELN	M1043	BRP651304HLAN
	packaging	8 m	16 m	40 m	1 piece
	nat. anodized alu	BRAP651701ELN	BRAP0802ELN	M1043	BRP651704HLAN
	packaging	8 m	16 m	40 m	1 piece
BRAP double lid 80 mm depth		Aluminium base	Aluminium lid	PVC simple cable divider	Internal corner
		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
	nat. anodized alu	BRAP802001ELN	BRAP0802ELN (2x)	M1043	L8081ELN
	packaging	6 m	16 m	40 m	1 piece

External corner  Cat. ref.	Flat corner  Cat. ref.	End cap  Cat. ref.	Junction pins  Cat. ref.
BRP651003HLAN	BRP651005HLAN	L6532ELN	L5412
1 piece	1 piece	1 piece	100 pieces
BRP651303HLAN	BRP651305HLAN	L6533ELN	L5412
1 piece	1 piece	1 piece	100 pieces
BRP651703HLAN	BRP651705HLAN	L6534ELN	L5412
1 piece	1 piece	1 piece	100 pieces
External corner  Cat. ref.	Flat corner  Cat. ref.	End cap  Cat. ref.	Junction pins  Cat. ref.
L8082ELN	L8085ELN	L8034ELN	L5412
1 piece	1 piece	1 piece	100 pieces

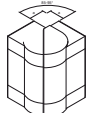
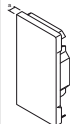

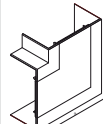
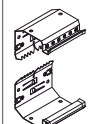
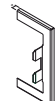

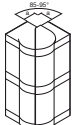
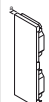
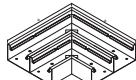
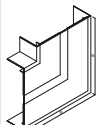
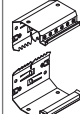


tehalit.BRS: steel trunking system for installation





Delivery information : Base pre-drilled and lid to be ordered separately (lid opening with screwdriver).

Standard length : 2 m. Other length on demand, max. 3,1 m.

Material : Natural anodized aluminium. Protection category : IP40, IK07.

		Steel base	Steel lid	Internal corner steel	Internal corner PC/ABS halogen free	External corner steel
<p>- Wiring capacities and measurements, see page J.31</p> <p>- Accessories, see page J.33</p>		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
	pure white zinc coated	BRS6510019010	BRS08029010	BRS6510049010	BRS651004H9010	BRS6510039010
	packaging	8 m	32 m	1 piece	1 piece	1 piece
	pure white zinc coated	BRS6513019010	BRS08029010	BRS6513049010	BRS651304H9010	BRS6513039010
	packaging	8 m	32 m	1 piece	1 piece	1 piece
	pure white zinc coated	BRS6517019010	BRS08029010	BRS6517049010	BRS651704H9010	BRS6517039010
	packaging	8 m	32 m	1 piece	1 piece	1 piece
	pure white zinc coated	BRS6521019010	BRS08029010	BRS6521049010	BRS652104H9010	BRS6521039010
	packaging	6 m	32 m	1 piece	1 piece	1 piece
<p>BRS double lid 65 mm depth</p>		Steel base	Steel lid	Internal corner steel	Internal corner PC/ABS halogen free	External corner steel
		Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
	pure white zinc coated	BRS652101D9010	BRS08029010 (2x)	BRS652104D9010	BRS652104DH9010	BRS652103D9010
	packaging	4 m	32 m	1 piece	1 piece	1 piece

External corner PC/ABS halogen free 	End cap steel 	Flat corner steel 	Flat corner PC/ABS halogen free 	Coupling steel 	Flange 	Joint cover 
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
BRS651003H9010	BRS6510069010	BRS6510059010	BRS651005H9010	BRS651009	BRS65100W9010	BRS6510079010
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	1 piece
BRS651303H9010	BRS6513069010	BRS6513059010	BRS651305H9010	BRS651309	BRS65130W9010	BRS6513079010
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	1 piece
BRS651703H9010	BRS6517069010	BRS6517059010	BRS651705H9010	BRS651709	BRS65170W9010	BRS6517079010
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	1 piece
BRS652103H9010	BRS6521069010	BRS6521059010	BRS652105H9010	BRS652109	BRS65210W9010	BRS6521079010
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	1 piece
External corner PC/ABS halogen free 	End cap steel 	Flat corner steel 	Flat corner PC/ABS halogen free 	Coupling steel 	Flange 	Joint cover 
Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.	Cat. ref.
BRS652103DH9010	BRS652106D9010	BRS652105D9010	BRS652105DH9010	BRS652109D	BRS65210WD9010	BRS652107D9010
1 piece	1 piece	1 piece	1 piece	1 piece	1 piece	1 piece

	Designation	Characteristics	Pack qty.	Cat. ref.	
 L4181GNGE	Earth straps	plug-in, 4mm ² section for electrical connection of the bases & lids			
			L = 150mm	100	L4181GNGE
			L = 300mm	100	L4182GNGE
			L = 600mm	25	L4183GNGE
 L4253BCHR	Cable retainer	zinc coated	82	L4253BCHR	
 L4187CHRO	Earth terminal	up to 10mm ²	10	L4187CHRO	
 L5802	Earth kit	material: sheet steel	1 set = 25 pieces	L5802	

Metal cable divider
offers a strong additional shield.





PVC divider
used to separate high and low
voltage current.

	Designation	Characteristics	Pack qty.	Cat. ref.
 TWS70VERZ	Divider for steel trunking zinc coated steel	to separate high and low voltage current	32 m	TWS70VERZ
 G1612	Partition 1 gang PVC	to separate high and low voltage current	48 m	G1612
 BRS0802A9010	External corner lid	to cover fixed external corners 80 mm lid, RAL 9010	1	BRS0802A9010
 BRS0802I9010	Internal corner lid	to cover fixed internal corners 80 mm lid, RAL 9010	1	BRS0802I9010
 L4253BCHR	Cable retainer	zinc coated	80	L4253BCHR
 L4187CHRO	Earth terminal	to connect to junction or as earthing up to 10 mm ²	10	L4187CHRO
 G2401	Universal earth clip	for electrical connection of bases or as earthing	10	G2401
 L4181GNGE	Earth straps	plug-in, 4mm ² section for electrical connection of the bases & lids, and for pieces bridging		
		L = 150mm	100	L4181GNGE
		L = 300mm	100	L4182GNGE
		L = 600mm	25	L4183GNGE

Installation
trunking





45mm wiring frame can be front
clipped on the profile.

Colours:
pure white, RAL 9010
noir, RAL 9011
alu, ALU

	Designation	Characteristics	Pack qty.	Cat. ref.
 GT4519010	1 gang outlet frame 45mm	white	1	GT4519010
		black	1	GT4519011
		alu	1	GT451ALU
 GT4529010	2 gang outlet frame 45mm	white	1	GT4529010
		black	1	GT4529011
		alu	1	GT452ALU
 GT4539010	3 gang outlet frame 45mm	white	1	GT4539010
		black	1	GT4539011
		alu	1	GT453ALU
 LFF79H	Insulation box	1 gang 45mm	1	LFF79H

tehalit.BRP / BRAP / BRS 60mm outlet boxes



	Designation	Characteristics	Pack qty.	Cat. ref.
 G2850	1 gang mounting box	for 60mm, high voltage	1	G2850
 G2860	2 gang mounting box	for 60mm, high voltage	1	G2860
 G2870	1 gang mounting frame	for 60mm, low voltage	1	G2870
 G35609010	Finishing frame	for finishing frame > 80mm or highly rounded, mounting between wiring finishing plate and trunking lid	1 1	G35609010 G3560LAN

Installation
trunking



tehalit.BRP / BRAP / BRS CEE outlet boxes

Description
Wide boxes to mount in BRAP and BRS trunking. Will accept CEE wiring up to 32A. Frame in PC/ABS with pre-cuts

adapted to CEE socket. Neat finish.

Delivery information
delivered with 4 self-threading screws and 2 cable clips.


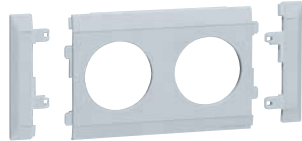




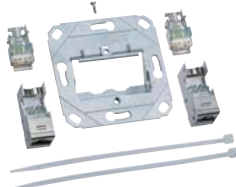

Colours
pure white, RAL9010
lacquered alu, LAN

	Designation	Characteristics	Pack qty.	Cat. ref.
 G2745	CEE outlet box	material: polyamide, centre distance: 60 or 70mm	1	G2745
 G33749010	Frontplate kit	for CEE outlet boxes, white for CEE outlet box, lacquered alu	1 1	G33749010 G3374LAN

Description
- to be clipped on front of BRP / BRAP / BRS trunking profiles,
- compact size thanks to plug-in,

- Double insulation socket box,
- safe socket,
- input connector for socket connection.

Colours
pure white, RAL9010
painted alu, LAN

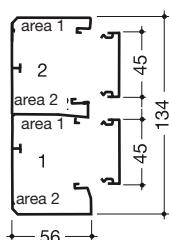
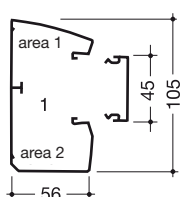
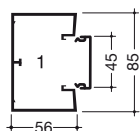
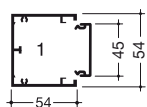
	Designation	Characteristics	Pack qty.	Cat. ref.
 G35009010	2 gang socket outlet box 16A, 250V	white	1	G39999010
		red	1	G39999ROT
 G35009010	Modular frontplate for 2 gang socket outlet	white	1	G35009010
		painted alu	1	G3501LAN
 G35519010	Modular intermediate frontplate	to combine data sockets and boxes with modular frontplate		
		white	1	G35519010
 G4703	3 pole input connector	for ecoline socket	1	G4703
 G4713	3 pole output connector	painted alu	1	G4713
 G32249010	Data outlet box	for G3155, front mounted	1	G2870
 G3155	2 gang RJ45 socket	cat. 6 UTP, ecoline	1	G3155
 G4733	Supply cable 3 x 2,5 mm ² WAGO connection	length: 300mm	1	G4733
		length: 450mm	1	G4743
		length: 750mm	1	G4753
		length: 1500mm	1	G4796
		length: 2500mm	1	G4797
		length: 4500mm	1	G4798

Wires and cables diameter and section for power and low voltage

	approx. external Ø in mm	section in mm ²
wire : H 07 V		
1,5	2,8	6,2
2,5	3,4	9,1
4	3,9	11,9
6	4,7	17,3
Phone cable - STY1		
1 pair	3,8	11,3
2 pairs	4,9	18,9
3 pairs	5,2	21,2
4 pairs	5,7	25,5
5 pairs	6,1	29,2
Data cable - Cat 5		
FTP 100 Ω 4 pairs	6,0	28,3
L 120 120 Ω 4 pairs	8 x 5	40,0
L 120 120 Ω 8 pairs	10,5 x 8	84,0
TV cable		
coax 75 Ω	7,0	38,5

	approx. external Ø in mm	section in mm ²
Cable U1000R02V - H07RNF		
2 x 1,5	8,4	55,4
2 x 2,5	9,6	72,4
2 x 4	10,5	86,6
2 x 6	11,8	109,4
3 x 1,5	8,8	60,8
3 x 2,5	10,0	78,5
3 x 4	11,0	95,0
3 x 6	12,9	130,7
4 x 1,5	9,6	72,4
4 x 2,5	11,0	95,0
4 x 4	12,2	116,9
4 x 6	14,2	158,4
5 x 1,5	10,0	78,5
5 x 2,5	11,6	105,7
5 x 4	13,5	143,1
5 x 6	15,5	188,7

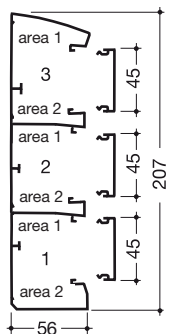
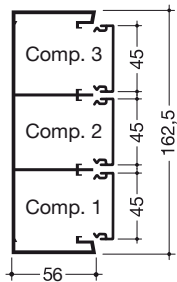
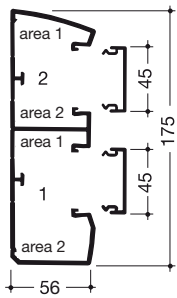
tehalit.queraz PVC



GBD500500				with outlet	without outlet
Cable capacity	power current 3 x 2,5 mm ²	compartment 1		2 + 2	15
	weak current L 120 - 4 pairs	compartment 1		2 + 2	25
GBD500850					
Cable capacity	power current 3 x 2,5 mm ²	compartment 1		7 + 7	20
	weak current L 120 - 4 pairs	compartment 1		15 + 15	40
GBD501000					
Cable capacity	power current 3 x 2,5 mm ²	compartment 1	area 1	5	29
			area 2	11	
	weak current L 120 - 4 pairs	compartment 1	area 1	10	58
			area 2	21	
Total useful / nominal section in mm ² *		compartment 1			2347 / 4694
Total useful / nominal section by zone *		compartment 1	area 1	420 / 840	
			area 2	870 / 1740	
GBD501310					
Cable capacity	power current 3 x 2,5 mm ²	compartment 2	area 1	3	18
			area 2	3	
		compartment 1	area 1	2	19
			area 2	7	
	weak current L 120 - 4 pairs	compartment 2	area 1	9	32
			area 2	9	
		compartment 1	area 1	5	34
			area 2	15	
Total useful / nominal section in mm ² *		compartment 2			1305 / 2610
		compartment 1			1360 / 2720
Total useful / nominal section by zone *		compartment 2	area 1	360 / 710	
			area 2	380 / 760	
		compartment 1	area 1	200 / 400	
			area 2	600 / 1200	

* Section acting as base of calculation to define the countenance according to the different section of cables.

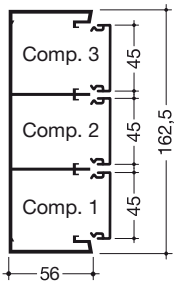
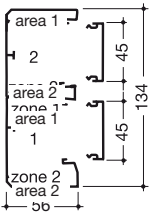
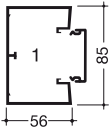
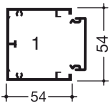
tehalit.queraz PVC



GBD501600				with outlet	without outlet
Cable capacity	power current 3 x 2,5 mm ²	compartment 2	area 1	5	22
			area 2	3	
		compartment 1	area 1	3	27
	area 2	11			
	weak current L 120 - 4 pairs	compartment 2	area 1	10	44
			area 2	7	
compartment 1		area 1	7	54	
area 2	21				
Total useful / nominal section in mm ² *		compartment 2			1792 / 3584
		compartment 1			2188 / 4376
Total useful / nominal section by zone *		compartment 2	area 1	420 / 840	
			area 2	300 / 600	
		compartment 1	area 1	300 / 600	
			area 2	870 / 1740	
GBD501610					
Cable capacity	power current 3 x 2,5 mm ²	compartment 3		11	20
		compartment 2		8	17
		compartment 1		11	20
	weak current L120 - 4 pairs	compartment 3		16	35
		compartment 2		12	30
		compartment 1		16	35
Total useful / nominal section in mm ² *		compartment 3		655 / 1310	935 / 1870
		compartment 2		510 / 1020	810 / 1620
		compartment 1		655 / 1310	935 / 1870
GBD501900					
Cable capacity	power current 3 x 2,5 mm ²	compartment 3	area 1	5	22
			area 2	3	
		compartment 2	area 1	1	16
			area 2	3	
		compartment 1	area 1	1	20
			area 2	8	
	weak current L120 - 4 pairs	compartment 3	area 1	15	38
			area 2	9	
		compartment 2	area 1	5	28
			area 2	9	
		compartment 1	area 1	5	34
			area 2	15	
Total useful / nominal section in mm ² *		compartment 3			1550 / 3100
		compartment 2			1150 / 2300
		compartment 1			1375 / 2750
Total useful / nominal section in mm ² *		compartment 3	area 1	600 / 1200	
			area 2	375 / 750	
		compartment 2	area 1	210 / 420	
			area 2	370 / 740	
		compartment 1	area 1	200 / 400	
			area 2	600 / 1200	

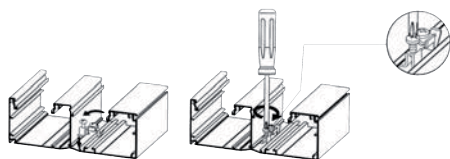
* Section acting as base of calculation to define the countenance according to the different section of cables.

tehalit.queraz alu

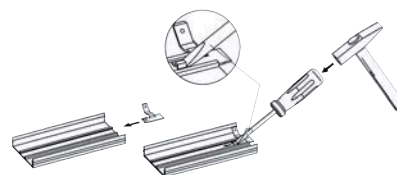


GBA500501			with outlet	without outlet
Cable capacity	power current 3 x 2,5 mm ²	compartment 1	2 + 2	15
	weak current L 120 - 4 pairs		2 + 2	25
GBA500851				
Cable capacity	power current 3 x 2,5 mm ²	compartment 1	7 + 7	20
	weak current L 120 - 4 pairs		15 + 15	40
GBA501311				
Cable capacity	power current 3 x 2,5 mm ²	compartment 2	area 1	3
			area 2	3
	weak current L 120 - 4 pairs	compartment 2	area 1	9
			area 2	9
		compartment 1	area 1	2
			area 2	7
		compartment 1	area 1	5
			area 2	15
Total useful / nominal section in mm ² *		compartment 2		18
		compartment 1		19
		compartment 2	area 1	32
		compartment 1	area 1	34
		compartment 2	area 2	32
		compartment 1	area 2	34
Total useful / nominal section in mm ² *		compartment 2		1305 / 2610
		compartment 1		1360 / 2720
Total useful / nominal section by zone *		compartment 2	area 1	360 / 710
		compartment 2	area 2	380 / 760
		compartment 1	area 1	200 / 400
		compartment 1	area 2	600 / 1200
GBA501611				
Cable capacity	power current 3 x 2,5 mm ²	compartment 3	11	20
		compartment 2	8	17
	weak current L120 - 4 pairs	compartment 1	11	20
		compartment 3	16	35
		compartment 2	12	30
		compartment 1	16	35
Total useful / nominal section in mm ² *		compartment 3		935 / 1870
		compartment 2		810 / 1620
		compartment 1		935 / 1870

Accessories mounting

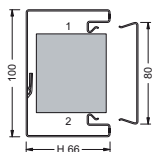


Earth terminal for aluminium base.

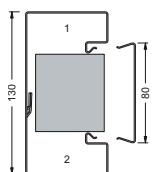


Earth terminal for aluminium lid.

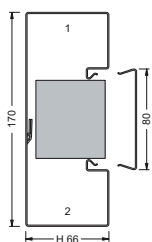
tehalit.queraz BRP/BRAP/BRS



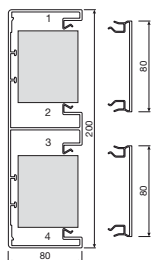
BRP/BRAP/BRS651001 - BRP/BRS65210D1				
cable capacity	power current 3 x 2,5 mm ²	area 1	6	33
		area 2	6	
	weak current L 120 - 4 pairs	area 1	12	66
		area 2	12	
Total useful / nominal section in mm ² *				2650 / 5300
Total useful / nominal section by compartment *			area 1	495 / 990
			area 2	495 / 990



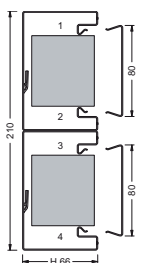
BRP/BRAP/BRS651301				
cable capacity	power current 3 x 2,5 mm ²	area 1	10	40
		area 2	10	
	weak current L 120 - 4 pairs	area 1	20	78
		area 2	20	
Total useful / nominal section in mm ² *				3150 / 6300
Total useful / nominal section by compartment *			area 1	832 / 1664
			area 2	832 / 1664



BRP/BRAP/BRS651701				
cable capacity	power current 3 x 2,5 mm ²	area 1	19	57
		area 2	19	
	weak current L 120 - 4 pairs	area 1	37	112
		area 2	37	
Total useful / nominal section in mm ² *				4500 / 9000
Total useful / nominal section by compartment *			area 1	1492 / 2984
			area 2	1492 / 2984



BRAP802001				
cable capacity	power current 3 x 2,5 mm ²	area 1	17	54
		area 2	17	
	weak current L 120 - 4 pairs	area 1	30	100
		area 2	30	
Total useful / nominal section in mm ² *				7000 / 14000
Total useful / nominal section by compartment *			area 1	1850 / 3700
			area 2	1850 / 3700



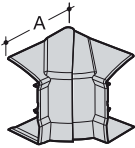
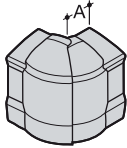
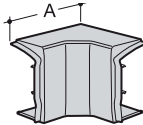
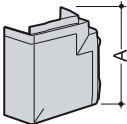
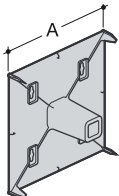
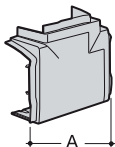
BRS652101				
cable capacity	power current 3 x 2,5 mm ²	area 1	25	70
		area 2	25	
	weak current L 120 - 4 pairs	area 1	45	130
		area 2	45	
Total useful / nominal section in mm ² *				5750 / 11700
Total useful / nominal section by compartment *			area 1	2050 / 4300
			area 2	2050 / 4300

* Section acting as base of calculation to define the countenance according to the different section of cables.

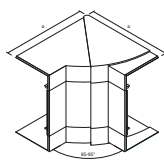

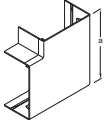
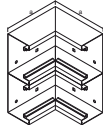

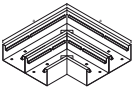
Trunking installation time

	trunking laying in min./m
BRP/BRAP/BRS trunking	
BRP/BRAP/BRS651001	10,5
BRP651301 ; BRAP/BRS651321	11
BRP651701 ; BRAP/BRS651721	12

tehalit.queraz

				
references	internal corner size in mm	external corner size in mm	3D internal corner size in mm	
GBD500850 / GBA500850	110	45 to 90°	-	
GBD501000	110	45 to 90°	145	
GBD501310 / GBA501310	110	45 to 90°	145	
GBD501600	110	45 to 90°	185	
GBD501610 / GBA501610	110	45 to 90°	185	
GBD501900	110	45 to 90°	-	
				
references	flat corner size in mm	back plate for flat corner and T piece size in mm	T piece size in mm	
GBD500850 / GBA500850	120	-	145	
GBD501000	140	110	165	
GBD501310 / GBA501310	165	136	190	
GBD501600	210	180	235	
GBD501610 / GBA501610	210	180	235	
GBD501900	240	212	265	

tehalit.queraz BRP, BRAP, BRS

			
references	internal corner size in mm	external corner size in mm	flat corner size in mm
BRP/BRAP/BRS651001	145	37	135
BRP/BRAP/BRS651301	145	37	165
BRP/BRAP/BRS651701	145	37	205
BRP/BRAP/BRS652101	145	37	265
BRP/BRAP/BRS65210D	145	37	290
			
references	internal corner size in mm	external corner size in mm	flat corner size in mm
BRAP802001	250	250	250

Installation
trunking

GBD deviation list toward other trunking types

derivation toward trunking	GBD501000			GBD501310			GBD501600			GBD501610			GBD501900		
	flat corner	T	int. corner 3D	flat corner	T	int. corner 3D	flat corner	T	int. corner 3D	flat corner	T	int. corner 3D	flat corner	T	int. corner 3D
LFF types															
LFF300300															
LFF300450															
LFF300600															
LFF400400															
LFF400600															
LFF400900															
LFF401100															
EK types															
EK400400															

All derivations for GBD (except 50190) toward 50085 using an adaptor delivered with the T of the GBD.

Earthing of BRAP / GBA aluminium trunking

• Use of wires

The earthing of every metallic part is compulsory, and are realized with L5802 earthing kit.

Bases are connected thanks to junctions and grounded through terminals inserted in the groove (cone-point set screw contact).

For the lids, the earthing is allowed by tabs (to be inserted in the groove) linked to one terminal of the base.

The BRAP covers must be connected to the bottom terminal thanks to an earthing conductor.

• Use of cables

Near the device, the earthing of every metallic part (bottom, lids,...) is compulsory using the same process as for wire cabling.

Earthing of BRAP / GBA aluminium trunking

• Use of wires

The earthing of every metallic part is compulsory. Junctions are used to connect bases electrically. The earthing of the bases can be done only on one point (junction ensuring the electric continuity). Covers are equipped with one tab on each end. If the ends of the cover should be cut, earth junctions (L6699) allow the earthing. They can be mounted in the slots that are every 40 cm on cover border.

A conductor must be connected between those tabs and an earthing point (for example: junctions of the bottoms).

The reported tab (L4180) allows the earthing of the metallic partitions.

Metallic covers should be connected, thanks to 2 integrated tabs, to an earthing point (for example: junctions of the bottoms or earth connection lugs).

• Use of cables

No earthing is required for the trunking systems.

For installation trunking, the earthing of every metallic part (bottom, lids,...) is compulsory near the device using the same process as for wire cabling.

Earthing of BRAP / GBA aluminium trunking

• Use of wires

The earthing of every metallic part is compulsory. Cone-point set screw of the leg and cylinder should be tighten.

The tabs (L4188) allows the earthing of the covers.

Boxes can be grounded thanks to a terminal.

Earth conductor can be connected to the terminal of one leg or cylinder.

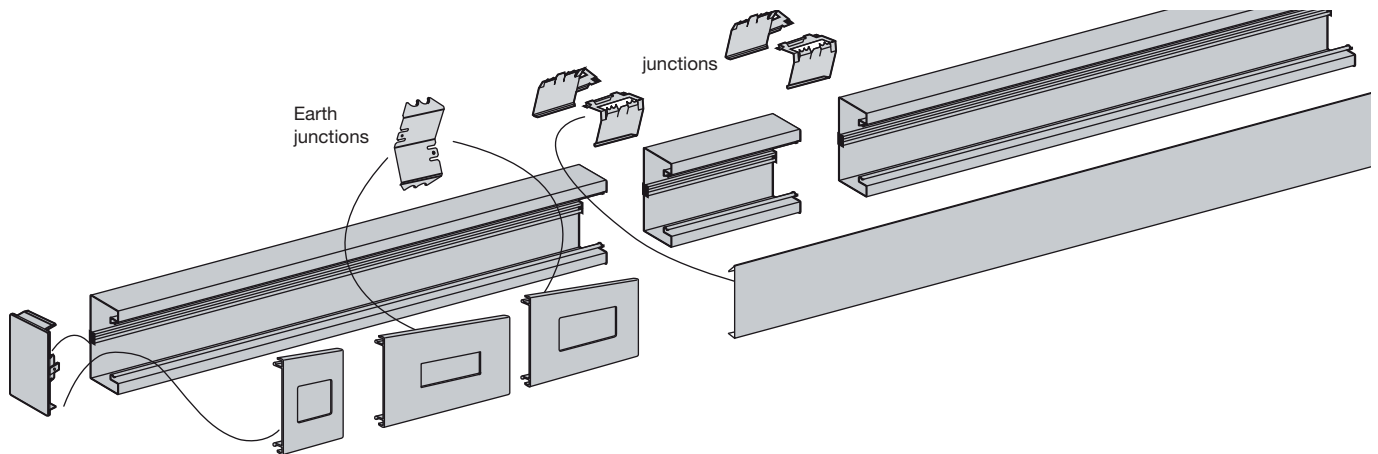
• Use of cables

The earth terminal that equip all the boxes can only be used to ground them.

• Equipotentiality

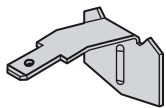
When required, it can be realized by simply tightening the cone-point set screw of the cylinder and leg.

tehalit.BRS trunking

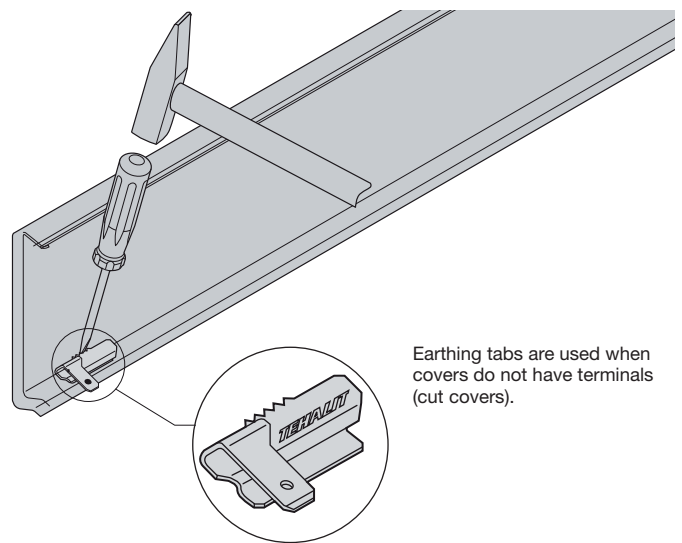


Metallic lids, bases and accessories are delivered with earth terminals.

Partitions earthing is done using L4180.

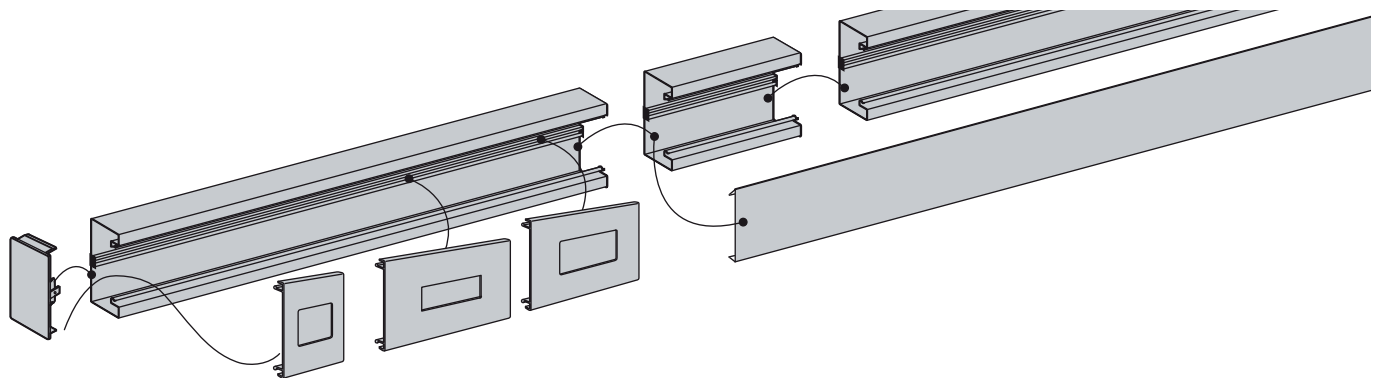


Earth junction for partition

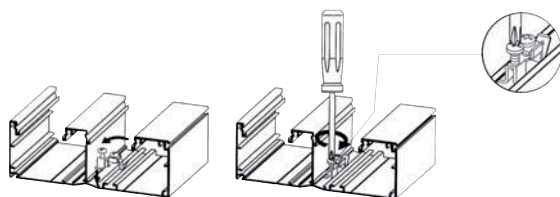


Earthing tabs are used when covers do not have terminals (cut covers).

BRAP and GBA trunkings

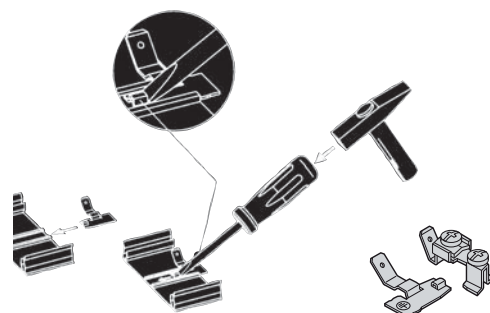


Base earthing



BRAP bases are equipped with earth terminals.

Lid earthing



base and lid earthing kits.

Less time, less mess, less hassle

tehalit.c60 perimeter trunking BS

Cable management, simplicity itself

Designed with ease of installation in mind, the unique push-out knockouts minimise damage to cables and aid alignment of the base.

With simple references, 3 different profiles to choose from – chamfered / chamfered, chamfered / round and round / round, plus base and lid supplied complete, there has never been an easier way to order.

All bases are pre-punched for fast installation and cable-retaining clips ensure that cables are secure when the covers are removed during installation or maintenance..



Your benefits

- Bases are pre-punched - no need to drill through to the fixing wall
- Base and lid can be supplied complete
- Available in 2 and 3 metre lengths
- Adjustable moulded corners for a perfect fit, even when corner is not truly 90°

Technical characteristics

- 170 x 60mm deep profile allows more space for cabling
- Data cable bend radii respected, maximising data integrity
- C60 standard in clean, bright white (RAL9010)

Expert tips

1



Choice of profiles

There is a choice of three profiles available (chamfered/chamfered, chamfered/round, and round/round).

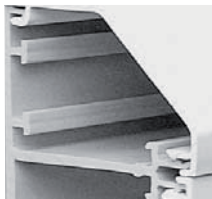
2



Can be supplied complete

One reference provides base and lid together alternatively order base and lid separately.

3



Pre-punched

The bases are provided pre-punched for fast installation. Clean knock out slots provide simple routing for cable.

4



Outlet boxes

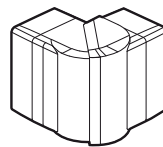
'Clip-lock' outlet boxes simply clip into place. Four fixings make the box suitable for horizontal or vertical runs.

5



Cable retaining clips

6



Adjustable corners

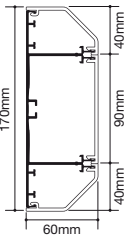
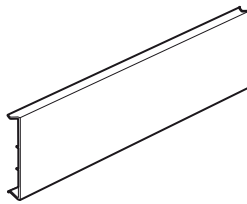
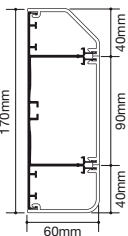
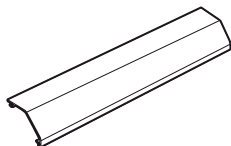
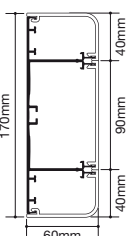
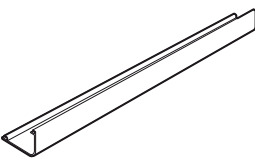
Internal and external adjustable moulded corners for a perfect fit even where the corner is not truly 90°.

tehalit.c60: uPVC perimeter trunking

Delivery information : Base and lid supplied complete.

Standard length : 3m or 2m.

Material : Rigid PVC.

	trunking		additional lids (if required)	
	base and lid supplied complete			
	length		pack qty. 24m	
	3m	2m	length 2m	
chamfered / chamfered (CC) 	CU601L9010	CU6019010	centre compartment cover 	CUL9010
chamfered / round (CR) 	CU602L9010	CU6029010	chamfered cover 	CULC9010
round / round (RR) 	CU603L9010	CU6039010	round cover 	CULR9010

Colour : pure white (9010)

Bases	Corner frame		T piece frame		Straight frame			
Dimensions	250 x 250mm		250 x 250mm					
Pack qty.	1		1		12 lengths of 2m			
Ref.	CUFC		CUTB		CU60B			
Corner cover kits	Corner covers		T piece covers		Adjustable internal corner	Adjustable external corner		
Pack qty.	1		1		1	1		
Ref.	CC	CUF19010	CC	CUT19010	CC	CI19010	CC	CE19010
	CR ▼	CUF2D9010	CR ▼	CUT2D9010	CR	CI29010	CR	CE29010
	CR ▲	CUF2U9010	CR ▲	CUT2U9010	RR	CI39010	RR	CE39010
	RR	CUF39010	RR	CUT39010				
End caps, covers and cable retainers	End caps		Joint covers		Cable retainer	Cable retainer (centre compartment)		
Pack qty.	1		1		1	1		
Ref.	CC	CC19010	CC	CJ19010	M6646	M6311		
	CR left	CC2L9010	CR	CJ29010				
	CR right	CC2R9010	RR	CJ39010				
	RR	CC39010						
Additional information			Supplied as a kit. At least one joint cover per straight run is recommended to aid lid removal.		Outer compartment. Two outer cable retainers supplied per meter. Used for support when running cables in the bottom compartment.	Centre compartment.		
Cable retainers, cable dividers and outlet boxes	Cable divider centre compartment 2m		Cable divider outer compartment 2m		Boxes for BS outlets	Infill centre lid fits between outlet boxes		
	plastic	steel			1 Gang	2 Gang		
Pack qty.	1	1	1		1	1	5	
Ref.	M1794	R9200	M1831		CB19010	CB29010	CULI9010	
Additional information							Used when 2 boxes are mounted next to each others. 28mm factory cut.	

* Partition retainer **L6705** used when the trunking is installed vertically

Poles and posts DA 200 in aluminium

Office spaces in tertiary buildings are very often reshaped so it's necessary that the electrical supply can be quickly adapted to any configuration.
Safe and more practical, poles and posts are the best solution.



Your benefits :

- Quick and safe installation by one person thanks to the one point jacking assembly system and the integrated spirit level.
- Available single and double sided.
- Complete range: fixed pole, mobile poles and posts.
- Design: discrete anodised aluminium or white lacquered RAL9010

Technical characteristics :

- Material : aluminium.
- Dimensions :
 - 66 x 66 mm and 130 x 66 mm for DA 200-45.
 - 68 x 98 mm and 136 x 98 mm for DA 200-80.
- Delivery: profile, lids, earthing set, ceiling rose, spirit level, partition (only for DA 200-80) and flexible outlet for mobile pole (base to be ordered separately).

Expert tips



Simple or double sided

All poles and posts from DA 200-45 and DA 200-80 ranges are available single and double sided.



A pre-mounted spirit level

to ensure the pole is perfectly upright.



Direct clip in

of accessories in the 45 mm format in the DA 200-45 poles. Support for accessories are no longer needed.



Full flexibility

The fastener keeps the cable in place. When the poles needs to be moved, no need to disconnect the accessories: just remove the cables.



A neat finish

A ceiling rose ensures a perfect finish.



Time saving

thanks to the clever assembly system, only one person needed to mount it.



Pole system DA 200

The power and data circuits reach directly the working stations via the poles (ceiling) and the posts (floor). The poles can be equipped with indirect lighting fixtures.



2 ranges :
- fixed pole (S) for :
- accessories 45 mm
- accessories 60 mm and ecoline
- quick and easy mounting by one person.
- profiles: single and double sided.

Colours :
anodised aluminium, ELN
pure white, RAL 9010
black, RAL 7021

Accessories, see page J.54.

Selection chart of pole length, see page J.79.

Material :
- body and cover aluminium
- end plate polyamide
- fixing system metal
- ceiling rose polyamide

Special finishes and RAL colours available on request.



DAS452700ELN



L4770



DAC807021



L1840

Designation	Characteristics	Fixing height	Pack qty	Cat. ref
Single sided pole DA 200-45 for accessories 45 mm fixed	slightly curved profile (66 x 66 mm), incl. fixing system, spirit level, earthing kit and ceiling rose	2,7 – 3 m	1	DAS452700ELN
		3 – 3,3 m	1	DAS453000ELN
		3,3 – 3,6 m	1	DAS453300ELN
Double sided pole DA 200-45 for accessories 45 mm fixed	slightly curved profile (130 x 66 mm), incl. fixing system, spirit level, earthing kit and ceiling rose	2,7 – 3 m	1	DAS2452700ELN
		3 – 3,3 m	1	DAS2453000ELN
		3,3 – 3,6 m	1	DAS2453300ELN
Partition for DA 200-45	partition 2 m (to be ordered separately)			50 m M2024
Adaptator for 45 mm accessories	to mount vertically 45 mm accessories like switches, RJ45...		10	L4770
Single sided pole DA 200-80 for accessories 60 mm fixed	slightly curved profile (68 x 98 mm), incl. fixing system, spirit level, earthing kit, partition and ceiling rose	2,5 – 2,8 m	1	DAS802500ELN
		2,8 – 3,1 m	1	DAS802800ELN
		3,1 – 3,4 m	1	DAS803100ELN
		3,4 – 3,7 m	1	DAS803400ELN
Double sided pole DA 200-80 for accessories 60 mm fixed	slightly curved profile (136 x 98 mm), incl. fixing system, spirit level, earthing kit, partition and ceiling rose	2,5 – 2,8 m	1	DAS2802500ELN
		2,8 – 3,1 m	1	DAS2802800ELN
		3,1 – 3,4 m	1	DAS2803100ELN
		3,4 – 3,7 m	1	DAS2803400ELN
Ceiling rose for fixed poles DA 200 (as spare part)	for DA200-45, simple, black		1	DAC457021
	for DA200-45, simple, pure white		1	DAC459010
	for DA200-45, double, black		1	DAC2457021
	for DA200-45, double, pure white		1	DAC2459010
	for DA200-80, simple, black		1	DAC807021
	for DA200-80, simple, pure white		1	DAC809010
Finishing sleeve (pole mounting without suspended ceiling)	for DA200-80, double, black		1	DAC2807021
	for DA200-80, double, pure white		1	DAC2809010
Finishing sleeve (pole mounting without suspended ceiling)	to hide the cables and the fixing system		1	L1840

DA 200 mobile poles accessories 45 mm, 60 mm and ecoline



2 ranges :

- mobile pole with flexible ceiling connector (**F**) for :
- accessories 45 mm
- accessories 60 mm and ecoline
- quick and easy mounting by one person
- profiles: single and double sided

Colours :

anodised aluminium, **ELN**
pure white, RAL **9010**
black, RAL **7021**

Accessories, see page J.54.

Material :

- body and cover aluminium
- end plate polyamide
- fixing system metal
- ceiling rose polyamide
- base cast iron

Special finishes and RAL colours available on request.



L4770

DAF802000ELN



DAFF20007021

Designation	Characteristics	Height	Pack qty.	Cat. ref.
Single sided pole DA 200-45 for accessories 45 mm with flexible ceiling connector	slightly curved profile (66 x 66 mm), incl. flexible connector, spirit level, earthing kit and ceiling rose without base	2 m	1 1	DAF452000ELN DAF4520009010
Double sided pole DA 200-45 for accessories 45 mm with flexible ceiling connector	slightly curved profile (130 x 66 mm), incl. flexible connector, spirit level, earthing kit and ceiling rose without base	2 m	1 1	DAF2452000ELN DAF24520009010
Partition for DA 200-45	partition 2 m for DA 200-45		50 m	M2024
Adaptor for 45 mm accessories	to mount vertically 45 mm accessories like switches, RJ45...		10	L4770
Single sided pole DA 200-80 for accessories 60 mm with flexible ceiling connector	slightly curved profile (68 x 98 mm), incl. flexible connector, spirit level, earthing kit and ceiling rose without base	2 m	1 1	DAF802000ELN DAF8020009010
Double sided pole DA 200-80 for accessories 60 mm with flexible ceiling connector	slightly curved profile (136 x 98 mm), incl. flexible connector, spirit level, earthing kit and ceiling rose without base	2 m	1 1	DAF2802000ELN DAF28020009010
Base for single sided pole DA 200-45 / DA 200-80	cast iron base (to be ordered separately) weight : 15 kg dimension : 300 x 300 x 26 mm		1 1	DAFF20007021 DAFF20007035
Base for double sided pole DA 200-45 / DA 200-80	cast iron base (to be ordered separately) weight : 15 kg dimension : 300 x 340 x 26 mm		1 1	DAFF220007021 DAFF220007035

DA 200 posts accessories 45 mm, 60 mm and ecoline



Posts (P) for :
- accessories 45 mm
- accessories 60 mm and
ecoline

Colours :
anodised aluminium, **ELN**
pure white, **RAL 9010**

Accessories, see page J.54.

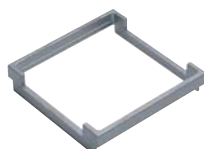
Material :
- body and cover
aluminium
- end plate polyamide
- fixing system metal

Special finishes and RAL
colours available on request.

Designation	Characteristics	Height	Pack qty.	Cat. ref.
Post single sided DA 200-45 for accessories 45 mm	aluminium post for accessories 45 mm, dim. 66 x 66 mm	700 mm	1	DAP45700ELN
			1	DAP457009010
Post double sided DA 200-45 for accessories 45 mm	aluminium post for accessories 45 mm, dim. 130 x 66 mm	700 mm	1	DAP245700ELN DAP2457009010
Partition for DA 200-45 (for accessories 45 mm)	PVC partition, length 2m, to be ordered separately		50 m	M2024
Adaptator for 45 mm accessories	to mount vertically 45 mm accessories like switches, RJ45...		10	L4770
Single sided pole DA 200-80 for accessories 60 mm	aluminium post for accessories 60 mm, dim. 68 x 98 mm	650 mm	1	DAP80650ELN
			1	DAP806509010
Double sided pole DA 200-80 for accessories 60 mm	aluminium post for accessories 60 mm, dim. 136 x 98 mm	650 mm	1	DAP280650ELN DAP2806509010
Partition for DA 200-80 (for accessories 60 mm)	PVC partition, length 2m, to be ordered separately		50 m	M2026



DAP45700ELN



L4770



DAP280650ELN

Delivery :

Poles / posts complete (with cover) fitted with:
 - bottom sleeve, ceiling rose, fixing system for fixed pole
 - flexible ceiling connector for the mobile pole, base to be ordered separately

The housing for the accessories have to be ordered separately.

Material :

Anodised aluminium

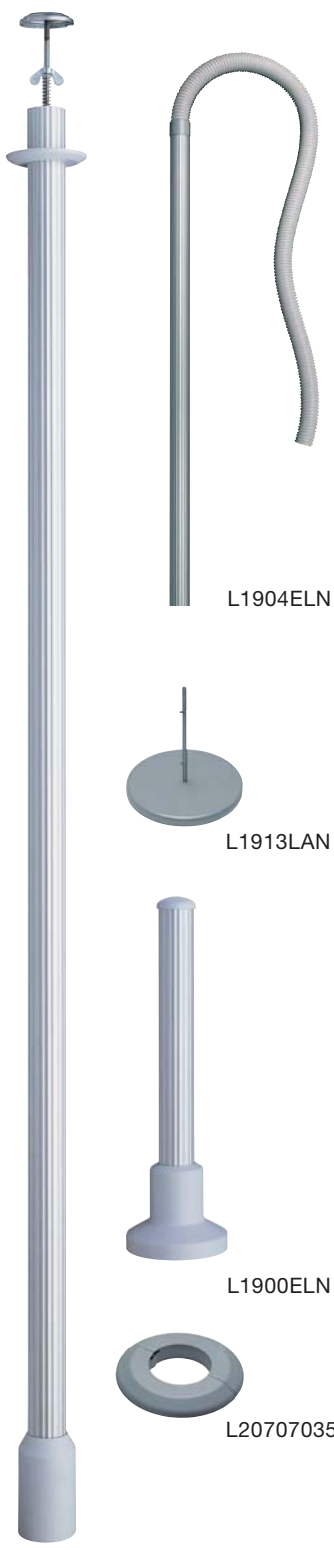
Cable capacity, see page J.78.

Accessories, see page J.47.

Colours :

Housing box :
 anodised aluminium, **ELN**
 Top and bottom covers :
 grey, **RAL 7035**
 Base for mobile pole :
 lacquered alu, **LAN**

Special finishes and RAL colours available on request



Designation	Characteristics	Height (profile)	Pack qty.	Cat. ref.
Fixed pole	fixing height : mini : 2700 mm maxi : 3000 mm	2600 mm	1	L1901ELN
	fixing height : mini : 3000 mm maxi : 3300 mm	2900 mm	1	L1902ELN
	fixing height : mini : 3300 mm maxi : 3600 mm	3200 mm	1	L1903ELN
Mobile pole	complete pole with flexible, without base (to be ordered separately) pole height : 2200 mm flexible length : 2000 mm (diam. 70 mm)	2200 mm	1	L1904ELN
Base for mobile pole	round base, alu lacquered for L1904ELN (diam. 320 mm)		1	L1913LAN
Post	complete post	700 mm	1	L1900ELN
Ceiling rose	ceiling rose as spare part (delivered standard with pole)		1	L20707035

L1904ELN

L1913LAN

L1900ELN

L20707035

L1901ELN

The housing for the accessories have to be ordered separately.

Material :
Anodised aluminium

Colours :
Housing box :
anodised aluminium, **ELN**
Top and bottom covers :
grey, **RAL 7035**

Special finishes and RAL colours available on request



L19067035

Designation	Characteristics	Height (profile)	Pack qty.	Cat. ref.
Housing box for RS poles and posts	for 6 modules	270 mm	1	L19067035
	for 8 modules	360 mm	1	L19087035
	for 10 modules	450 mm	1	L19107035
	for 12 modules*	540 mm	1	L19127035
*the 12 modules box does not fit on post L1900ELN				

Installation trunking



L4188VERZ

Earthing clip for corner			10	L4188VERZ
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L20627035

Sleeve	for installation without suspended ceiling		5	L20627035
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RS design poles in aluminium



Pure and aesthetical lines which fit in any high class office environment. The pole, lacquered in black, is pre-equipped and pre-wired for a quick installation.



RS design.... aesthetic and technic in one



Your benefits :

- A pole with a unique design.
- One reference for a pole including accessories.
- Quick and simple mounting as the pole is already pre-wired.

Technical characteristics :

- Fitted with 5 socket outlets 230V and RJ45 Cat 6 outlets + cables LV / VLV (6,5 m) + connectors.
- Two types available: fixed or mobile pole.
- Colour: black RAL9011.




Delivery :
Poles / posts complete (with cover) fitted with:

- collar
- quick fix system
- earthing kit
- flexible ceiling connection for mobile pole, base to be ordered separately
- outlet box with 45 mm accessories pre-mounted and wired

The pole can be equipped with outlets on both sides (one side as standard)

Material :
Aluminium

Colours :
Pole and base :
black, RAL **9011**
Collar : titan lacquered

Designation	Characteristics	Max. height (suspended ceiling)	Pack qty.	Cat. ref.
 DES2700F	fixing height : min. : 2700 mm max. : 3000 mm	2640 mm	1	DES2700F
	fixing height : min. : 3000 mm max. : 3300 mm	2940 mm	1	DES3000F
	fixing height : min. : 3300 mm max. : 3600 mm	3240 mm	1	DES3300F
	Each type of pole is equipped with accessories (simple side): - 5 power socket outlets 230 V - 4 data RJ45 sockets Cat 6, FTP - power / data cable (6,5 m) + connectors			
 DEF2000F	Mobile pole pole (height 2000 mm) complete with flexible, ceiling rose, without base. Each type of pole is equipped with accessories (simple side): - 5 power socket outlets 230 V - 4 data RJ45 sockets Cat 6, FTP - power / data cable (6,5 m) + connectors		1	DEF2000F
 DEFF	Base for mobile pole round base, lacquered black RAL 9011		1	DEFF
Pre-equipped unit with outlets for extensions	The box should be mounted in the profile to equip a double sided pole. The box is equipped with: - 5 power socket outlets 230 V - 4 data RJ45 sockets Cat 6, FTP - power / data cable (6,5 m) + connectors		1	DEM F

Installation trunking

The post “the tower” supplies power and data in all directions

The architecture of offices changes regularly. The post “the tower” with its flexibility is the ideal solution to face all modifications, as well for power as for data supplies.

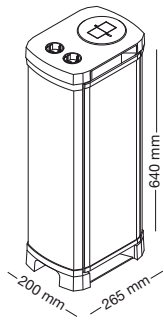


Your benefits :

- 2 large doors granting an easy access to the outlets hiding cables.
- “the tower” has a perfect design which will accommodate ecoline, multi socket outlet modules and the 45 and 60 mm accessories.
- The post can be associated with floor trunking.

Technical characteristics :

- Material : anodised aluminium with light grey PVC RAL 7035 or black RAL 7021.
- Height : 640 mm.
- 2 power outlets 230 V are integrated in the upper cover.
- The post can be supplied with a cable equipped with a quick fit connector.



- A central post to supply power and data to the working stations.
 - A perfect design.
 - Outlets easily accessible via two large doors.
 - Large space inside to cater with cables.
 - Opening for cable entries from the floor
 - Equipment with 45, 60 mm and ecoline accessories or multi outlet units
- Standard height 540 mm
 - 2 power outlets are integrated in the upper cover
 - 2 cable supports
- Material :**
Anodised aluminium with light grey PVC, RAL 7035 or black, RAL 7021

Designation	Characteristics	Height	Pack qty.	Cat. ref.
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G73707035

Empty post, for mounting of 4 multi outlet modules	inside empty, can accept 4 multi outlet modules (up to 450 mm)	640 mm	1	G73707035
			1	G73707021



G73717035

Empty post, for mounting of 2 multi outlet modules and ecoline accessories	inside empty with 2 supports for a combination of ecoline accessories and 2 multi outlet modules (up to 450 mm)	640 mm	1	G73717035
			1	G73717021



G73727035

Empty post, for mounting of ecoline accessories	inside empty with 4 supports for combination of 2 ecoline outlets	640 mm	1	G73727035
			1	G73727021



G71517035

Set of 2 supports for ecoline accessories	to make modifications inside the posts Material : PC / ABS for ecoline accessories	500 mm	1	G71517035
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G71527035

PVC cover	cover 300 mm to close empty spaces in ecoline combinations	500 mm	1	G71527035
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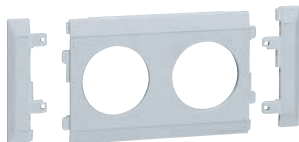




G7091

Cable support	to store cables inside the post (2 pieces are delivered with the post)		50	G7091
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The ecoline range only fits in DA 200-80 poles and posts "the tower".

- Compact size with quick plug-in technique
- Double insulated socket outlet
- The connector G4703 must be used for connecting the outlet.

Colours :
For lids:
Grey RAL, **7035**
White, RAL **9010**
Lacquered alu, **LAN**

Designation	Characteristics	Pack qty.	Cat. ref.
 G39999010	double outlet white RAL 9010	1	G39999010
	double outlet in red	1	G3999ROT
 G35007035	modular lid for double ecoline outlet	1	G35007035
		1	G35009010
		1	G3501LAN
 G35519010	intermediary lid for combination of power and data outlets	1	G35517035
		1	G35519010
		1	G3561LAN
 G4703	for ecoline outlet	1	G4703
 G4713	for ecoline outlet	1	G4713
 G4733	length : 300 mm	1	G4733
	length : 450 mm	1	G4743
	length : 750 mm	1	G4753
	length : 1500 mm	1	G4796
	length : 2500 mm	1	G4797
	length : 4500 mm	1	G4798

Outlet box for RJ45

quick clip in box for vertical mounting in poles DA 200-80 and "the tower".

R4545 ecoline outlet


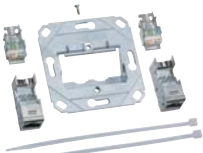


- 8 pole connecting module with RJ45 engines oriented downwards.
- Colour codes according to EIA/TAI-568 A/B.
- Always double.
- Upto 250 Mhz.
- To standards EN 55 022 and 50 082 T1
- LSA+ connectors

Modular lids

- Cover cut outs, with label, to be clipped on the accessories.
- With 2 plug in end parts.
- Central cover with integrated protection lids.

Colours :

White, RAL 9010
Lacquered alu, LAN

Designation	Characteristics	Pack qty.	Cat. ref.
 G2734	Outlet box fir RJ45 socket	empty box for socket G3155	1 G2734
 G3155	Double RJ45 socket	double data outlet cat. 6 UTP ecoline	1 G3155
 G32249010	Modular lid	lid with cover for double RJ45 socket white RAL 9010	1 G32249010
		lid with cover for double RJ45 socket lacquered alu	1 G3234LAN
 G35519010	Intermediary lid	intermediary lid for combination of power and data outlets white RAL 9010	1 G35519010
		intermediary lid for combination of power and data outlets lacquered alu	1 G3561LAN

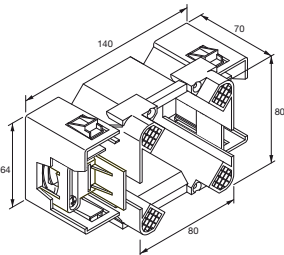
Installation trunking

Mounting boxes for 60 mm accessories post “the tower” and DA 200-80

For standard accessories
60 mm

	Designation	Characteristics	Pack qty.	Cat. ref.
	Single mounting box power outlet	dim. 64 x 71 x 42 mm, mounting of 60 mm accessories	5	G2700
	Double mounting box power outlet	dim. 64 x 142 x 42 mm, mounting of 60 mm accessories	2	G2705
	Single mounting box data outlet	dim. 70 x 71 x 55 mm, mounting of 60 mm accessories	1	G2734

Mounting boxes for EEC accessories poles / posts DA 200-80





- Large mounting boxes to be fixed on poles and posts DA 200-80.
- EEC accessories up to 32A and compatible with different brands.
- Lids in PC / ABS with cut out to the size of the EEC socket outlet.

- Nice finish guaranteed

Delivery :
Mounting box, 4 self tapping screws and 2 cables tighteners.

Colours :
White, RAL 9010
Lacquered aluminium, LAN





	Designation	Characteristics	Pack qty.	Cat. ref.
	EEC mounting box	polyamide box with 4 screws and 2 cables tighteners	1	G2745
	Lid for DA 200-80	lid to be used with the mounting box for EEC accessories (EEC socket fixing points 60 or 70 mm) white, RAL 9010	1	G33759010
		lid to be used with the mounting box for EEC accessories (EEC socket fixing points 60 or 70 mm) lacquered alu	1	G3375LAN

Frames for 45 mm accessories poles / posts DA 200-80 and “the tower”



The frames in the 45 mm format are to be clipped on the front of the profile.

Colours :
frames in the 45 mm format :
white, RAL **9010**
black, RAL **9011**
lacquered alu, **ALU**

Designation	Characteristics	Pack qty.	Cat. ref.
 GT4519010	Frames for 45 mm accessories single support	1	GT4519010
		1	GT4519011
		1	GT451ALU
 GT4529010	double support	1	GT4529010
		1	GT4529011
		1	GT452ALU
 GT4539010	triple support	1	GT4539010
		1	GT4539011
		1	GT453ALU
 LFF79H	Insulation box for frames 45 x 45 mm	1	LFF79H



Multi outlet blocs NR



The multi outlet blocs empty or equipped, to provide a solution to all your needs. A large number of configurations to supply power and data to working stations.

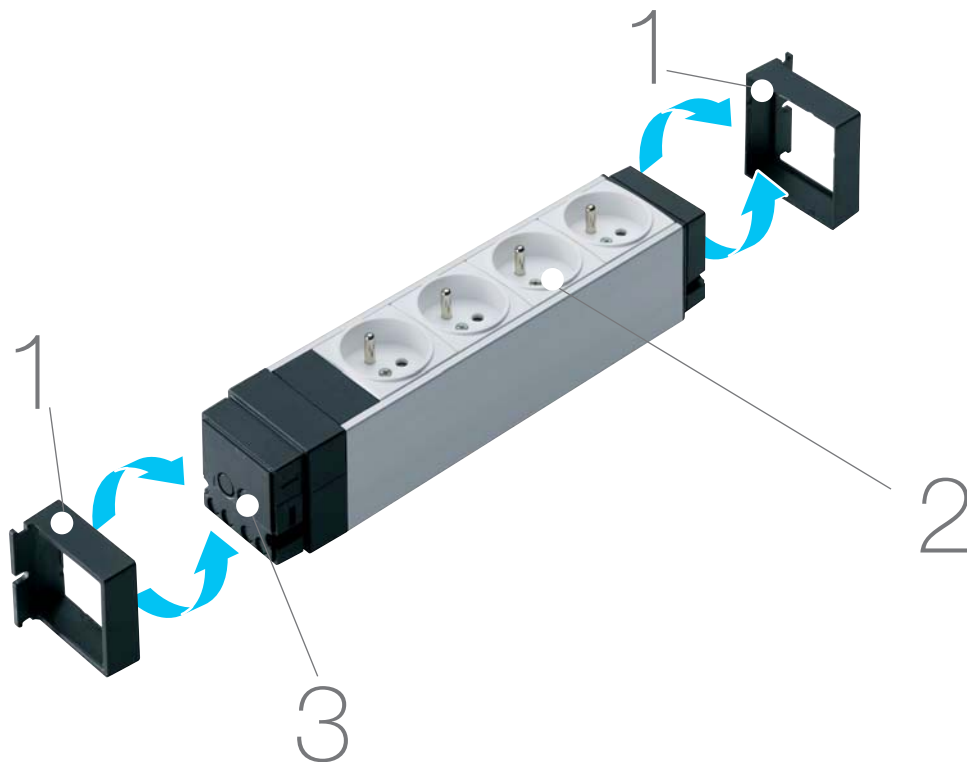


The blocs can be used in offices as well as in meeting rooms.

Working station equipment with the multi outlet blocs NR

Modules for all kind of configurations

The range has been developed to give a quick and easy answer to all kind of configurations of power and data supplies to working stations.



Your benefits :

- A range to answer all your needs in power, data and special networks (special socket).
- A multi outlet bloc quickly and easily installed with the mounting frame.
- Installation: with screws, collars, glue.
- A resistant and sober designed profile.

Technical characteristics :

- 16 references ranging from : empty multi outlet blocs, pre-equipped multi outlet blocs and / or pre-wired.
- The 54 x 54 mm section of the profile : minimum size for a maximum of configurations possibilities.

Expert tips

1



360° rotating

360° rotating mounting frames to make sure the outlets are always in the right position.

3



Smart end caps

End caps with pre-cut parts for power and data for the empty or pre-equipped multi outlet blocs.

2



Smart design

Aluminium body with 45 mm accessories.
End caps and mounting frames in black RAL 9011.

4



A very large range of multi outlet blocs :

- empty
- pre-equipped with quick fit connectors
- pre-equipped and pre-wired
- with terminals and empty space for RJ45 outlets

Multi outlet blocs NR 45 mm accessories



- Anodised aluminium profile fitted with 2 mounting frames.
- Empty or equipped in different configurations.
- Separation low and very low voltage.
- Quick fit connections Winsta







- technique from Wago.
- Quick and protected connection with prepared supply cables.
- Special equipment possible on request.

Material :
Anodised aluminium profile, PVC covers and mounting frames.

Colours :
Covers and mounting frames, black RAL **9011**

	Designation	Characteristics	Pack qty.	Cat. ref.
 NRF0008A00	Empty blocs	6 modules of 22,5 x 45 mm	1	NRF0006A00
		8 modules of 22,5 x 45 mm	1	NRF0008A00
		12 modules of 22,5 x 45 mm	1	NRF0012A00
		16 modules of 22,5 x 45 mm	1	NRF0016A00
		20 modules of 22,5 x 45 mm	1	NRF0020A00
 NRF0004D00	Pre-equipped blocs with quick fit connectors	3 sockets 2P + E	1	NRF0003D00
		4 sockets 2P + E	1	NRF0004D00
		6 sockets 2P + E	1	NRF0006D00
		3 sockets 2P + E and 2 special sockets 2P + E	1	NRF0023D00
		4 sockets 2P + E and 3 special sockets 2P + E	1	NRF0034D00
 NRF0023D00	Pre-equipped blocs with terminal and free space	4 sockets 2P + E and 2 sockets RJ45 Cat 6 UTP patch / patch	1	NRF4204D00
		 NRF4204D00		
 NRF0204B00	Pre-equipped blocs with terminal and free space	3 sockets 2P + E and 2 empty modules 22,5 mm	1	NRF0203B00
		4 sockets 2P + E and 2 empty modules 22,5 mm	1	NRF0204B00
		6 sockets 2P + E and 4 empty modules 22,5 mm	1	NRF0406B00
 NRF4204K00	Pre-equipped and pre-wired blocs	4 sockets 2P + E with 3 m cable and quick fit connector; 2 sockets RJ45 Cat 6 UTP with 3 m cable and RJ45 plug	1	NRF4204K00
		6 sockets 2P + E with 3 m cable and quick fit connector; 4 sockets RJ45 Cat 6 UTP with 3 m cable and RJ45 plug	1	NRF4406K00

- Different types of ready to use cables for connecting multi outlet blocs or the ecoline sockets in the post “the tower”.
- All combinations of plugs, incoming / outgoing connectors Winsta type from WAGO.
- Protected connections.

Designation	Characteristics	Length	Pack qty.	Cat. ref.
 G7150	Complete connection and extension kit composed of : - 5 m cable with angle plug and incoming connector - 2 connecting cables with incoming / outgoing connector (300 mm) - double shunt for a supply in parallel		1	G7150
 G4741	Supply cable cable with incoming connector and 3P plug	1 m 2 m 3 m 4 m 5 m	1 1 1 1 1	G4721 G4731 G4741 G4751 G4761
 G4743	Connecting cable cable 3 x 2,5mm ² with incoming / outgoing connector	0,3 m 0,45 m 0,75 m 1,5 m 2,5 m 4,5 m	1 1 1 1 1 1	G4733 G4743 G4753 G4796 G4797 G4798
 G4773	Shunt - double to connect sockets in parallel		1	G4773
 G4703	Incoming connector used with connecting cable		1	G4703
 G4713	Outgoing connector used on the outgoing side of ecoline sockets		1	G4713

Installation
trunking

"Multi outlet modules" power and data supplies to the desk

The multi outlet modules fixed and removed very quickly on or below a desk. This range, with its perfect aluminium design, provides the right solution to your needs.



Your benefits :

- Multi outlet modules with a perfect design.
- Quick installation with ready to use cables.
- Different ways of installation: in the support on the desk, against or below the desk with a specific fixing rail, in the post "the tower".

Technical characteristics :

- Anodised aluminium body.
- PVC end caps, black RAL 7021.
- On request possibility to combine power and data outlets.

Expert tips



Perfect design

The multi outlet module just needs to be clipped on it's specific support.



Connection to flexible cable ducts

The round flexible cable duct will clip on the multi outlet module with the supply cables.



Flexible system

With the aluminium fixing rail the module can be installed on the side of the desk... or very simply under it.



Quick connection

The multi outlet modules are connected with pre-fabricated cables, available in different lengths. The cable are fitted with an incoming connector as well as a bended plug.



Post equipment

The multi module module will clip on the profile integrated in "the tower".

- Installation on specific support on the desk as well as in the post "the tower"
- Choice of fixing on an aluminium rail
- Flexibility of connection
- Quick and protected connection with pre-fabricated cables
- Sockets for two different circuits (supply of sockets for computers)







- With switch depending on model
- With surge arrestor and network filter depending on model
- Quick connection with Winsta technique from WAGO
- The support has a stowing box for the cables
- Protected connections

Special equipments available on request.

Material :
Body in anodised aluminium
Colours :
End caps and sockets in black, RAL **7021**
Anodised aluminium, **ELN**
White, RAL **9010**

	Designation	Characteristics	Length	Pack qty.	Cat. ref.
	Multi outlet module for mounting : - in a support or on an aluminium rail	combination of 4 sockets black	300 mm	1	G7310ELN
G7310ELN					
	- in the post "the tower"	combination of 5 sockets for 2 separated circuits : 3 sockets black / 2 sockets red	350 mm	1	G7311ELN
G7311ELN					
		combination of 4 sockets / 1 switch black	350 mm	1	G7312ELN
G7312ELN					
		combination of 3 sockets / 1 switch / surge arrestor / network filter black	400 mm	1	G7313ELN
G7313ELN					
		combination of 7 sockets black	450 mm	1	G7314ELN
G7314ELN					
		combination of 7 sockets red	450 mm	1	G7315ELN
G7315ELN					
		combination of 7 prises for 2 separated circuits : 4 sockets black / 3 sockets red	450 mm	1	G7316ELN
G7316ELN					
	Support for multi socket module	complete support for fixing on desk adjustable 20 to 50 mm	250 mm	1	G70407021
G70407021					
	Fixing rail	anodised aluminium profile to fix multi outlet module dimension : 52 x 100 mm	2 m	1	G7025ELN
G7025ELN					
	Cover for fixing rail G7025ELN	cover to clip on alu rail	2 m	1	G70279010
G70279010					

- Different pre-fabricated cables to connect multi outlet blocs or modules or the ecoline sockets in the post “the tower”.
- All combinations will be bended plugs and incoming / outgoing connectors Winsta type from WAGO.
- Protected connections.

Designation	Characteristics	Length	Pack qty.	Cat. ref.
 G7150	Complete extension kit made of: - supply cable 5 m with plug and incoming connector - 2 connecting cables with in / out connectors (300 mm) - shunt - double for parallel distribution		1	G7150
 G4741	Supply cable supply cable with plug and 3 pole connectors	1 m 2 m 3 m 4 m 5 m	1 1 1 1 1	G4721 G4731 G4741 G4751 G4761
 G4743	Connecting cable cable 3 x 2,5mm ² with in / out connectors	0,3 m 0,45 m 0,75 m 1,5 m 2,5 m 4,5 m	1 1 1 1 1 1	G4733 G4743 G4753 G4796 G4797 G4798
 G4773	Shunt - double to connect sockets in parallel		1	G4773
 G4703	Incoming connector used with connecting cable		1	G4703
 G4713	Outgoing connector to fit on outgoing cable of ecoline sockets		1	G4713



Pull out multi outlet
modules



Flush mounting multi outlet modules for power and data right at the desk. Can also be installed in kitchens.



Multi outlet modules to be flush mounted on desks, in kitchens...



Your benefits :

- Hidden system.
- Flexible.
- Save space.
- Supply of power / data.
- Rigid aluminium body.
- Perfect design

Technical characteristics :




- Material : aluminium / PVC alu lacquered.
- Hole diameter : 102 mm.
- Special equipment possible on request.
- Black sockets; 230 V 2P + E; child safety.
- Sockets RJ45 Cat 6; Patch / Patch.

- Flush mounting modules
- Hole diameter: 102 mm.

Material :
Aluminium / PVC

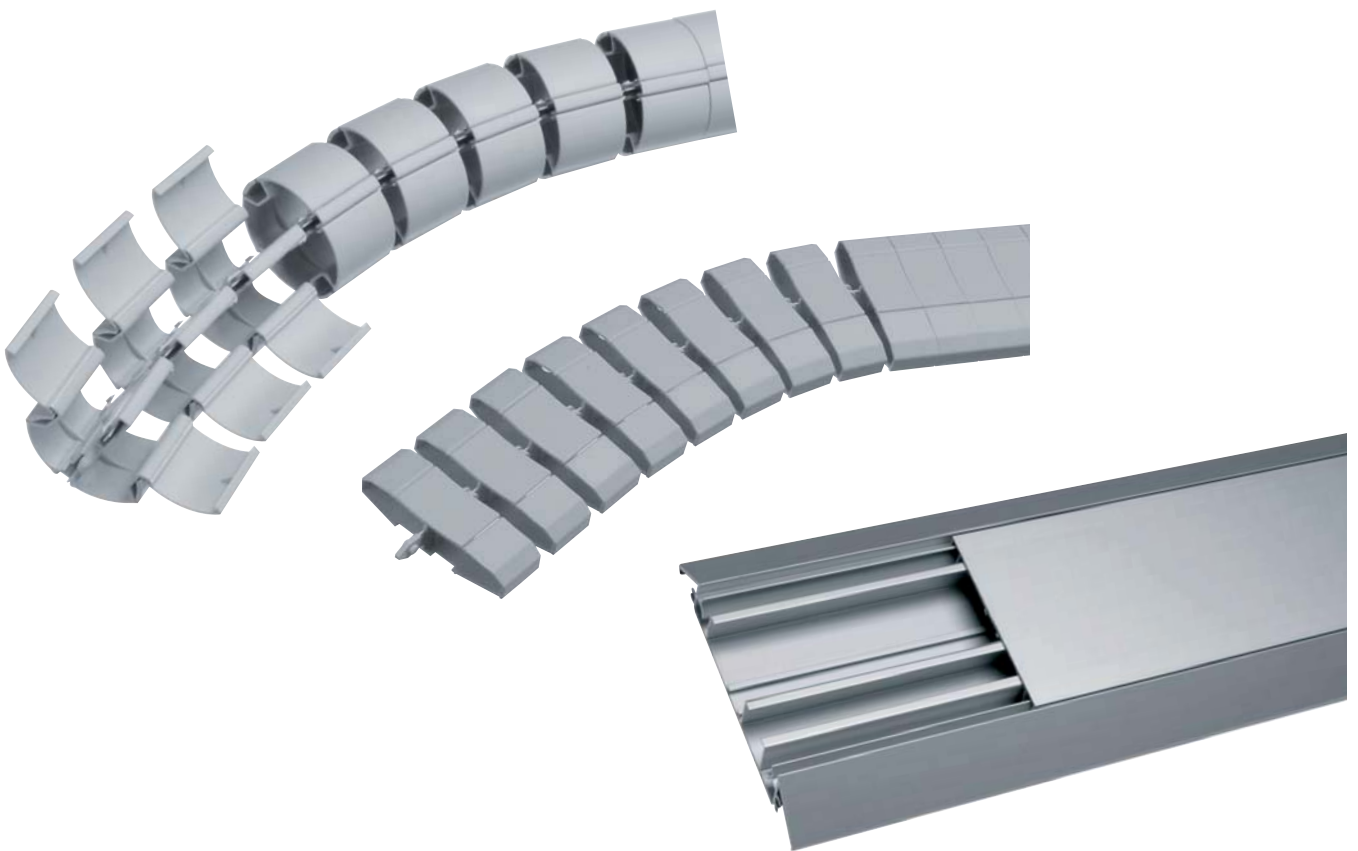
Colours :
Body anodised aluminium.
Cover lacquered alu.
Sockets black.

Special equipment on request.

Designation	Characteristics	Pack qty.	Cat. ref.
 G7343LAN	Multi outlet module for flush mounting 3 sockets 230 V 2 P + E ; child safety ; cable : 3 m	1	G7343LAN
 G7345LAN	Multi outlet module for flush mounting 3 sockets 230 V 2 P + E ; 2 sockets RJ45 Cat 6, patch / patch ; child safety ; cable : 3 m	1	G7345LAN
 G7059	Hole saw diam. 102 mm,	1	G7059

Accessories for the working station environment

With a complete range of accessories you can create an homogeneous and complete system, in harmony with all the other products like poles, posts and multi outlet modules and blocs.



Your benefits :

- Compatibility of components.
- Easy and quick installation.
- Flexible working places.
- Easy upgrade.
- Safe and clean cable circulation.

Technical characteristics :

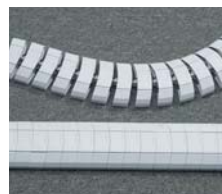
- Colours : light grey (RAL7035) and black (RAL7021).
- Floor trunking in polyamide or anodised aluminium.
- Universal derivation in steel, lacquered RAL7035 or 7021.
- Floor trunking with separations to differentiate power and data.
- The flexible floor trunking has a bending radius of 250 mm.

Expert tips



Full access

Inserting cable in the flexible round trunking just by simple clic on the side.



Flexible or rigid

To close the flexible floor trunking all it's links glides in each other.



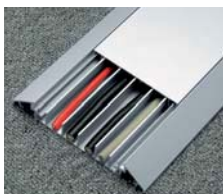
Endless configuration

To supply the multi outlet modules on the desks, the cables come from the floor trunking and the round flexible trunking. Other configurations are also possible.



Different floor trunking join

A universal derivation links the different floor trunkings.








When strength is prime necessity

The aluminium floor trunking offers an optimal protection to the cables. Very strong, with it's different compartments power and data are separated.




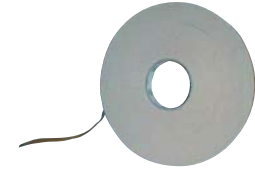

- Flexible round trunking to bring power / data cables from the floor to the post and the multi outlet modules.
- The rigidity of the trunking ensures good protection of the cables.
- Easy to open / close with the clip system.
- Supply of power and data cables
- Very flexible in all directions taking in consideration cable bending angle.
- Extension just by adding one link.

Material : polyamide
Colours :
 Grey, RAL 7035
 Black, RAL 7021
Delivery : 1 m (18 links)

	Designation	Characteristics	Length	Pack qty.	Cat. ref.
 G71107035	Flexible round trunking	- trunking with 2 compartments to supply power / data cables, bending radius 250 mm - connecting to multi outlet modules or "the tower"	1 m	1	G71107035
				1	G71107021
 G71417035	Base	base incl. adaptor with cable clamp, for fixing on the floor, ceiling or wall		1	G71417035
				1	G71417021
 G71177035	Connection adaptor	connecting adaptor with cable clamp for fixing on floor, ceiling		20	G71177035
				20	G71177021
 G71117035	Flexible round trunking desk / floor set	- trunking with 2 compartments to supply power / data cables, bending radius 250 mm (14 links) - to supply cables from the floor to the desk - connecting adaptor - base (for fixing under a desk, 1 x adaptor G7117xxxx to be ordered separately)	0,8 m	1	G71117035
				1	G71117021
 G7118	Wall support	to fix round trunking on the wall		5	G7118
 G71227035	Cover sleeve for connection with floor trunking G7130xxxx	sleeve in 2 parts to go from floor trunking to round trunking (combined with base G7141xxxx)		1	G71227035
				1	G71227021
 G71237035	Cover sleeve for connection with floor trunking AKA181250ELN	sleeve in 2 parts to go from floor aluminium trunking to round trunking (combined with base G7141xxxx)		1	G71237035
				1	G71237021
 G71267035	Cover sleeve for floor connection	sleeve in 2 parts to go directly from the floor to the round trunking (combined with base G7141xxxx)		1	G71267035
				1	G71267021

- Flexible floor trunking with limited height to run cables on the floor.
- Respect the 250 mm bending radius.
- 2 compartments to supply power / data cables.

Material : polyamide
Colours :
 Grey, RAL **7035**
 Black, RAL **7021**
Delivery : 1 m

	Designation	Characteristics	Length	Pack qty.	Cat. ref.
 G71307035	Flexible floor trunking	- trunking with 2 compartments to run power / data cables on the floor, bending radius of 250 mm kept - connecting to the post "the tower"	1 m	1	G71307035
					G71307021
 G7138	Support with cable clamps	support to fix the trunking on the floor or the wall		1	G7138
 G71357035	Universal derivation complete	- to go from alu floor trunking AKA to flexible floor trunking - two parts: base and cover - material: steel - colour : RAL 7035 or RAL 7021		1	G71357035
				1	G71357021
 L5106	Double sided adhesive tape	to fix trunking on the floor		1	L5106
 G71407035	Universal derivation cover only	- to change directions between alu floor trunking AKA and flexible floor trunking - material : steel - colour : RAL 7035 or RAL 7021		1	G71407035
				1	G71407021

Floor trunking

To run cables on the floor in a safe way.

In PVC

- 1 or 4 compartments
- base and cover in PVC

Delivery :

Base with pre-punched holes and cover 2 meters, other length on request (max. 6 m).

Colours :

Grey, RAL **7030**
Light grey, RAL **7035**
Brown, RAL **8014**

In aluminium

- Floor trunking in aluminium for heavy loads
- 2 or 4 compartments
- Easy access via cover

Delivery : 2 m, other length on request (max. 6 m).

	Designation	Characteristics	Pack qty.	Cat. ref.
 SL1104007030	Floor trunking PVC	dimensions 11 x 41 mm, grey	70 m	SL1104007030
				
 SL1807507030	Floor trunking PVC	dimensions 17 x 75 mm, grey dimensions 17 x 75 mm, light grey dimensions 17 x 75 mm, brown	32 m	SL1807507030 SL1807507035 SL1807508014
				
 SLA180750ELN	Floor trunking cover aluminium, base PVC	dimensions 17 x 75 mm, aluminium	10 m	SLA180750ELN
				
 AKA181250ELN	Floor trunking in aluminium	dimensions 18 x 125 mm, aluminium 2 compartments	12 m	AKA181250ELN

- Cable outlet for raised floor with a thickness of 20 mm or more, dry cleaned floors.
- Diameter 132 mm, flush fitting 112 mm

- Accepts the flexible floor trunking (ref. **G7130xxxx**) or the round flexible trunking (ref. **G7110xxxx**).

Material :
polyamide without halogen.

Colours :
Grey, RAL **7035**
Black, RAL **7021**

Designation	Characteristics	Pack qty.	Cat. ref.
 G84007035	Cable outlet for dry cleaned floors (flexible floor trunking G7130xxxx)	1	G84007035
	floor thickness > 20 mm	1	G84007021
	floor thickness < 20 mm	1	G84037035
		1	G84037021
 G84047035	Cable outlet for dry cleaned floors (round flexible trunking G7110xxxx)	1	G84017035
	floor thickness > 20 mm	1	G84017021
	floor thickness < 20 mm	1	G84047035
		1	G84047021

Installation trunking

Consolidation points

- Decentralised and flexible connection.

- Power connection with up to 6 incoming connectors Winsta type from Wago.
- The data repartition point for RJ45 is fitted with dust protective covers.

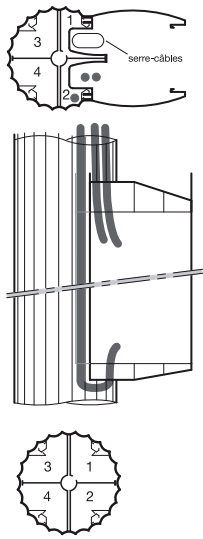
Delivery : box fitted with 6 incoming connectors.

Colour : black
Material : PC / ABS

Connectors and cables, see page J.67.

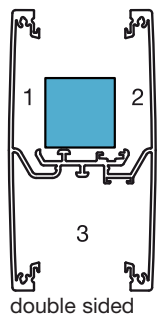
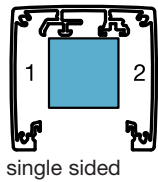
Designation	Characteristics	Pack qty.	Cat. ref.
 G8360	Power repartition (consolidation point)	1	G8360
 G3160	Data repartition (consolidation point)	1	G3160

Poles / posts RS



	compartments 1, 2, 3, 4 or without support		compart. 1 and 2 and/or 3 and 4 with support	
	number of cables		number of cables	
	per compartment	total	per compartment	per cable clamp
power				
3 x 1,5 mm ²	5	20	3	2
3 x 2,5 mm ²	3	12	3	2
data				
L 120 - 4 pairs	7	28	5	2
L 120 - 8 pairs	3	12	3	2

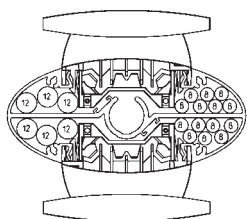
Poles / posts DA 200-45



	cable type	number of cables		
		area 1	area 2	area 3
single sided	power (3 x 2,5 mm ²)	3	3	-
	data (L 120 - 4 paires)	8	3	-
double sided	power (3 x 2,5 mm ²)	4	4	14
	data (L 120 - 4 paires)	9	9	30

Fixing system space.

Pressure fitting and mobile poles

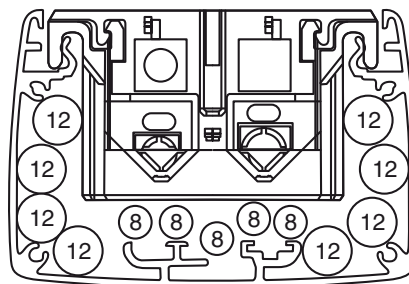


	cable capacity	cable type			
		area 1	area 2	area 3	area 4
simple and double sided pressure fitting and mobile	power current (ø 10 - 11 mm)	3	3	3	3
	weak current (ø 7 mm)	7	7	7	7

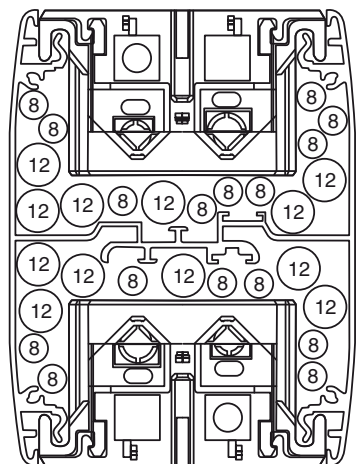
Example : installation in pole DA 200-80



G2700



Single sided pole DA 200-80 :
Min. 6 x diam. 12 mm (power)
Min. 4 x diam. 8 mm (data)



Double sided pole DA 200-80 :
Min. 12 x diam. 12 mm (power)
Min. 8 x diam. 8 mm (data)

Installation
trunking

Selection chart for pressure fixing poles DA 200 profile length

This chart will assist you in selecting the right pole depending on available height and way of installation.

DA 200-45

reference	profile length	suspended ceiling	concrete ceiling
DAS452700xxxx DAS2452700xxxx	2.657 mm	up to max. 2.650 mm	2.700 - 3.000 mm
DAS453000xxxx DAS2453000xxxx	2.957 mm	up to max. 2.950 mm	3.000 - 3.300 mm
DAS453300xxxx DAS2453300xxxx	3.257 mm	up to max. 3.250 mm	3.300 - 3.600 mm

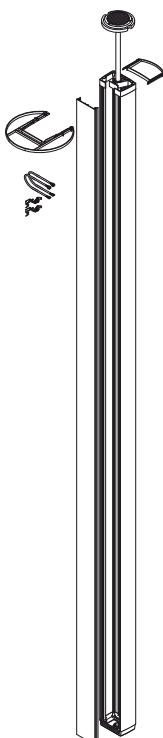
DA 200-80

reference	profile length	suspended ceiling	concrete ceiling
DAS802500xxxx DAS2802500xxxx	2.457 mm	up to max. 2.450 mm	2.500 - 2.800 mm
DAS802800xxxx DAS2802800xxxx	2.757 mm	up to max. 2.750 mm	2.800 - 3.100 mm
DAS803100xxxx DAS2803100xxxx	3.057 mm	up to max. 3.050 mm	3.100 - 3.400 mm
DAS803400xxxx DAS2803400xxxx	3.357 mm	up to max. 3.350 mm	3.400 - 3.700 mm

xxxx (colour) : ELN (anodised alu) or 9010 (white)

For example : when the concrete ceiling is at a height of 2800 mm the pole DAS4527000 can be used provided the suspended ceiling is at a max height of 2.650 mm.

For other lengths not indicated in the above chart, please consult us.

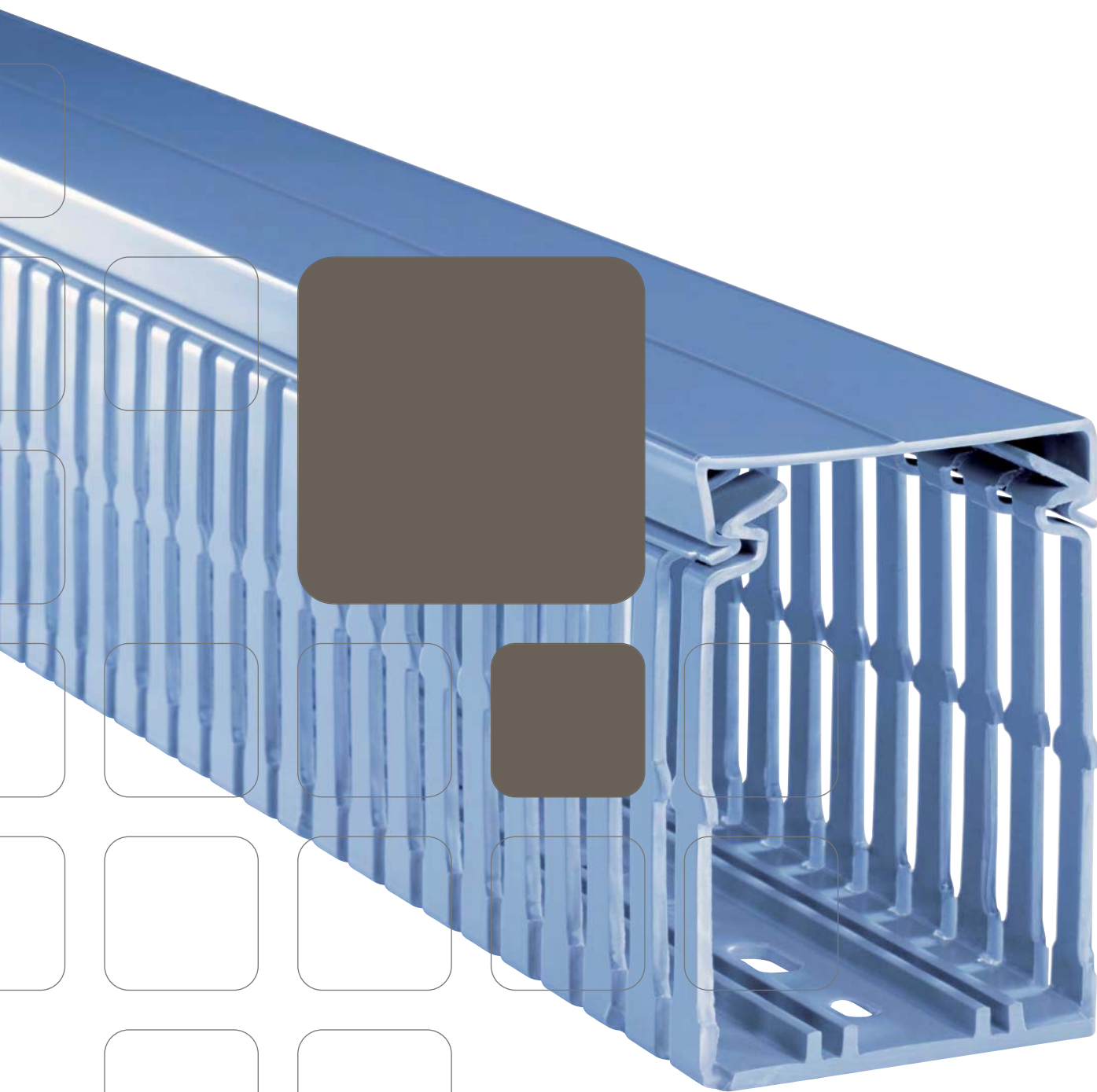


Enclosure trunking

tehalit.beha-set

The system of equipment of the boards is a wide range proposing solutions for each type of application:

- the series tehalit.BA7 in PVC cover the whole current needs,
- series tehalit.HA7 in PC-ABS and tehalit.HNG in PPO, both halogen free, are proposed for the sensitive equipments,
- the series tehalit.VK-flex allows flexible connections between the equipment of the door and the body of the board.



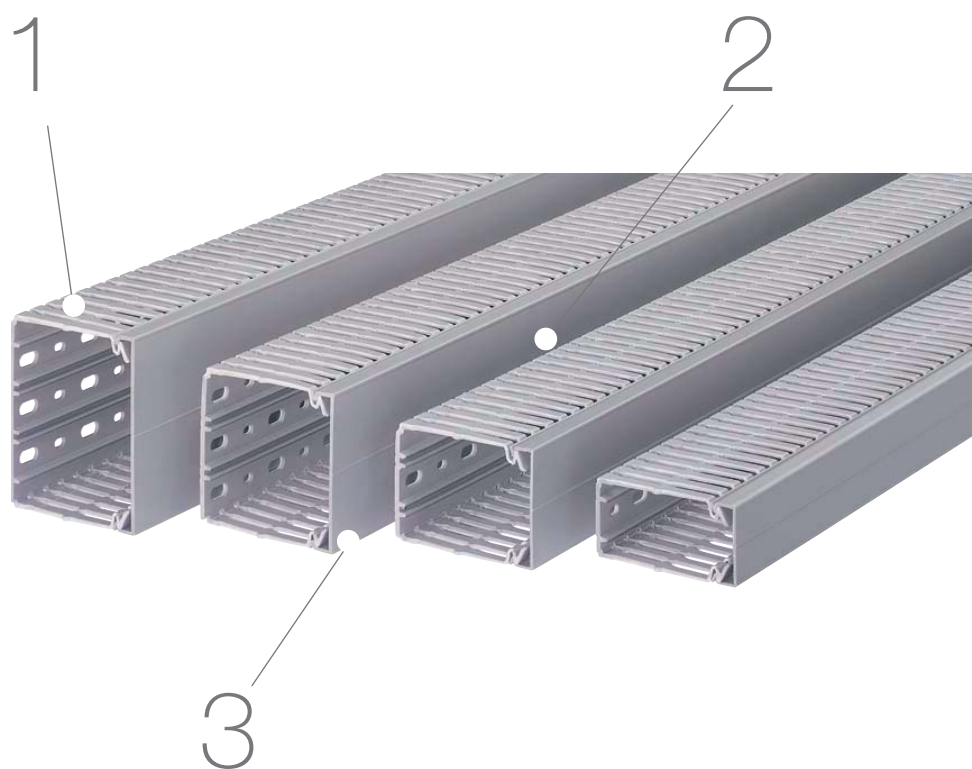
tehalit.beha-set trunking	K.2
- tehalit.BA7 cable ducting	K.4
- tehalit.BA7 blue cable ducting	K.5
- tehalit.HA7 halogen free slotted trunking	K.6
- tehalit.HNG halogen free slotted trunking in PPO	K.7
- tehalit.VK-flex halogen free flexible slotted trunking	K.8
<hr/>	
accessories	K.9
<hr/>	



Enclosure trunking tehalit.beha-set

For an easy installation in your enclosure

The tehalit beha-set range brings solution to many kind of configurations in or around the enclosure: electrical distribution and automation devices cabling, cable entries and outlets, equipments mounted on the door or near the enclosure.



Your benefits

- Easy to install.
- A solution for each configuration.
- Complete range of accessories for a quick implementation.

Technical characteristics

- Depths : 25, 40, 60, 80, 100 mm.
- 3 materials : PVC, PC-ABS, PPO.
- Fire protection class : UL94VO or UL94V1.

Expert tips

1



Breakable strips

A starter of rupture allows, if necessary, to break the side strips on all the series.

3



Neat cut

Thanks to the trunking scissor.

2



Easy labelling

The ratchet on the cover can be used to align labels.

4



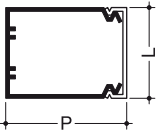
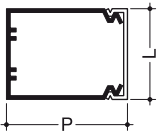
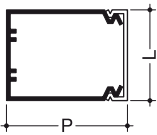
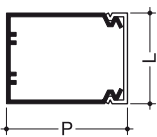
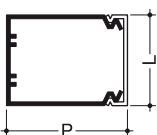
Adapted ranges

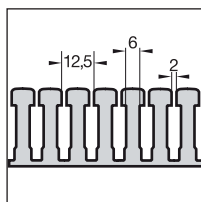
Also available in halogen free PC-ABS or PPO trunking.

Flexible trunking, junction trunking for enclosure peripheral cabling.

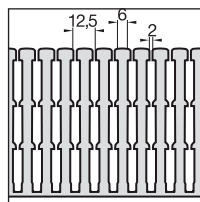
Delivery information : Base pre-drilled and lid.
Standard length : 2 m.
Material : Rigid PVC. Fire classification : UL 94VO.

Colour :
 Grey (7030)

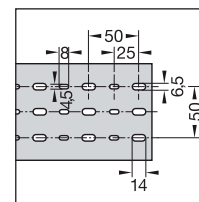
	Base and lid		Countenance by conductors section in mm ²				Lid (separated)	
	Cat. ref.	Depth x width P x L	1,0 ²	1,5 ²	2,5 ²	Packaging	Cat. ref.	Packaging
 Depth 25 mm	BA725025	25 x 25	24	17	12	50 m	BA70252K	28 m
	BA725040	25 x 40	41	29	21	48 m	BA70402K	28 m
 Depth 40 mm	BA740025	40 x 25	50	36	26	48 m	BA70252	28 m
	BA740040	40 x 40	81	58	42	50 m	BA70402	28 m
	BA740060	40 x 60	125	90	64	40 m	BA70602	20 m
	BA740080	40 x 80	169	121	87	30 m	BA70802	20 m
	BA740100	40 x 100	212	152	109	20 m	BA71002	12 m
 Depth 60 mm	BA760025	60 x 25	91	65	47	60 m	BA70252	28 m
	BA760040	60 x 40	152	109	78	40 m	BA70402	28 m
	BA760060	60 x 60	236	170	122	24 m	BA70602	20 m
	BA760080	60 x 80	322	231	166	20 m	BA70802	20 m
	BA760100	60 x 100	406	292	209	16 m	BA71002	12 m
	BA760120	60 x 120	489	352	252	12 m	BA71202	12 m
 Depth 80 mm	BA780025	80 x 25	130	94	67	20 m	BA70252	28 m
	BA780040	80 x 40	224	161	115	20 m	BA70402	28 m
	BA780060	80 x 60	351	253	181	20 m	BA70602	20 m
	BA780080	80 x 80	478	344	246	16 m	BA70802	20 m
	BA780100	80 x 100	604	435	311	12 m	BA71002	12 m
	BA780120	80 x 120	730	525	376	16 m	BA71202	12 m
 Depth 100 mm	BA7100060	100 x 60	459	330	236	16 m	BA70602	20 m
	BA7100080	100 x 80	630	453	324	16 m	BA70802	20 m
	BA7100100	100 x 100	801	576	422	12 m	BA71002	12 m



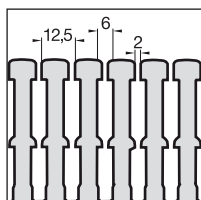
Dimensions
 height 25 mm
 ducting 25 x 40



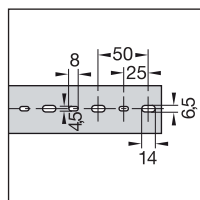
Dimensions
 height 100 mm



Perforation details
 DIN 43659
 EN 50 085-2-3
 width 80, 100 and 120 mm



Dimensions
 height 60 and 80 mm



Perforation details
 DIN 43659
 EN 50 085-2-3
 width 25, 40 and 60 mm


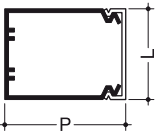
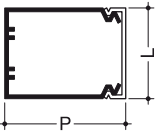
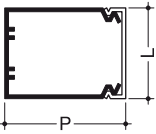
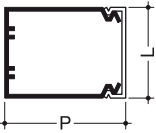
Delivery information : Base pre-drilled and lid (opening with screwdriver).

Standard length : 2m.

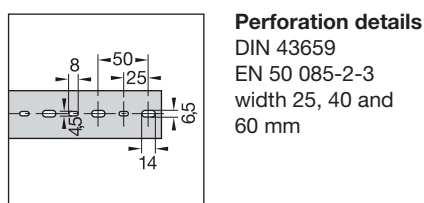
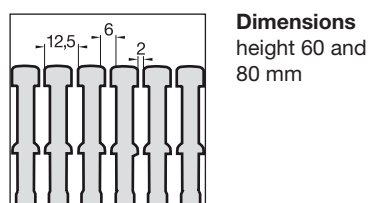
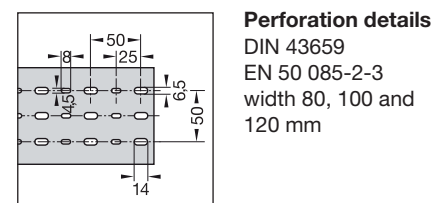
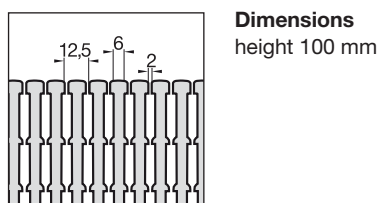
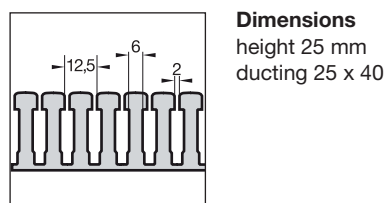
Material : Rigid PVC. Fire classification : UL 94V0.

Colours :



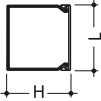
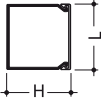
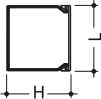
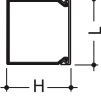
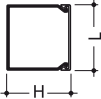
	Base and lid 	Cat. ref.	Depth x width P x L	Countenance by conductors section in mm ²			Packaging
				1,0 ²	1,5 ²	2,5 ²	
 Depth 25 mm	BA725025BL		25 x 25	24	17	12	50 m
	BA740025BL		40 x 25	50	36	26	48 m
 Depth 40 mm	BA740040BL		40 x 40	81	58	42	50 m
	BA740060BL		40 x 60	125	90	64	40 m
 Depth 60 mm	BA760025BL		60 x 25	91	65	47	60 m
	BA760040BL		60 x 40	152	109	78	40 m
	BA760060BL		60 x 60	236	170	122	24 m
 Depth 80 mm	BA780025BL		80 x 25	130	94	67	20 m
	BA780060BL		80 x 60	351	253	181	20 m
	BA780100BL		80 x 100	604	435	311	12 m

Enclosure trunking

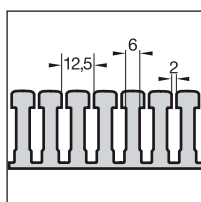


Delivery information : Base pre-drilled and lid.
Standard length : 2m.
Material : PC/ABS. Fire classification : UL 94VO.

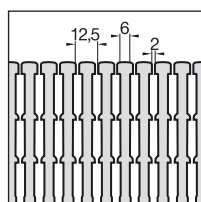
Colour :
 Grey (7030)

	Base and lid*		Countenance by conductors section in mm ²			Packaging	Clip	
	Cat. ref.	Depth x width P x L	1,0	1,5	2,5		Cat. ref.	Packaging
 Depth 25 mm	HA725025	25 x 25	24	17	12	50 m		
	HA725040	25 x 40	41	29	21	48 m		
 Depth 40 mm	HA740025	40 x 25	50	36	26	48 m		
	HA740040	40 x 40	81	58	42	50 m	BA7CLIP	10
	HA740060	40 x 60	125	90	64	40 m	BA7CLIP	10
	HA740080	40 x 80	169	121	87	30 m	BA7CLIP	10
	HA740100	40 x 100	212	152	109	20 m	BA7CLIP	10
 Depth 60 mm	HA760025	60 x 25	91	65	47	60 m		
	HA760040	60 x 40	152	109	78	40 m	BA7CLIP	
	HA760060	60 x 60	236	170	122	24 m	BA7CLIP	10
	HA760080	60 x 80	322	231	166	20 m	BA7CLIP	10
	HA760100	60 x 100	406	292	209	16 m	BA7CLIP	10
	HA760120	60 x 120	489	352	252	12 m	BA7CLIP	10
 Depth 80 mm	HA780025	80 x 25	130	94	67	20 m		
	HA780040	80 x 40	224	161	115	20 m	BA7CLIP	
	HA780060	80 x 60	351	253	181	20 m	BA7CLIP	10
	HA780080	80 x 80	478	344	246	16 m	BA7CLIP	10
	HA780100	80 x 100	604	435	311	12 m	BA7CLIP	10
	HA780120	80 x 120	730	525	376	16 m	BA7CLIP	10
 Depth 100 mm	HA710060	100 x 60	459	330	236	16 m	BA7CLIP	10
	HA710080	100 x 80	630	453	324	16 m	BA7CLIP	10
	HA7100100	100 x 100	801	576	412	12 m	BA7CLIP	10

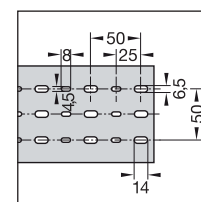
* complete trunking with cutting side with step of 10 mm



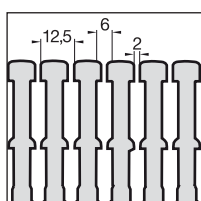
Dimensions
 height 25 mm
 ducting 25 x 40



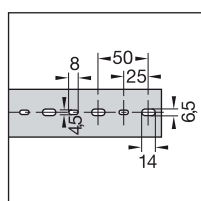
Dimensions
 height 100 mm



Perforation details
 DIN 43659
 EN 50 085-2-3
 width 80, 100 and 120 mm



Dimensions
 height 60 and 80 mm



Perforation details
 DIN 43659
 EN 50 085-2-3
 width 25, 40 and 60 mm


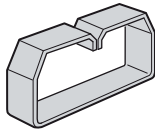
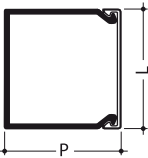
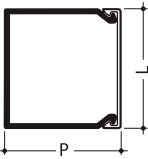
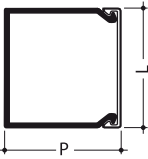
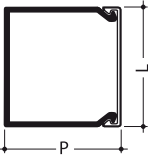
Delivery information : Base pre-drilled and lid.

Standard length : 2m.

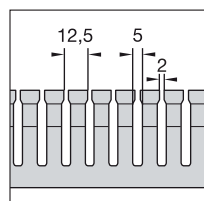
Material : PPO. Self-extinguishing classification : UL 94V1.

Colour :

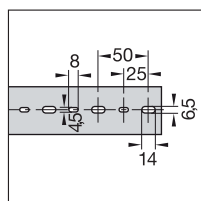
light grey (7035B)

	Base and lid *				Clip	
						
	Cat. ref.	Depth x width P x L	Countenance by conductors section in mm ² 1,0 ² 1,5 ² 2,5 ²	Packaging	Cat. ref.	Packaging
 Depth 25 mm	HNG250250	24 x 24	40 32 22	36 m		
 Depth 40 mm	HNG370250	36 x 24		48 m		
	HNG370370	36 x 37	95 76 52	32 m		
	HNG370500	36 x 49	129 103 71	40 m	HN370503	50
 Depth 50 mm	HNG500250	49 x 24	77 62 42	48 m		
	HNG500370	49 x 37	127 102 70	40 m		
	HNG500500	49 x 49	185 140 96	48 m	HN500503	50
	HNG500750	49 x 74	250 212 146	20 m	HN500753	50
	HNG501000	49 x 99	336 285 196	24 m	HN501003	50
 Depth 75 mm	HNG501250	49 x 124	502 403 277	18 m	HN501253	50
	HNG750370	73 x 36	210 169 116	40 m		
	HNG750500	73 x 49	277 222 153	20 m	HN750503	50
	HNG750750	73 x 74	423 340 233	16 m	HN750753	50
	HNG751000	73 x 99	575 462 317	16 m	HN751003	50
	HNG751250	73 x 124	724 581 400	12 m	HN751253	50

* complete trunking with cutting side with step of 10 mm

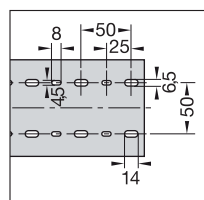


Slot configuration



Base punching configuration for trunking width 25, 37 and 50 mm
DIN 43659

- Halogen free
- Self-extinguishing
- Operating temperature : -25 °C to + 90 °C
- High rigidity



Base punching configuration for trunking width 75, 100 and 125 mm
DIN 43659


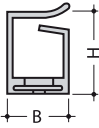

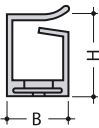



Enclosure trunking

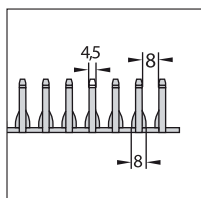
Delivery information : Base pre-drilled.

Matériau : polyamide halogen free. Self-extinguishing classification : UL 94V0.

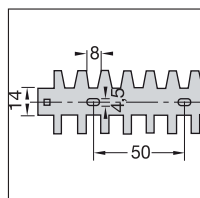
Colour :

light grey (7035)

Flexible slotted trunking					
					
Cat. ref.	Length	Depth x width	Countenance by conductors section in mm ² 1,0 ² 1,5 ² 2,5 ²	Packaging	
	VK-flex10 M5690	250 mm	15 x 11 x 250	10 8 5	40 pces
	VK-flex20 M5691	500 mm	21 x 23 x 500	20 18 13	40 pces
	VK-flex30 M5692	500 mm	31 x 33 x 500	57 46 30	40 pces
	VK-flex40 M5693	500 mm	45 x 43 x 500	101 81 53	40 pces
	Flexible slotted trunking 				
VK-flex with adhesive tape 	VK-flex10 L2212	250 mm	15 x 11 x 250	10 8 5	40 pces
	VK-flex20 L2222	500 mm	21 x 23 x 500	20 18 13	40 m
	VK-flex30 L2232	500 mm	31 x 33 x 500	57 46 30	40 m
	VK-flex40 L2242	500 mm	45 x 43 x 500	101 81 53	40 m
	Flexible slotted trunking 				
	VK-flex10 L2212	250 mm	15 x 11 x 250	10 8 5	40 pces
	VK-flex20 L2222	500 mm	21 x 23 x 500	20 18 13	40 m
	VK-flex30 L2232	500 mm	31 x 33 x 500	57 46 30	40 m
	VK-flex40 L2242	500 mm	45 x 43 x 500	101 81 53	40 m
	Flexible slotted trunking 				



Slot configuration



Base punching configuration



L6490



L5561



L5085



L5263



L5264



M5159/1/2



M5164



BA7CLIP



AF/colle/Cart



UC969

Designation	Characteristics	Pack qty.	Colour	Cat. ref.
Web cropping tool	for HNG	1	grey (7030)	L6490
Trunking scissors	for BA7/HNG/HA7	1	grey (7030)	L5561
One piece rivets	Ø 4 for width 2 - 5 mm	100		L5085
	Ø 4 for width 4 - 7 mm	100		L5123
	Ø 6 for width 3 - 8 mm	100		L5067
Rivet drivers	for L5085	1	grey (GRAU)	L5262
	for L5123	1	red (ROT)	L5263
	for L5067	1	black (SCHW)	L5264
Spacers Ø 25 mm	height 12 mm	50		M51592
	height 20 mm	50		M5159
Screw collars	to hide M4 to M5 screws heads	100		M5164
Clips	for BA7, BA7 blue and HA7 breakable clip for all width	10		BA7CLIP
Pure white glue cartridges	capacity : 0,3 l colour: RAL 9010	1		ATACOLLE
Nut-clips and M5 screws for perforated mounting plates		25		UC969

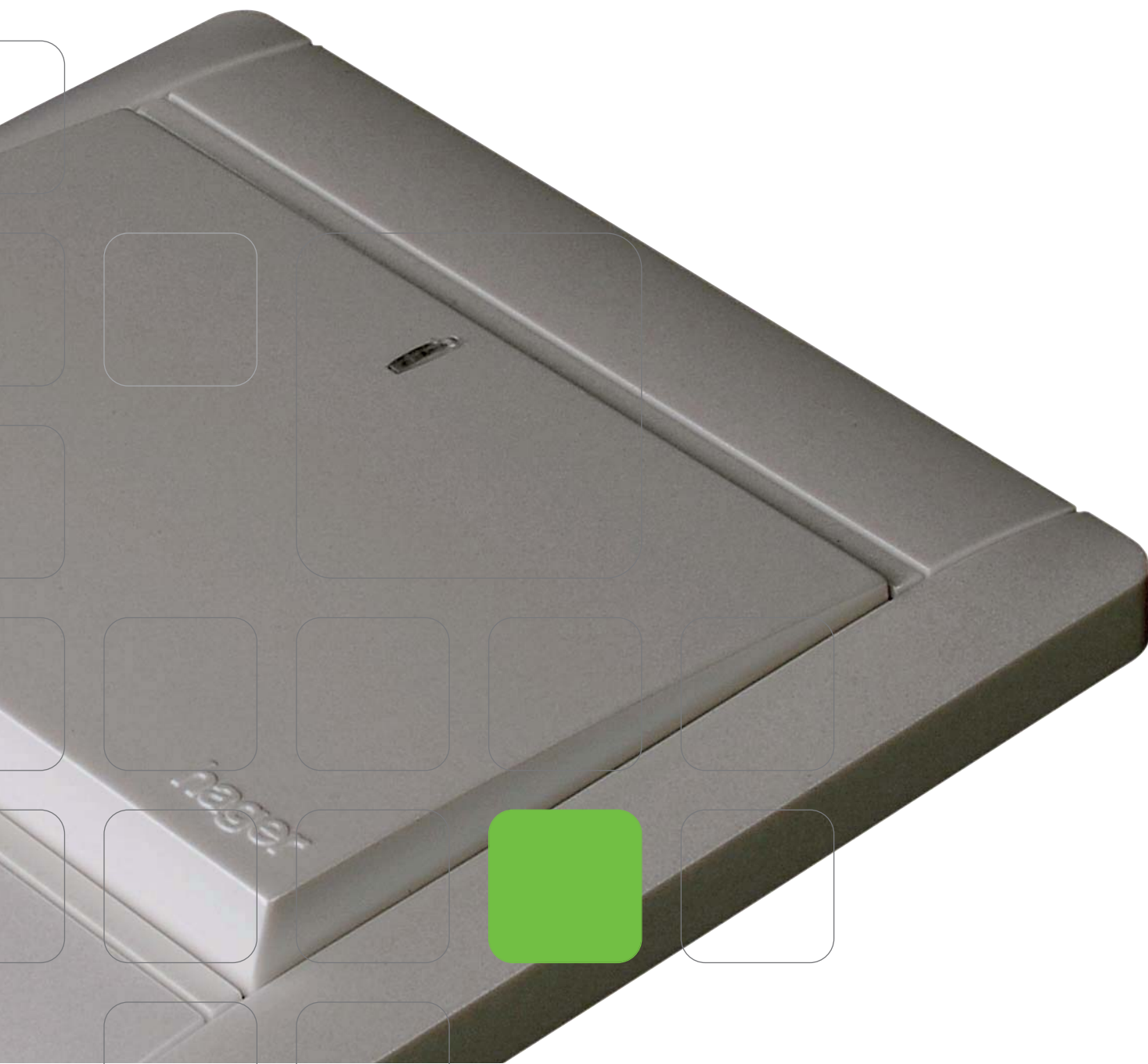
Enclosure trunking

Wiring accessories

British Standards

Hager provides a complete range of wiring accessories to fit in homes, offices or hotels. Nice designs, wide choice of switches and colours, each product can be easily adapted to your specific needs.

Systems 8000, 9000, 9088 and 10088 are compliant with British Standards.



system 8000	L.2
system 9000	L.12
system 9088	L.22
system 10088	L.26
IP55	L.41
IP66	L.43
IP66 isolators	L.45
technical data	L.46

'X' rated - No need to derate for fluorescent loads.
Supplied with M3.5 x 25mm long fixing screws and screw caps.







Capacity of each terminal
3 x 1.5mm²
2 X 2.5mm²

Two way switches can be wired either 1 way or 2 way.

Terminal markings denote:
L1 = one way
L2 = two way
C = common

Material
Polycarbonate

Comply with
BS EN 60669-1, a.c only
IEC 60669-1, CB certificate

Designation		Characteristics	Pack qty.	Cat. ref.
	Plate switches 10AX	1 gang 1 way	10	XP8110
		1 gang 2 way	10	XP8120
		2 gang 1 way	10	XP8210
		2 gang 2 way	10	XP8220
		3 gang 1 way	10	XP8310
		3 gang 2 way	10	XP8320
		4 gang 1 way	10	XP8410
		4 gang 2 way	10	XP8420
		5 gang 1 way	10	XP8510
		5 gang 2 way	10	XP8520
		1 gang intermediate switch	10	XP8001
		Plate switches 20AX	1 gang 1 way	10
		1 gang 2 way	10	XP8212
		2 gang 1 way	10	XP8221
		2 gang 2 way	10	XP8222
		3 gang 1 way	10	XP8231
		3 gang 2 way	10	XP8232
		4 gang 1 way	10	XP8241
		4 gang 2 way	10	XP8242
			1 gang 1 way	10

***Red dolly series**

*Remark: please contact your local sales office for this customised product.

System 8000 - bell switches

Bell push / press can be wired to make 250V a.c.


Supplied with M3.5 x 25mm long fixing screws and screw

caps.

Capacity of each terminal
3 x 1.5mm²
2 X 2.5mm²

Material
Polycarbonate

Comply with BS EN 60669-1
IEC 60669-1

Designation		Characteristics	Pack qty.	Cat. ref.
	Bell switches single pole 10A	marked bell	10	XP8910
		marked press	10	XP8911

System 8000 dimmer and fan controller switches






Supplied with M3.5 x 25mm long fixing screws and screw caps.

Frequency 50Hz/ 60Hz
Rating 500W max
For incandescent lamps only
Max 150W for halogen lamps

Comply with
BS EN 60669-2-1, a.c. only
IEC 60669-1, CB certificate

Capacity of each terminal
3 x 1.5mm² conductors
2 x 2.5mm² conductors

Material
Polycarbonate

Designation		Characteristics	Pack qty.	Cat. ref.	
 XP8515	 XP8525	Dimmer switches 500W 2 way switched	single dimmer	5	XP8515
		twin dimmer	5	XP8525	
 XP8105		Fan controller 400VA 2 way switched	fan control	5	XP8105







System 8000 20A double pole control switches

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Material
Polycarbonate

Capacity of each terminal
L, N: 2 X 6.0mm²
E: 2 X 4.0mm²

Comply with
BS EN 60669-1, a.c. only
IEC 60669-1, CB certificate

Designation		Characteristics	Pack qty.	Cat. ref.	
 XR8200	 XR8206	Double pole control switches	20AX	10	XR8200
		20AX with neon	10	XR8206	
 XR8203	 XR8204	20AX double pole switch + 10AX single pole switch	10	XR8203	
		20AX double pole switch + twin 10AX single pole switch	10	XR8204	
 XR8207	 XR8222	20AX double pole control switch with optional cable & neon	10	XR8207	
		20AX double gang with neon	10	XR8222	

BS wiring accessories

System 8000

32A and 45A double pole control switches



Supplied with M3.5 x 25mm long fixing screws and screw caps.

Material
Polycarbonate

Capacity of each terminal
L, N: 1 X 16.0mm²
E: 1 X 16.0mm²

Comply with
BS EN 60669-1, a.c. only
IEC 60669-1, CB certificate



XR8457



XR8456

Designation	Characteristics	Pack qty.	Cat. ref.
Double pole control switches	32A with neon	10	XR8327
	45A with neon	10	XR8457
	45A DP cooker control unit on plate (size 2)	10	XR8456

System 8000

cooker control unit

Combined switch / sockets have double pole 45A main switch and 13A switched socket outlet.

Capacity of each terminal
L, N: 1 X 16.0mm²
E: 1 X 10.0mm²

Material
Polycarbonate

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Marking on cooker control units:
ON, OFF and circuit identification cooker and socket.

Comply with BS 4177, a.c. only



XR8458

Designation	Characteristics	Pack qty.	Cat. ref.
Double pole cooker control unit	45A cooker control unit (size 2)	5	XR8458

System 8000

cooker control unit

Designation	Characteristics	Pack qty.	Cat. ref.
Double pole control switch with special marking with neon marked	20 AX - "Air Conditioner"	10	XR8206AC
	20 AX - "Cooker Hob"	10	XR8206CB
	20 AX - "Cooker Hood"	10	XR8206CH
	20 AX - "Computer Power"	10	XR8206CP
	20 AX - "Dryer"	10	XR8206DR
	20 AX - "Dish Washer"	10	XR8206DW
	20 AX - "Fridge"	10	XR8327FR
	20 AX - "Oven"	10	XR8327OV
	20 AX - "Washing machine"	10	XR8327WM
	32 AX - "Dish Washer"	10	XR8327DW











XR8206AC



XR8206AC

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Material
Polycarbonate



		Designation	Characteristics	Pack qty.	Cat. ref.
 XT8001	 XT8004	Communication and data	phone outlet (BS style master)	10	XT8001
			phone outlet (BS style slave)	10	XT8002
			TV co-axial outlet	10	XT8004
 XT8005	 XT8007		TV & FM outlet	10	XT8005
			RJ 45 data outlet (1 mod) Cat 5e	10	XT8007
			RJ 45 data outlet (1 mod) Cat 6	10	XT8607
 XT8010	 XT8012		RJ 11 data outlet (1 mod)	10	XT8010
			RG 6 cable TV outlet	10	XT8012
			2A telephone socket with shutter	10	XT8014
 XT8014	 XT8017		TV + RG 6 connector without splitter	10	XT8017

System 8000
moulded blank plates

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Material
Polycarbonate

Comply with BS5733

		Designation	Characteristics	Pack qty.	Cat. ref.
 XV8101	 XV8102	Blank plate	(size 1)	20	XV8101
		Blank plate	(size 2)	10	XV8102

All terminal screws upward facing for ease of installation.

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Capacity of each terminal

L, N: 2 X 4.0mm²

E: 3 X 2.5mm²


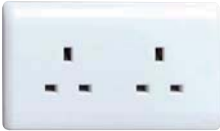




Integral rocker design of switched sockets provide clear red 'on' indication.

Tough plastic back for durability.

Material

Polycarbonate

Comply with BS 1363 Pt 2, a.c. only SS145

	Designation	Characteristics	Pack qty.	Cat. ref.
	Socket outlets	13A single unswitched	10	XS8113
		13A double unswitched (size 2)	5	XS8213
		13A single switched	10	XS8114
		13A double switched (size 2)	5	XS8214
		13A single switched with neon	10	XS8117
		13A double switched with neon (size 2)	5	XS8217
				
				
				

* Socket are with FREE dust preventive sticker to give additional protection during installation

* Sockets with Red dolly switch are also available / Surcharge applies

System 8000

5A socket outlets

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Integral rocker design of switched sockets provide clear red 'on' indication.



Comply with BS 546 and SS472

Capacity of each terminal

L, N: 2 x 2.5mm²
E: 3 x 1.5mm²

Material

Polycarbonate

	Designation	Characteristics	Pack qty.	Cat. ref.
 XS8905	Socket outlets	5A round pin unswitched	10	XS8905
		5A round pin switched	10	XS8906
 XS8905				

System 8000

15A socket outlets

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Integral rocker design of switched sockets provide clear red 'on' indication.




Comply with BS 546 and SS472

Capacity of each terminal

L, N: 2 x 4.0mm²
E: 3 x 2.5mm²

Material

Polycarbonate

	Designation	Characteristics	Pack qty.	Cat. ref.
 XS8915	Socket outlets	15A round pin unswitched	10	XS8915
		15A round pin switched	10	XS8916
 XS8916	German style sockets	16A German style socket (without shutter)	10	XS8413
		16A German style socket (with shutter)	10	XS8414
 XS8413				

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Integral rocker design of switched sockets provide clear red 'on' indication.



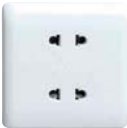

Comply with IEC 884-1

Capacity of each terminal

L, N: 2 x 4.0mm²
E: 3 x 2.5mm²

Material

Polycarbonate

	Designation	Characteristics	Pack qty.	Cat. ref.
	Socket outlets	10A 2 pin unswitched universal socket	10	XS8211P
XS8211P		10A 2 pin switched universal socket	10	XS8212P
		10A 2 pin unswitched twin universal socket	10	XS8221P
XS8212P		10A 3 pin switched multi international socket	10	XS8314
				
XS8211P				
				
XS8314				

Cable clamp accommodates up to 2.5mm² flexible cords.

Supplied with M3.5 x 25mm long fixing screws and screw caps.

All switched units are double pole.

Capacity of each terminal





L, N: 3 x 4.0mm²
E: 2 x 4.0mm²

All units fitted with a 13A fuse link to BS 1362, can be supplied with 2A, 5A fuse link.

Optional flex outlet: for choice of use.

Material
Polycarbonate

Comply with BS 1363 Pt 4, a.c. only

	Designation	Characteristics	Pack qty.	Cat. ref.
	Fused connection units	13A fused with flex outlet	10	XR8130
XR8130		13A switch fused with flex outlet	10	XR8131
		13A switch fused with neon and flex outlet	10	XR8137
XR8131				
		13A fused with neon and flex outlet	10	XR8138
XR8137				
				
XR8138				

BS wiring accessories

System 8000 15A socket outlets

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Material
Polycarbonate


25A connection unit

Capacity of each terminal:
L, N: 2 x 6.0mm²
E: 2 x 6.0mm²

45A connection unit




Capacity of each terminal:
L, N: 2 x 6.0mm²
E: 2 x 6.0mm²

Comply with BS5733

	Designation	Characteristics	Pack qty.	Cat. ref.
	Connection units	25A connection unit with flex outlet	10	XR8250
XR8450		45A connection unit with flex outlet	10	XR8450

2 earth terminals.
Feet on base to add mounting on uneven surfaces.

Comply with BS 67
BS EN 61184:1997

Designation	Characteristics	Pack qty.	Cat. ref.
 XB8001	Lampholders 3 terminal, home office shield BC batten (pin type)	10	XB8001
 XB8002	3 terminal, home office shield BC batten (screw type)	10	XB8002
 XB8003	ceiling rose	10	XB8003



Colour and size match to hager 8000, 9000, 9088, 10088 series White WA.

With earth terminal.

Material
PVC

Knockouts are provided on the base and sides for cable entry.

Comply with BS5733 standard

Designation	Characteristics	Pack qty.	Cat. ref.
 XB8351	Mounting box		
	35mm depth (size 1)	10	XB8351
 XB8352	47mm depth (size 1)	10	XB8471
	35mm depth (size 2)	10	XB8352
	47mm depth (size 2)	10	XB8472

'X' rated - No need to derate for fluorescent loads.

Two way switches can be wired either 1 way or 2 way.








Material
Polycarbonate

Supplied with M3.5 x 25mm long fixing screws.

Terminal markings denote:
L1 = one way
L2 = two way
C = common

Comply with
BS EN 60669-1, a.c only
IEC 60669-1, CB certificate

Capacity of each terminal
3 x 1.5mm²
2 x 2.5mm²

	Designation	Characteristics	Pack qty.	Cat. ref.
 XP9110	Plate switches 10AX	1 gang 1 way	10	XP9110
		1 gang 2 way	10	XP9120
		2 gang 1 way	10	XP9210
		2 gang 2 way	10	XP9220
 XP9210		3 gang 1 way	10	XP9310
		3 gang 2 way	10	XP9320
		4 gang 1 way	10	XP9410
		4 gang 2 way	10	XP9420
 XP9310		4 gang 1 way (size 2)	5	XP9412
		6 gang 1 way (size 2)	5	XP9610
		6 gang 2 way (size 2)	5	XP9620
 XP9410		8 gang 1 way (size 2)	5	XP9810
		8 gang 2 way (size 2)	5	XP9820
		intermediate switch	10	XP9001
 XP9412	Plate switches 20AX	1 gang 1 way	10	XP9211
		1 gang 2 way	10	XP9212
		2 gang 1 way	10	XP9221
		2 gang 2 way	10	XP9222
 XP9610		3 gang 1 way	10	XP9231
		3 gang 2 way	10	XP9232
		4 gang 1 way	10	XP9241
 XP9810		4 gang 2 way	10	XP9242

Bell push / press can be wired to make 250V a.c.

Capacity of each terminal
3 x 1.5mm²
2 x 2.5mm²

Material
Polycarbonate

Supplied with M3.5 x 25mm long fixing screws.

Comply with BS EN 60669-1 IEC 60669-1

Designation	Characteristics	Pack qty.	Cat. ref.
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XP9910

Bell switches single pole 10A	marked bell	10	XP9910
	marked press	10	XP9911



XP9911

System 9000 dimmer and fan control switches

Supplied with M3.5 x 25mm long fixing screws.

Frequency: 50/ 60Hz.

Material
Polycarbonate

Capacity of each terminal
3 x 1.5mm²
2 x 2.5mm²

Rating 500W max.

Comply with BS EN 60669-2-1, a.c only IEC 60669-2-1, CB certificate

For incandescent lamps and max 150W halogen lamps.

Designation	Characteristics	Pack qty.	Cat. ref.
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XP9515

Dimmer and fan control switches	500W 2 way switched single dimmer	5	XP9515
	500W 2 way switched twin dimmer	5	XP9525
	400VA 2 way switched fan control	5	XP9105



XP9525



XP9105

System 9000

20A double pole control switches






Supplied with M3.5 x 25mm long fixing screws.

Optional flex outlet: for choice of use .

Comply with BS EN 60669-1, a.c. only IEC 60669-1, CB certificate

Capacity of each terminal
L, N: 2 x 6.0mm²
E: 2 x 4.0mm²

Material
Polycarbonate

	Designation	Characteristics	Pack qty.	Cat. ref.
 XR9200	Double pole control switches	20AX	10	XR9200
		20AX with neon	10	XR9206
 XR9206		20AX with flex outlet	10	XR9201
		20AX double pole switch + 10AX single pole switch	10	XR9203
 XR9222		20AX double pole switch + twin 10AX single pole switch	10	XR9204
		20AX with neon and flex outlet	10	XR9207
		20AX double gang with neon	10	XR9222

System 9000



32A and 45A double pole control switches

Supplied with M3.5 x 25mm long fixing screws.

Material
Polycarbonate

Comply with BS EN 60669-1, a.c. only IEC 60669-1, CB certificate

Capacity of each terminal
L, N: 1 x 16.0mm²
E: 2 x 16.0mm²

	Designation	Characteristics	Pack qty.	Cat. ref.
 XR9327	Double pole control switches	32A with neon	10	XR9327
		45A with neon	10	XR9457
 XR9456		45A double pole cooker control unit on (size 2)	10	XR9456

System 9000 cooker control unit

Combined switch / sockets have double pole 45A main switch and 13A switched socket outlet.

Capacity of each terminal
L, N: 1 x 16mm²
E: 1 x 10mm²

cooker and socket.

Supplied with M3.5 x 25mm long fixing screws.

Marking on cooker control units:
ON, OFF and circuit identification

Material
Polycarbonate

Comply with BS 4177, a.c. only

Designation	Characteristics	Pack qty.	Cat. ref.
Double pole cooker control unit	45A cooker control unit (size 2)	5	XR9458



XR9458

System 9000 special marked units

Designation	Characteristics	Pack qty.	Cat. ref.
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XR9201AC

Double pole control switch with special marking

20AX with neon marked "Water Heater"

10

XR9206WH

20AX with flex outlet marked "Air Conditioner"

10

XR9201AC



XR9207AC

20AX with neon and flex outlet marked "Air Conditioner"

10

XR9207AC

20AX with neon and flex outlet marked "Water Heater"

10

XR9207WH



XR9207WH

32AX with neon marked "Air Conditioner"

10












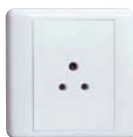

XR9327AC



XR9327AC



Supplied with M3.5 x 25mm
long fixing screws.

Material
Polycarbonate


Designation		Characteristics	Pack qty.	Cat. ref.
		Communication and data telephone outlet (BS style master)	10	XT9001
XT9001	XT9004	telephone outlet (BS style slave)	10	XT9002
		FM co-axial outlet	10	XT9003
XT9005		TV co-axial outlet	10	XT9004
		TV & FM connector	10	XT9005
XT9025		TV / FM splitter isolator SCV outlet (size 2) (blank plate only)	10	XT9025
		TV / FM outlet with splitter	10	XT9006
XT9007	XT9008	RJ45 data outlet (1 mod) Cat 5e	10	XT9007
		RJ45 data outlet (2 mod) Cat 5e	10	XT9008
XT9009	XT9010	RJ45 data outlet (1 mod) cat 6	10	XT9607
		RJ45 data outlet (2 mod) cat 6	10	XT9608
XT9011	XT9012	RJ11 + RJ45 data outlet	10	XT9009
		RJ11 data outlet (1 mod)	10	XT9010
XT9013	XT9014	RJ11 data outlet (2 mod)	10	XT9011
		RG6 cable TV outlet	10	XT9012
XT9016		branching terminal 5-pair tel. terminal	10	XT9013
		2A telephone socket with shutter	10	XT9014
		TV/ FM outlet	10	XT9015
		TV/ FM outlet slave	10	XT9016
		TV/ RG6 connector without splitter	10	XT9017

System 9000 moulded blank plates



	Supplied with M3.5 x 25mm long fixing screws.	Material Polycarbonate	Comply with BS5733	
	Designation	Characteristics	Pack qty.	Cat. ref.
 XV9101	Blank plates	blank plate (size 1)	20	XV9101
		blank plate (size 2)	10	XV9102
 XV9102				

System 9000 shaver socket

	Supplied with M3.5 x 25mm long fixing screws.	Capacity of each terminal 2 x 2.5mm ²	Material Polycarbonate	
	Designed for use in bathrooms and washrooms and incorporates a double wound isolating transformer for an earth free supply. Input 230V a.c. output dual voltage 230V a.c. and 115V a.c. outlets rating 20VA on either voltage.	Primary circuit is protected by a self-resetting thermal overload device. Insertion of shaver plug automatically switches on the transformer, removal automatically switches it off. A positive interlock prevents 2 plugs being inserted simultaneously.	Comply with BS EN 61558-2-5 IEC 61558-2-5, CB certificate	
	Designation	Characteristics	Pack qty.	Cat. ref.
 XS9200	Shaver socket	115V / 230V [20VA] (size 2)	1	XS9200

BS wiring accessories

System 9000

13A socket outlets



All terminal screws upward facing for ease of installation.

Supplied with M3.5 x 25mm long fixing screws.

Capacity of each terminal


L, N: 2 x 4.0mm²
E: 3 x 2.5mm²

Integral rocker design of switched sockets provide clear red 'on' indication.

Tough plastic back for durability.

Material
Polycarbonate

Comply with BS 1363 Pt 2, a.c. only, SS145

Designation	Characteristics	Pack qty.	Cat. ref.
 <p>XS9113 XS9114</p>	Socket outlets		
	13A single unswitched	10	XS9113
	13A double unswitched (size 2)	5	XS9213
 <p>XS9213</p>	13A single switched	10	XS9114
 <p>XS9214</p>	13A double switched (size 2)	5	XS9214
 <p>XS9117</p>	13A single switched with neon	10	XS9117
 <p>XS9217</p>	13A double switched with neon (size 2)	5	XS9217

System 9000

5A socket outlets

Supplied with M3.5 x 25mm long fixing screws.


Capacity of each terminal

L, N: 2 X 2.5mm²
E: 3 X 1.5mm²

Integral rocker design of switched sockets provide clear red 'on' indication.

Material
Polycarbonate

Comply with BS 546 SS472

Designation	Characteristics	Pack qty.	Cat. ref.
 <p>XS9905 XS9906</p>	Socket outlets		
	5A round pin unswitched	10	XS9905
	5A round pin switched	10	XS9906

System 9000

15A and 16A socket outlets



Supplied with M3.5 x 25mm long fixing screws.

Integral rocker design of switched sockets provide clear red 'on' indication.




Comply with BS 546 SS472

Capacity of each terminal

L, N: 2 X 4.0mm²
E: 3 X 2.5mm²

Material

Polycarbonate

Designation		Characteristics	Pack qty.	Cat. ref.	
 XS9915	 XS9916	Socket outlets	15A round pin unswitched	10	XS9915
			15A round pin switched	10	XS9916
 XS9413	German style sockets		16A German style socket (without shutter)	10	XS9413
			16A German style socket (with shutter)	10	XS9414

System 9000

10A socket outlets

Supplied with M3.5 x 25mm long fixing screws.

Integral rocker design of switched sockets provide clear red 'on' indication.



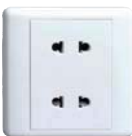
Comply with IEC 884-1

Capacity of each terminal

L, N: 2 X 4.0mm²
E: 3 X 2.5mm²

Material

Polycarbonate

Designation		Characteristics	Pack qty.	Cat. ref.	
 XS9211P	 XS9212P	Socket outlets	10A 2 pin unswitched universal socket	10	XS9211P
			10A 2 pin switched universal socket	10	XS9212P
 XS9221P			10A 2 pin unswitched twin universal socket	10	XS9221P
			10A 3 pin switched multi universal socket	10	XS9314P

BS wiring accessories

Cable clamp accommodates up to 2.5mm² flexible cord.

Supplied with M3.5 x 25mm long fixing screws.
All switched units are double pole.

Capacity of each terminal





L, N: 3 X 4.0mm²
E: 2 X 4.0mm²

All units fitted with a 13A fuse link to BS 1362, can be supplied with 2A, 5A fuse link.

Material
Polycarbonate

Optional flex outlet for choice of use.

Comply with BS 1363 Pt 4, a.c. only

	Designation	Characteristics	Pack qty.	Cat. ref.
	Fused connection units	13A fused with flex outlet	10	XR9130
XR9130		13A switch fused with flex outlet	10	XR9131
		13A switch fused with neon and flex outlet	10	XR9137
XR9131		13A fused with neon and flex outlet	10	XR9138
				
XR9137				
				
XR9138				



Supplied with M3.5 x 25mm long fixing screws.

- 25A connection unit
Capacity of each terminal
L, N: 2 x 6.0mm²
E: 2 x 6.0mm²




- 45A connection unit
Capacity of each terminal
L, N: 2 x 6.0mm²
E: 2 x 6.0mm²

Material
Polycarbonate

Comply with BS5733

	Designation	Characteristics	Pack qty.	Cat. ref.
 XR9250	Connection units	25A connection unit with flex outlet	10	XR9250
		45A connection unit with flex outlet	10	XR9450
 XR9450				

System 9000
door chimes and covers

	Designation	Characteristics	Pack qty.	Cat. ref.
 XD9001	Door chime	complies with BSEN 60335-1, IEC 60669-1 250V AC or 4.5V DC (AAA x 3) frequency 50 Hz with adjustable melody - ding dong sound supplied with M3.5 x 25mm long fixing screws	10	XD9001
 XC9001	WA covers	WA Cover for switch	10	XC9001
		WA Cover for socket	10	XC9002
 XC9002				

BS wiring accessories

'X' rated - No need to derate for fluorescent loads.

Supplied with M3.5 x 25mm long fixing screws. Switches with neon for illuminated identification in the dark environment.

Capacity of each terminal
3 x 1.5mm²
2 x 2.5mm²

























Two way switches can be wired either 1 way or 2 way.

Terminal markings denote:
L1 = one way

L2 = two way
C = common

Material
Polycarbonate

Comply with
BS EN 60669-1, a.c only
IEC 60669-1, CB certificate

Designation	Characteristics	Pack qty.	Cat. ref.
Large dolly switches 10AX			
 XL9110	1 gang 1 way, large dolly	10	XL9110
 XL9210	1 gang 2 way, large dolly	10	XL9120
 XL9310	1 gang Intermediate large dolly	10	XL9001
 XL9001	2 gang 1 way, large dolly	10	XL9210
 XL9410	2 gang 2 way, large dolly	10	XL9220
 XL9117	3 gang 1 way, large dolly	10	XL9310
 XL9217	3 gang 2 way, large dolly	10	XL9320
 XL9317	4 gang 1 way, large dolly (size 2)	10	XL9410
 XL9211	4 gang 2 way, large dolly (size 2)	10	XL9420
 XL9221			
 XL9231			
 XL9241			
Large dolly switches 10AX with neon			
 XL9117	1 gang 1 way, large dolly with neon	10	XL9117
 XL9217	1 gang 2 way, large dolly with neon	10	XL9127
 XL9317	2 gang 1 way, large dolly with neon	10	XL9217
 XL9211	2 gang 2 way, large dolly with neon	10	XL9227
 XL9221	3 gang 1 way, large dolly with neon	10	XL9317
 XL9231	3 gang 2 way, large dolly with neon	10	XL9327
Large dolly switches 20AX			
 XL9211	1 gang 1 way, large dolly	10	XL9211
 XL9221	1 gang 2 way, large dolly	10	XL9212
 XL9231	2 gang 1 way, large dolly	10	XL9221-2
 XL9241	2 gang 2 way, large dolly	10	XL9222-2
 XL9211	3 gang 1 way, large dolly	10	XL9231
 XL9221	3 gang 2 way, large dolly	10	XL9232
 XL9231	4 gang 1 way, large dolly (size 2)	10	XL9241
 XL9241	4 gang 2 way, large dolly (size 2)	10	XL9242

System 9088 bell switches






Bell push / press can be wired to make 250V a.c.

Capacity of each terminal
3 x 1.5mm²
2 x 2.5mm²

Material
Polycarbonate

Supplied with M3.5 x 25mm long fixing screws.

Comply with BS EN 60669-1

Designation	Characteristics	Pack qty.	Cat. ref.
 XL9910	Bell switches single pole 10A marked bell large dolly	10	XL9910
 XL9911	marked press large dolly	10	XL9911
 XL9911NM	without marking large dolly	10	XL9911NM

System 9088 dimmer switches

Supplied with M3.5 x 25mm long fixing screws.



For incandescent lamps only.

Frequency 50/ 60Hz

Capacity of each terminal
3 x 1.5mm² conductors

Material
Polycarbonate

Comply with BS EN 60669-2-1
IEC 60669-2-1, CB certificate

Designation	Characteristics	Pack qty.	Cat. ref.
 XL9515	Dimmer switches 600W 1 gang, large dolly dimming switch with neon (cycle action)	10	XL9515
 XL9525	400W 2 gang, large dolly dimming switch with neon (cycle action)	10	XL9525

BS wiring accessories

System 9088

double pole control switches







Supplied with M3.5 x 25mm long fixing screws.

Material
Polycarbonate



Capacity of each terminal
L, N: 1 x 16.0mm²
E: 2 x 16.0mm²

Comply with BS EN 60669-1, a.c. only
IEC 606691, CB certificate

	Designation	Characteristics	Pack qty.	Cat. ref.
 XL9200	Double pole control switches	20AX 1 gang, large dolly	10	XL9200
		20AX 2 gang, large dolly	10	XL9221
 XL9221		20AX 1 gang, large dolly with neon	10	XL9206
		20AX 2 gang, large dolly with neon	10	XL9222
 XL9206				
 XL9222				

System 9088





special marked units

	Designation	Characteristics	Pack qty.	Cat. ref.
 XL9206WH	Double pole control switches with special marking	20AX 1 gang, large dolly with neon marked "Water Heater"	10	XL9206WH
		20AX 2 gang, large dolly with neon marked "Washing Machine"	10	XL9222WM
 XL9222WM				

Supplied with M3.5 x 25mm
long fixing screws

Comply with BSEN 60669-1

Material
Polycarbonate

Designation	Characteristics	Pack qty.	Cat. ref.
 XH9001	Hotel range Key tag switch with key card (time delay 60s)	5	XH9001
	Key card only	5	XH9001CARD
 XH9001CARD	"DND" & "Please clean up" switches with (RED) neon	10	XH9002
	"DND" & "Please clean up" indication box with door bell switch	10	XH9003
 XH9002			
 XH9003			

BS wiring
accessories

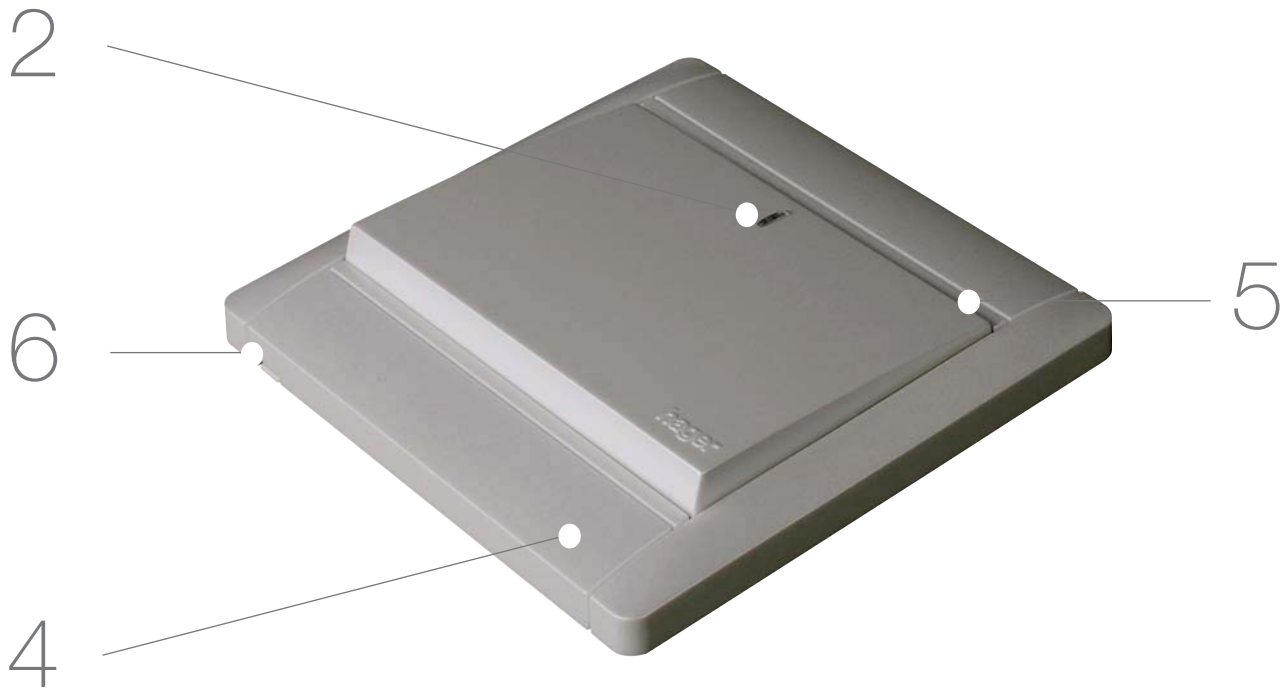
Wiring accessories

10088 range

Make the switch

The large convex rocker switch feature provides a subtle feel when switching. The product is available in a full range of colours and finishes, which ensures the compatibility of the switches with the interior design. The changeable clip on cover enables you to mix and match to create your own product character.

The unique "Blue Mechanism" represents Hager's Professional products in order to ensure quality and safety. System 10088* has obtained the British certificate under the International Third Party Laboratory Nemko UK.



Your benefits

- Full range of colours and finishes
- "Blue Mechanism" ensures quality and safety
- Mix and match clip on covers to create a unique product

Characteristics

- Standard BS EN60669-1 / IEC 60669-1
- Material: polycarbonate
- Safety shutter

Expert tips

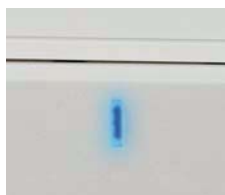
1



Unique design

Slim front plate, combination of glass and matt finish.

2



Blue LED

Location or ON indicator.
Glow in the dark (4-5 hours)

4



Available in four colours

5



Cover with gold or silver strip

More choice for your decoration.

6



Removable slot

No damage to the wall when removing covers.

7



Screws in one direction

Easier for installation.

8



Safety shutter

All sockets equipped with shutters preventing single object intrusion.

'X' rated - No need to derate for fluorescent loads.

Supplied with M3.5 x 25mm long fixing screws.
Switches available with Blue LED for illuminated identification in a dark environment.

All switches with LED are pre-wired as location indicator.

All switches without LED have glow in the dark fluorescent indicators.





Capacity of each terminal
3 x 1.5mm²
2 x 2.5mm²

Two way switches can be wired either 1 way or 2 way.

Terminal markings denote:
L1 = one way
L2 = two way
C = common

Material
Polycarbonate

Comply with
BS EN 60669-1, a.c only
IEC 60669-1, CB certificate

Designation		Characteristics	Pack qty.	Cat. ref.
		Large dolly switches with fluorescent strips 10AX		
		1 gang 1 way, large dolly	10	WGL111
		1 gang 2 way, large dolly	10	WGL112
		1 gang intermediate large dolly	10	WGL101
		2 gang 1 way, large dolly	10	WGL121
		2 gang 2 way, large dolly	10	WGL122
		3 gang 1 way, large dolly	10	WGL131
		3 gang 2 way, large dolly	10	WGL132
WGL111/112N	WGL121/122N	Large dolly switches with LED 10AX		
		1 gang 1 way, large dolly	10	WGL111N
		1 gang 2 way, large dolly	10	WGL112N
		2 gang 1 way, large dolly	10	WGL121N
		2 gang 2 way, large dolly	10	WGL122N
		3 gang 1 way, large dolly	10	WGL131N
		3 gang 2 way, large dolly	10	WGL132N
		Large dolly switches with fluorescent strips 20AX		
		1 gang 1 way, large dolly	10	WGL211
		1 gang 2 way, large dolly	10	WGL212
		2 gang 1 way, large dolly	10	WGL221
		2 gang 2 way, large dolly	10	WGL222
		3 gang 1 way, large dolly	10	WGL231
		3 gang 2 way, large dolly	10	WGL232
		Large dolly switches with LED 20AX		
		1 gang 1 way, large dolly	10	WGL211N
		1 gang 2 way, large dolly	10	WGL212N
		2 gang 1 way, large dolly	10	WGL221N
		2 gang 2 way, large dolly	10	WGL222N
		3 gang 1 way, large dolly	10	WGL231N
		3 gang 2 way, large dolly	10	WGL232N

System 10088 bell switches



Bell push / press can be wired to make 250V a.c.

With fluorescent strip.

Material
Polycarbonate

Supplied with M3.5 x 25mm long fixing screws.

Capacity of each terminal
3 x 1.5mm²
2 x 2.5mm²

Comply with BS EN 60669-1

Designation	Characteristics	Pack qty.	Cat. ref.
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WGL11B

Bell switches single pole 10A	marked bell large dolly	10	WGL11B
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	marked press large dolly	10	WGL11P
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WGL11P

System 10088 dimmer switches

Supplied with M3.5 x 25mm long fixing screws.

Dimmers can control incandescent lamps only.

Material
Polycarbonate

Capacity of each terminal
3 x 1.5mm² conductors

Frequency 50Hz/ 60Hz

Comply with BS EN 60669-2-1
IEC 60669-2-, CB certificate

Designation	Characteristics	Pack qty.	Cat. ref.
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WGLD600

Dimmer switches	600W 1 gang, large dolly dimming switch with neon (cycle action)	10	WGLD600
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	400W 2 gang, large dolly dimming switch with neon (cycle action)	10	WGLD400
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WGLD400

System 10088 double pole control switches

Supplied with M3.5 x 25mm long fixing screws.

Material
Polycarbonate

Capacity of each terminal
L, N: 1 x 16mm²
E: 2 x 16mm²

Comply with BS EN 60669-1, a.c. only
IEC 60669, CB certificate



WGL2D1N

Designation	Characteristics	Pack qty.	Cat. ref.
Double pole control switches	20AX 1 gang, large dolly with (RED) neon	10	WGL2D1N
	20AX 1 gang, large dolly	10	WGL2D1

System 10088 32A and 45A double pole control switches

Supplied with M3.5 x 25mm long fixing screws and screw caps

Material
Polycarbonate

Capacity of each terminal
L, N: 1 x 16.0mm²
E: 2 x 16.0mm²

Comply with BS EN 60669-1, a.c. only
IEC 60669-1, CB certificate



WGR32D1
WGR45D1

Designation	Characteristics	Pack qty.	Cat. ref.
Double pole control switches	32A with (RED) neon	10	WGR32D1
	45A with (RED) neon	10	WGR45D1
	45A DP cooker unit (size 2)	10	WGR45D2

System 10088 cooker control unit

Combined switch / sockets have double pole 45A main switch and 13A switched socket outlet.

Capacity of each terminal
L, N: 1 x 16mm²
E: 1 x 10mm²

cooker and socket.

Supplied with M3.5 x 25mm long fixing screws and screw caps.

Marking on cooker control units:
ON, OFF and circuit identification

Material
Polycarbonate

Comply with BS 4177, a.c. only



WGR45CCU

Designation	Characteristics	Pack qty.	Cat. ref.
Double pole cooker control unit	45A cooker control unit (size 2)	5	WGR45CCU







WGL2D1WH

Designation	Characteristics	Pack qty.	Cat. ref.
Double pole control switch with special marking and (RED) neon	20AX 1 gang, large dolly marked "Water Heater"	10	WGL2D1WH
	20AX 1 gang, large dolly marked "Air Conditioner"	10	WGL2D1AC
	20AX 1 gang, large dolly marked "Cooker Hob"	10	WGL2D1CB
	20AX 1 gang, large dolly marked "Cooker Hood"	10	WGL2D1CH
	20AX 1 gang, large dolly marked "Dryer"	10	WGL2D1DR
	20AX 1 gang, large dolly marked "Dish Washer"	10	WGL2D1DW
	20AX 1 gang, large dolly marked "Fridge"	10	WGL2D1FR
	20AX 1 gang, large dolly marked "Oven"	10	WGL2D1AV
	20AX 1 gang, large dolly marked "Washing machine"	10	WGL2D1WM

System 10088
hotel range

Combined switch / sockets have double pole 45A main switch and 13A switched socket outlet. **Capacity of each terminal**
L, N: 1 x 16mm²
E: 1 x 10mm²
cooker and socket.












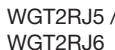











Supplied with M3.5 x 25mm long fixing screws and screw caps. **Material**
Polycarbonate
Marking on cooker control units: ON, OFF and circuit identification
Comply with BS 4177, a.c. only

Designation	Characteristics	Pack qty.	Cat. ref.
  WGHKT WGHKTCARD	Hotel range Key tag switch with key card (time delay 60s)	5	WGHKT
	Key card only	5	WGHKTCARD
 WGHDC  WGHBD	"DND" & "Please clean up" switches with (RED) neon	10	WGHDC
	"DND" & "Please clean up" indication box with door bell switch	10	WGHBD

BS wiring accessories

Supplied with M3.5 x 25mm
long fixing screws.

Material
Polycarbonate

Designation		Characteristics	Pack qty.	Cat. ref.
Communication and data		telephone outlet (BS style master)	10	WGT1M
		telephone outlet (BS style slave)	10	WGT1S
				
		TV co-axial outlet	10	WGTV75
				
		TV/ FM splitter isolator SCV outlet (size 2) (blank plate only)	10	WGTVFM2
				
		RJ45 data outlet (1 mod) Cat 5e	10	WGT1RJ5
		RJ45 data outlet (2 mod) Cat 5e	10	WGT2RJ5
		RJ45 data outlet (1 mod) Cat 6	10	WGT1RJ6
		RJ45 data outlet (2 mod) Cat 6	10	WGT2RJ6
		RJ11 + RJ45 data outlet	10	WGTD
				
		RJ11 data outlet (1 mod)	10	WGT1RJ
		RJ11 data outlet (2 mod)	10	WGT2RJ
		RG6 cable TV outlet	10	WGTV75F
		Branching terminal 5-pair tel. terminal	10	WGTBT5
				

All terminal screws upward facing for ease of installation. Supplied with M3.5 x 25mm long fixing screws.

Capacity of each terminal

L, N: 2 x 4.0mm²
E: 3 x 2.5mm²







Integral rocker design of switched sockets provide clear red 'on' indication.

Tough plastic back for durability.

Material

Polycarbonate

Comply with BS 1363 Pt 2, a.c. only, SS145

	Designation	Characteristics	Pack qty.	Cat. ref.
	Socket outlets	13A single unswitched	10	WGS113
		13A double unswitched (size 2)	5	WGS213
		13A single switched	10	WGS113S
		13A double switched (size 2)	5	WGS213S
		13A single switched with neon	10	WGS113N
		13A double switched with neon (size 2)	5	WGS213N

* Socket are with FREE dust preventive sticker to give additional protection during installation.
* Sockets with red dolly are also available.

System 10088

5A socket outlets

Supplied with M3.5 x 25mm long fixing screws.

Capacity of each terminal


L, N: 3 X 2.5mm²
E: 4 X 1.5mm²

Integral rocker design of switched sockets provide clear red 'on' indication.

Material

Polycarbonate

Comply with BS 546, SS472

	Designation	Characteristics	Pack qty.	Cat. ref.
	Socket outlet	5A round pin switched	10	WGS105S

System 10088 15A and 16A socket outlets



Supplied with M3.5 x 25mm long fixing screws.

Integral rocker design of switched sockets provide clear red 'on' indication.



Comply with BS 546 SS 472 IEC 60884 (for WGS116/116S)

Capacity of each terminal

L, N: 2 X 4.0mm²
E: 3 X 2.5mm²

Material

Polycarbonate

	Designation	Characteristics	Pack qty.	Cat. ref.	
 WGS115	 WGS115S	Socket outlets			
			15A round pin unswitched	10	WGS115
			15A round pin switched	10	WGS115S
 WGS116/116S	German style sockets				
		16A German style socket (without shutter)	10	WGS116	
		16A German style socket (with shutter)	10	WGS116S	

System 10088 shaver socket

Supplied with M3.5 x 25mm long fixing screws.

Capacity of each terminal
2 x 2.5mm²


Material
Polycarbonate

Designed for use in bathrooms and washrooms and incorporates a double wound isolating transformer for an earth free supply.

Primary circuit is protected by a self-resetting thermal overload device. Insertion of shaver plug automatically switches on the transformer, removal automatically switches it off. A positive interlock prevents 2 plugs being inserted simultaneously.

Comply with BS EN 61558-2-5 IEC 61558-2-5, CB certificate

Input 230V a.c. output dual voltage 230V a.c. and 115V a.c. outlets rating 20VA on either voltage.

	Designation	Characteristics	Pack qty.	Cat. ref.
 WGS200	Shaver socket	115V /230V [20VA] (size 2)	1	WGS200

System 10088

10A socket outlets



Supplied with M3.5 x 25mm long fixing screws.

Integral rocker design of switched sockets provide clear red 'on' indication.





Comply with IEC 884-1 BS 5733 (for WGS10IS)

Capacity of each terminal

L, N: 2 X 4.0mm²
E: 3 X 2.5mm²

Material

Polycarbonate

Designation		Characteristics	Pack qty.	Cat. ref.
		Socket outlets 10A 2 pin unswitched universal socket	10	WGS10U
WGS10U	WGS10US	10A 2 pin switched universal socket	10	WGS10US
		10A 2 pin unswitched twin universal socket	10	WGS10U2
WGS10U2	WGS10IS	10A switched multi international socket	10	WGS10IS

System 10088



moulded blank plates

Supplied with M3.5 x 25mm long fixing screws.

Comply with BS5733

Material

Polycarbonate

Designation		Characteristics	Pack qty.	Cat. ref.
	Blank plates	blank plate (size 1)	20	WGV1
WGV1		blank plate (size 2)	10	WGV2
				
WGV2				

BS wiring accessories

System 10088 fused connection units

Cable clamp accommodates up to 2.5mm² flexible cord.

Supplied with M3.5 x 25mm long fixing screws.

All switched units are double pole.

Capacity of each terminal

L, N: 3 x 4.0mm²
E: 2 x 4.0mm²




All units fitted with a 13A fuse link to BS 1362, can be supplied with 2A, 5A fuse link.

Material

Polycarbonate

Optional flex outlet - for choice of use.

Comply with BS 1363 Pt 4, a.c. only

Designation	Characteristics	Pack qty.	Cat. ref.
 WGR13	Fused connection units	10	WGR13
 WGR13S	13A fused with flex outlet	10	WGR13S
 WGR13SN	13A switch fused with flex outlet	10	WGR13SN
	13A switch fused with neon and flex outlet	10	WGR13SN

System 10088 connection unit

Supplied with M3.5 x 25mm long fixing screws.


- 25A connection unit

Capacity of each terminal
L, N: 2 x 6.0mm²
E: 2 x 6.0mm²

Material

Polycarbonate

Comply with BS5733

Designation	Characteristics	Pack qty.	Cat. ref.
 WGR25	Connection unit	10	WGR25
	25A connection unit with flex outlet	10	WGR25

System 10088 connection unit

Designation

Characteristics

Pack qty.

Cat. ref.






WGDC01

Door chime






Complies with BS EN 60335-1, IEC 60669-1
250V AC or 4.5V DC (AAA x 3)
Frequency 50 Hz
With adjustable melody/
ding dong sound
Supplied with M3.5 x 25mm long fixing screws

10

WGDC01

Designation		Characteristics	Pack qty.	Cat. ref.
 WGVE2	 WGVE3	Euro accomodation plates 1 module = 22.5mm x 45mm	20	WGVE2
		accommodation plate (for 2 modules)	20	WGVE3
Modules				
 WGSM16EA		13A multi international socket (45mm x 45mm)	10	WGSM13I
		16A 2 pin Euro American socket (22.5mm x 45mm)	10	WGSM216EA
 WGSM16EA	 WGSM16EA	16A 3 pin Euro American socket (45mm x 45mm)	10	WGSM16EA
		16A 3 pin Twin Euro American socket (45mm x 67.5mm)	5	WGSMT16EA
 WGSM113	 WGMRJ11	13A BS socket (45mm x 45mm)	10	WGSM113
		keystone 4 pin telephone (22.5mm x 45mm)	10	WGMRJ11
 WGMRJ45		keystone 8 pin Cat 5E Data (22.5mm x 45mm)	10	WGMRJ45
		keystone 8 pin Cat 6 Data (22.5mm x 45mm)	10	WGMRJ456

BS wiring accessories

	Designation	Characteristics	Pack qty.	Cat. ref.
 WS050	Motion detectors	without neutral (2 wires) 230V AC/ 50Hz In case of renovation, replace simple switch for: - Incandescent and halogen 230V AC lamps - ELV halogen lamps with electronic transformer Can be used as "master" in a multi switch configuration	1	WS050
		without neutral (3 wires) for: - Incandescent and halogen 230V AC lamps - incandescent and halogen 230V AC: 0... 1000W - ELV halogen lamps with electronic or ferromagnetic transformer - other loads: 0...500V A - Fluorescent lamps - CMV, fan, Can be used as "master" in a multi switch configuration	1	WS051
 WS063	 WS064	Dimmers 230V AC/ 50Hz for: - Incandescent and halogen 230V AC lamps - ELV halogen lamps with ferromagnetic transformer (WS063) - ELV halogen lamps with electronic transformer (WS064)	1	WS063*
		rotative 400V A Fonctionning -Variation by rotation -ON/OFF by press - 60... 4000W/ VA	1	WS064*
		rotative 400V A Fonctionning - Variation by rotation - ON/OFF by press - 60... 320W/ VA	1	WS065*
 WS300	 WS301	Shutter control switches 10A - 250V AC	1	WS300*
		double 2W switch for shutters allows direct motor control inversed switch with fixed position	1	WS301*
		double push button for shutters allows individual or grouped control for motors through an automation box switch with momentary position	1	WS301*

* available only in white

Designation		Characteristics	Pack qty.	Cat. ref.
 WGC1CA	 WGC1TG	Clip on covers		
		carbon, size 1	40	WGC1CA
		carbon, size 2	20	WGC2CA
 WGC1MP	 WGC1-GD	titanium grey, size 1	40	WGC1TG
		titanium grey, size 2	20	WGC2TG
 WGC1-SV	 WGC1	mother of pearl, size 1	40	WGC1MP
		mother of pearl, size 2	20	WGC2MP
 WGC2CA		with gold strip, size 1	40	WGC1-GD
		with gold strip, size 2	20	WGC2-GD
 WGC2TG		with silver strip, size 1	40	WGC1-SV
		with silver strip, size 2	20	WGC2-SV
 WGC2MP		white, size 1	40	WGC1
		white, size 2	20	WGC2
 WGC2-GD				
 WGC2-SV				
 WGC2				

BS wiring accessories



WGL111CA

CA: carbon



WGL111TG

TG: titanium grey



WGL111MP

MG: mother of pearl

System 10088 colour codes and references

Colour Code & Reference

*** All below colour for System 10088 only.

Item	colour reference	colour code
1	carbon	CA
2	titanium grey	TG
3	mother of pearl	MP

Ordering

- If whole product is in WHITE colour:

	Reference	clip on cover	product
ex:	WGL112	white	white



WGL112

- If whole product is colour sprayed:

	Reference	clip on cover	product
ex:	WGL112CA	carbon	carbon



WGL112CA

IP55 switches

IP55
Available in 1, 2 & 3 gang

Features

- Clear Silicon gasket allows operation of switch without lifting cover
- Clear Silicon gasket is replaceable
- Large switch rocker allows easy operation
- Mounting screws locations

segregated from the back box by gaskets for improved IP installations

- 20 mm Conduit entries available on all sides
- IP rated cable gland included




Technical data

- IP55
- 250V 10AX rated (suitable for fluorescent loads)
- 1 way & 2 way models
- Terminals capable of taking

3 x 1.5 mm² or 2 x 2.5 mm² cables



- Earth terminal mounted in back box

Comply with
BS EN 60529 IP test
BS EN 60669-1

	Designation	Characteristics	Pack qty.	Cat. ref.
 XPW5110/5120	IP55 switches 10AX Inductive load rated	1 gang 1 way conduit entries: 4 x 20 mm	1	XPW5110
		1 gang 2 way conduit entries: 4 x 20 mm	1	XPW5120
 XPW5210/5220		2 gang 1 way conduit entries: 4 x 20 mm	1	XPW5210
		2 gang 2 way conduit entries: 4 x 20 mm	1	XPW5220
 XPW5320		3 gang 1 way conduit entries: 4 x 20 mm	1	XPW5310
		3 gang 2 way conduit entries: 4 x 20 mm	1	XPW5320

BS wiring accessories

IP55 special function switches

	Designation	Characteristics	Pack qty.	Cat. ref.
 XRW5200	IP55 switches 20AX double pole	1 gang 1 way double pole conduit entries: 4 x 20 mm	1	XRW5200
		IP55 switches 10AX bell press	1 gang 1 way bell press conduit entries: 4 x 20 mm	1
 XPW5910				

IP55 Sockets

Single & twin
Switched and un-switched
sockets outlets.

Features

- Clear silicon gasket allows visual identification of switch position without lifting cover
- Clear silicon gasket is replaceable
- Mounting screws locations

segregated from the back box by gaskets for improved IP installations

- 20 mm Conduit entries available on all sides
- IP rated cable gland included

Technical data

- IP55
- 250V 13A
- Terminals capable of taking 3 x 2.5 mm² or 2 x 4 mm² cables

- Earth terminal mounted in back box

Complies with
BS EN 60529 IP test
BS 1363 Socket outlets
SS145
MS589

Designation	Characteristics	Pack qty.	Cat. ref.
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XSW5113

IP55 un-switched sockets

single socket un-switched 13A
conduit entries: 4 x 20 mm

1

XSW5113

double socket un-switched 13A
conduit entries: 8 x 20 mm

1

XSW5213



XSW5213

IP55 switched sockets

single socket switched 13A
conduit entries: 4 x 20 mm

1

XSW5114

double socket switched 13A
conduit entries: 8 x 20 mm

1

XSW5214



XSW5114



XSW5214

IP66 Sockets
 Single, un-switched

Twin, switched and un-switched

Fuse Connection Units
 BS1363: Part 4 1995 Connection Units

Features
 - Soft GEL cable seals to maintain IP66 when plug is inserted

- Mounting screws locations segregated from the back box by gaskets for improved IP installations
 - 20 mm conduit entries available on all sides
 IP rated cable gland included

Technical data
 - IP66
 - 250V 13A
 - Terminals capable of taking 3 x 2.5 mm² or 2 x 4 mm² cables

- Earth terminal mounted in back box

Comply with
 BS EN 60529 IP test
 BS 1363 Socket outlets

Designation	Characteristics	Pack qty.	Cat. ref.
 XSW6113	IP66 un-switched sockets single socket un-switched 13A conduit entries: 4 x 20 mm	1	XSW6113
	double socket un-switched 13A conduit entries: 8 x 20 mm	1	XSW6213
 XSW6213			
 XSW6214	IP 66 switched sockets double socket switched 13A conduit entries: 8 x 20 mm	1	XSW6214
 XRW6130	IP66 Spur units 13A fused spur with flex outlet conduit entries: 4 x 20 mm	1	XRW6130
	fused spur with switch conduit entries: 4 x 20 mm	1	XRW6131
 XRW6131			

BS wiring accessories

<p>XC001 - Dimension: w.105mm x h.168mm x d.45mm - Power source: 220-240V AC 50Hz - Transformer output: 6VDC</p>	<p>XC002 - Dimension: w.105mm x h.168mm x d.45mm - Power source: 4 x 1.5V R14C batteries - Only dingdong sound</p>	<p>Comply with BS EN 61558-1:1998 BS EN 61558-2-8:1999</p>
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XC001/002

Designation	Characteristics	Pack qty.	Cat. ref.
Doorbells	220-240V AC 50Hz	1	XC001
	4 X 1.5V R14C batteries	1	XC002

Floor mounting sockets

<p>Floor mounting socket Single and twin un-switched sockets outlets</p>	<p>Technical data - 250V 13A - Single and twin - Terminals capable of taking: 3 x 2.5 mm² or 2 x 4 mm² cables</p>	<p>Comply with BS1363 socket outlets MS589 SS145</p>
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XS113FM



XS113FM

Designation	Characteristics	Pack qty.	Cat. ref.
Floor mounting socket	1 gang 13A single floor mounting socket	10	XS113FM
	2 gang 13A twin floor mounting socket	5	XS213FM

IP66 isolators

The range of IP66 isolators are designed to be used in outdoor applications with IP66 degree of protection. They are rated at AC22A and AC23A offer options of 2, 3 poles and 4 poles with switched neutral. They are compact and easy to install with 2 screw quick release top cover.

Electrical specification

Tested and comply with BSEN 60947-3.

Rated voltage: 250V ~ AC
440V ~ AC

Rating AC22A is for switching of mixed resistive and inductive loads, including moderate overloads.

Rating AC23A is for switching of motor loads or other highly inductive loads.

Mechanical specification

Protection Category: IP66

Material

polycarbonate – UV grade

Devices & accessories

DP 20-40A
TP & N 20-40A

TP & SW N 20-63A



JG440IN

Designation	Characteristics	In/A	Cat. ref.
IP66 isolators AC23A	2P h.170 x w.84 x d.87 mm	20A	JG220IN
		32A	JG232IN
		40A	JG240IN
		63A	JG263IN
	3P h.170 x w.84 x d.87 mm	20A	JG320IN
		32A	JG332IN
		40A	JG340IN
		63A	JG363IN
	3P with switched neutral h.170 x w.84 x d.87 mm	20A	JG420IN
		32A	JG432IN
		40A	JG440IN
		63A	JG463IN
IP66 isolators AC22A	2P h.170 x w.84 x d.87 mm	20A	JG220U
		32A	JG232U
		40A	JG240U
		63A	JG263U
	3P h.170 x w.84 x d.87 mm	20A	JG320U
		32A	JG332U
		40A	JG340U
		63A	JG363U
	3P with switched neutral h.170 x w.84 x d.87 mm	20A	JG420U
		32A	JG432U
		40A	JG440U
		63A	JG463U

BS wiring accessories

Compliance with standards

Regulation 511-01-01 of BS 7671 : Requirements for Electrical Installations, IEE Wiring Regulations Sixteenth Edition is of particular importance to specifiers and installers with respect to product standards.

Regulation 511-01-01 requires every item of equipment to comply with the relevant requirements of the applicable British Standard, or Harmonised Standard appropriate to the intended use of the equipment.

British Standards (BS)

The BSI (British Standards Institution) was the first national standards body in the world. There are now more than 100 similar organisations which belong to the International Organisation for Standardisation (ISO) and the International Electrotechnical Commission (IEC). British Standards are drawn up by all those who have a particular interest in the subject i.e. manufacturers, users, research organisations, government departments and consumers. This work is co-ordinated by BSI staff, acting as secretaries to the committees where the work is done. All standards are made available for public comment before they are published.

Harmonised standards

A Harmonised standard is a European standard formally presented by CENELEC, to the European Commission and published in the commission's official journal. CENELEC is the Comité Européen de Normalisation Electrotechnique i.e. European Committee for Electrotechnical Standardisation.

BS 7671 part 2 defines a harmonised standard as a standard which has been drawn up by common agreement between national standards bodies notified to the European Commission by all member states and published under national procedures. The UK national standards body is the British Standards Institution. In the UK a harmonised standard will normally be published as a British Standard European Norm i.e. BS EN.

British Standard European Norm (BS EN)

CENELEC European standards are pre-fixed EN (European Norm). Adoption of the European Standard within the EC is mandatory and member countries of CENELEC are obliged to publish them unchanged. In the UK such standards are further endorsed with the additional prefix 'BS', for example BS EN 60669-1 : 1996 is the British Standard European Norm for Switches for household and similar fixed electrical installations.

Whilst a European Standard can be a direct replica of an IEC standard, discussions within CENELEC may result in the formulation of a standard which includes commonly agreed variations and Special National Conditions.

International Electrotechnical Commission (IEC)

Founded in 1906 the International Electrotechnical Commission (IEC) is the world organisation that prepares and publishes international standards for all electrical, electronic and related technologies. The membership consists of 60 participating countries, including all the world's major trading nations and a growing number of industrialising countries.

Foreign national standards based on IEC standards are permitted to be used by BS 7671. However the specifier must verify that any differences between the foreign standard and the corresponding British Standard or Harmonised Standard does not result in any lesser degree of safety than that afforded by compliance with the British Standard. This assessment would probably need to be made by specialists.

Conclusion

BS 7671 (IEE Wiring Regulations) recognises equipment which complies with a British Standard or Harmonised Standard appropriate to the intended use of the equipment without the need for further qualification.

Hager products have always been designed and manufactured to a high standard to ensure compliance with the current British or Harmonised Standard. See the table below for further information.

Product description	BS number	Description
switches	BS EN 60669-1 : 2000	switches for households and similar fixed electrical installations
indicators	BS 5733 : 1995	general requirements for electrical accessories
fused connection unit, cord outlets	BS 5733 : 1995	switches for household and similar fixed electrical installations with particular requirements for time delay switches (TDS)
dimmers	BS EN 60669-2-3 : 2008	switches for household and similar fixed electrical installations with particular requirements for time delay switches (TDS)
frames and plates	BS 5733 : 1995	switches for household and similar fixed electrical installations with particular requirements for time delay switches (TDS)
boxes	BS 4662 : 1980 or BS 5733 : 1995	specification for boxes for the enclosure of electrical accessories
10A wall switches	BS EN 60669-1 : 2000 IEC 60669-1 Ed.3.2b : 2007 CB certificate	switches for households and similar fixed electrical installations
dimmer switches	BS EN 60669-2-1 : 2004 IEC 60669-1 Ed.4.0b : 2002 CB certificate	electronic variable control switches (dimmer switches) for tungsten filament lighting
13A socket outlets	BS 1363 : part 2 : 1995	13A plugs, socket outlets, adaptors and connection units
15A switched sockets	BS 546 : 1950 (1988)	specification: two pole and earthing-pin plugs, socket outlets and socket outlet adaptators
20A D.P. switches	BS EN 60669-1 : 2000 IEC 60669-1 Ed.3.2b : 2007	switches for households and similar fixed electrical installations
13A fused connection units	BS 1363 : part 4 : 1995	specification for 13A fused connection units switched and unswitched
45A D.P. switches	BS EN 60669-1 : 2000 BS 3676 : 1 : 2000	switches for households and similar fixed electrical installations
45A cooker control units	BS4177 : 1992 IEC 60669-1 CB certificate	cooker control units
shaver socket outlets	BS EN 61558-2-5 : 1998 IEC 61558-2-5 : 1997 CB certificate	general requirements isolating transformers and safety isolating transformers electromagnetic compatibility, immunity requirements for household appliances tools and similar apparatus.
25A / A flex outlet plates	BS 5733 : 1995	general requirements for electrical accessories
BS batten	BS EN 61184 : 1997	home office shield are T2 rated.
ceiling rose	BS 67	

Objective of CE marking

CE marking is a "technical passport" which indicates that a product conforms to all relevant directives which require CE marking, thus enabling the product to travel within the E.U.

A directive is a piece of mandatory European Legislation implemented by regulations in all member countries. Its purpose is to allow free movement of goods that are safe and fit for use into and within the European Union.

CE marking is not a quality mark and it does not indicate that any testing or certification has been carried out.

The marking

CE marking is a statement by the manufacturer that the product complies with the essential requirements of all relevant Directives, notably in the area of technical safety and conformity assessment.

CE marking can appear on the product or packaging or documentation or combination thereof dependant upon which directive it has to comply with.

CE marking is a very specific graphical symbol and must be clearly separated from other marks.

**Directives**

It is the responsibility of the manufacturer or his authorised representative who places the product onto the EC market to decide which Directive(s) apply and to ensure the CE marking is affixed by the dates stated in the relevant directive(s).

For the majority of Hager products only one directive is applicable this is referred to as the Low Voltage Directive. Where some products incorporate electronic devices the Low voltage Directive and the Electromagnetic Compatibility Directive are applicable.

The Low Voltage Directive

EC directives are requirements adopted by the European Council and published in the Official Journal of the European Communities and are addressed to the member states.

European Council Directive 73/23/EEC with an amendment 93/68/EEC is known as the Low Voltage Directive.

The Low Voltage Directive has been implemented into UK law by the "Electrical Equipment (Safety) Regulations 1994" and apply to all electrical / electronic equipment operating at a voltage of 50-1000 V a.c. or 75-1500 V d.c.. They do not apply to plugs, socket outlets and adapters which are covered by the Plugs and Sockets (Safety) Regulations 1994.

Relationship between the Electrical Equipment (Safety) Regulations, Harmonised standards and the IEE Wiring Regulations Sixteenth Edition.

The Electrical Equipment (Safety) Regulations requires electrical equipment to be safe. Electrical equipment which satisfies the safety provisions of Harmonised standards shall be taken to comply with this requirement, unless there are reasonable grounds for suspecting that the equipment does not so comply.

Regulation 511-01-01 of BS 7671 Requirements for Electrical Installations, IEE Wiring Regulations Sixteenth Edition requires every item of equipment to comply with the relevant requirements of the applicable British Standard, or Harmonised Standard appropriate to the intended use of the equipment.

The first character numeral protection against solid substances

indicates the degree of protection provided by the enclosure with respect to persons and solid objects, also to the equipment inside the enclosure.

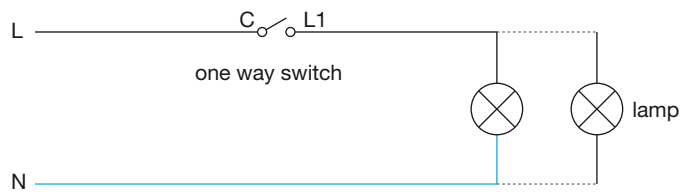
IP	Test	Short description	Definition
0		non-protected	no special protection
1		protected against solid objects greater than 50mm	a large surface of the body, such as a hand (but no protection against deliberate access) solid objects exceeding 50mm in diameter
2		protected against solid objects greater than 12,5mm	fingers or similar objects not exceeding 80mm in length; solid objects exceeding 12,5mm in diameter
3		protected against solid objects greater than 2,5mm	tools, wires, etc... of diameter or thickness greater than 2,5mm; solid objects exceeding 2,5mm in diameter
4		protected against solid objects greater than 1,0mm	wires or strips of greater than 1,0mm; solid objects exceeding 1,0mm in diameter
5		dust-protected	ingress of dust is not totally prevented but dust does not enter in sufficient quantity to interfere with satisfactory operation of the equipment
6		dust-light	no ingress of dust

The second character numeral protection against liquid substances

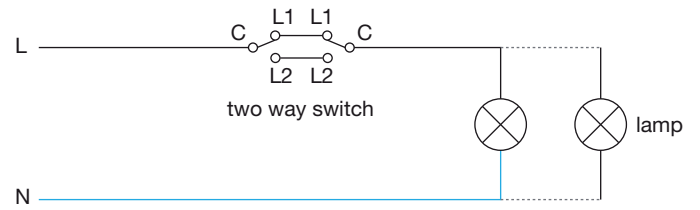
indicates the degree of protection provided by the enclosure with respect to harmful ingress of water; a third character may be used to indicate mechanical strength. An x signifies that no test has been carried out

IP	Test	Short description	Definition
0		non-protected	no special protection
1		protected against dripping water	dripping water shall have no harmful effect
2		protected against dripping water when tilted up to 15°	vertically dripping water shall have no harmful effect when the enclosure is tilted at any angle up to 15° from its normal position
3		protected against spraying water greater than 60°	water falling as a spray at an angle up to 60° from the vertical shall have no harmful effect
4		protected against splashing water	water splashed against the enclosure from any direction shall have no harmful effect
5		protected against water jets	water projected by a nozzle against the enclosure from any direction shall have no harmful effect
6		protected against heavy seas	water from heavy seas or water projected in powerful jets shall not enter the enclosure in harmful quantities
7		protected against the effect of immersion	ingress of water in a harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time
8		protected against submersion	the equipment is suitable for continuous submersion in water under conditions which shall be specified by the manufacturer

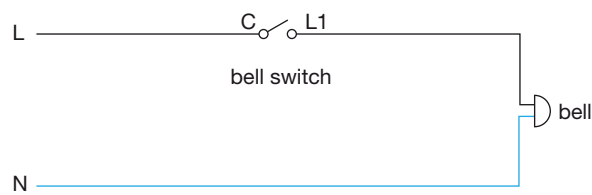
One way switch



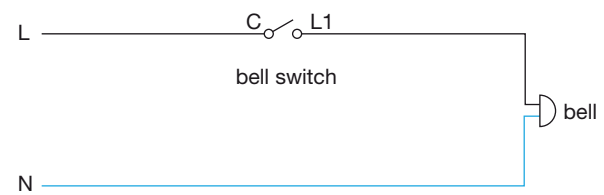
Two way switch



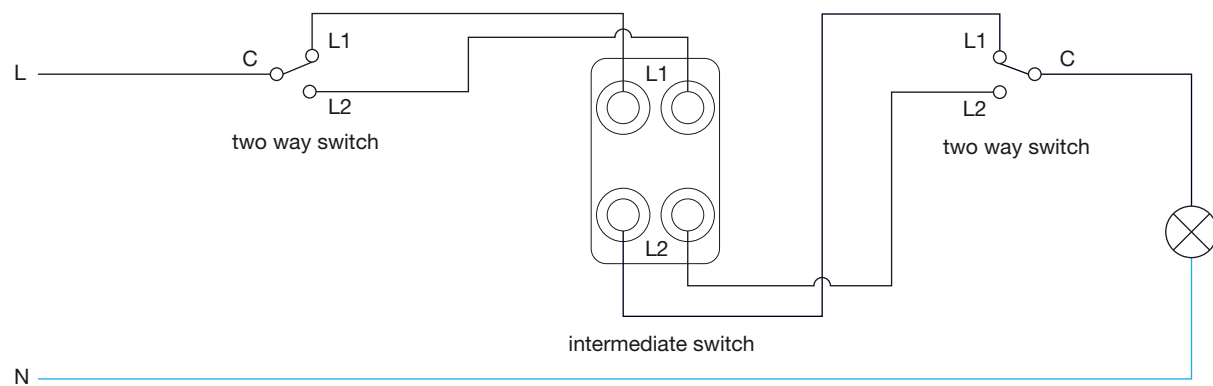
Marked bell switch



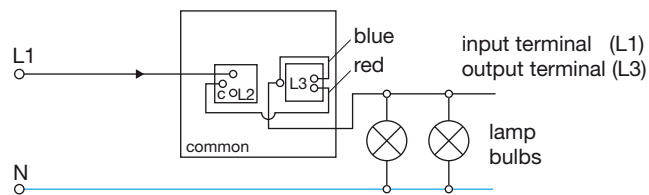
Marked bell switch



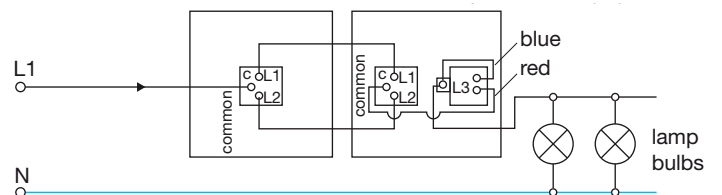
Intermediate switch



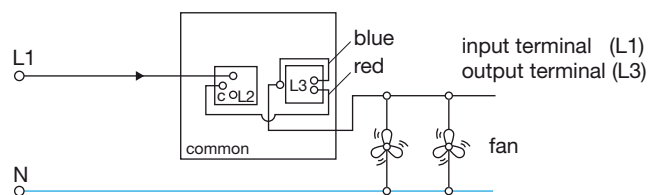
Dimmer switch - one way connection



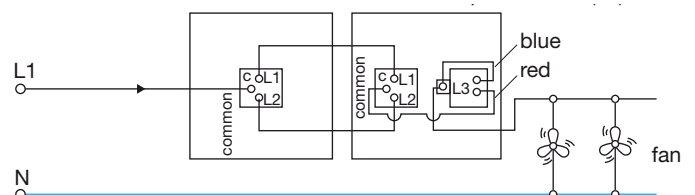
Dimmer switch - two way connection



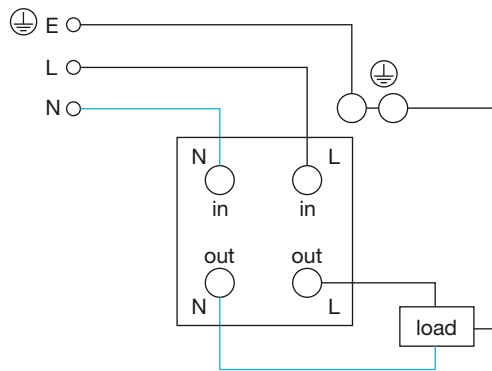
Fan control - one way connection



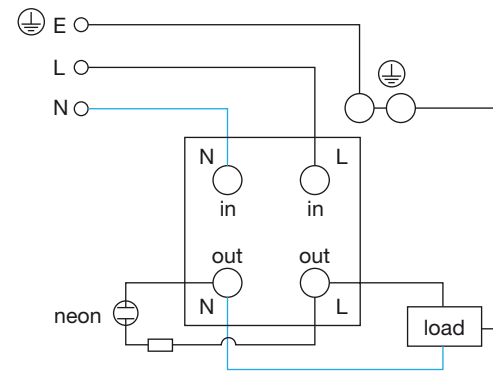
Fan control - two way connection



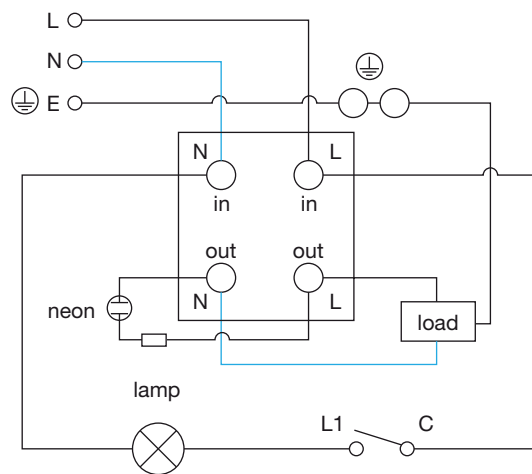
Dimmer switch - one way connection



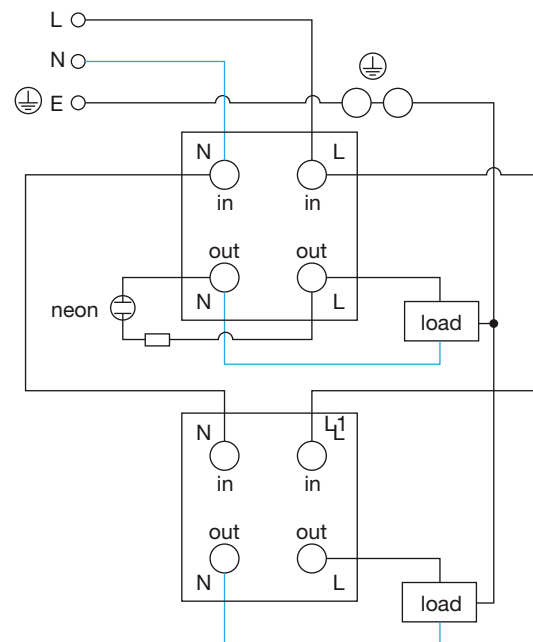
Double pole control switch with neon



Double pole control switch 20AX with neon + 10AX

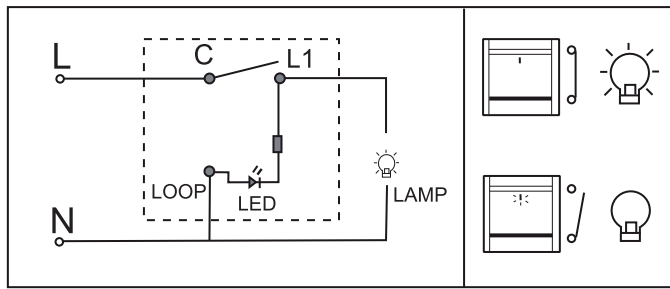


Double pole control switch 20AX without neon + 20AX with neon

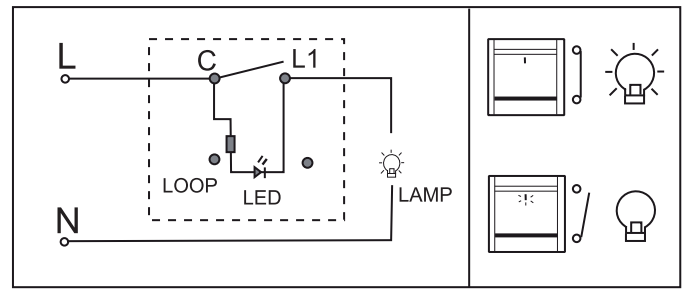


One way large dolly switch with LED

LED as location indicator

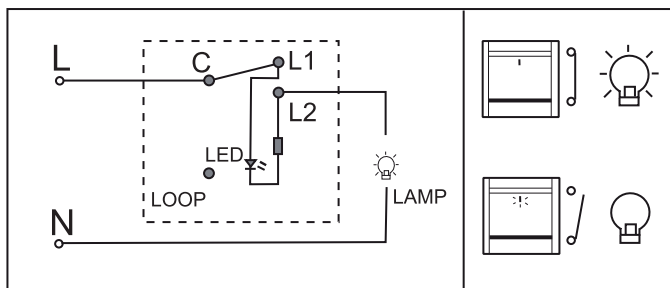


LED as ON indicator

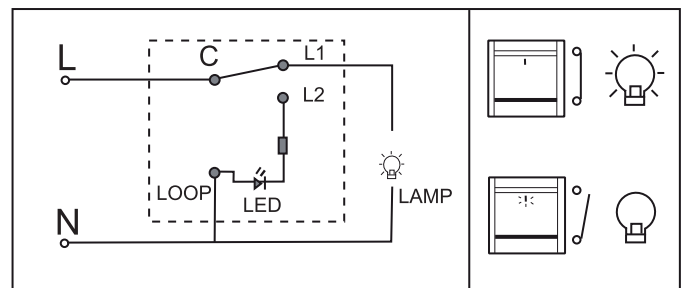


Two way large dolly switch with LED

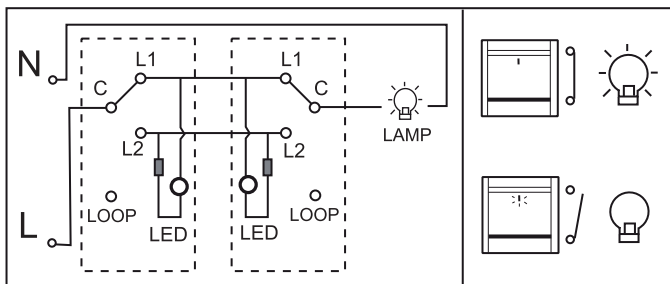
LED as location indicator



LED as ON indicator

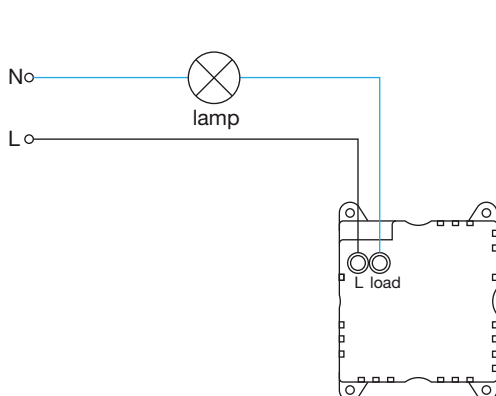


LED as ON indicator



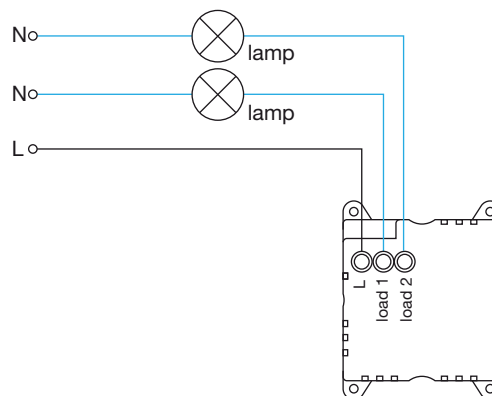
600W 1 gang large dolly dimming

Switch with neon (cycle action)

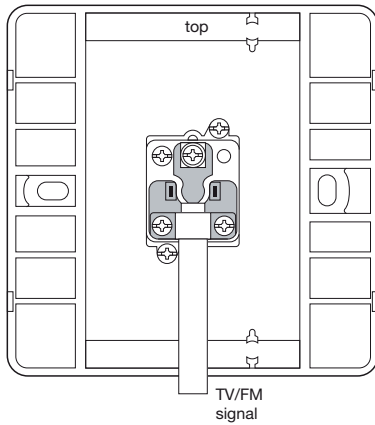


400W 2 gang large dolly dimming

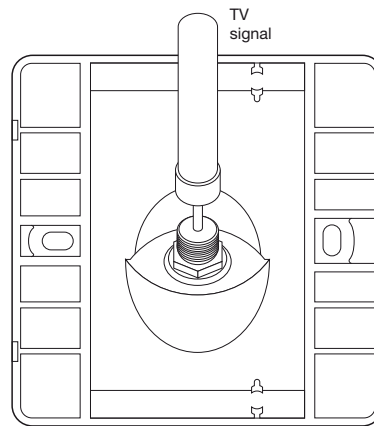
Switch with neon (cycle action)



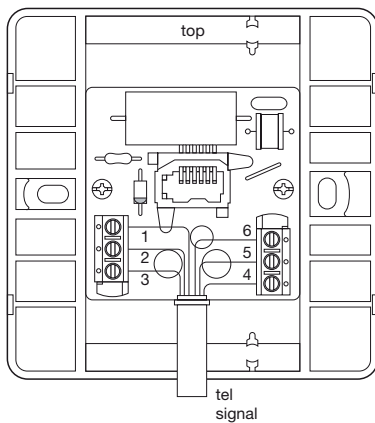
TV and FM connector



RG6 cable TV outlet

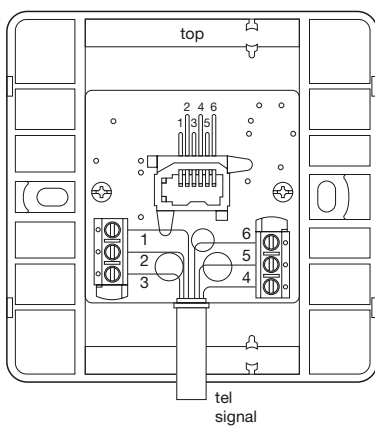


Phone socket BS style - master



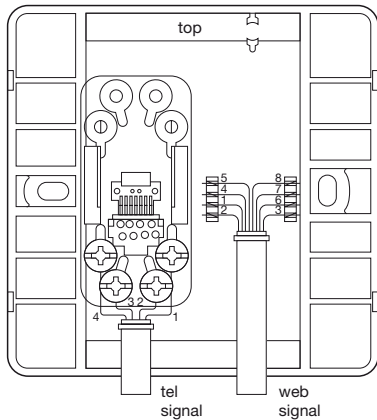
Pin No	Pin code
1	green / white
2	blue / white
3	orange / white
4	white / orange
5	white / blue
6	white / green

Phone socket BS style - slave



Pin No	Pin code
1	green / white
2	blue / white
3	orange / white
4	white / orange
5	white / blue
6	white / green

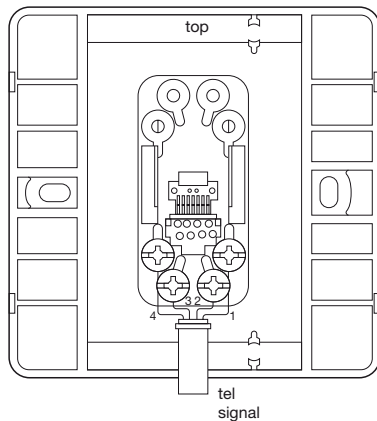
RJ45 + RJ11 data outlet



Pin No	Pin code
1	yellow
2	green
3	red
4	brown

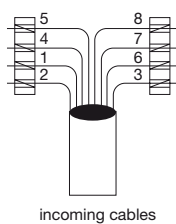
Jack pin	A	B
1	white / green	white / orange
2	green / white	orange / white
3	white / orange	white / green
4	blue / white	blue / white
5	white / blue	white / blue
6	orange / white	green / white
7	white / brown	white / brown
8	brown / white	brown / white

RJ11 data outlet



Pin No	Pin code
1	yellow
2	green
3	red
4	brown

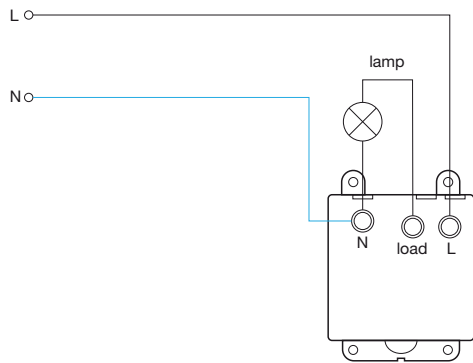
RJ45 data outlet



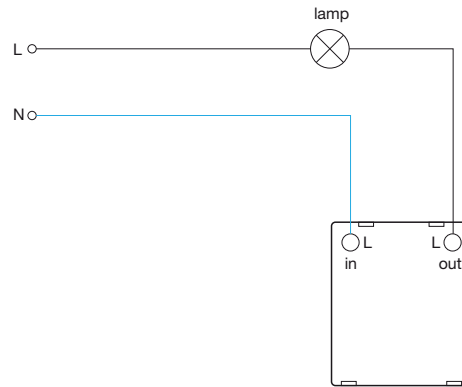
Jack pin	A	B
1	white / green	white / orange
2	green / white	orange / white
3	white / orange	white / green
4	blue / white	blue / white
5	white / blue	white / blue
6	orange / white	green / white
7	white / brown	white / brown
8	brown / white	brown / white

Hotel range

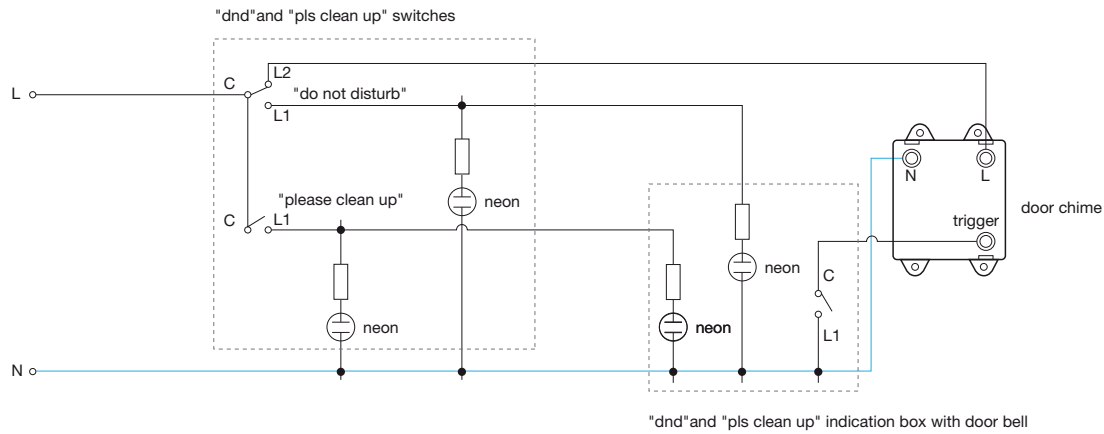
Key tag



Infrared motion detectors



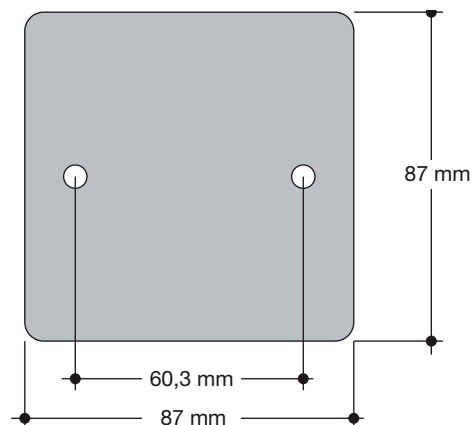
“Do not disturb” and “Please clean up” indication box with door bell



Dimensions

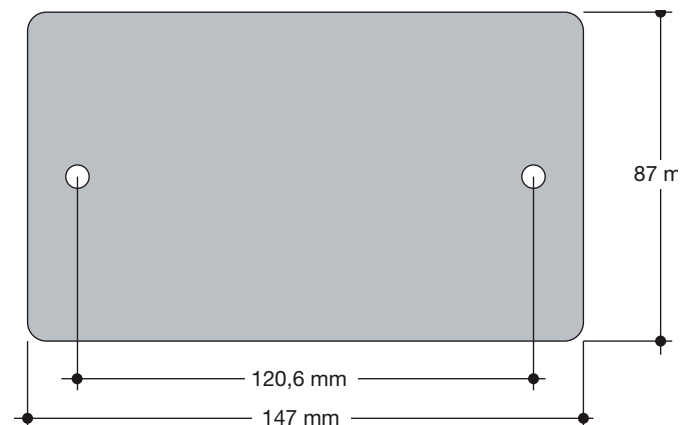
Size 1

Dimensions: 87 x 87 mm
Mounting: 60,3 mm



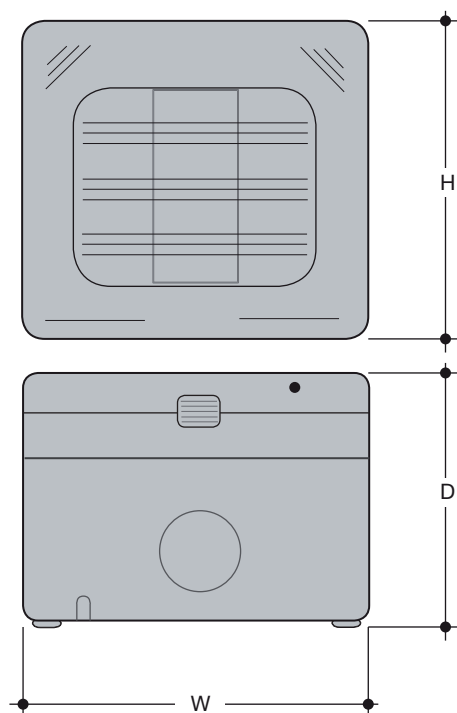
Size 2

Dimensions: 87 x 147 mm
Mounting: 120,6 mm

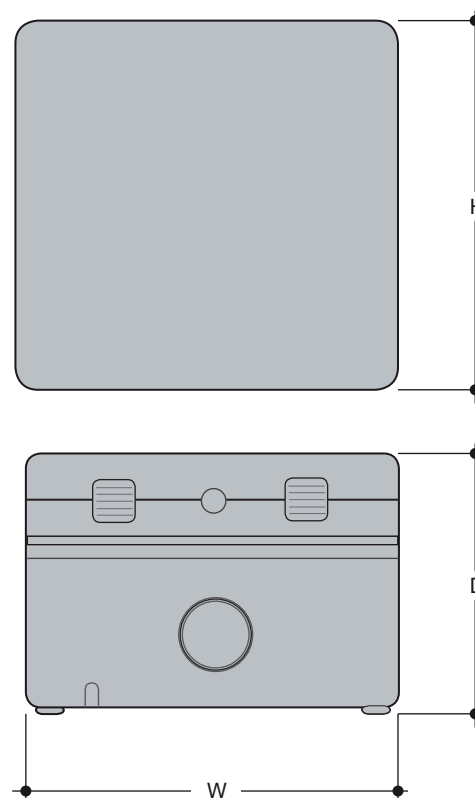


Ref.	Product range	IP rating	Height in mm	Width in mm	Depth in mm
XPW5110	1 gang 1 way switch 10 AX	IP55	91	84	67,5
XPW5120	1 gang 2 way switch 10 AX	IP55	91	84	67,5
XPW5910	1 gang 10 AX bell switch	IP55	91	84	67,5
XRW5200	1 gang DP switch 20 AX	IP55	91	84	67,5
XPW5210	2 gang 1 way switch 10 AX	IP55	91	84	67,5
XPW5220	2 gang 2 way switch 10 AX	IP55	91	84	67,5
XPW5320	3 gang 2 way switch 10 AX	IP55	91,5	110	67,5
XSW5113	1 gang socket un-switched 13A	IP55	91	84	67,5
XSW5114	1 gang socket switched 13A	IP55	91,5	110	67,5
XSW5213	2 gang socket un-switched 13A	IP55	91	151	67,5
XSW5214	2 gang socket switched 13A	IP55	91	151	67,5
XSW6113	1 gang socket un-switched 13A	IP66	120,5	110	81,5
XSW6213	2 gang socket un-switched 13A	IP66	128	150,5	82,5
XSW6214	2 gang socket switched 13A	IP66	128	150,5	82,5
XRW6131	switched fused spur 13A	IP66	120,5	110	81,5
XRW6130	fused spur with flex outlet 13A	IP66	120,5	110	81,5

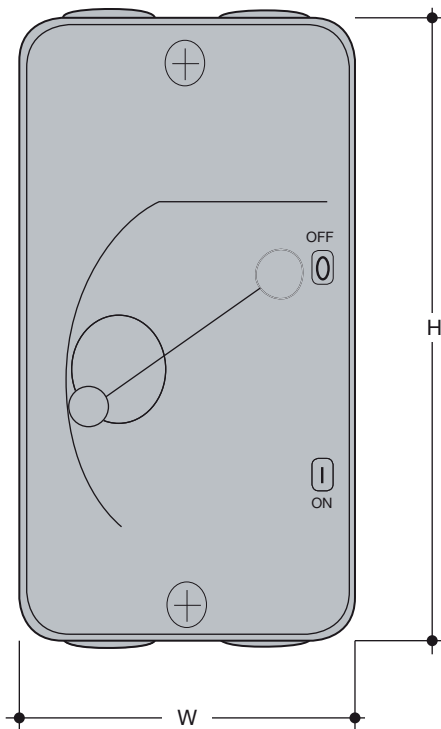
IP55



IP66



IP66 isolator dimensions



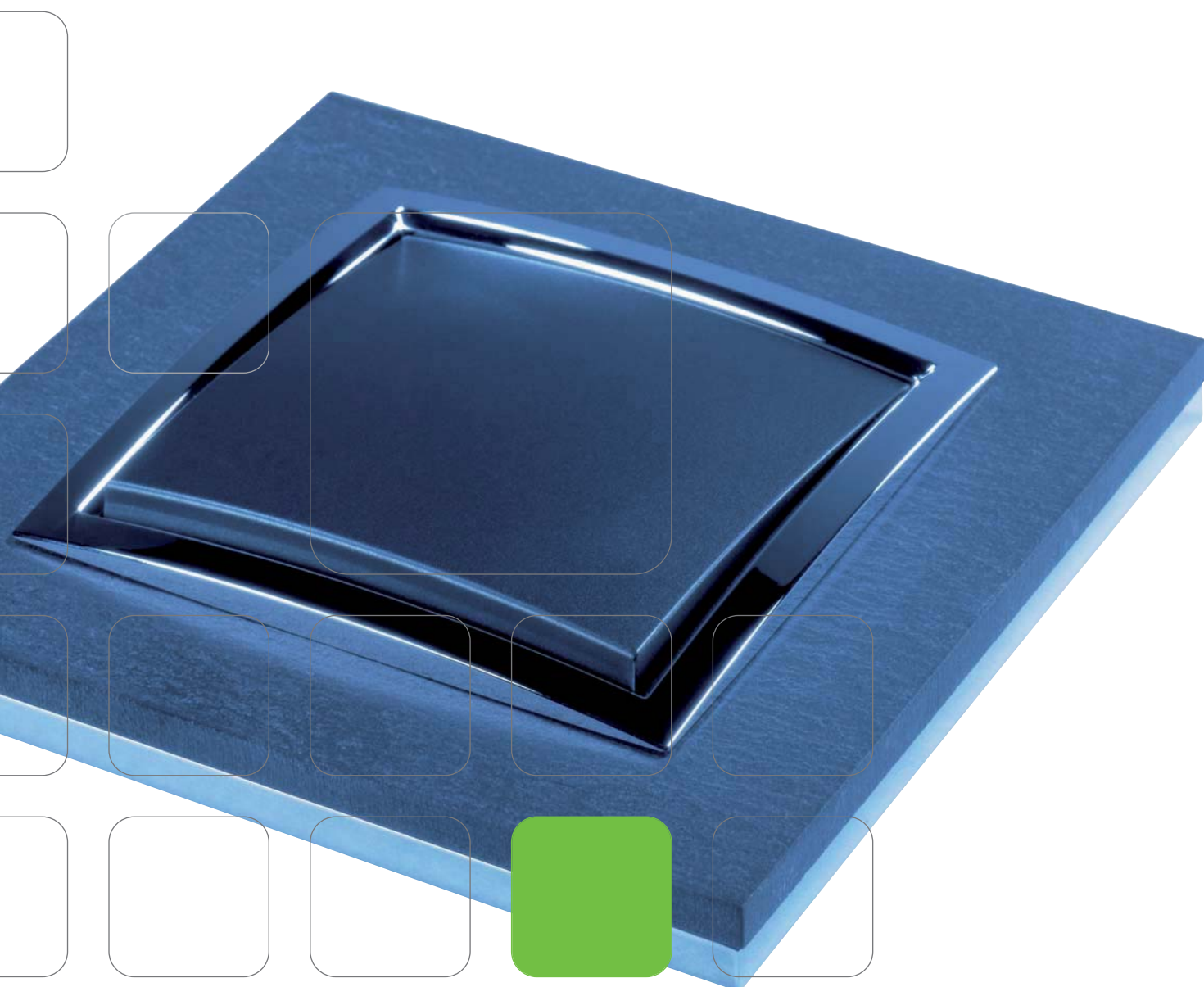
Range	Reference	Current	H	W	D
2P AC22A	JG220U	20A	170	84	87
	JG232U	32A	170	84	87
	JG240U	40A	170	84	87
	JG220U	63A	170	84	87
3P AC22A	JG320U	20A	170	84	87
	JG332U	32A	170	84	87
	JG340U	40A	170	84	87
3P + switched neutral AC22A	JG420U	20A	170	84	87
	JG432U	32A	170	84	87
	JG440U	40A	170	84	87
	JG420U	63A	170	84	87
2P AC23A	JG220IN	20A	170	84	87
	JG232IN	32A	170	84	87
	JG240IN	40A	170	84	87
	JG220IN	63A	170	84	87
3P AC23A	JG320IN	20A	170	84	87
	JG332IN	32A	170	84	87
	JG340IN	40A	170	84	87
3P + switched neutral AC23A	JG420IN	20A	170	84	87
	JG432IN	32A	170	84	87
	JG440IN	40A	170	84	87
	JG420IN	63A	170	84	87

Wiring accessories

European Standards

Hager provides a complete range of wiring accessories suitable for domestic and commercial applications. Nice designs, wide choice of switches and colours, each product can be easily adapted to your specific needs.

systo, essensya and kallysta ranges comply with European Standards.



systo

- mechanisms M.4
 - plates and frames M.15
-

essensya

- mechanisms M.26
 - plates and frames M.30
-

kallysta

- mechanisms and cover plates selection chart M.40
 - plates selection chart M.48
 - mechanisms M.52
 - cover plates M.64
-

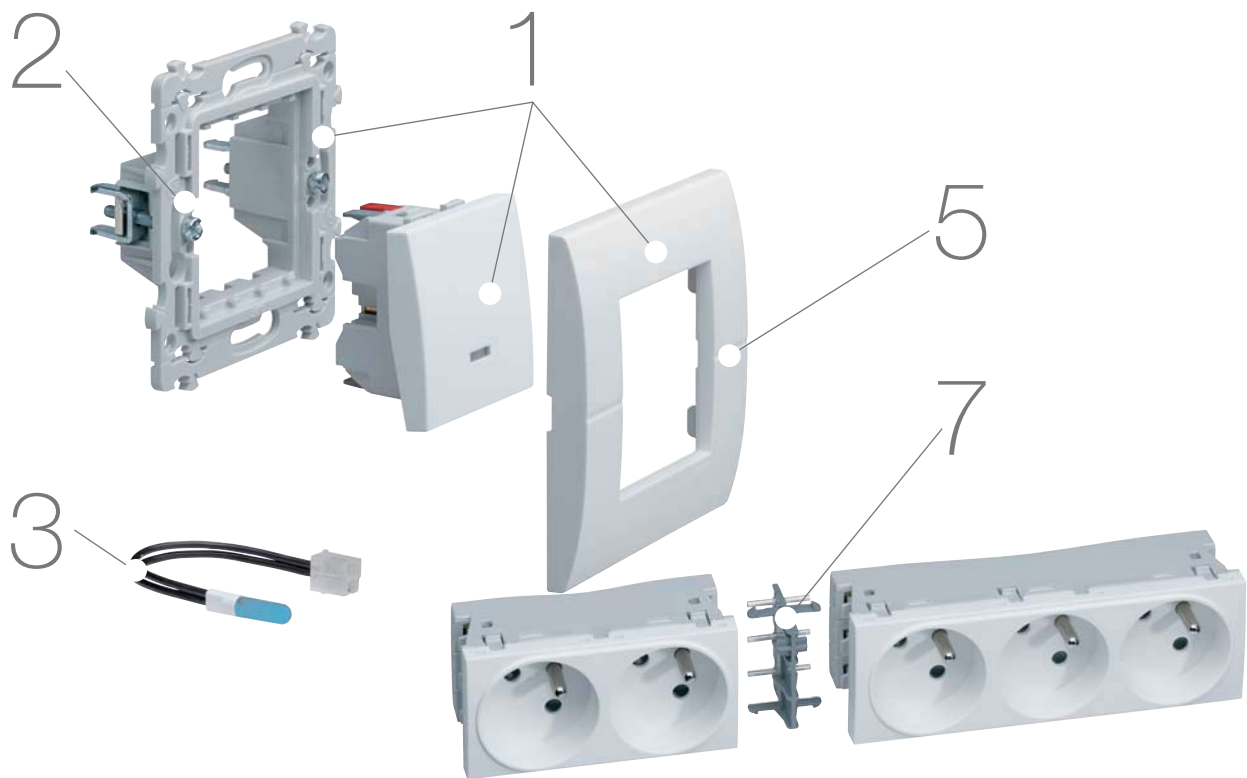
- hollow wall and concrete boxes references chart M.68
-



Wiring accessories **systo**

The modular solution for multi-mode installation ways

All the benefits at one glance.



Your benefits

- systo can be adapted to fit a wide range of configuration thanks to its multi-mode installation (flush, surface, trunking).
- Multiple plates available in 57 and 71mm centre distance for new buildings and renovation.
- Quick Connect terminals for a safe and quick installation.

Your benefits

- Compact mechanism and connection from the bottom for an easy installation.
- Painting protection delivered with all the supports for a neat finish.
- New systo sockets available in double and triple plates, in three colours, with pass-through.

Expert tips

1



Modular system

Only one support frame and mechanisms in 1 or 2 modules in 45 x 22,5mm size.

4



Easy installation

Compact mechanism and connection from the bottom for an easy installation.



Multi-mode installation

Adapted for surface mounting, in poles, trunking due to the 45 x 45mm size.

5



Multiple plates

Available in 57 and 71mm center distance.

2



Strong support frame

Reinforced with glassfiber and insulated against electrical shocks.

6



Painting protection

Delivered with product protection support compatible with all the systo range.

3



Clip-on mounting

Mechanisms, plates and lamps can be clipped for an easy installation.

7



New systo sockets for trunking

Compatible with all direct clamping products for trunking. Junction plate for interconnection.











Options

Lamps for signaling or controlling are compatible with all control switches with indicator lights and label holders.

Connection capacity :

- mini: 2 x 1mm² rigid
- maxi: 2 x 2,5mm² rigid

Complies to IEC 60 669-1.

Designation	Characteristics	Pack. qty	Cat. ref. 45x22,5 mm	Pack. qty	Cat. ref. 45x45 mm
10 AX - 250V switches					
 WS001, WS010, WS020, WS022	1 way switch - white	-	-	10	WS000
	2 way switch - white	10	WS012	10	WS001
 WS001T	- black	-	-	10	WS001N
	- alu	10	WS012T	10	WS001T
 WS012, WS027, WS029	2 way switch with light indicator, delivered without LED - white	10	WS013	10	WS002
	- alu	10	WS013T	10	WS002T
 WS012, WS027, WS029	2 way pull cord switch, delivered with 1,5m pull cord - white	-	-	1	WS005
	2 way switch with label holder - white	1	WS014	1	WS006
 WS013, WS030	2 pole switch, allows to cut 2 conductors - white	-	-	1	WS008
	2 pole switch with light indicator, delivered with LED - white	-	-	1	WS009
 WS002T	intermediate switch - white	-	-	1	WS010
	intermediate switch, with light indicator - white	-	-	1	WS011
10 AX - 250V push buttons					
 WS005	push button 1NO - white	10	WS027	10	WS020
	- alu	10	WS027T	10	WS020T
 WS014, WS031	push button 1NO + 1NC - white	10	WS029	1	WS022
	- black	-	-	10	WS022N
 WS008	push button 1NO + 1NC with light indicator, delivered without LED - white	10	WS030	10	WS023
	- alu	10	WS030T	10	WS023T
 WS006, WS025	pull cord push button 1NO + 1NC delivered with 1,5m pull cord - white	-	-	1	WS024
	push button 1NO + 1NC with label holder - white	10	WS031	10	WS025

Designation	Characteristics	Pack. qty	Cat. ref.																				
 WS690, WS692	LED lamps signal lamp 250V AC cons.: 0,4mA - 50000h blue	10	WS690																				
	control lamp 250V AC cons.: 0,75mA - 50000h red	10	WS691																				
	signal lamp 12 - 24V DC cons.: 0,4mA - 50000h blue	10	WS692																				
 WS691	LED for WS103 socket cons.: 0,75mA - 50000h red	10	WUZ694																				
 WUZ694	<table border="1"> <thead> <tr> <th>Designation</th> <th>Characteristics</th> <th>Pack. qty</th> <th>Cat. ref.</th> </tr> </thead> <tbody> <tr> <td rowspan="4"> Automation switches 45 x 45 mm </td> <td> 2 modules emergency stop switch key Ronis n°455 1NO + 1NC </td> <td>1</td> <td>WS032</td> </tr> <tr> <td> 2 modules emergency stop switch 1/4 turn 1NO + 1NC </td> <td>1</td> <td>WS033</td> </tr> <tr> <td> 2 modules key switch 2 positions Ronis 1NO + 1NC </td> <td>1</td> <td>WS035</td> </tr> <tr> <td> 2 modules key switch 3 positions Ronis 1NO + 1NC </td> <td>1</td> <td>WS036</td> </tr> <tr> <td> hotel card switch, white bank card size </td> <td>1</td> <td>WS055</td> </tr> </tbody> </table>			Designation	Characteristics	Pack. qty	Cat. ref.	Automation switches 45 x 45 mm	2 modules emergency stop switch key Ronis n°455 1NO + 1NC	1	WS032	2 modules emergency stop switch 1/4 turn 1NO + 1NC	1	WS033	2 modules key switch 2 positions Ronis 1NO + 1NC	1	WS035	2 modules key switch 3 positions Ronis 1NO + 1NC	1	WS036	hotel card switch, white bank card size	1	WS055
Designation	Characteristics	Pack. qty	Cat. ref.																				
Automation switches 45 x 45 mm	2 modules emergency stop switch key Ronis n°455 1NO + 1NC	1	WS032																				
	2 modules emergency stop switch 1/4 turn 1NO + 1NC	1	WS033																				
	2 modules key switch 2 positions Ronis 1NO + 1NC	1	WS035																				
	2 modules key switch 3 positions Ronis 1NO + 1NC	1	WS036																				
hotel card switch, white bank card size	1	WS055																					
 WS032	 WS035	 WS036																					






European wiring accessories









Connection capacity :
Quick Connect terminals
- mini: 2 x 1mm² rigid
- maxi: 2 x 2,5mm² rigid
Screw terminals
- maxi: 1 x 4mm² rigid
or 2 x 2,5mm² rigid









Complies to IEC 60 314 , and NF certificates for references WS100, WS101, WS102, WS103, WS105 and WS106.

Products equipped with frame and plate are IP2XC.

Glow wire test according to NF EN 60 695-2.

Designation	Characteristics	Pack. qty	Cat. ref.
 WS100, WS101  WS100T	16 A - 250V French standard socket outlets 45 x 45 mm		
	2P+E, Quick Connect - white	10	WS100
	- orange	10	WS100E
	- black	10	WS100N
	- red	10	WS100R
	- alu	10	WS100T
 WS102  WS103	2P+E, screw terminals - white	10	WS101
	- black	10	WS101N
 WS105, WS106	2P, screw terminals - white	10	WS102
	2P+E with red LED WUZ694, Quick Connect - white	10	WS103
	2P+E with locating pin, Quick Connect - white	10	WS105
	2P+E with locating pin, screw terminals - white	10	WS106

	Designation	Characteristics	Pack. qty	Cat. ref.
 WS122  WS122N	16 A - 250V French standard socket outlets for trunking 45 x 45 mm	2P+E, Quick Connect - white	20	WS121
		- orange	20	WS121E
		- black	20	WS121N
		- red	20	WS121R
		- alu	20	WS121T
		- green	20	WS121V
 WS122T	16 A - 250V French standard socket outlets for trunking 45 x 45 mm	2 x 2P+E, Quick Connect - white	10	WS122
		- orange	10	WS122E
		- black	10	WS122N
		- red	10	WS122R
		- alu	10	WS122T
		- green	10	WS122V
 WS123  WS123T	16 A - 250V French standard socket outlets for trunking 45 x 45 mm	3 x 2P+E, Quick Connect - white	10	WS123
		- orange	10	WS123E
		- black	10	WS123N
		- red	10	WS123R
		- alu	10	WS123T
		- green	10	WS123V
 WS120	16 A - 250V French standard socket outlets for trunking 45 x 45 mm	cable clamp for multi sockets	10	WS130
		systo accessory of junction for multiple sockets	10	WS120
 WS132	16 A - 250V French standard socket outlets with locating pin for trunking 45 x 45 mm	2P+E, Quick Connect - white	20	WS131
		2 x 2P+E, Quick Connect - white	10	WS132
		3 x 2P+E, Quick Connect - white	10	WS133
 WS133	16 A - 250V French standard socket outlets accessories 45 x 45 mm	systo switch 16AX for multi sockets - white	10	WS136
		systo surge for multi sockets - white	1	WS137
		- black	1	WS137N
		systo filter for multi sockets - white	1	WS138
		surge protection cartridge -white	1	WS169
		- black	1	WS169N

	Designation	Characteristics	Pack. qty	Cat. ref.
	16 A - 250V German standard Schuko socket outlets 45 x 45 mm	2P+E, Quick Connect with childprotection	10	WS160
WS160		- white		
		- orange	10	WS160E
WS160T		- black	10	WS160N
		- alu	10	WS160T
		- green	10	WS160V
		2P+E, screw terminals	10	WS161
WS162		- white		
		- black	10	WS161N
		- red	10	WS162
		2P+E, screw terminals with childprotection	10	WS163
WS163		- white		
		- black	10	WS163N
		2P+E, screw terminals with childprotection and locating pin	10	WS164
WS164		- white		
	16 A - 250V German standard Schuko socket outlets for trunking 45 x 45 mm	2P+E, with childprotection	20	WS171
		- white		
		- orange	20	WS171E
		- alu	20	WS171T
		- green	20	WS171V
		- red	20	WS187
		2 x 2P+E, with childprotection	10	WS172
WS172		- white		
		- orange	10	WS172E
		- black	10	WS172N
		- alu	10	WS172T
		- green	10	WS172V
		- red	10	WS185
		3 x 2P+E, with childprotection	10	WS173
WS173		- white		
		- orange	10	WS173E
		- black	10	WS173N
		- alu	10	WS173T
		- green	10	WS173V
		- red	10	WS186

Designation	Characteristics	Pack. qty	Cat. ref. 22,5x45 mm	Pack. qty	Cat. ref. 45x45 mm
16 A - 250V German standard Schuko socket outlets with locating pin for trunking	2P+E with childprotection - red	-	-	20	WS181
	2 x 2P+E with childprotection - red	-	-	10	WS182
	3 x 2P+E with childprotection - red	-	-	10	WS183
German standard Schuko socket outlets accessories	systo switch 16AX for multi sockets - white	-	-	20	WS166
	systo surge for multi sockets - white	-	-	10	WS167
	systo filter for multi sockets - white	-	-	10	WS168
Accessories	junction accessory for multiple sockets	-	-	10	WS120
	systo cable outlet - white	-	-	10	WS155
	- black	-	-	10	WS155N
	- alu	-	-	10	WS155T
	cable outlet Ø 8mm - white	10	WS687	-	-
	1 module blank plate - white	10	WS688	-	WS689
	- black	10	WS688N	-	WS689N
	- alu	10	WS688T	-	WS689T
	lamp for WS103 socket (LED)	-	-	10	WUZ694
	locating pin for plugs	-	-	10	WS697
long mounting claws	-	-	50	WK697	
short mounting claws	-	-	50	WK696	



WS120



WS155



WS155T



WS687



WS688



WS697



WK696

TV sockets

For hertzian analog and digital TV reception.
Also suitable for cable reception.
TV+FM+SAT sockets are available for satellite TV reception.

For series wiring of the sockets, the terminal resistance should be mounted on the last socket.
For star wiring, use direct sockets.

Complies to ISO 11801 ed.2, EN 50173 WS210 to WS227, NF EN 50083 UTE 90123 UTE 90125 for WS250 to WS257.

Glow wire test according to NF EN 60 695-2.

Designation	Characteristics	Pack. qty	Cat. ref. 45x22,5 mm	Pack. qty	Cat. ref. 45x45 mm
-------------	-----------------	-----------	----------------------	-----------	--------------------

RJ45 sockets

with label holder and anti-dust flap

category 5E RJ45:
D class at 100 MHz

UTP, 8 pts
- white

10 **WS210** 1 **WS211**

- alu

10 **WS210T** 1 **WS211T**

FTP, 9 pts for grade1
- white

10 **WS213** 10 **WS214**

- alu

10 **WS213T** 10 **WS214T**

- black

10 **WS213N** 10 **WS214N**

STP or SFTP 8 shielded points
-white

10 **WS216** 1 **WS217**

- alu

10 **WS216T** 1 **WS217T**

category 6 RJ45:
E class at 250 MHz

UTP, 8 pts
-white

10 **WS219** 1 **WS220**

- alu

10 **WS219T** 1 **WS220T**

- black

10 **WS219N** 1 **WS220N**

FTP, 9 pts
-white

10 **WS222** 10 **WS223**

- alu

10 **WS222T** 10 **WS223T**

- black

10 **WS222N** 10 **WS223N**

STP or SFTP 8 shielded points for grade 3
-white

10 **WS225** 1 **WS226**

- alu

10 **WS225T** 1 **WS226T**

- black

10 **WS225N** 1 **WS226N**

Loud speaker socket

Quick Connect
- white

10 **WS290** 10 **WS291**



WS210T



WS211T



WS213



WS213N



WS214



WS290

	Designation	Characteristics	Pack. qty	Cat. ref.
 WS250	TV sockets 45 x 45 mm screw terminals for a strong maintain of the coaxial cable	direct	10	WS250
		- white		
		- alu	10	WS250T
		F type		
		- white	10	WS259
		- alu	10	WS259T
 WS250T		pass through socket attenuation 10dB delivered with terminal resistance 75Ω	1	WS251
		- white		
 WS254	TV + FM socket 45 x 45 mm screw terminals for a strong maintain of the coaxial cable	pass through socket attenuation 15dB delivered with terminal resistance 75Ω	1	WS252
		- white		
		direct	1	WS253
		- white		
		- alu	1	WS253T
		- black	1	WS253N
 WS256	TV + FM + SAT socket 45 x 45 mm screw terminals for a strong maintain of the coaxial cable	pass through socket attenuation 10dB delivered with terminal resistance 75Ω	1	WS254
		- white		
		- black	1	WS254N
		pass through socket attenuation 15dB delivered with terminal resistance 75Ω	1	WS255
		- white		
		direct 1 inlet	1	WS256
		- white		
		- alu	1	WS256T
		- black	1	WS256N
		direct 2 inlet	1	WS257
		- white		
		- alu	1	WS257T
		- black	1	WS257N

European wiring accessories



WS260



WS261



WS262



WS264



WS266



WS267



WS274



WS275



WS279



WS290

Designation	Characteristics	Pack. qty	Cat. ref. 45x22,5 mm	Pack. qty	Cat. ref. 45x45 mm
2 RCA audio socket	white + red wires - white	-	-	1	WS260
3 RCA socket	white + red + yellow wires - white	-	-	1	WS261
YUV 3 socket	red + green + blue wires - white	-	-	1	WS262
HDMI pass through socket	- white	-	-	1	WS263
HDMI socket	screw terminals - white	-	-	1	WS264
USB socket	- white	-	-	1	WS265
XLR female socket	screw terminals - white	-	-	1	WS266
XLR male socket	screw terminals - white	-	-	1	WS267
Optical pass through connector SC socket	- white	-	-	1	WS270
Optical pass through connector LC socket	-white	-	-	1	WS271
Pass through BNC socket	- white	-	-	1	WS273
VDI-D socket	screw terminals - white	-	-	1	WS274
S-video socket	screw terminals - white	-	-	1	WS275
SUB-D 15 (VGA) socket	screw terminals - white	-	-	1	WS276
Jack connector	3,5 mm - white	-	-	1	WS278
S-video + RCA audio	screw terminals - white	-	-	1	WS279
Socket for speaker single	- white	10	WS290	10	WS291
	- black	10	WS290N	10	WS291N

Flush mounting
To be mounted in a 40mm depth box and 50mm depth box for thermostats.

Connection capacity
Quick Connect terminals
- mini: 2 x 1mm² rigid
- maxi: 2 x 2,5mm² rigid







Screw terminals
- maxi: 1 x 2,5mm² rigid
- maxi: 1 x 1,5mm² flexible

Complies with NF EN 60 669-1 for WS300 and WS301,
NF EN 60 730-2,
NF EN 60 335-1
NF EN 55 014-1,

NF EN 61 000-3 for WS310, WS311 and WS314.

Glow wire test according to NF EN 60 695-2.



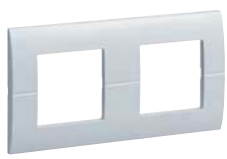
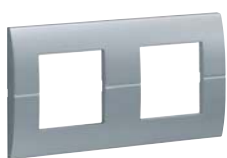
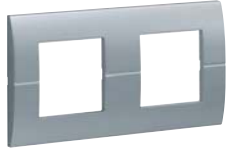






Products equipped with frame and plate are IP2XC.

	Designation	Characteristics	Pack. qty	Cat. ref.
	Shutters control Quick Connect 10 A - 250 V~	double 2 way switch with mechanical interlock - white	1	WS300
WS300		- alu	1	WS300T
		double push button for automatic system - white	1	WS301
WS301		- alu	1	WS301T
	Electronic shutters control	control for electric blind and shutter, daily programming - white	1	WS304
WS304		control for electric blind and shutter with display weekly programming and centralized working - white	1	WS305
	Electronic room thermostats power supply 230 V~ /50 Hz output: 1 changeover contact	room thermostat adjustment range : +5° C to +30°C accuracy ± 0,5°C output relay 8 A - 250 V~ for cos φ=1 - white	1	WS310
WS305		chrono thermostat adjustment range : +10° C to +30°C accuracy ± 0,5°C operating reserve : 30 days output relay 8 A - 250 V~ for cos φ=1 - white	1	WS311
				
WS310				
				
WS311				

Clipsable plates
UV resistant material with
antistatic texture.

Accurate mounting thanks to
clips steps.
Removal slots on the sides.

Glow wire test according to NF
EN 60 695-2.

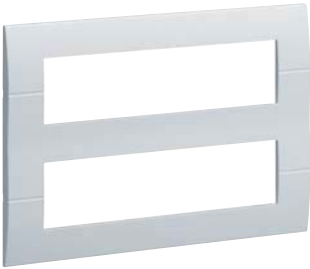





	Designation	Characteristics	Pack. qty	Cat. ref.
 WS401 WS401T	Simple plates 2 modules	dim. : 80 x 80 mm - white	10	WS401
		- alu	10	WS401T
 WS402 WS402T	Double plates horizontal 2 x 2 modules	dim. : 80 x 151 mm - white	10	WS402
		- alu	10	WS402T
 WS403 WS403T	Triple plates horizontal 3 x 2 modules	dim. : 80 x 222 mm centre distance 71 mm - white	5	WS403
		- alu	5	WS403T
 WS404 WS404T	Quadruple plates horizontal 4 x 2 modules	dim. : 80 x 293 mm centre distance 71 mm - white	1	WS404
		- alu	1	WS404T
 WS406 WS406T	Double plates vertical 2 x 2 modules	dim. : 80 x 137 mm centre distance 57 mm - white	10	WS406
		- alu	10	WS406T
 WS407 WS407T	Triple plates vertical 3 x 2 modules	dim. : 151 x 80 mm centre distance 71 mm - white	5	WS408
		- alu	5	WS408T
 WS407 WS407T	Triple plates vertical 3 x 2 modules	dim. : 80 x 194 mm centre distance 57 mm -white	5	WS407
		- alu	5	WS407T
 WS410 WS410T	Plates 4 modules horizontal	dim. : 222 x 80 mm centre distance 71 mm -white	5	WS409
		- alu	5	WS409T
 WS410 WS410T	Plates 4 modules horizontal	dim. : 80 x 137 mm centre distance 57 mm - white	10	WS410
		- alu	10	WS410T
 WS411 WS411T	Plates 6 modules horizontal	dim. : 80 x 194 mm centre distance 57 mm - white	5	WS411
		- alu	5	WS411T
 WS412 WS412T	Plates 5 modules horizontal	dim. : 80 x 137 mm centre distance 71 mm - white	10	WS412
		- alu	10	WS412T

Frames

To use with 45 x 45 mechanisms in standard boxes flush and surface mounting.

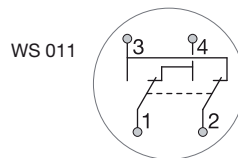
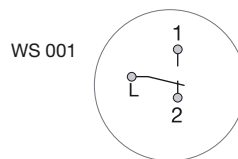
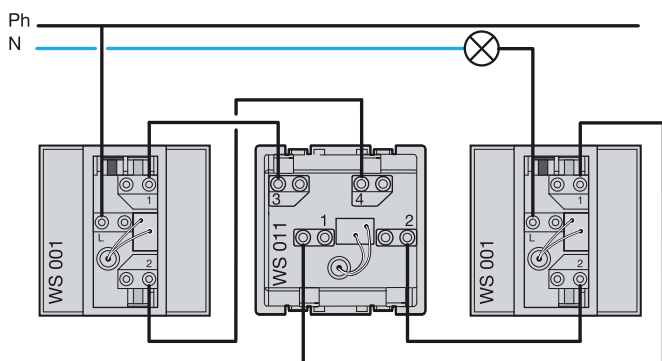
Possibility to associate 2 frames, horizontally or vertically for multi gang configuration.

Glow wire test according to NF EN 60 695-2.

Designation	Characteristics	Pack. qty	Cat. ref.
 WS416	Plates 8 modules horizontal	dim. : 80 x 194 mm centre distance 71 mm	
	- white	5	WS413
	- alu	5	WS413T
	Plates 16 modules	dim. : 165 x 235 mm	
	- white	5	WS416
	- alu	5	WS416T
 WS450 WS451	2 modules frames to be equipped with painting protection	with screws	10
		with claws	10
 WS452	4 modules frames	for plate WS410, 4 fixing points centre distance 57 mm with screws	10
	5 modules frames	for plate WS412 centre distance 57 mm with screws	10
 WS453	6 modules frames	for plate WS411, 6 fixing points centre distance 57 mm with screws	5
	8 modules frames	for plate WS413 centre distance 57 mm with screws	5
 WS681	12 modules frames	for plate WS416 centre distance 57 mm with screws	5
	 WS683	Surface mounting boxes	1 gang to link with systo frame WS450
- white		10	WS681
- alu		10	WS681T
2 gang centre distance 71 mm to link with 2 systo frames WS450			
- white		5	WS682
- alu		5	WS682T
3 gang centre distance 71 mm to link with 3 systo frames WS450			
- white	5	WS683	
- alu	5	WS683T	
8 gang / 16 modules			
- white	1	WS686	
- alu	1	WS686T	

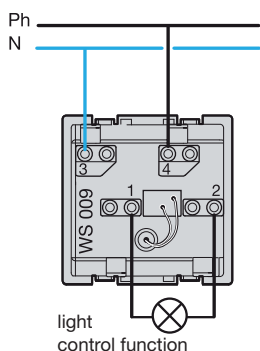
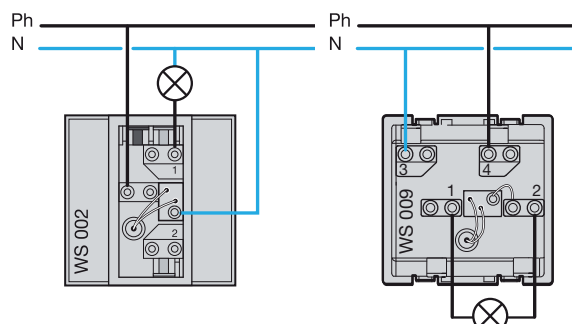
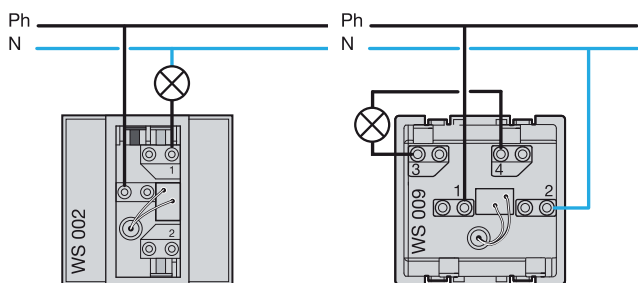
Circuit diagram

Intermediate switch with light indicator



- **WS690 or WS692** signal lamps with electrical connection for devices WS002, WS006, WS013, WS014, WS023, WS025, WS030, WS031 et WS009

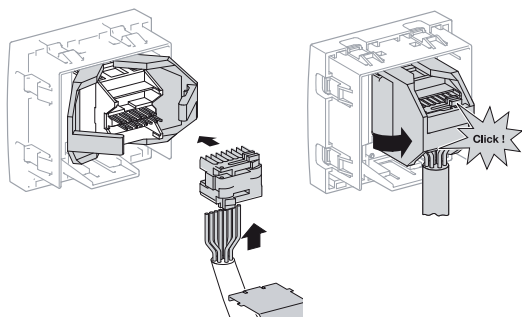
- **WS691** controls lamp, with electrical connector for devices WS002, WS006, WS013, WS014 et WS009



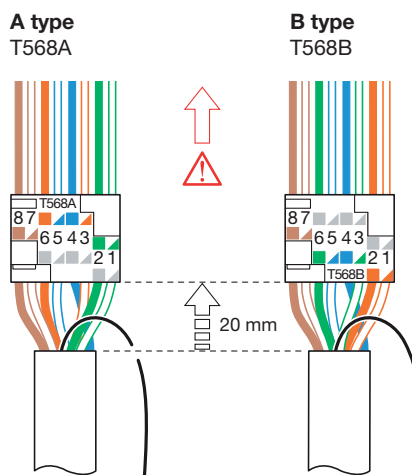
Technical specifications

Lighting function			Light signal function - switch: lamp is lit when the load is power off - push button or 2 pole switch: lamp is always lit	Light control function - switch: lamp is lit when the load is power on	
	mechanisms		blue light 250V~ blue light 12-24V ..	red light 250V~	
switches	1 module	2 modules			
2 ways switch	WS013	WS002	WS690	WS692	WS691
2 ways switch with label holder	WS014	WS006	WS690	WS692	WS691
2 pole switch with light indicator		WS009	WS690	WS692	WS691 (blue with lamp WS690)
intermediate switch with light indicator		WS011	WS690	WS692	-
push buttons					
push button 1NO+1NC with light indicator	WS030	WS023	WS690	WS692	-
push button 1NO+1NC with label holder	WS031	WS025	WS690	WS692	-
socket outlet					
2P+E with red LED	WS103				WUZ694 (red lamp)

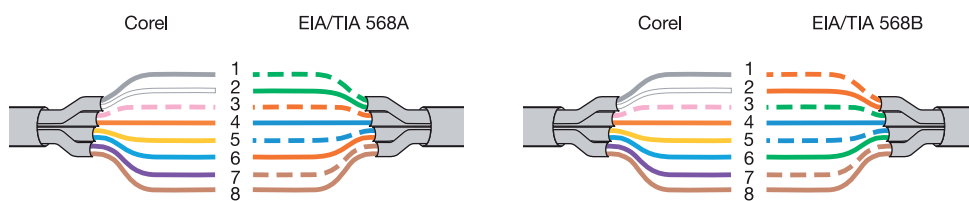
RJ45 sockets connection



Wiring diagram



Agreement conformity between Corel/EIA-TIA






Residential wiring recommendation according to UTE-C 90 483

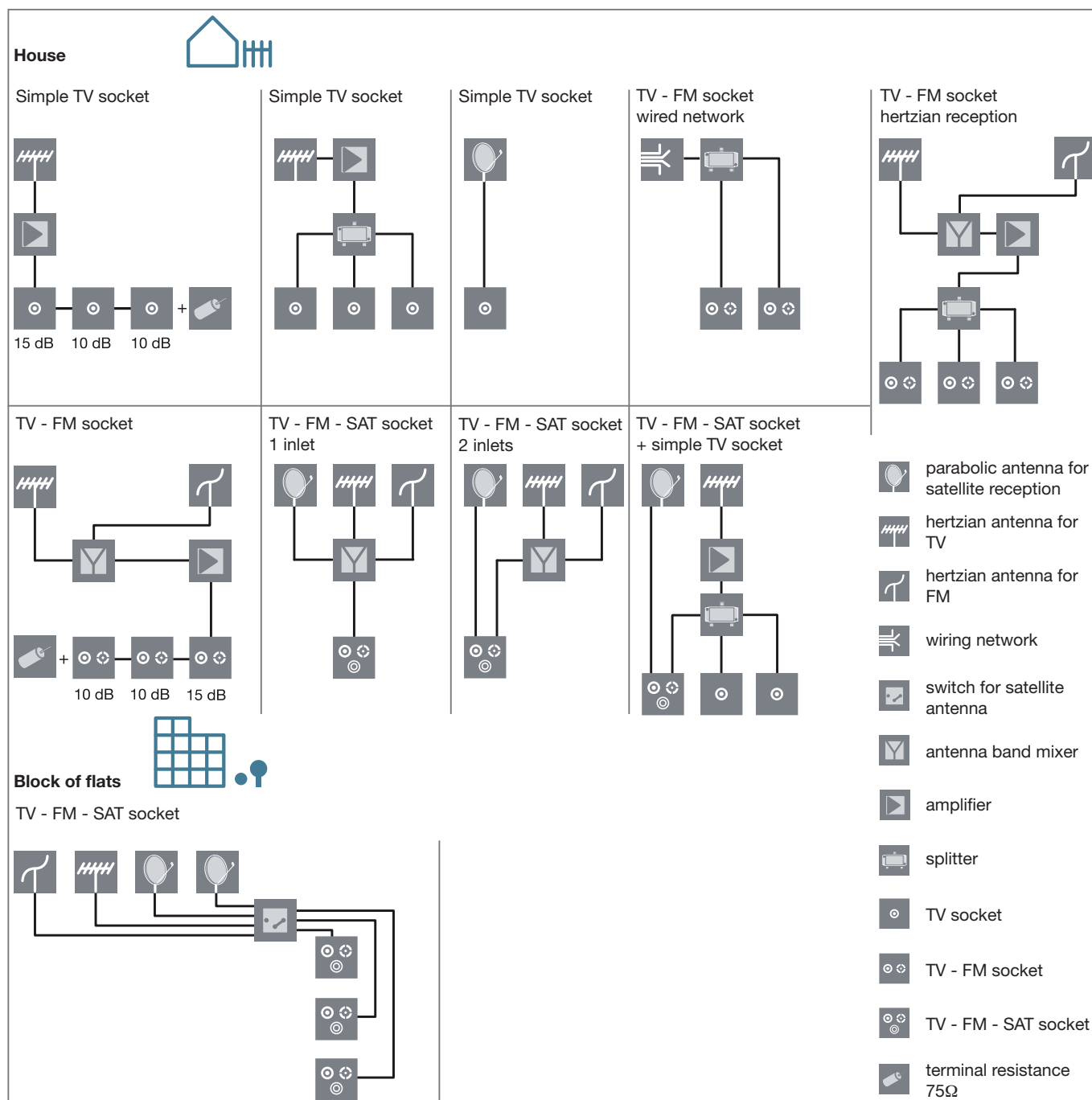
	grade 1 telcom service	phone + LAN	grade 3 multiservices	multimedia
cable	grade 1		grade 3	
connector	category 5e FTP		category 6 STP	
systo reference	1 modules 2 modules	WS213 WS214	WS225 WS226	
analog voice transmission				
RNIS digital voice transmission + internet				
internet ADSL				
local network 100Mbits/s				
video, digital TV (analog by telcom line)				
local network 1Gbit/s				
analog and digital TV (VHF/UHF)				
satellite TV				

advisable
 adapted
 minimal
 unadapted

Technical specification

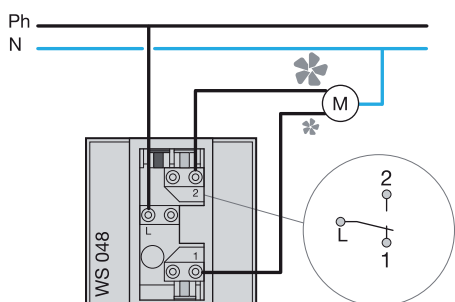
					direct current (1)	back	band 1	FM	VHF	UHF	SAT
					mA	MHz	MHz	MHz	MHz	MHz	MHz
ref.	type	dB	75Ω								
	WS250	direct socket	< 1dB			TV			TV		
	WS251 WS252	terminal socket	10dB 15dB	yes yes							
	WS253	direct socket	< 1dB			TV		FM	TV		
	WS254	terminal socket	10dB	yes							
	WS255	terminal socket	15dB	yes							
	WS256	1 inlet			500mA	TV		FM	TV		SAT
	WS257	2 inlets			500mA						

(1) amplifier or LNB satellite remote power feeding









CMV control

WS048 : 2 speeds without stop position.



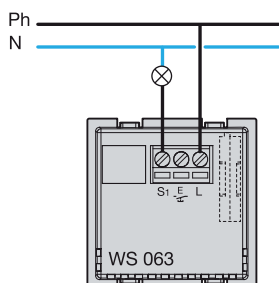
Dimmer switches

Technical characteristics

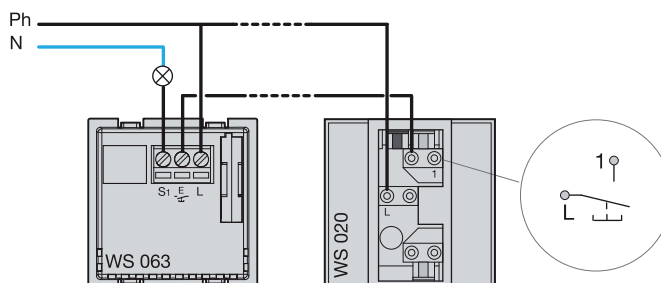
load		WS063 rotary switch dimmer	WS064 rotary switch dimmer	WS065 rotary switch dimmer	WS066 push dimmer	WS067 push dimmer
halogen or incandescent lamps 230V	 	60 to 400W	60 to 320W	40 to 350W	60 to 400W	40 to 350W
ELV halogen lamps supplied by ferromagnetic transformer	 	60 to 400W	-	40 to 350W	60 to 400W	40 to 350W
ELV halogen lamps supplied by electronic transformer	 	-	60 to 320W	40 to 350W	-	40 to 350W
characteristics						
overload protection		electronic	electronic	electronic	electronic	electronic
overcurrent protection		fuse T 2 A H	electronic	electronic	fuse T 2 A H	electronic
lighting level storage		yes	yes	yes	yes	yes
sofstart / sofstop		yes	yes	yes	yes	yes
latching relay function / remote dimmer		yes	yes	yes	yes	yes

Connection

- change a simple switch



- change a 2 way switch :
possibility to connect push buttons (type WS022) on the input E. They will have the same function as the dimmer itself.



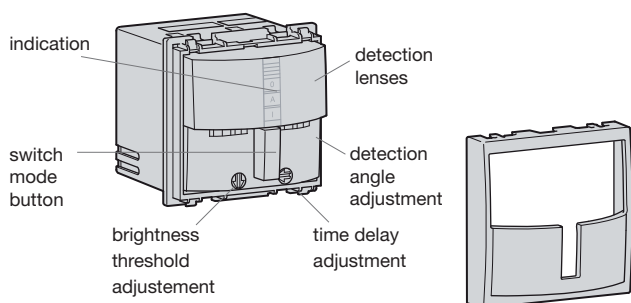
← 40 m maxi →

Working principle if push buttons are associated to a dimmer:
 - short press: switching on / switching off (variation level storage)
 - long press: variation, each press invert the variation sense
 - push buttons cannot be equipped with light indicator.

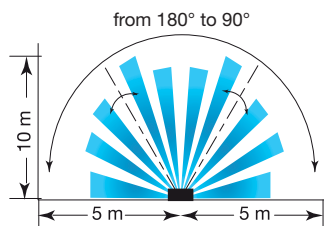
Technical characteristics

load	WS050	WS051
halogen or incandescent lamps 230V	60 to 320W	0 to 1000W
ELV halogen lamps supplied by ferromagnetic transformer		0 to 500W
ELV halogen lamps supplied by electronic transformer	60 to 320W	0 to 500W
fluorescent lamps		0 to 500W
characteristics		
brightness threshold	5 to 800 lux (possibility to disable)	
time delay	2s to 30min	
detection angle	90° to 180°	
overload protection	electronic	
overcurrent protection	electronic	fuse F 4A H
use as master	yes	yes
use as slave	no	yes
remote timer function	yes	yes

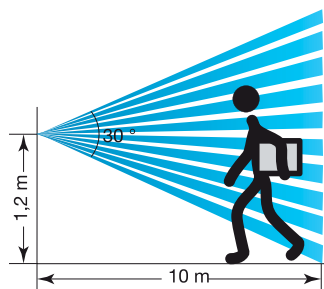
Product presentation



Detection area



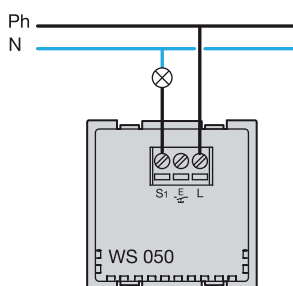
left and right area adjustment



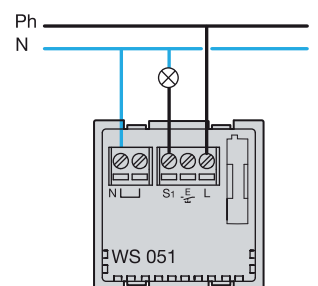
limitation of detection area with potentiometers on test position

Circuit diagram

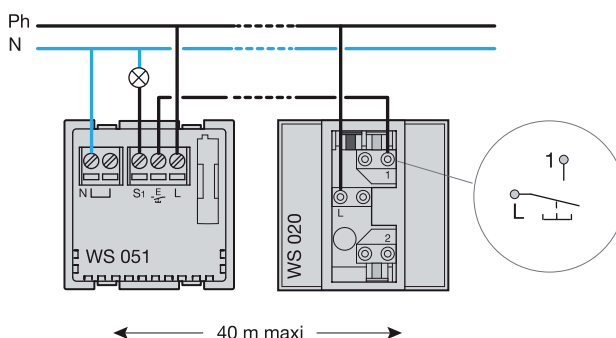
- 2 wire version to substitute a switch



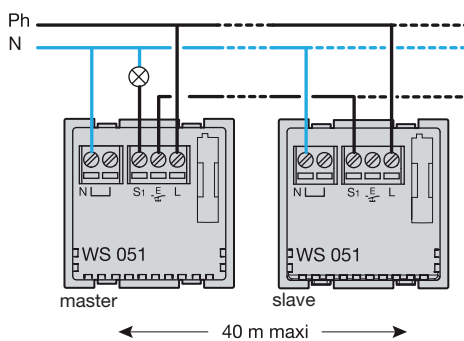
- 3 wire version without minimal load



- possibility to connect push button on input "E" to force the switching on (see wiring)



- extension of detection area



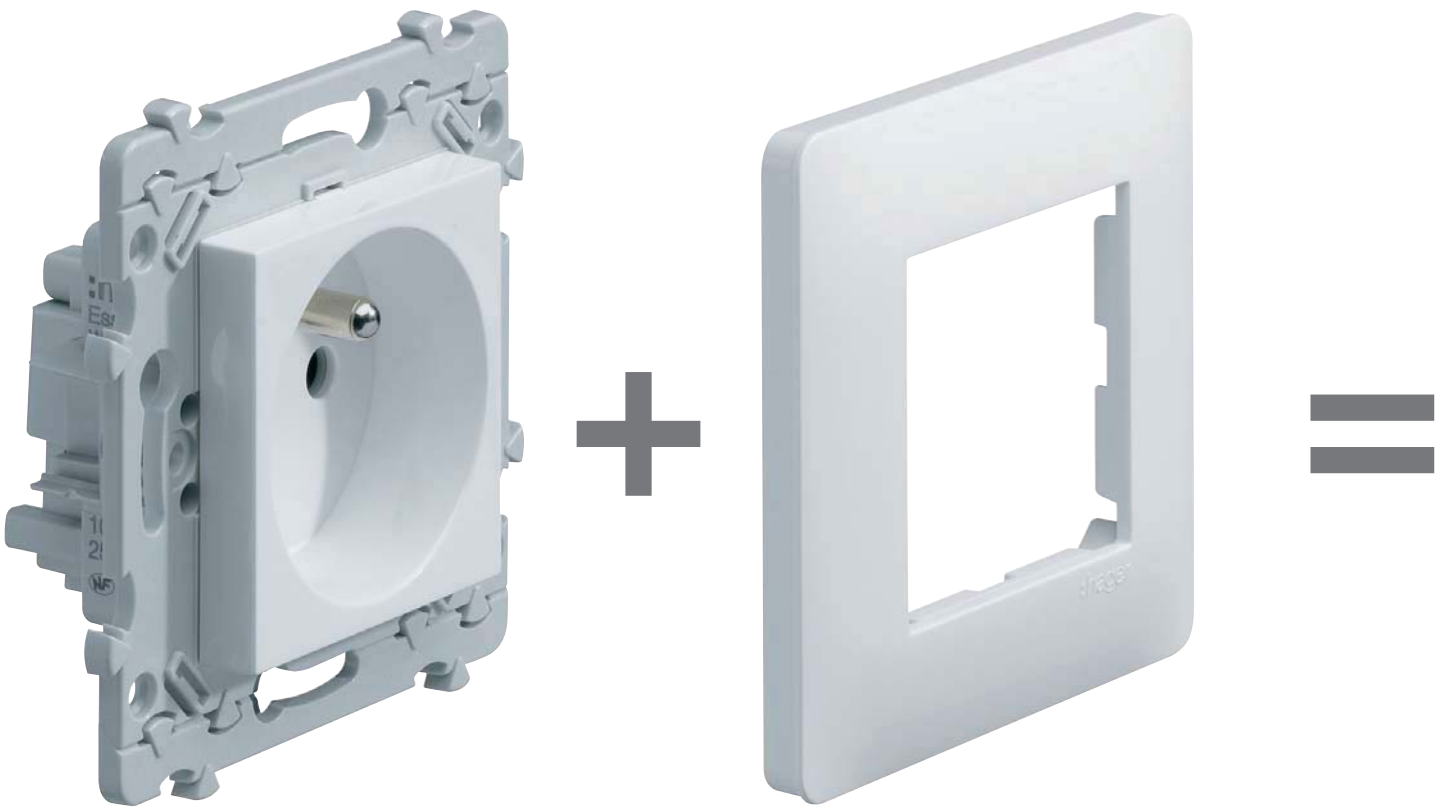
Product description

Adjustment of brightness threshold:

- manual: through potentiometer
- automatic: the threshold corresponds to the current room brightness.

Selection of the mode through short press on button:

- automatic mode: release when passage detection, and brightness lower than threshold,
- Forced switching on and off,
- temporary forcing: lighting on during 2 hours then returns to the automatic mode,
- security: this mode disable the selection by press on the front button.



1 way switch



2 way switch with light indicator



cable outlet



roller shutter control



RJ45 socket outlet



loud speaker outlet



TV, FM, SAT socket

user-friendly, easy-going

Because it has to be quick and simple, essensya makes your installation easy: you only need 2 references to get a complete product.

The essensya range brings solution to all the functions you need in your home: multi module reversible plates to fit all situations, and optimized packaging per 50 pieces that allows an efficient stock management.



The benefits



Packaging

For an economical and practical management, essensya simple frames, 1 way switches and sockets are packed by 50 pieces.



Painting protection

Each mechanism is delivered with a painting protection.



Neat finish

Plate and control switch are glossy white, with trendy design and easy to clean.



dimmer



thermostat



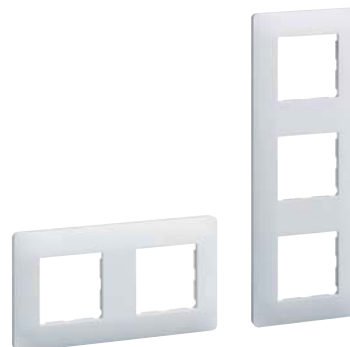
motion detector

Multi-module frames

available with 57 ou 71 mm centre distances, they fit to all mounting configurations.



57 mm centre distance, vertical

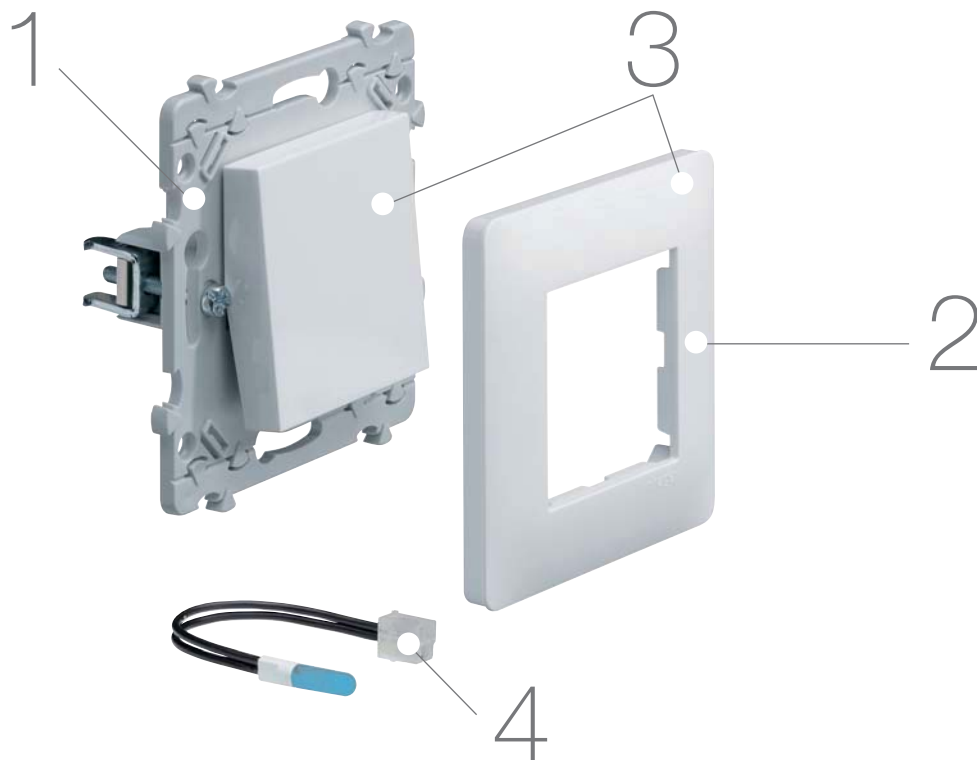


71 mm centre distance, reversible horizontal or vertical

Wiring accessories essensya

The nice and efficient range

The essensya wiring accessories fit everywhere in your home. Its design allows a quick and easy mounting. It also brings a trendy touch to your building projects.



Your benefits

- Only 2 references needed to get a complete product with quick installation time and easy stock management.
- Multi gang plates available in 57 mm and 71 mm centre distances vertical, for renovation and new building.
- Quick Connect terminals for an safe and easy mounting.
- Plates and switches in glossy white are easy to clean.

Your benefits

- Compact mechanism and bottom connection for an easy integration in mounting boxes.
- All mechanism are equipped with a painting protection for a neat finish.
- Optimized packaging thanks to 50 pieces boxes for socket outlets, 1 way switches and simple frames.

Expert tips

1



Strong frame

Glass fiber reinforced and protection against electric shocks.

5



Easy installation

Compact mechanism with Quick Connect terminals and bottom connection allows an easy mounting.

2



Perfect fit

Thanks to the plate compensation system that make up for the wall defects.

6



Painting protection

Flexible and transparent, it equips each mechanism and protects the product during the mounting.

3



Neat finish

Plate and control switch in glossy white with a trendy design and easy to clean.

7



Push button or switch ?

You can make a switch with a push button by just removing a spring in the mechanism.

4



Clip-on mounting

Lamps, mechanisms and plates can be clipped for a quick mounting.

Options

Lamps for signaling or controlling are compatible with all control switches with indicator lights and label holders.

Connection capacity :

- mini: 2 x 1mm² rigid
- maxi: 2 x 2,5mm² rigid

Complies to IEC 60 669-1.

Push button mechanisms WE022, WE023, WE025, WE044, WE045 can be turned into 2 way switch by removing the spring under the cap.

References with screws can be equipped with claws:
- short: WK696
- long: WK697

References with claws: WK696 pre-mounted.

Products with plates are IP2X.



WE000, WE001,
WE010, WE022



WE002



WE025



WE045



WS690, WS692



WS691

Designation	Characteristics	Pack. qty	Cat. ref. w/ screws	Pack. qty	Cat. ref. w/ claws
10 AX - 250V switches Quick Connect	1 way switch	10	WE000	10	WE000G
	2 way switch	10	WE001	10	WE001G
	2 way switch with light indicator, delivered without LED	10	WE002	10	WE002G
	intermediate switch allows a 3rd 2 way control point	10	WE010	-	-
	2 gang 2 way single way	10	WE040	10	WE040G
	2 gang 2 way single way with light indicator, double push button 1NO+1NC can be turned into 2 gang 2 way or 2 way switch + push button	10	WE045	-	-
	2 way switches WE001- set of 50 pieces	1	WE00150	-	-
10 AX - 250V push buttons Quick Connect	push button 1NO+1NC	10	WE022	10	WE022G
	double push button 1NO+1NC can be turned into push button / 2 way switch	10	WE044	10	WE044G
	push button 1NO+1NC with light	10	WE023	10	WE023G
	push button 1NO+1NC with label holder can be equipped with a LED	10	WE025	10	WE025G
	2 gang 2 way single way with light indicator, double push button 1NO+1NC can be turned into 2 gang 2 way or 2 way switch + push button	10	WE045	-	-
LED lamps	signal lamp, blue 250V AC, cons.: 0,4mA - 50000h			10	WS690
	control lamp, red 250V AC, cons.: 0,75mA - 50000h			10	WS691
	signal lamp, blue 12 - 24V DC , cons.: 0,4mA - 50000h			10	WS692

Connection capacity :
Quick Connect terminals
- mini: 2 x 1mm² rigid
- maxi: 2 x 2,5mm² rigid
Screw terminals
- maxi: 1 x 4mm² rigid
or 2 x 2,5mm² rigid

Complies to IEC 60 314 and NF
for references WE100, WE102,
WS105.

Glow wire test according to NF
EN 60 695-2.

References with screws can be
equipped with claws:
- short: WK696
- long WK697

References with claws:
WK696 pre-mounted.

Products equipped with frame
and plate are IP2XC.



WE100



WE100G



WE155



WE156



WE157



WK696



WS697

Designation	Characteristics	Pack. qty	Cat. ref. w/ screws	Pack. qty	Cat. ref. w/ claws
16 A - 250V French standard socket outlets 45 x 45 mm	2P+E, Quick Connect access to deconnection handle behind the cap.	10	WE100	10	WE100G
	2P+E with locating pin, Quick Connect access to deconnection handle behind the cap.	10	WE105	-	-
	2P, screw terminals	10	WE102	-	WE102G
	2P+E socket outlets WE100 - set of 50 pieces	1	WE10050	-	-
Cable outlet for wires: Ø1,5 to 12mm fixing with screws or removable claws	extra flat monobloc (18 mm surface mounting, no multi module) delivered with specific frame	10	WE155	-	-
	modular (multi module possible)	10	WE156	-	-
Accessories	blank plate	10	WE157	-	-
	locating pin for socket outlet	-	-	10	WS697
	short mounting claws	-	-	50	WK696
	long mounting claws	-	-	50	WK697

TV sockets

For Hertzian terrestrial analog and digital (TDT) TV reception. Also suitable for cable reception. TV+FM+SAT sockets are available for satellite TV reception.

For series wiring of the sockets, the terminal resistance should be mounted on the last socket.

For star wiring, use direct sockets.

Complies to ISO 11801 ed.2, EN 50173 WE211 to WE226, NF EN 50083 UTE 90123 UTE 90125 for WE250 to WE259.

Glow wire test according to NF EN 60 695-2.

References with screws can be equipped with claws:
- short: WK696
- long: WK697

References with claws:
WK696 pre-mounted.

Designation	Characteristics	Pack. qty	Cat. ref. w/ screws	Pack. qty	Cat. ref. w/ claws
-------------	-----------------	-----------	---------------------	-----------	--------------------

Phone socket "T"

8 screw contacts

10 **WE200** - -

RJ45 sockets

with label holder and anti-dust flap compatible with RJ11 and RJ12 plugs

self stripping contacts connection according to EIA/TIA 568A or B standardized colour code

category 5E RJ45:
D class at 100 MHz

UTP, 8 pts

10 **WE211** - -

FTP, 9 pts for grade1

10 **WE214** 10 **WE214G**

category 6 RJ45:
E class at 250 MHz

UTP, 8 pts

10 **WE220** - -

FTP, 9 pts

10 **WE223** 10 **WE223G**

STP or SFTP 8 shielded points for grade 3

10 **WE226** - -

Loud speaker socket
Quick Connect terminal

simple socket for speaker

10 **WE290** - -

double socket for speaker

10 **WE291** - -

TV sockets

screw terminals for a strong maintain of the coaxial cable

direct

10 **WE250** 10 **WE250G**

F type

10 **WE259** - -

TV + FM socket

screw terminals for a strong maintain of the coaxial cable

direct

10 **WE253** 10 **WE253G**

TV + FM + SAT socket
screw terminals for a strong maintain of the coaxial cable

direct 1 inlet

10 **WE256** - -

direct 2 inlets

10 **WE257** - -



WE200



WE214



WE290



WE250



WE257

Flush mounting

To be mounted in a 40mm depth box and 50mm depth box for motion detectors and dimmers.

Connection capacity

Quick Connect terminals
- mini: 2 x 1mm² rigid
- maxi: 2 x 2,5mm² rigid

Screw terminals

- maxi: 2 x 2,5mm² rigid
- maxi: 2 x 1,5mm² flexible

Complies with NF EN 60 669-1 for WE048, WE063, WE064.

Complies with NF EN 60 669-2 for WE050, WE051, WE063, WE064.

Glow wire test according to NF EN 60 695-2.

References with screws can be equipped with claws:
- short: WK696
- long WK697

Products equipped with frame and plate are IP2XC.

Designation	Characteristics	Pack. qty	Cat. ref. w/ screws
-------------	-----------------	-----------	---------------------

Ventilation control
10 A - 250 V~

Quick Connect, 2 way switch
2 speeds without "stop" position

1

WE048



WE048

Motion detectors without neutral (2 wires)

- for installation in place a switch with no additional wiring
- operates: incandescent and halogen lamps 230V~, ELV lamps with electronic transformer, can be used as master,

230 V~ / 50 Hz
60 ... 320 W/VA

1

WE050

Motion detectors with neutral (3 wires)

- operates: incandescent and halogen lamps 230V~, ELV halogen lamps with ferromagnetic or electronic transformers, - can control ventilation and fluorescent lamps, can be used as master or slave.

incandescent and halogen
230V~ : 0 ... 1000 W
other loads : 0 ... 500 VA

1

WE051



WE050, WE051

Dimmers for incandescent and halogen lamps 230V~, and ELV lamps with ferromagnetic transformer
230 V~ / 50 Hz

rotary switch dimmer 400 VA
without end position
with integrated latching relay function
60 ... 400 W/VA

1

WE063



WE063, WE064

Dimmers for incandescent and halogen lamps 230VM, and ELV lamps with electronic transformer
230 V~ / 50 Hz

rotary switch dimmer 320 VA
without end position
with integrated latching relay function
60 ... 320 W/VA

1

WE064

Flush mounting

To be mounted in a 40mm depth box and 50mm depth box for thermostats.

Connection capacity

Quick Connect terminals
- mini: 2 x 1mm² rigid
- maxi: 2 x 2,5mm² rigid

Screw terminals

- maxi: 1 x 2,5mm² rigid
- maxi: 2 x 1,5mm² flexible

Complies with NF EN 60 669-1 for WE300 and WE301, NF EN 60 730-2, NF EN 60 335-1 NF EN 55 014-1,

NF EN 61 000-3 for WE310, WE314.

Glow wire test according to NF EN 60 695-2.

Products equipped with frame and plate are IP2XC.



WE301



WE310, WE314

Designation	Characteristics	Pack. qty	Cat. ref.
Shutters control Quick Connect 10 A - 250 V~	double 2 way switch with mechanical interlock	1	WE300
	double push button for automatic system	1	WE301
Electronic room thermostats power supply 230 V~ /50 Hz output: 1 changeover contact	room thermostat adjustment range: +5°C to +30°C accuracy ± 0,5°C output relay 8 A - 250 V~ for cos φ=1	1	WE310
	thermostat pilot wire pilot wire input 6 controls adjustment range: +5° C to 30°C accuracy ± 0,5°C operating reserve : 30 days output relay 8 A - 250 V~ for cos φ=1	1	WE314

essensya
plates and frames

Clip-on plates

UV resistant material with antistatic texture.

Accurate mounting thanks to clips steps.
Removal slots on the sides.



WE401



WE403

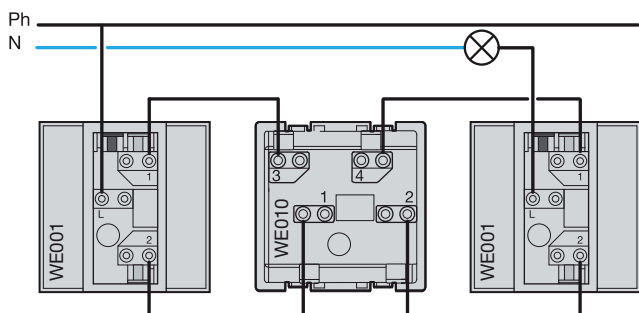


WE406

Designation	Characteristics	Pack. qty	Cat. ref.
Simple plates	dim. : 80 x 80 mm	10	WE401
	simple plates WE401 - set of 50 pieces	1	WE40150
Double plates horizontal reversible	dim. : 80 x 151 mm centre distance 71 mm	10	WE402
Triple plates horizontal or vertical reversible	dim. : 80 x 222 mm centre distance 71 mm	5	WE403
Double plates vertical	dim. : 80 x 137 mm centre distance 57 mm	10	WE406
Triple plates vertical	dim. : 80 x 194 mm centre distance 57 mm	5	WE407

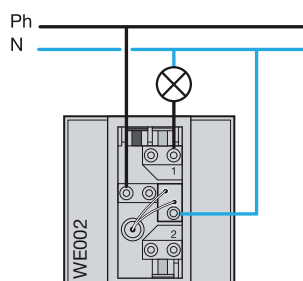
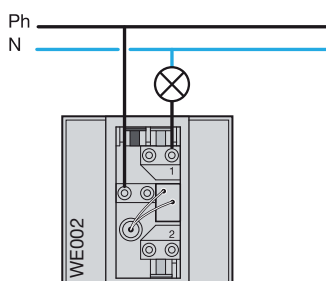
Circuit diagram

Intermediate switch with light indicator



- **WS690 or WS692** signal lamps with connector for devices WE002, WE023, WE025, WE045

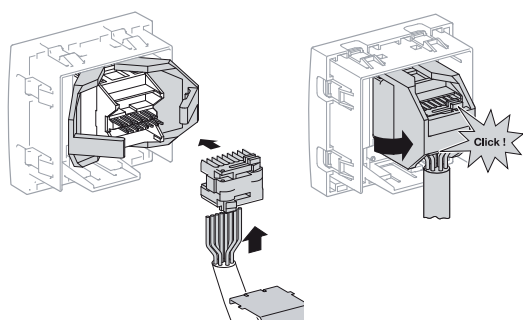
- **WS691** controls lamp, with connector for devices WE002, WE023, WE025, WE045



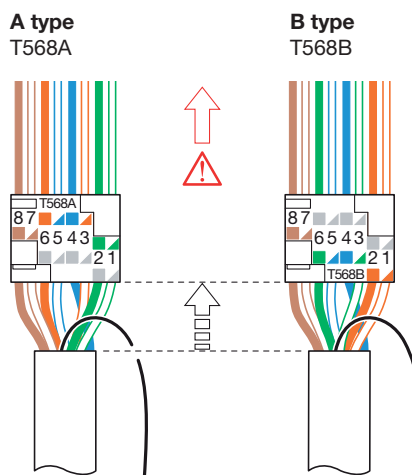
Technical specifications

Lighting function		Light signal function		Light control function	
		- switch: lamp is lit when the load is power off - push button or 2 pole switch: lamp is always lit		- switch: lamp is lit when the load is power on	
mechanisms		blue light 250V~ blue light 12-24V ..		red light 250V~	
switches					
2 way switch with light indicator	WE002	WS690	WS692	WS691	
2 gang 2 way single way with light indicator	WE045	WS690	WS692	WS691	
push buttons					
push button 1NO+1NC with light	WE023	WS690	WS692	-	
push button 1NO+1NC with label holder	WE025	WS690	WS692	-	
2 gang 2 way single way with light indicator	WE045	WS690	WS692	WS691	

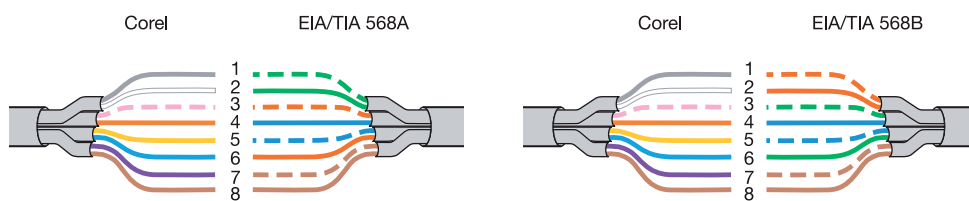
RJ45 sockets connection



Wiring diagram



Agreement conformity between Corel/EIA-TIA








Residential wiring recommendation according to UTE-C 90 483

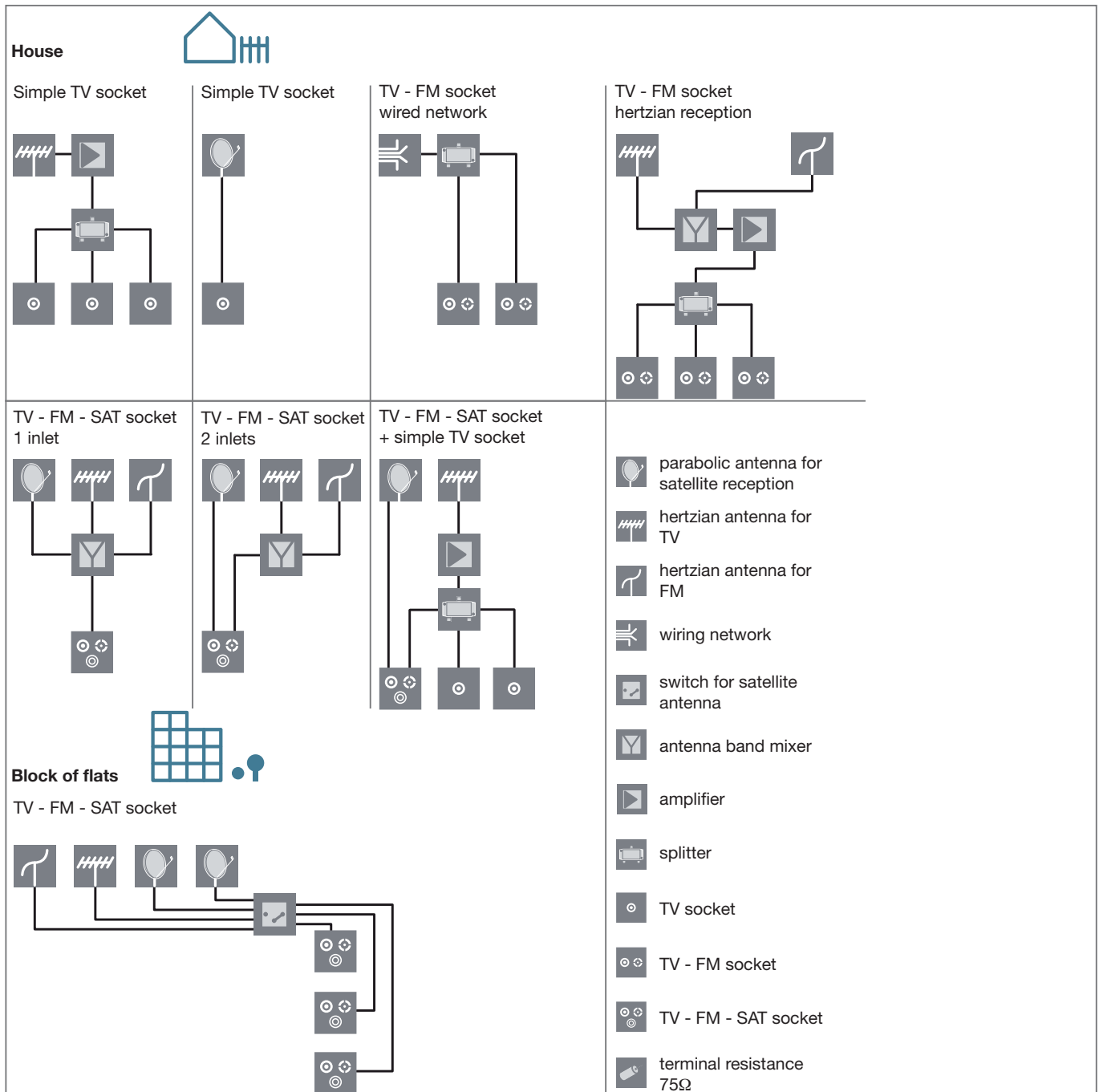
	grade 1 telcom service	phone + LAN	grade 3 multiservices	multimedia
cable	grade 1		grade 3	
connector	FTP		STP	
essensya reference	WE214		WE226	
analog voice transmission				
RNIS digital voice transmission + internet				
internet ADSL				
local network 100Mbits/s				
video, digital TV (analogue by telcom line)				
local network 1Gbit/s				
analog and digital TV (VHF/UHF)				
satellite TV				

advisable
 adapted
 minimal
 unadapted

Technical specification

	ref.	type	dB	75Ω 	direct current (1)	back	band 1	FM	VHF	UHF	SAT
					mA	MHz	MHz	MHz	MHz	MHz	
	WE250	direct socket	< 1dB			4-30	47-68	87,5-108	120-470	470-862	950-2400
	WE253	direct socket	< 1dB								
	WE256 WE257	1 inlet 2 inlets			500mA 500mA						
	WE259	1 inlet 2 inlets									

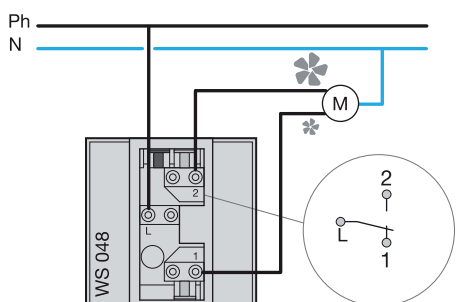
(1) amplifier or LNB satellite remote power feeding



European wiring accessories







CMV control

WE048 : 2 speeds without stop position.



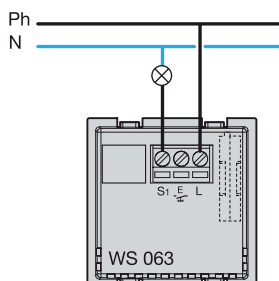
Dimmer switches

Technical specifications

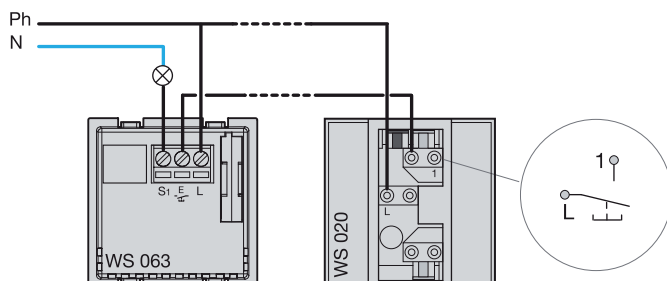
load		WE063 rotary switch dimmer	WE064 rotary switch dimmer
halogen or incandescent lamps 230V	 	60 to 400W	60 to 320W
ELV halogen lamps supplied by ferromagnetic transformer	 	60 to 400W	-
ELV halogen lamps supplied by electronic transformer	 	-	60 to 320W
characteristics			
overload protection		electronic	electronic
overcurrent protection		fuse T 2 A H	fuse T 2 A H
lighting level storage		yes	yes
softstart / softstop		yes	yes
latching relay function / remote dimmer		yes	yes

Connection

- change a simple way switch



- change a 2 way switch : possibility to connect push buttons on the input E. They will have the same function as the dimmer itself.



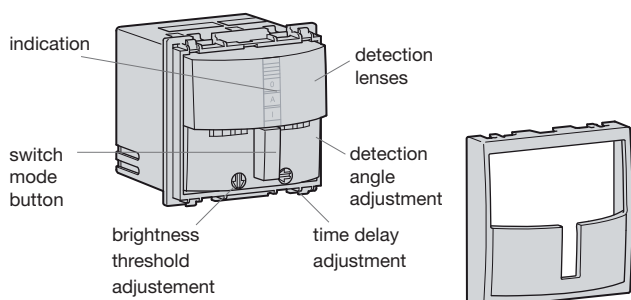
← 40 m maxi →

Working principle if push buttons are associated to a dimmer:
 - short press: switching on / switching off (variation level storage)
 - long press: variation, each press invert the variation sense
 - push buttons cannot be equipped with light indicator.

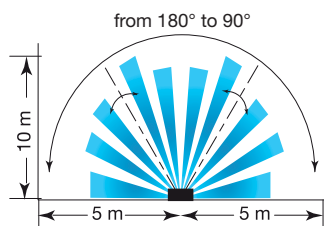
Technical characteristics

load	WE050	WE051
halogen or incandescent lamps 230V	60 to 320W	0 to 1000W
ELV halogen lamps supplied by ferromagnetic transformer		0 to 500VA
ELV halogen lamps supplied by electronic transformer	60 to 320W	0 to 500VA
fluorescent lamps		0 to 500VA
Characteristics		
brightness threshold	5 to 800 lux (possibility to disable)	
time delay	2s to 30min	
detection angle	90° to 180°	
overload protection	electronic	
overcurrent protection	electronic	fuse F 4A H
use as master	yes	yes
use as slave	no	yes
remote timer function	yes	yes

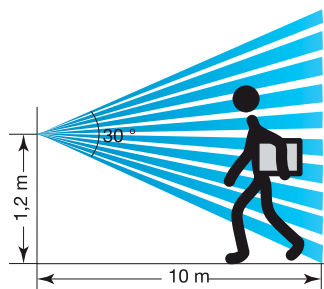
Product presentation



Detection area



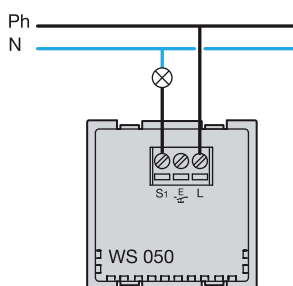
left and right area adjustment



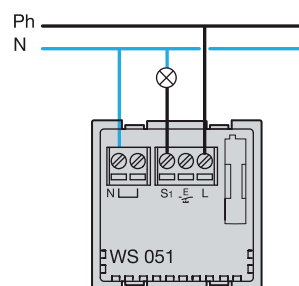
limitation of detection area with potentiometers on test position

Circuit diagram

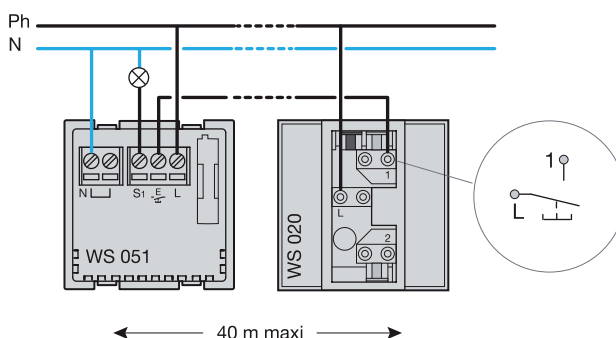
- 2 wire version to substitute a switch



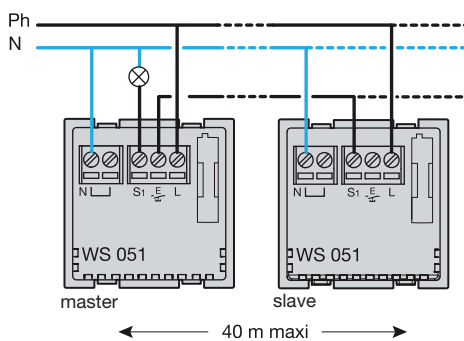
- 3 wire version without minimal load



- possibility to connect push button on input "E" to force the switching on (see wiring)



- extension of detection area



Product description

Adjustment of brightness threshold:

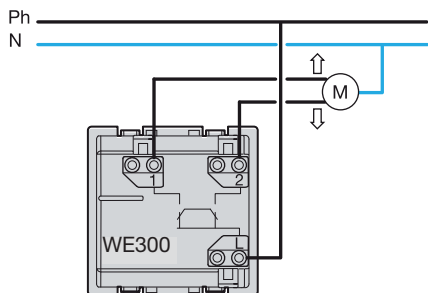
- manual: through potentiometer
- automatic: the threshold corresponds to the current room brightness.

Selection of the mode through short press on button:

- automatic mode: release when passage detection, and brightness lower than threshold,
- Forced switching on and off,
- temporary forcing: lighting on during 2 hours then returns to the automatic mode,
- security: this mode disable the selection by press on the front button.

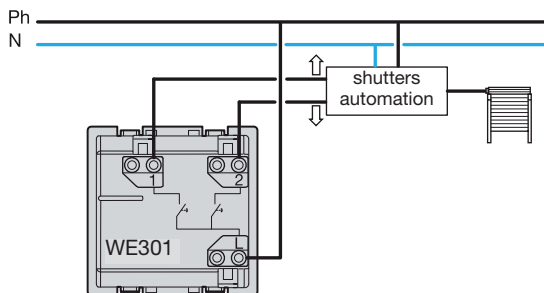
Shutters control : WE300

double 2 way switch: allows motor direct control

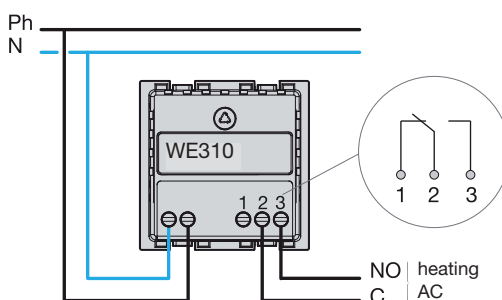
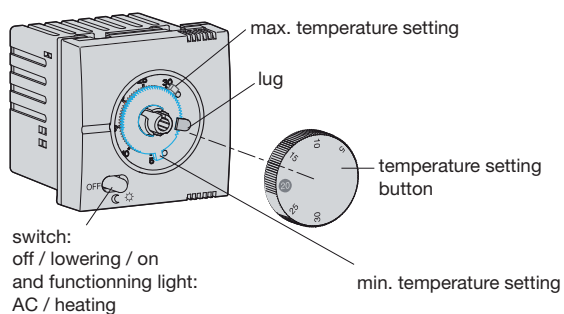


Shutters control : WE301

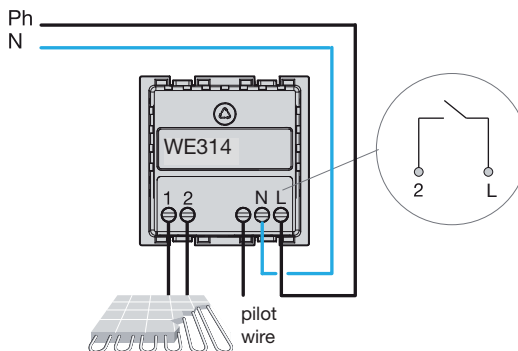
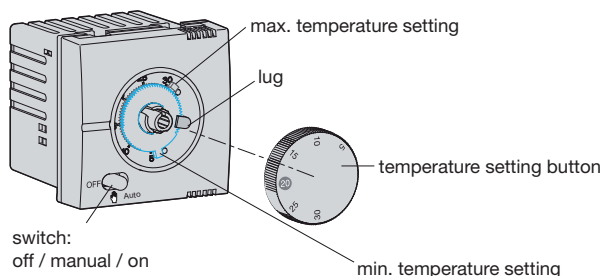
double push button: allows motors individual or common control through an automated system (flush mounted or modular ELxxx).



Room thermostat WE310



Pilot wire thermostat WE314



kallysta designed for your home



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Spirit of beauty

The kallysta switch is not just functional, it is beautiful. Whatever the style, the kallysta range offers a wide and trendy choice of wiring accessories to fit in every interior.

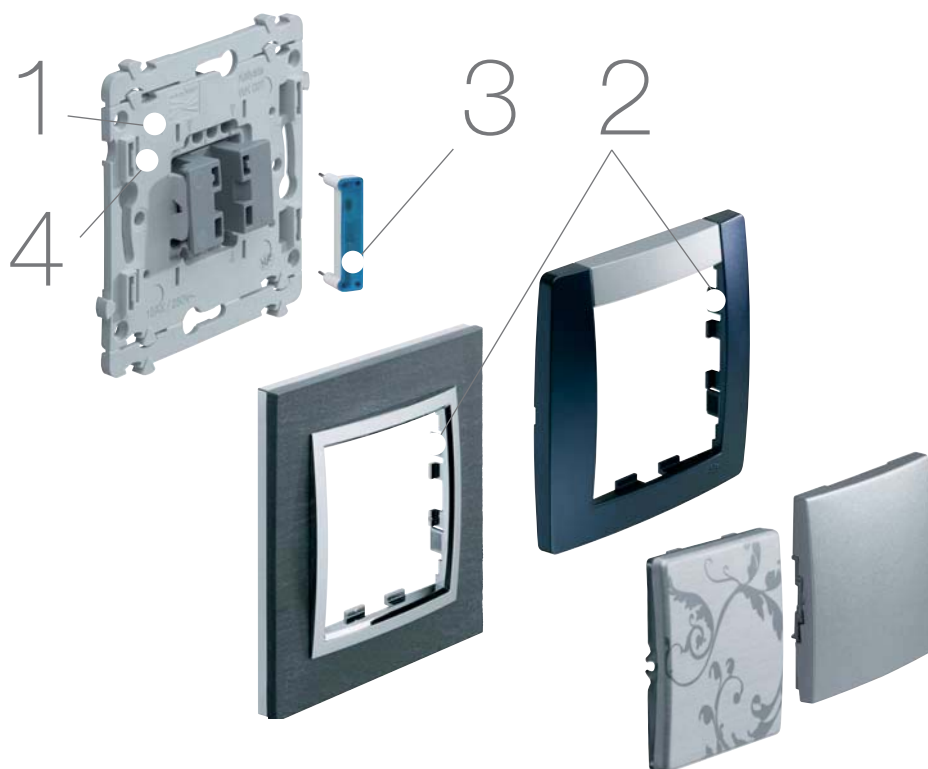
www.near-east.hager.com

hager

Wiring accessories kallysta

The design solution for your projects

The kallysta range offers a wide choice of sizes, materials and colors to fit all your projects. With 2 different designs, 35 plates and 8 cover plates, you can get the perfect combination to answer your customer needs.



Your benefits

- Mechanism can be associated with the 35 plates and 8 cover plates for a progressive installation.
- Multi module plates available in 57 and 71mm vertical centre distance, for new building and renovation.
- Quick Connect terminals for a quick and safe mounting.

Your benefits

- Compact mechanism and bottom connection allow an easy integration in the mounting boxes.
- All the mechanisms are equipped with a painting protection for a neat finish.

Expert tips

1



Robustness

Fiberglass reinforced mechanism and electric shocks isolation.

4



Anti-theft function

To fix the plate, screw the under-button onto the mechanism.

2



Perfect fit

Thanks to the plate compensation system that make up for the wall defects.

6



Painting protection

It equips each mechanism and protects the product during the mounting.

3



Clip-on mounting

Lamps, mechanisms and plates can be clipped for a quick mounting.

5

















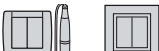







Mechanisms combination

To facilitate the multi-module plate mounting, the dovetails allows to combine 2 mechanisms horizontally or vertically.

kallysta mechanisms and cover plates for controls

references guide

 <p>Functions</p>	 <p>Mechanisms</p>	 <p>White cover plates</p>	 <p>Beige cover plates</p>	
Switches 10AX - 250V~ IP2XC Quick Connect				
- 2 way switch			WK780B	WK780D
- 2 way switch with light		WK001 (M.52)	WK781B	WK781D
- 2 way switch with label holder			WK782B	WK782D
- 2 way switch control light with neutral		WK003 (M.52)	WK781B	WK781D
- pull cord 2 way switch		WK005* (M.52)	WK788B	WK788D
- 2 pole switch		WK008* (M.52)	WK783B	WK783D
- 2 pole switch with light			WK784B	WK784D
- intermediate switch		WK010 (M.52)	WK780B	WK780D
- rocker hotel card		WK055 (M.52)	WK762B	WK762D
Push buttons 10A - 250V~ IP2XC Quick Connect				
- push button 1NO+1NC		WK022 (M.52)	WK780B	WK780D
- push button 1NO+1NC with light			WK781B	WK781D
- push button 1NO+1NC with label holder			WK782B	WK782D
- push button 1NC with control light		WK023 (M.52) to be associated with lamp WUZ690	WK781B	WK781D
- pull cord push button		WK024* (M.52)	WK788B	WK788D
Double switches 10AX and double push buttons 10A 250V~ IP2X Quick Connect				
- 2 gang 2 way switch		WK040 (M.52)	WK785B	WK785D
- 2 gang 2 way switch with light		WK044 (M.52)	WK786B	WK786D
- double push button 1NO+1NC			WK785B	WK785D
- double push button 1NO+1NC with light			WK786B	WK786D
- double push button 1NO+1NC with label holder			WK787B	WK787D



Quick Connect terminals



Alu cover plates



Black cover plates



Ekla cover plates



Optik cover plates



Graphik cover plates



Barok cover plates














	WK780T	WK780C	WK780M1	WK780M2	WK780M3	WK780M4
	WK781T	WK781C	WK781M1	WK781M2	WK781M3	WK781M4
	WK782T	WK782C	-	-	-	-
	WK781T	WK781C	WK781M1	WK781M2	WK781M3	WK781M4
	WK788T	WK788C	-	-	-	-
	WK783T	WK783C	-	-	-	-
	WK784T	WK784C	-	-	-	-
	WK780T	WK780C	WK780M1	WK780M2	WK780M3	WK780M4
	WK762T	WK762C	-	-	-	-

	WK780T	WK780C	WK780M1	WK780M2	WK780M3	WK780M4
	WK781T	WK781C	WK781M1	WK781M2	WK781M3	WK781M4
	WK782T	WK782C	-	-	-	-
	WK781T	WK781C	WK781M1	WK781M2	WK781M3	WK781M4
	WK788T	WK788C	-	-	-	-

	WK785T	WK785C	WK785M1	WK785M2	WK785M3	WK785M4
	WK786T	WK786C	-	-	-	-
	WK785T	WK785C	WK785M1	WK785M2	WK785M3	WK785M4
	WK786T	WK786C	-	-	-	-
	WK787T	WK787C	-	-	-	-

kallysta mechanisms and cover plates for socket outlets

references guide

<p>Functions</p> 	<p>Mechanisms</p> 	<p>White cover plates</p> 	<p>Beige cover plates</p> 	
<p>Socket outlets 16A 250V~ IP2XC</p>				
<p>- 2P+E socket Quick Connect</p>		<p>WK100 (M.53)</p>	<p>WK730B</p>	<p>WK780D</p>
<p>- 2P+E screw terminals</p>		<p>WK101 (M.53)</p>	<p>WK730B</p>	<p>WK781D</p>
<p>- 2P socket screw terminals</p>		<p>WK102 (M.53)</p>	<p>WK733B</p>	<p>WK782D</p>
<p>- 2P+E socket to be associated with WUZ694, Quick Connect</p>		<p>WK100 (M.53)</p>	<p>WK731B</p>	<p>WK781D</p>
<p>- 2P+E socket with locating pin Quick Connect</p>		<p>WK105 (M.53)</p>	<p>for WK105: red cover plate included</p>	
<p>- 2P+E socket with locating pin screw terminals</p>		<p>WK106 (M.53)</p>	<p>for WK105: red cover plate included</p>	
<p>Cable outlet IP2XC</p>				
<p>- modular cable outlet</p>		<p>WK155 (M.53)</p>	<p>WK739B</p>	<p>WK739D</p>
<p>- Extra slim monobloc socket outlet (no multi module)</p>		<p>WE155 (M.53)</p>	<p>for WE155: mechanism included, no multi module possibility</p>	
<p>- blank function</p>		<p>WK157 (M.53)</p>	<p>WK780B</p>	<p>WK780D</p>



Quick Connect terminals



Alu cover plates



Black cover plates



Ekla cover plates



Optik cover plates

































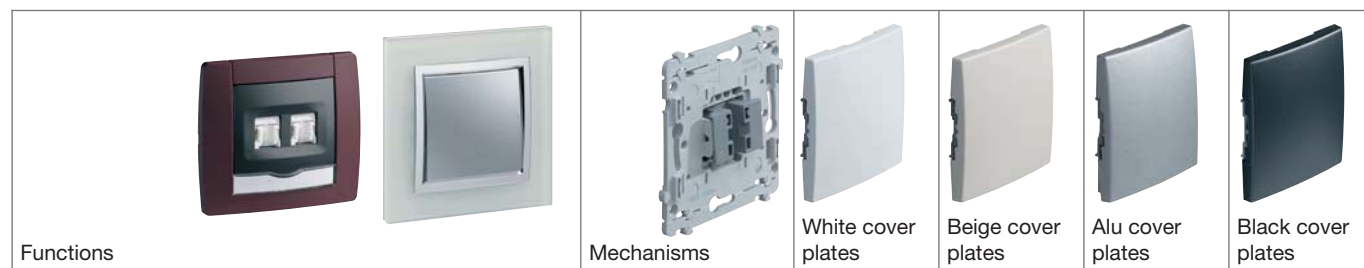
Graphik cover plates






Barok cover plates

	WK730T	WK730C	WK730M1	WK730M2	WK730M3	WK730M4
	WK730T	WK730C	WK730M1	WK730M2	WK730M3	WK730M4
	WK733T	WK733C	-	-	-	-
	WK731T	WK731C	-	-	-	-
	WK739T	WK739C	-	-	-	-
	WK780T	WK780C	WK780M1	WK780M2	WK780M3	WK780M4





<p>Functions</p> 	<p>Mechanisms</p> 	<p>White cover plates</p> 	<p>Beige cover plates</p> 	<p>Alu cover plates</p> 	<p>Black cover plates</p> 	
Phone socket						
- phone socket "T"	WK200 (M.54)	WK750B	WK750D	WK750T	WK750C	
Data sockets						
- RJ45 socket cat. 5e UTP	 	WK211 (M.54)	WK751B	WK751D	WK751T	WK751C
- RJ45 x 2 sockets cat. 5e UTP	 	WK212 (M.54)	WK752B	WK752D	WK752T	WK752C
- RJ45 socket cat. 5e UTP (grade 1)	 	WK214 (M.54)	WK751B	WK751D	WK751T	WK751C
- RJ45 x 2 sockets cat. 5e UTP (grade 1)	 	WK215 (M.54)	WK752B	WK752D	WK752T	WK752C
- RJ45 socket cat. 5e STP	 	WK217 (M.54)	WK751B	WK751D	WK751T	WK751C
- RJ45 x 2 sockets cat. 5e STP	 	WK218 (M.54)	WK752B	WK752D	WK752T	WK752C
- RJ45 socket cat. 6 UTP	 	WK220 (M.54)	WK751B	WK751D	WK751T	WK751C
- RJ45 x 2 sockets cat. 6 UTP	 	WK221 (M.54)	WK752B	WK752D	WK752T	WK752C
- RJ45 socket cat. 6 STP	 	WK223 (M.54)	WK751B	WK751D	WK751T	WK751C
- RJ45 x 2 sockets cat. 6 STP	 	WK224 (M.54)	WK752B	WK752D	WK752T	WK752C
- RJ45 socket cat. 6 STP (grade 3)	 	WK226 (M.54)	WK751B	WK751D	WK751T	WK751C
- RJ45 x 2 sockets cat. 6 STP (grade 3)	 	WK227 (M.54)	WK752B	WK752D	WK752T	WK752C



TV sockets

- "F" type TV socket	 	WK259 (M.54)	WK740B	WK740D	WK740T	WK740C
- direct TV socket	 	WK250 (M.54)	WK740B	WK740D	WK740T	WK740C
- TV pass-through / end socket 10dB	 	WK251 (M.54)	WK740B	WK740D	WK740T	WK740C
- TV pass-through / end socket 15dB	 	WK252 (M.54)	WK740B	WK740D	WK740T	WK740C
- direct TV + FM socket	 	WK253 (M.54)	WK741B	WK741D	WK741T	WK741C
- TV + FM pass-through / end socket 10dB	 	WK254 (M.54)	WK741B	WK741D	WK741T	WK741C
- TV + FM pass-through / end socket 15dB	 	WK255 (M.54)	WK741B	WK741D	WK741T	WK741C
- direct TV + FM + SAT socket 1 cable	 	WK256 (M.54)	WK742B	WK742D	WK742T	WK742C
- direct TV + FM + SAT socket 2 cables	 	WK257 (M.54)	WK742B	WK742D	WK742T	WK742C




















Loud speaker sockets







- 1 speaker outlet	 	WK290 (M.54)	WK751B	WK751D	WK751T	WK751C
- 2 speakers outlet	 	WK291 (M.54)	WK752B	WK752D	WK752T	WK752C

European wiring accessories


























kallysta mechanisms and cover plates for comfort controls

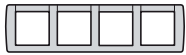

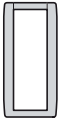

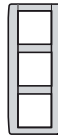
references guide

 <p>Functions</p>	 <p>Mechanisms</p>	 <p>White cover plates</p>	 <p>Beige cover plates</p>	
Dimmers 250V~ IP2XC				
- rotary switch dimmer 400VA for ferromagnetic transformer		WK063 (M.55)	WK790B	WK790D
- rotary switch dimmer 320VA for electronic transformer		WK064 (M.55)	WK790B	WK790D
- push dimmer 400VA for ferromagnetic transformer		WK066 (M.55)	WK791B	WK791D
- rotary switch dimmer 350VA universal		WK065 (M.55)	WK790B	WK790D
- push dimmer 350VA universal		WK067 (M.55)	WK791B	WK791D
Motion detectors IP2XC				
- without neutral (2 wires)		WK050 (M.55)	WK794B	WK794D
- with neutral (3 wires)		WK051 (M.55)	WK794B	WK794D
Ventilation control 10A - 250V~ IP2XC				
- 2 way switch		WK001 (M.55)	WK798B	WK798D
Shutter controls 10A IP2XC Quick Connect				
- double 2 way switch		WK300 (M.56)	WK795B	WK795D
- double push button		WK301 (M.56)	WK796B	WK796D
- local remote control for shutter programmable		WK304 (M.56)	WK760B	WK760D
- shutter control programmable with display		WK305 (M.56)	WK761B	WK761D
Electronic room thermostats IP2XC				
- room thermostat		WK310 (M.56)	WK792B	WK792D
- chrono thermostat		WK311 (M.56)	WK793B	WK793D
- pilot wire thermostat		WK314 (M.56)	WK797B	WK797D

						
	Alu cover plates	Black cover plates	Ekla cover plates	Optik cover plates	Graphik cover plates	Barok cover plates
	WK790T	WK790C	-	-	-	-
	WK790T	WK790C	-	-	-	-
	WK791T	WK791C	-	-	-	-
	WK790T	WK790C	-	-	-	-
	WK791T	WK791C	-	-	-	-
	WK794T	WK794C	-	-	-	-
	WK794T	WK794C	-	-	-	-
	WK798T	WK798C	-	-	-	-
	WK795T	WK795C	WK795M1	WK795M2	WK795M3	WK795M4
	WK796T	WK796C	WK796M1	WK796M2	WK796M3	WK796M4
	WK760T	WK760C	-	-	-	-
	WK761T	WK761C	-	-	-	-
	WK792T	WK792C	-	-	-	-
	WK793T	WK793C	-	-	-	-
	WK797T	WK797C	-	-	-	-












kallysta plates references guide


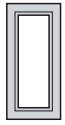

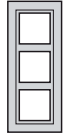










Finish	plate rendering	horizontal 71mm centre distance					
		1 module 80 x 90mm		2 modules 80 x 160mm		3 modules 80 x 233mm	
		cat. ref.	pack qty.	cat. ref.	pack qty.	cat. ref.	pack qty.
- white		WK401	10	WK402	10	WK403	5
- beige	 pastel	WK411	10	WK412	10	WK413	5
- mint	 pastel	WK421	1	WK422	1	WK423	1
- pink	 pastel	WK431	1	WK432	1	WK433	1
- light blue	 pastel	WK441	1	WK442	1	WK443	1
- dark blue	 soft effect	WK451	1	WK452	1	WK453	1
- plum	 soft effect	WK461	1	WK462	1	WK463	1
- dark red	 soft effect	WK471	1	WK472	1	WK473	1
- auburn	 metallic finish	WK481	1	WK482	1	WK483	1
- alu	 metallic finish	WK491	1	WK492	1	WK493	1
- black	 metallic finish	WK501	1	WK502	1	WK503	1
- iris	 metallic finish	WK511	1	WK512	1	WK513	1
- citrus	 metallic finish	WK521	1	WK522	1	WK523	1
- tango	 metallic finish	WK531	1	WK532	1	WK533	1
- chrome	 shiny chrome	WK541	1	WK542	1	WK543	1
- shiny gold	 shiny gold	WK551	1	WK552	1	WK553	1
- flat gold	 brushed gold	WK561	1	WK562	1	WK563	1
- maple	 solid wood	WK571	1	WK572	1	WK573	1
- bamboo	 solid wood	WK581	1	WK582	1	WK583	1
- wild cherry tree	 solid wood	WK591	1	WK592	1	WK593	1
- briar	 solid wood	WK601	1	WK602	1	WK603	1
- galet	 brushed chrome	WK631	1	WK632	1	WK633	1
- platinum	 nickel	WK641	1	WK642	1	WK643	1
- black corian	 Corian® granite effect	WK651	1	WK652	1	WK653	1
- white corian	 Corian® marble effect	WK661	1	WK662	1	WK663	1

		vertical 57mm centre distance				vertical 71mm centre distance			
4 modules 80 x 302mm 		2 modules 137 x 90mm 		3 modules 194 x 90mm 		2 modules 150 x 90mm 		3 modules 221 x 90mm 	
cat. ref.	pack qty.	cat. ref.	pack qty.	cat. ref.	pack qty.	cat. ref.	pack qty.	cat. ref.	pack qty.
WK404	1	WK406	10	WK407	5	WK408	5	WK409	5
WK414	1	WK416	10	WK417	5	WK418	5	WK419	5
WK424	1	WK426	1	WK427	1	WK428	1	WK429	1
WK434	1	WK436	1	WK437	1	WK438	1	WK439	1
WK444	1	WK446	1	WK447	1	WK448	1	WK449	1
WK454	1	WK456	1	WK457	1	WK458	1	WK459	1
WK464	1	WK466	1	WK467	1	WK468	1	WK469	1
WK474	1	WK476	1	WK477	1	WK478	1	WK479	1
WK484	1	WK486	1	WK487	1	WK488	1	WK489	1
WK494	1	WK496	1	WK497	1	WK498	1	WK499	1
WK504	1	WK506	1	WK507	1	WK508	1	WK509	1
WK514	1	WK516	1	WK517	1	WK518	1	WK519	1
WK524	1	WK526	1	WK527	1	WK528	1	WK529	1
WK534	1	WK536	1	WK537	1	WK538	1	WK539	1
-	-	WK546	1	WK547	1	WK548	1	WK549	1
-	-	WK556	1	WK557	1	WK558	1	WK559	1
-	-	WK566	1	WK567	1	WK568	1	WK569	1
-	-	WK576	1	WK577	1	WK578	1	WK579	1
-	-	WK586	1	WK587	1	WK588	1	WK589	1
-	-	WK596	1	WK597	1	WK598	1	WK599	1
-	-	WK606	1	WK607	1	WK608	1	WK609	1
-	-	WK636	1	WK637	1	WK638	1	WK639	1
-	-	WK646	1	WK647	1	WK648	1	WK649	1
-	-	WK656	1	WK657	1	WK658	1	WK659	1
-	-	WK666	1	WK667	1	WK668	1	WK669	1

The natural materials used to manufacture the kallysta range show differences in their textures, colours and graining. These characteristics provide each item a unique look.

kallysta plates references guide

 Finish	plate rendering	horizontal 71mm centre distance					
		1 module 100 x 100mm		2 modules 100 x 171mm		3 modules 100 x 242mm	
		cat. ref.	pack qty.	cat. ref.	pack qty.	cat. ref.	pack qty.
- white glass 		WK801	1	WK802	1	WK803	1
- green glass 		WK811	1	WK812	1	WK813	1
- grey glass 		WK821	1	WK822	1	WK823	1
- black glass 		WK831	1	WK832	1	WK833	1
- marble stone 	light grey marble	WK841	1	WK842	1	WK843	1
- ardesia 	slate	WK861	1	WK862	1	WK863	1
- aluminum 	brushed alu	WK871	1	WK872	1	WK873	1
- aluminium black 	brushed black aluminium	WK891	1	WK892	1	WK893	1
- wood rovere 	english oak	WK901	1	WK902	1	WK903	1
- wood wenge 	wenge	WK911	1	WK912	1	WK913	1

vertical 57mm centre distance				vertical 71mm centre distance				Decor
2 modules 157 x 100mm 		3 modules 214 x 100mm 		2 modules 171 x 100mm 		3 modules 242 x 100mm 		
cat. ref.	pack qty.	cat. ref.	pack qty.	cat. ref.	pack qty.	cat. ref.	pack qty.	
WK806	1	WK807	1	WK808	1	WK809	1	- white glass 
WK816	1	WK817	1	WK818	1	WK819	1	- green glass 
WK826	1	WK827	1	WK828	1	WK829	1	- grey glass 
WK836	1	WK837	1	WK838	1	WK839	1	- black glass 
WK846	1	WK847	1	WK848	1	WK849	1	- marble stone 
WK866	1	WK867	1	WK868	1	WK869	1	- ardesia 
WK876	1	WK877	1	WK878	1	WK879	1	- aluminum 
WK896	1	WK897	1	WK898	1	WK899	1	- aluminium black 
WK906	1	WK907	1	WK908	1	WK909	1	- wood rovere 
WK916	1	WK917	1	WK918	1	WK919	1	- wood wenge 

The natural materials used to manufacture the kallista range show differences in their textures, colours and graining. These characteristics provide each item a unique look.









Options

Lamps for signaling or controlling are compatible with all control switches with indicator lights and label holders.

Connection capacity :

- mini: 2 x 1mm² rigid
- maxi: 1 x 2,5mm² rigid

Complies to IEC 60 669-1.

	Designation	Characteristics	Pack. qty	Cat. ref.
 WK001  WK005  WK010  WK055	Switches 10AX - 250V Quick Connect	2 way switch can be equipped with lamp WUZ690 or WUZ692	10	WK001
		2 way switch control light with neutral can be equipped with lamp WUZ691	1	WK003
		2 way pull cord switch delivered with 1,5m pull cord	1	WK005
		2 pole switch allows to cut 2 conductors can be equipped with lamp WUZ691	1	WK008
		intermediate switch allows a 3rd 2 way control point can be equipped with lamp WUZ690 or WUZ692	1	WK010
	hotel card switch credit card size	1	WK055	
 WK023	Push buttons 10A - 250V	push button 1NO + 1NC Quick Connect can be equipped with lamp WUZ690 or WUZ692	10	WK022
		pull cord push button 1NO + 1NC delivered with 1,5m pull cord	1	WK024
		push button 1NC with control light Quick Connect to be equipped with WUZ690	1	WK023
 WK040	Double switches 10AX - 250V double push buttons 10A - 250V	2 gang 2 way switch 1NO + 1NC Quick Connect can be equipped with lamp WUZ690 or WUZ692	10	WK040
		double push button can be turned into push button + 2 way switch	1	WK044
 WUZ691  WUZ692	LED lamps	blue signal lamp, 250V AC cons.: 0,4mA - 50000h	10	WUZ690
		red control lamp, 250V AC cons.: 0,75mA - 50000h	10	WUZ691
		blue signal lamp, 12 - 24V DC cons.: 0,4mA - 50000h	10	WUZ692
		red LED for WS103 socket cons.: 0,75mA - 50000h	10	WUZ694










TV sockets

For Hertzian terrestrial analog and digital (TDT) TV reception. Also suitable for cable reception. TV+FM+SAT sockets are available for satellite TV reception.

For series wiring of the sockets, the terminal resistance should be mounted on the last socket. For star wiring, use direct sockets.

Complies to ISO 11801 ed.2, EN 50173 WK211 to WK227, NF EN 50083 UTE 90123 UTE 90125 for WK250 to WK257.

Glow wire test according to NF EN 60 695-2.

Designation	Characteristics	Pack. qty	Cat. ref. single	Pack. qty	Cat. ref. double
 WK200	Phone socket "T"	10	WK200	-	-
 WK211	RJ45 sockets with label holder and anti-dust flap compatible with RJ11 and RJ12 plugs				
 WK215	category 5E RJ45: D class at 100 MHz	5	WK211	5	WK212
 WK217		5	WK214	5	WK215
 WK218		5	WK217	5	WK218
	category 6 RJ45: E class at 250 MHz	5	WK220	5	WK221
		5	WK223	5	WK224
		5	WK226	5	WK227
	Loud speaker socket	10	WK290	10	WK291
 WK290	TV sockets screw terminals for a strong maintain of the coaxial cable	10	WK250		
 WK250		10	WK259		
 WK253		5	WK251		
 WK256	TV + FM socket screw terminals for a strong maintain of the coaxial cable	5	WK252		
		5	WK253		
		5	WK254		
	TV + FM + SAT socket screw terminals for a strong maintain of the coaxial cable	5	WK255		
		5	WK256		
		5	WK257		

Flush mounting
To be mounted in a 40mm depth box and 50mm depth box for motion detectors and dimmers.

Connection capacity
Quick Connect terminals
- mini: 2 x 1mm² rigid
- maxi: 2 x 2,5mm² rigid

Screw terminals
- maxi: 2 x 2,5mm² rigid
- maxi: 2 x 1,5mm² flexible

Complies with NF EN 60 669-1 for WK063, WK064, WK065, WK066 and WK067.
Complies with NF EN 60 669-2 for WK050, WK051, WK063,

WK065, WK066 and WK067.
Glow wire test according to NF EN 60 695-2.
Products equipped with frame and plate are IP2XC.

Designation	Characteristics	Pack. qty	Cat. ref.
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WK001

Ventilation control 10 A - 250 V~	Quick Connect, 2 way switch	10	WK001
---	-----------------------------	----	--------------



WK050

Motion detectors without neutral (2 wires) - for installation in place of a switch with no additional wiring - operates: incandescent and halogen lamps 230V~, ELV lamps with electronic transformer the WS050 can be used as master. temporization: 2s to 30 min.	230 V~ / 50 Hz 60 ... 320 W/VA	1	WK050
--	-----------------------------------	---	--------------



WK051

Motion detectors with neutral (3 wires) - operates: up to 1000W incandescent and halogen lamps 230V~, ELV halogen lamps with ferromagnetic and electronic transformer, - can control ventilation and fluorescent lamps, the WS051 can be used as master and slave.	incandescent and halogen lamps 230V~ : 0 ... 1000 W other loads : 0 ... 500 VA	1	WK051
---	---	---	--------------



WK063
WK064
WK065

Dimmers for incandescent and halogen lamps 230V~, and ELV lamps with ferromagnetic transformer 230 V~ / 50 Hz	rotary switch dimmer 400 VA without end position with integrated latching relay function 60 ... 400 W/VA	1	WK063
---	---	---	--------------

push dimmer 400 VA with integrated latching relay function 60 ... 400 W/VA	1	WK066
---	---	--------------



WK066
WK067

Dimmers for incandescent and halogen lamps 230V~, and ELV lamps with electronic transformer 230 V~ / 50 Hz	rotary switch dimmer 320 VA without end position with integrated latching relay function 60 ... 320 W/VA	1	WK064
--	---	---	--------------

Universal switch dimmers for all load type	rotary switch dimmer 350 VA without end position with integrated latching relay function 40 ... 350 W/VA	1	WK065
--	---	---	--------------

push dimmer 350 VA with integrated latching relay function 40 ... 350 W/VA	1	WK067
---	---	--------------

Flush mounting

To be mounted in a 40mm depth box and 50mm depth box for thermostats.

Connection capacity

Quick Connect terminals
- mini: 2 x 1mm² rigid
- maxi: 2 x 2,5mm² rigid

Screw terminals

- maxi: 1 x 2,5mm² rigid
- maxi: 1 x 1,5mm² flexible

Complies with NF EN 60 669-1 for WK300 and WK301,
NF EN 60 730-2,
NF EN 60 335-1
NF EN 55 014-1,

NF EN 61 000-3 for WK310, WK311 and WK314.

Glow wire test according to NF EN 60 695-2.

Products equipped with frame and plate are IP2XC.

Designation	Characteristics	Pack. qty	Cat. ref.
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WK300

Shutters control Quick Connect 10 A - 250 V~	double 2 way switch with mechanical interlock	5	WK300
---	---	---	--------------

	double push button for automatic system	5	WK301
--	---	---	--------------



WK301

Electronic shutters control	control for electric blind and shutter, daily programming	1	WK304
------------------------------------	---	---	--------------

	control for electric blind and shutter with display weekly programming and centralized working	1	WK305
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WK305

Electronic room thermostats power supply: 230 V~ /50 Hz output: 1 NO	room thermostat adjustment range : +5° C to +30°C accuracy ± 0,5°C output relay 8 A - 250 V~ for cos φ=1	1	WK310
---	--	---	--------------

	thermostat pilot wire pilot wire input 6 controls adjustment range: +5° C to 30°C accuracy ± 0,5°C operating reserve : 30 days output relay 8 A - 250 V~ for cos φ=1	1	WK314
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WK310

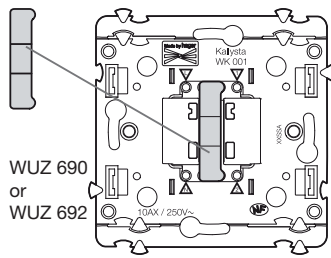
	chrono thermostat adjustment range : +10° C to +30°C accuracy ± 0,5°C operating reserve : 30 days output relay 8 A - 250 V~ for cos φ=1	1	WK311
--	--	---	--------------



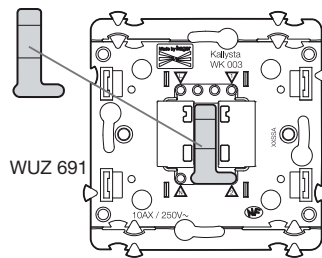
WK311

Circuit diagram

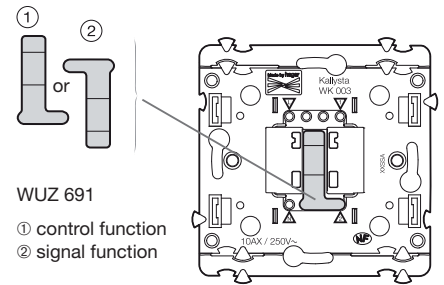
WK001 2 way switch
WK022 push button 1NO+1NF



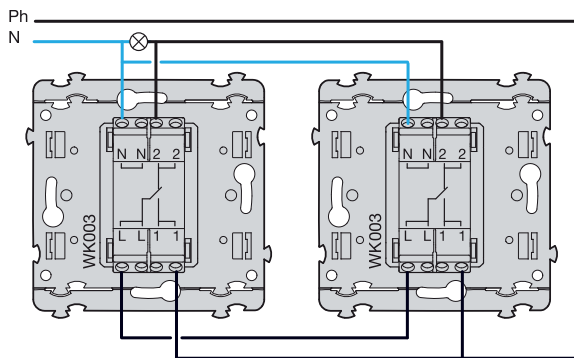
WK003 2 way switch control
light with neutral



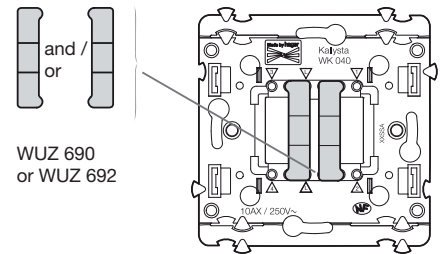
WK008 2 pole switch



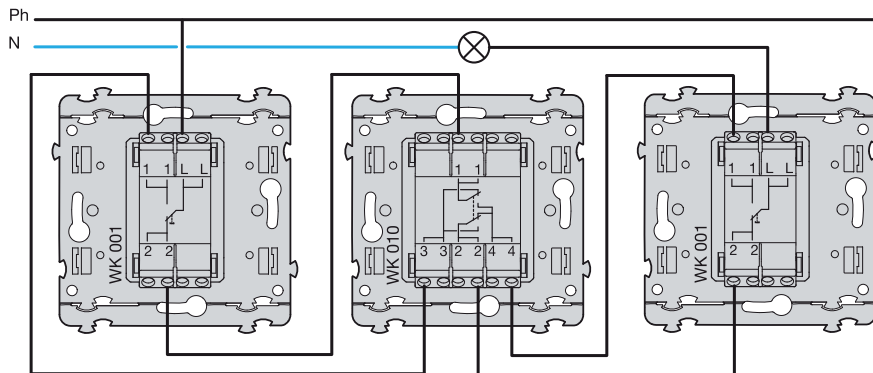
WK003 2 way switch control light with neutral



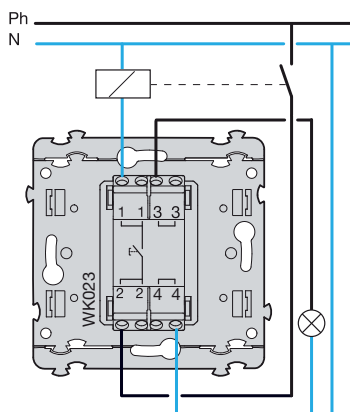
WK040 double 2 way switch
WK044 double push button



intermediate switch WK010 connection



Push button 1NC with control light WK023

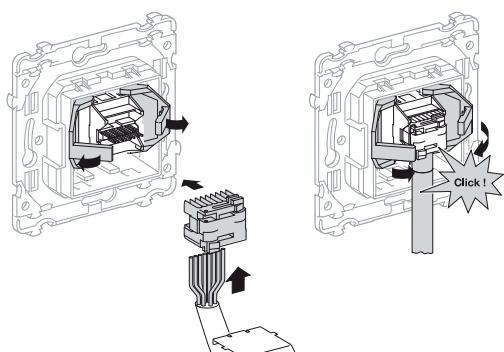


Technical specifications

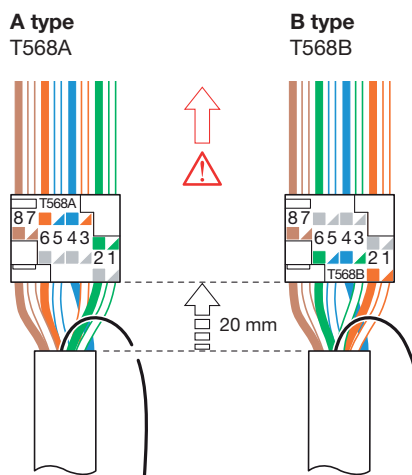
Lighting function		Light signal function			Light control function	
		- switch: lamp is lit when the load is power off - push button or 2 pole switch: lamp is always lit			- switch: lamp is lit when the load is power on	
	mechanisms	lamps 250V~	lamps 24V ∴	connection	lamps 250V~	connection
switches						
2 way switch	WK001	WUZ690 blue or WUZ691 red	WUZ692	1/2 1/L	-	-
2 way switch control light with neutral	WK003	WUZ690	WUZ692	1/2	WUZ691	N/2
2 pole switch	WK008	WUZ691	-	L/N	WUZ691	N/L
intermediate switch	WK010	WUZ690	WUZ692	1/2	-	-
push buttons						
push button 1NO+1NC	WK022	WUZ690	WUZ692	1/2	-	-
push button 1NC with control light	WK023	-	-	-	WUZ690	3/4
double switches and double push buttons						
2 gang 2 way switch	WK040	WUZ690 blue or WUZ691 red	WUZ692	1/2 or 3/4 1/L or 4/L	-	-
double push button	WK044	WUZ690 blue or WUZ691 red	WUZ692	1/2 or 3/4 1/L or 4/L	-	-
socket outlets						
socket outlet	WK100	-	-	-	WUZ694	-

Red variant between L/1, permanently switched on.

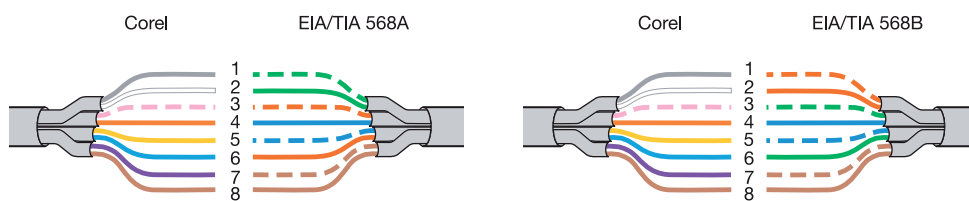
RJ45 sockets connection



Wiring diagram



Agreement conformity between Corel/EIA-TIA





Residential wiring recommendation according to UTE-C 90 483

	grade 1 telcom service	phone + LAN	grade 3 multiservices	multimedia
cable	grade 1		grade 3	
connector	cat. 5e FTP		cat. 6 STP	
kallysta reference	simple double	WK214 WK215	WK226 WK227	
analog voice transmission				
RNIS digital voice transmission + internet				
internet ADSL				
local network 100Mbits/s				
video, digital TV (analogue by telcom line)				
local network 1Gbit/s				
analog and digital TV (VHF/UHF)				
satellite TV				

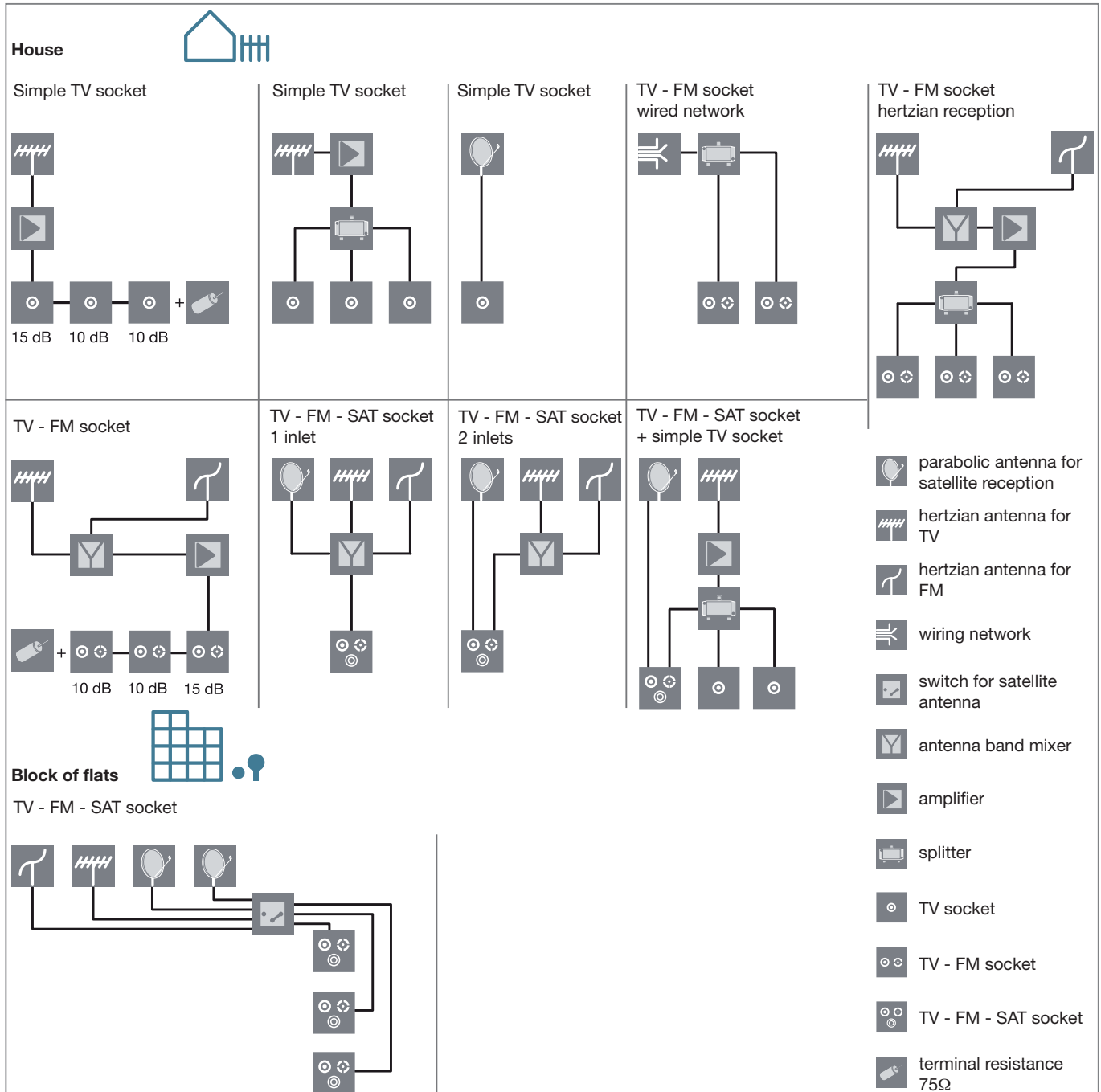
advisable
 adapted
 minimal
 unadapted

European wiring accessories

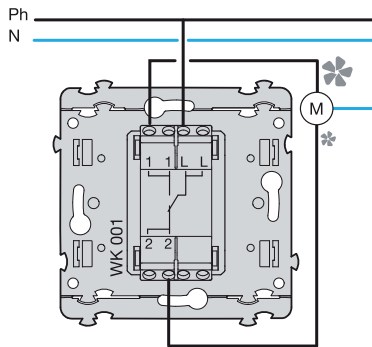
Technical specification

					direct current (1)	back	band 1	FM	VHF	UHF	SAT	
					mA	MHz	MHz	MHz	MHz	MHz	MHz	
ref.	type	dB	75Ω									
	WK250	direct socket	< 1dB			TV			TV			
	WK251 WK252	terminal socket	10 dB 15dB	yes yes								
	WK253	direct socket	< 1dB			TV		FM	TV			
	WK254 WK255	terminal socket	10 dB 15dB	yes yes								
	WK256 WK257	1 inlet 2 inlets					500mA 500mA			FM		

(1) amplifier or LNB satellite remote power feeding









Ventilation control



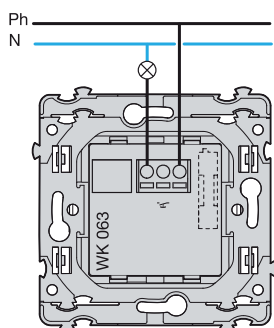
Dimmer switches

Technical characteristics

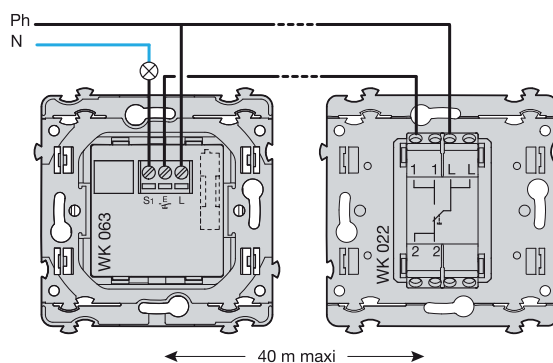
load		WK063 rotary switch dimmer	WK064 rotary switch dimmer	WK065 rotary switch dimmer	WK066 push dimmer	WK067 push dimmer
halogen or incandescent lamps 230V	 	60 to 400W	60 to 320W	40 to 350W	60 to 400W	40 to 350W
ELV halogen lamps supplied by ferromagnetic transformer	 	60 to 400W	-	40 to 350W	60 to 400W	40 to 350W
ELV halogen lamps supplied by electronic transformer	 	-	60 to 320W	40 to 350W	-	40 to 350W
characteristics						
overload protection		electronic	electronic	electronic	electronic	electronic
overcurrent protection		fuse T 2 A H	electronic	electronic	fuse T 2 A H	electronic
lighting level storage		yes	yes	yes	yes	yes
softstart / softstop		yes	yes	yes	yes	yes
latching relay function / remote dimmer		yes	yes	yes	yes	yes

Connection

- change a simple switch



- change a 2 way switch :
possibility to connect push buttons on the input E. They will have the same function as the dimmer itself.

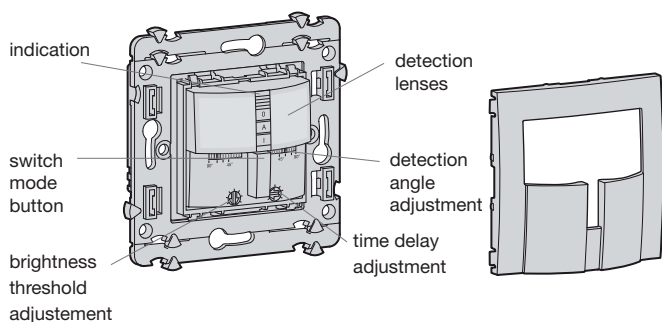


Working principle if push buttons are associated to a dimmer:
 - short press: switching on / switching off (variation level storage)
 - long press: variation, each press invert the variation sense
 - push buttons cannot be equipped with light indicator.

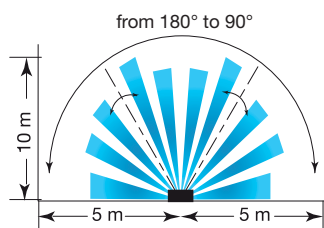
Technical characteristics

load	WK050	WK051
halogen or incandescent lamps 230V	60 to 320W	0 to 1000W
ELV halogen lamps supplied by ferromagnetic transformer		0 to 500VA
ELV halogen lamps supplied by electronic transformer	60 to 320W	0 to 500VA
fluorescent lamps		0 to 500VA
characteristics		
brightness threshold	5 to 800 lux (possibility to disable)	
time delay	2s to 30min	
detection angle	90° to 180°	
overload protection	electronic	
overcurrent protection	electronic	fuse F 4A H
use as master	yes	yes
use as slave	no	yes
remote timer function	yes	yes

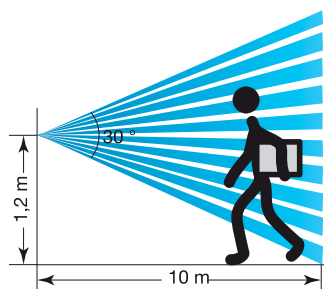
Présentation du produit



Detection area



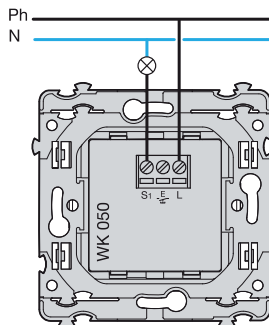
left and right area adjustment



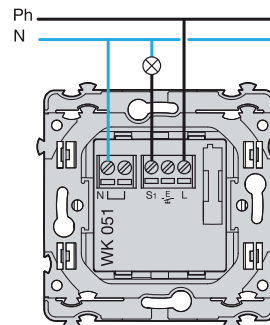
limitation of detection area with potentiometers on test position

Circuit diagram

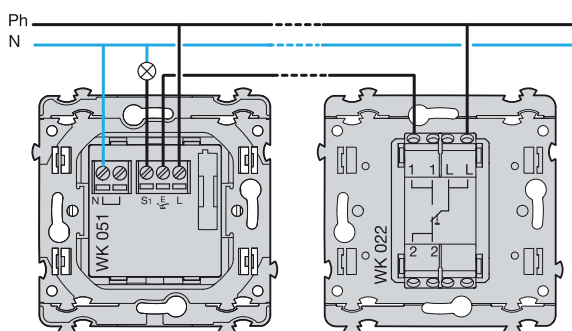
- 2 wire version to substitute a switch



- 3 wire version without minimal load

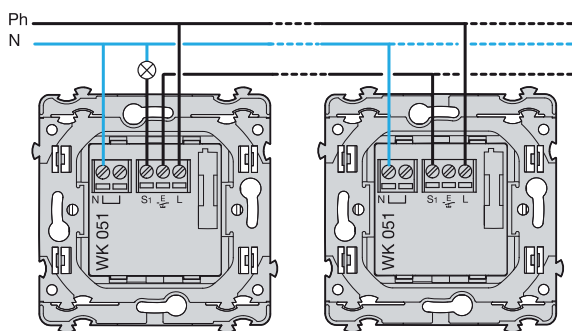


- possibility to connect push button on input "E" to force the switching on (see wiring)



← 40 m maxi →

- extension of detection area



← 40 m maxi →

Product description

Adjustment of brightness threshold:

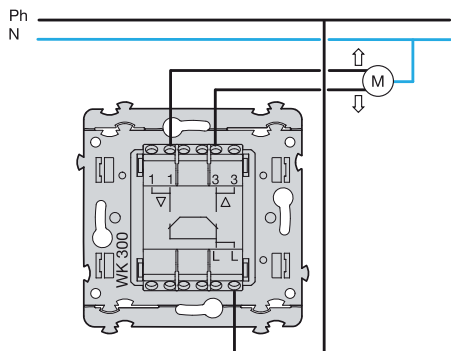
- manual: through potentiometer
- automatic: the threshold corresponds to the current room brightness.

Selection of the mode through short press on button:

- automatic mode: release when movement detected, and brightness lower than threshold,
- Forced switching on and off,
- temporary forcing: lighting on during 2 hours then returns to the automatic mode,
- security: this mode disable the selection by press on the front button.

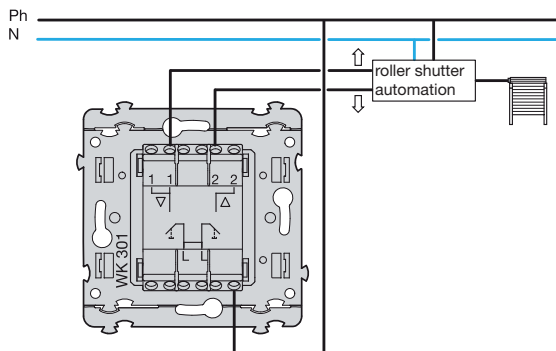
Shutters control : WK300

double 2 way switch: allows motor direct control

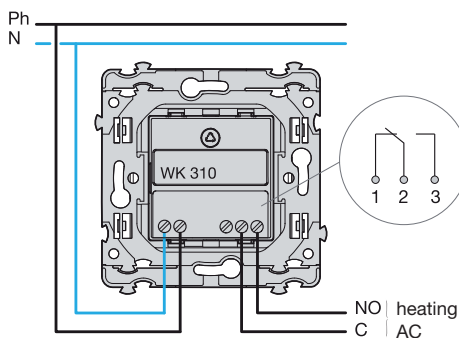
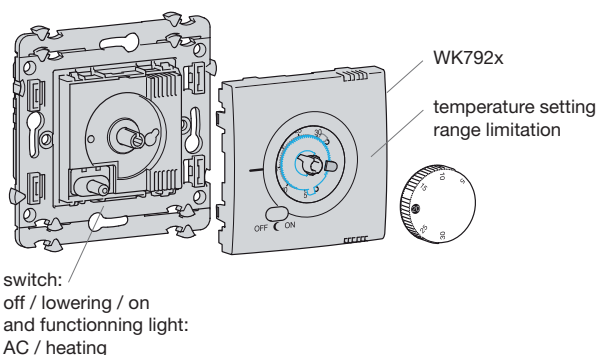


Shutters control : WK301

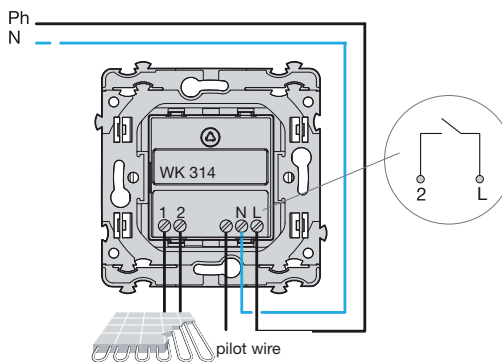
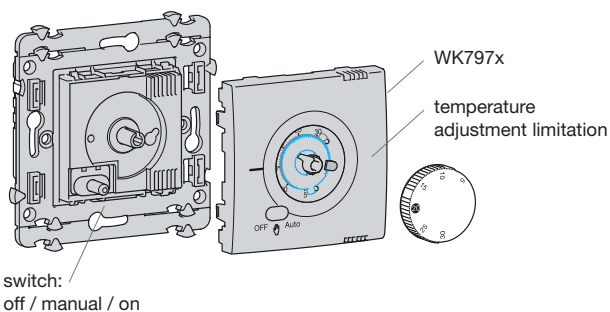
double push button: allows motors individual or common control through an automated system (flush mounted or modular ELxxx).



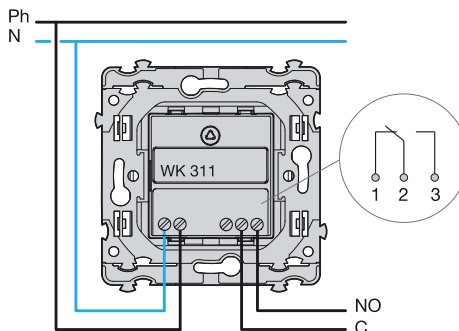
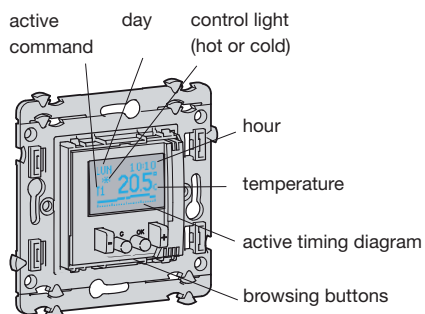
Room thermostat WK310



Pilot wire thermostat WE314











Pilot wire thermostat WK311



Operating specifications

- 6 operating modes
 - automatic
 - manual
 - derogation function
 - temporary manual
 - frost-guard mode
 - OFF
- temperature control
 - 4 temperature levels: heating T3, T2, T1 and frost-guard
 - temperature adjustment: 10°C to 30°C and frost-guard
 - adjustment of the hysteresis from 0,1°C to 1°C
- possibility to calibrate the room temperature
- modification of operating mode: heating or air-conditioning
 - Programming a program includes 7 days of the week
- adjustment by steps of 30 min.
- 3 programs to compose
- 3 pre-loaded programs: the use of the thermostat, heating or air-conditioning has to be determined before adjusting the programs.







Glow wire test according to NF
EN 60 695-2.

		Designation	Characteristics	Pack. qty	Cat. ref. white	Pack. qty	Cat. ref. beige	Pack. qty	Cat. ref. alu	Pack. qty	Cat. ref. black
 WK780C  WK781B  WK783B  WK785T  WK787B  WK788B  WK780M1  WK780M2 WK780M3 WK780M4	Polycarbonate cover plates	simple button	10	WK780B	10	WK780D	10	WK780T	10	WK780C	
		simple button with light	10	WK781B	10	WK781D	1	WK781T	1	WK781C	
		simple button with label holder	1	WK782B	1	WK782D	1	WK782T	1	WK782C	
		2 pole button	1	WK783B	1	WK783D	1	WK783T	1	WK783C	
		2 pole button with light	10	WK784B	1	WK784D	1	WK784T	1	WK784C	
		double button	1	WK785B	1	WK785D	1	WK785T	1	WK785C	
		double button with light	1	WK786B	1	WK786D	1	WK786T	1	WK786C	
		double button with label holder	1	WK787B	1	WK787D	1	WK787T	1	WK787C	
		pull cord cover plate	1	WK788B	1	WK788D	1	WK788T	1	WK788C	
		hotel card	1	WK762B	1	WK762D	1	WK762T	1	WK762C	
		Designation	Characteristics	Pack. qty	Cat. ref. ekla	Pack. qty	Cat. ref. optik	Pack. qty	Cat. ref. graphik	Pack. qty	Cat. ref. barok
		Metal cover plates	simple button	10	WK780M1	10	WK780M2	10	WK780M3	10	WK780M4
			simple button with light	10	WK781M1	10	WK781M2	1	WK781M3	1	WK781M4
			double button	1	WK785M1	1	WK785M2	1	WK785M3	1	WK785M4
		Accessories	box of 100 anti-theft screws (by fixing the frame on the mechanism base)							1 set	WUZ680






Glow wire test according to NF
EN 60 695-2.

		Designation	Characteristics	Pack. qty	Cat. ref. white	Pack. qty	Cat. ref. beige	Pack. qty	Cat. ref. alu	Pack. qty	Cat. ref. black
 WK730C  WK730B  WK730M1  WK730M3  WK730M4	 WK733D  WK739B  WK730M2  WK730M4	Polycarbonate socket outlets	cover plate for 2P+E socket	10	WK730B	10	WK730D	10	WK730T	10	WK730C
		cover plate for 2P socket	10	WK733B	10	WK733D	10	WK733T	10	WK733C	
		simple button / blank plate for cover plate mounting on the mechanism, remove the under-button	10	WK780B	10	WK780D	10	WK780T	10	WK780C	
		cover plate for 2P+E socket with light	10	WK731B	10	WK731D	10	WK731T	10	WK731C	
			cover plate for cable outlet	1	WK739B	1	WK739D	1	WK739T	1	WK739C
		Designation	Characteristics	Pack. qty	Cat. ref. ekla	Pack. qty	Cat. ref. optik	Pack. qty	Cat. ref. graphik	Pack. qty	Cat. ref. barok
		Metal socket outlets	cover plate for 2P+E socket	1	WK730M1	1	WK730M2	1	WK730M3	1	WK730M4
			simple button / blank plate for cover plate mounting on the mechanism, remove the under-button	1	WK780M1	1	WK780M2	1	WK780M3	1	WK780M4


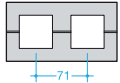
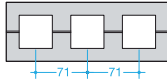
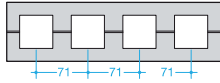
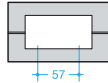
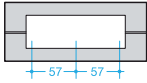

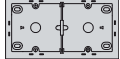
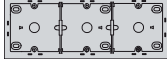

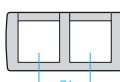
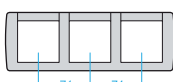
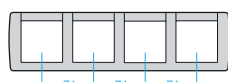



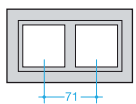
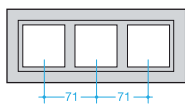

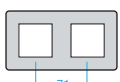
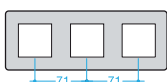
Glow wire test according to NF
EN 60 695-2.

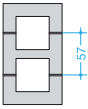
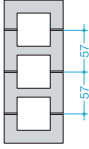
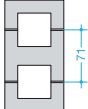
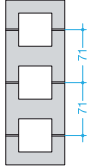
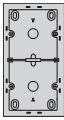
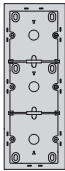
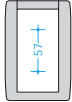

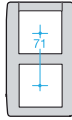
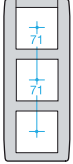
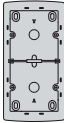
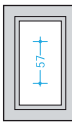

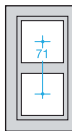
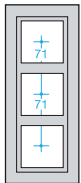
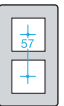
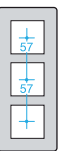
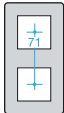
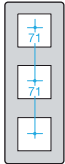
Designation	Characteristics	Pack.	Cat. ref.	Pack.	Cat. ref.	Pack.	Cat. ref.	Pack.	Cat. ref.
		qty	white	qty	beige	qty	alu	qty	black
 WK750T  WK751C  WK752B  WK740C  WK741B  WK742T	Polycarbonate data sockets	10	WK750B	10	WK750D	1	WK750T	1	WK750C
	cover plate for phone socket	10	WK751B	10	WK751D	1	WK751T	1	WK751C
	cover plate for RJ45 * and loud speakers	1	WK752B	1	WK752D	1	WK752T	1	WK752C
	cover plate for double RJ45 and double loud speakers*	10	WK740B	1	WK740D	1	WK740T	1	WK740C
	cover plate for TV socket	1	WK741B	1	WK741D	1	WK741T	1	WK741C
	cover plate for TV + FM socket	1	WK742B	1	WK742D	1	WK742T	1	WK742C
cover plate for TV + FM + SAT socket	* delivered with label holder.								

Glow wire test according to NF
EN 60 695-2.

Designation	Characteristics	Pack. qty	Cat. ref. white	Pack. qty	Cat. ref. beige	Pack. qty	Cat. ref. alu	Pack. qty	Cat. ref. black
 WK790C  WK794T  WK798B  WK792D  WK793B	Polycarbonate cover plates	1	WK790B	1	WK790D	1	WK790T	1	WK790C
	cover plate for rotary switch dimmer	1	WK791B	1	WK791D	1	WK791T	1	WK791C
	cover plate for push dimmer	1	WK794B	1	WK794D	1	WK794T	1	WK794C
	cover plate for motion detector	1	WK798B	1	WK798D	1	WK798T	1	WK798C
	cover plate for ventilation 2 way switch	1	WK795B	1	WK795D	1	WK795T	1	WK795C
	cover plate for double 2 way switch roller shutter	1	WK796B	1	WK796D	1	WK796T	1	WK796C
	cover plate for double push button roller shutter	1	WK760B	1	WK760D	1	WK760T	1	WK760C
	cover plate for local remote control for programmable shutter	1	WK761B	1	WK761D	1	WK761T	1	WK761C
	cover plate for programmable shutter control with display	1	WK792B	1	WK792D	1	WK792T	1	WK792C
	cover plate for room thermostat	1	WK793B	1	WK793D	1	WK793T	1	WK793C
cover plate for electronic chronothermostat	1	WK797B	1	WK797D	1	WK797T	1	WK797C	
cover plate for pilot wire thermostat	1	WK797B	1	WK797D	1	WK797T	1	WK797C	
Designation	Characteristics	Pack. qty	Cat. ref. ekla	Pack. qty	Cat. ref. optik	Pack. qty	Cat. ref. graphik	Pack. qty	Cat. ref. barok
Metal cover plates	cover plate for double 2 way switch roller shutter	1	WK795M1	1	WK795M2	1	WK795M3	1	WK795M4
	cover plate for double push button roller shutter	1	WK796M1	1	WK796M2	1	WK796M3	1	WK796M4

Hollow wall and concrete boxes references guide

systo plates	horizontal 71 mm centre distance	WS401 2 modules	WS402 2 x 2 modules	WS403 3 x 2 modules	WS404 4 x 2 modules	horizontal 57 mm centre distance	WS410 4 modules	WS411 6 modules
								
systo wall mounted boxes	horizontal 71 mm centre distance	WS681	WS682	WS683	-	-	-	
								
kallysta plates	horizontal 71 mm centre distance	WK401 1 module	WK402 2 modules	WK403 3 modules	WK404 4 modules			
								
kallysta wall mounted boxes	horizontal 71 mm centre distance	WK681	WK682	-	-	-	-	
								
kallysta plates	horizontal 71 mm centre distance	WK801 1 module	WK802 2 modules	WK803 3 modules				
								
essensya plates	horizontal 71 mm centre distance	WE401 1 module	WE402 2 modules	WE403 3 modules				
								

systo plates vertical 57 mm centre distance WS406 2 x 2 modules 		WS407 3 x 2 modules 		vertical 71 mm centre distance WS408 2 x 2 modules 		WS409 3 x 2 modules 	
-		-		vertical 71 mm centre distance WS682 		WS683 	
kallysta plates vertical 57 mm centre distance WK406 2 modules 		WK407 3 modules 		vertical 71 mm centre distance WK408 2 modules 		WK409 3 modules 	
-		-		vertical 71 mm centre distance WK682 		-	
kallysta plates vertical 57 mm centre distance WK806 2 modules 		WK807 3 modules 		vertical 71 mm centre distance WK808 2 modules 		WK809 3 modules 	
essensya plates vertical 57 mm centre distance WE406 2 modules 		WE407 3 modules 		vertical 71 mm centre distance WE402 2 modules 		WE403 3 modules 	

Energy & lighting control comfort and efficiency

Energy and lighting control product range allows to optimise energy consumption while increasing comfort.



time lag switches	N.2
dimmers	N.5
twilight switches	N.15
astronomical time switches	N.15
light sensitive switches	N.17
analogue time switches	N.20
analogue time switches 72x72mm	N.25
digital time switches	N.27
motion detectors	N.33
presence detectors	N.36
smoke detectors	N.42
remote control	N.43

Description

Time lag switches provide control of lighting circuits with automatic switch-off after a pre-set time (e.g. for staircase, corridors lighting). Compact design with a 2 position switch permanent/timed lighting implementation facility.

EMN005 incorporate a pre-warning of switch OFF to

improve the safety for users and a double delay function: 30 sec. to 10 min. or 1 hour by pressing the push button more than 3s.

EM011 is an electronic switch that monitors the circuit. If no electrical receiver is switched on in the monitored circuit, EM011 cuts the supply. The electrical field is removed at

a use level (ex: bedside light). A 15V DC voltage allows to monitor the current in the circuit. As soon as the electrical receiver is operating, EM011 supplies the circuit.

Connection capacity:

6mm² flexible
10mm² rigid

Complies with EN 60 669.



EMN001

Designation	Characteristics	Width in ■ 17.5mm	Pack qty.	Cat. ref.
Standard stair case time lag switch adjustable time delay setting: 30 seconds until 10 minutes retrigger	supply voltage : 230V 50/60Hz 16A - 250V~ AC1 2300W incandescent halogen and fluo in serial	1	6	EMN001
Press shortly a push button to switch ON the light. After an adjustable time "T", the light switch OFF automatically.				
Multifunction stair case time lag switch	supply voltage : 230V 50/60Hz 16A - 250V AC1 2300W incandescent halogen and fluo	1	1	EMN005
Choice of function: A - Basic mode: Press shortly a push button to switch ON the light. After an adjustable time "T", the light switch OFF automatically.				
B - Prewarning mode: a signal (blink) appear before the end of the lighting period.				
C - Double delay mode: Press shortly a pushbutton to switch ON the light. After an adjustable time "T", the light switch OFF automatically. If you press the push button more than 3 seconds, a time lag of one hour begin.				
D - Double delay +prewarning mode: Press shortly a push button to switch ON the light. After an adjustable time "T", the light switch OFF automatically. If you press the push button more than 3 seconds, a time lag of one hour begin. A signal (blink) appear before the end of the lighting period.				
Bio switch only adapted to ohmic loads and incandescent or 230V halogen lamps	supply voltage : 230V 50/60Hz 16A - 250V AC1 monitoring voltage: 15 V DC	1	1	EM011



EM011

Time lag switches

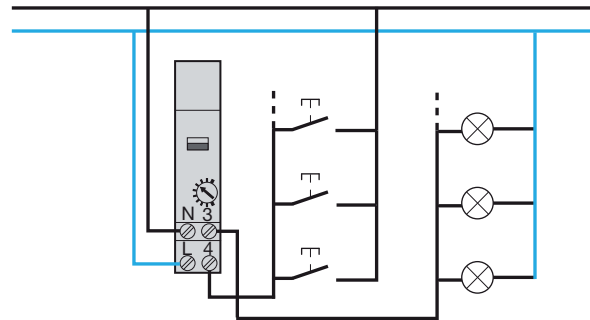
A common area where time delay devices are used is stairways and corridors in multi occupancy buildings where they provide a level of energy efficiency. The EMN001 device provides basic time lag control.

Technical specification

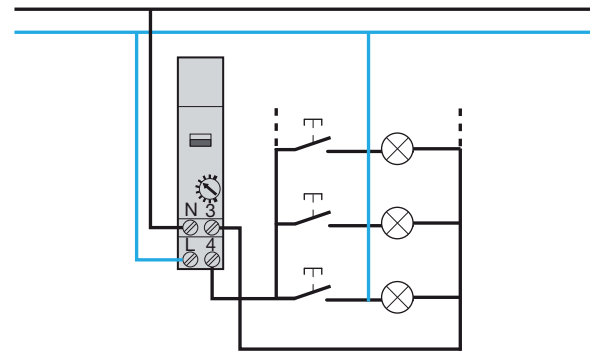
	EMN001 EMN005	EM011
Electrical characteristics		
supply voltage	230V +10/-15% 50/60 Hz	230V +/- 10 % 50 Hz
consumption	1VA	4 VA
size	1	1
Breaking capacity		
AC1	16A 230V AC	16A 250V AC
incandescent	2300W	2300W
halogen 230V	2300W	2300W
ferromagnetic transformer	1600W	1400VA
parallel compensated	capacitor 112µF	-
fluorescent lamps	1000W	-
series compensated	3600W	-
electronic transformer	2300W	-
compact fluorescent lamps with electronic ballast	60 x 7W or 40 x 11W or 32 x 15W or 20 x 23W	-
with conventional ballast	23000W	-
monitoring voltage	-	15V DC
Functional characteristics		
time delay	30s to 10min	
retrigger	yes	
max. current in rest position	100mA	
automatic 3/4 recognition	yes	
local command	automatic / override on	
Environment		
working temperature	-10 to +55°C	-10 to +45°C
storage temperature	-20 to +60°C	-20 to +70°C
Connection		
flexible	1 to 6mm ²	0,75 to 4mm ²
rigid	1,5 to 10mm ²	1 to 6mm ²
connection EM001 / EM002	-	-

Wiring diagrams EMN001

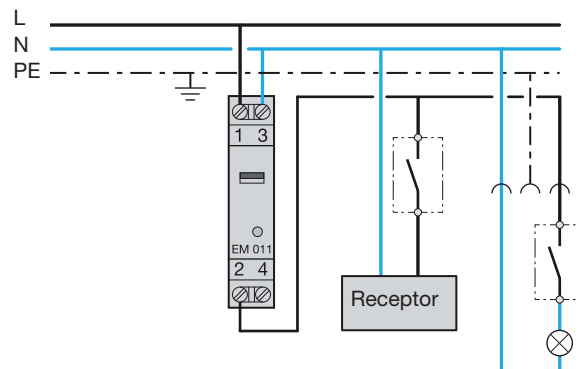
4-wire



3-wire



EM011 wiring



	functioning as a standalone product							functioning in system : association of dimmers with 1/10V max 30 x 1kW
	0W	20W	60W	100W	300W	600W	1000W	
Incandescent / halogen 230V 			EV011, EV012					EV102 pilot : switch to "master" position
			EV002, EV004					EV102 + n x EV100 or EV102 (slave position)
			EV100, EV102 switch to "local" position					
Halogen VLV (12 or 24V) ferromagnetic transformer suitable for dimming. The transformer shouldn't be used with less than 75% of nominal load 			EV011					EV102 pilot : switch to "master" position
			EV002, EV004					EV102 + n x EV100 or EV102 (slave position)
			EV100, EV102 switch to "local" position					
Halogen VLV (12 or 24V) via electronic transformer 			EV012					EV102 pilot : switch to "master" position
			EV002, EV004					EV102 + n x EV100 or EV102 (slave position)
			EV100, EV102 switch to "local" position					
1/10V control (output only) fluo with electroballast 1/10V 	Input 1/10 V, 50 mA							
	EV106							
	EV108 with scene inputs							

Technical features	300 W	600 W	1000 W		Pilot 1/10 V	
	EV011 EV012	EV002 EV004	EV100	EV102	EV106	EV108
Controls available - on the product - external with illuminated push button - input 1/10 V - ambient lighting setting	- yes - -	yes yes - 1 (EV004)	yes yes yes (slave) -	yes yes yes (slave) 2 levels	yes yes - -	yes yes - 2 levels
Types of outputs : - direct (capacitive / inductive load) - input 1/10 V	yes -	yes -	yes -	yes yes (master)	- yes	- yes
Functions : - protection overheating / overloads - level indicator - memorisation - softstart	yes * - yes yes	yes EV004 yes yes	yes - yes yes	yes yes yes yes	yes yes yes -	yes yes yes -
Parameter setting : - mini, max. level - dimming speed - speed at start / stop - transition speed for level call	- - - -	EV004 EV004 EV004 -	yes - - -	yes yes yes yes	yes yes yes yes	yes yes yes yes

* EV011 : protection via integrated fuse, electronic protection for other products

dimmers 300 W



EV011 EV012

universal dimmers 600 W



EV002 EV004

system dimmers
universal dimmers 1000 W



EV100 EV102

system dimmers
1-10 V pilots



EV106 EV108

Description:

The Hager products are suitable for all light sources : incandescent, LV and VLV halogen, fluorescent with electronic ballast.

Dimming controlled by push button :
 - start / stop by short press
 - increasing / decreasing by maintaining pressure

Common characteristics :

- Softstart (progressive start) to increase the working life of lamps
 - memorisation of last dimming level

- protection against overheating
 - control possible by illuminated push button until 5mA.

Dimmer 300 W :

- control by several push buttons
 - can replace a latching relay with dimming function

Dimmers 600 and 1000 W :

- universal products with automatic recognition of the load type (inductive/capacitive)
 - electronic protection against overheating and overload
 - Indicators :
 230 V / overheating / overload

Connection capacity:

10mm² rigid

Dimmers are conform to standards :
 EN 50081-1, EN 50082-1, CEI 669-1, CEI 669-2-1.

Designation	Characteristics	Width in 17,5 mm	Pack qty	Cat. ref.
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EV011

Dimmers 300 W

for :
 - incandescent 230 V
 - halogen 230 V
 - VLV halogen lamps with :
 • ferromagnetic transformer (inductive load EV011)
 • dimmable electronic transformer (capacitive load EV012)

20 ... 300 W / VA
 230 V / 50 Hz
inductive load

1 1 **EV011**

capacitive load

1 1 **EV012**



EV004

Universal remote control dimmer 600 W

for :
 - incandescent 230 V
 - halogen 230 V
 - VLV halogen lamps supplied by ferromagnetic or dimmable electronic transformer (cos φ ≥ 0,95)

20 ... 600 W / VA
 230 V / 50 Hz
 - products with automatic load recognition
 - dimming function

4 1 **EV002**

Enhanced universal dimmer 600 W

in addition to EV002 features :
 - min/max level setting
 - recall mode with push button, override mode with switch
 - scene level setting
 0 ... 99 %

4 1 **EV004**



LZ060

Heat dissipation insert

1/2 12 **LZ060**



EV100



EV102

Designation	Characteristics	Width in 17,5 mm	Pack qty	Cat. ref.
<p>Universal dimmer 1000 W for :</p> <ul style="list-style-type: none"> • Functional mode selection via local switch : - control via push button (local) - remote control via 1/10V (slave) • Min/Max setting via potentiometer • LED indication : - 230V power supply / load error - overload / overheating <p>Load type :</p> <ul style="list-style-type: none"> - incandescent - 230V halogen lamps - VLV halogen lamps associated to ferromagnetic transformer (inductive) - VLV halogen lamps associated to electronic transformer (capacitive) 	<p>230 V ~ / 50 Hz</p> <p>20 ...1000W</p> <p>1/10V-input</p>	5	1	EV100
<p>Universal dimmer 1000 W with scene inputs</p> <ul style="list-style-type: none"> • Functional mode selection via local switch : - control via push button (local) - remote control via 1/10V (slave) - control of the other dimmers via 1/10V (master) • Display to show the dim level and to set the parameters: - dimming rise time (4s ..99s) - min dim level (0...49%) - max dim level (51..99%) - rise time when switching ON (1s..99s) - fall time when switching OFF (1s..99s) - scene level - dimming rise time for each scene - scene working mode : recall or override mode • Output contact to display the dim state (load is OFF, contact is opened, if load is dimmed the contact is closed) • LED indication : - 230V power supply / load error - overload / overheating <p>Load type :</p> <ul style="list-style-type: none"> - incandescent - 230V halogen lamps - VLV halogen lamps associated to ferromagnetic transformer (inductive) - VLV halogen lamps associated to electronic transformer (capacitive) 	<p>230 V ~ / 50 Hz</p> <p>20 ...1000W</p> <p>1/10V-input/output (max. 50mA, 30 EV100 / EV102) defined via the local switch</p> <p>Contact output : 1 NO, 250V ~, μ 5A</p>	5	1	EV102

EV106 and EV108 pilot dimmers



- To control several dimmers or electronic ballasts via the 1/10V output
- Display to show the dim level and for parameter setting
- Wiring of illuminated push buttons possible up to 5mA
- Min/max level setting
- Contact output for state information
- Dimming rise time setting
- Setting of rise time and fall time

EV108 pilot dimmer

- Scene inputs used for override (3 levels) or simple recall (2 levels).

Use :
to control lighting in meeting and conference rooms, or in restaurants




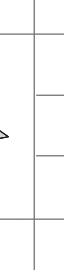
Dimmers are conform to standards :
EN 50081-1, EN 50082-1,
CEI 669-1, CEI 669-2-1.

	Designation	Characteristics	Width in ■ 17,5 mm	Pack qty	Cat. ref.
	1/10V pilot dimmer • To control EV100 and EV102 (max. 30) • To dim electronic ballasts • Wiring of illuminated push buttons possible up to 5mA • Display to show the dim level and to set the parameters: - dimming rise time (4 s ..99s) - min dim level (0..49%) - max. dim level (51..99%) Contact output to display the dim state (load is OFF, contact is opened, if load is dimmed the contact is closed). It is used to switch ON/OFF the electronic ballast	230 V ~ / 50 Hz 1/10V - interface output /max 50mA contact output : 1 NO, 250 V ~ μA	4	1	EV106
	1/10V pilot dimmer with scene input In addition to EV106 features : • Scene inputs used for override (3 levels) or simple recall (2) • For each scene - dimming rise time - scene level - and scene mode (recall or override)		4	1	EV108

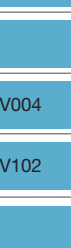
EV106

EV108

Choice of dimmers according to : lighting sources, dimming ranges and other characteristics

lighting source	functioning of a standalone product						functioning in a system (association of dimmers)	
	0 W	20 W	60 W	100 W	300 W	600 W	1000 W	30 x 1 kW
halogen or incandescent 230 V  	EV011, EV012							
	EV002, EV004							
	EV100, EV102						EV102 (Master position) + x EV100 ou EV102 (Slave position)	
VLV halogen lamps supplied by ferromagnetic transformer 	EV011							
	EV002, EV004							
	EV100, EV102						EV102 (Master position) + x EV100 ou EV102 (Slave position)	
VLV halogen lamps supplied by dimmable electronic transformer 230V (cos φ > 0,95) 	EV012							
	EV002, EV004							
	EV100, EV102						EV102 (Master position) + x EV100 ou EV102 (Slave position)	

Choice of pilot dimmers for direct control via 1/10V transformers or electronic ballast

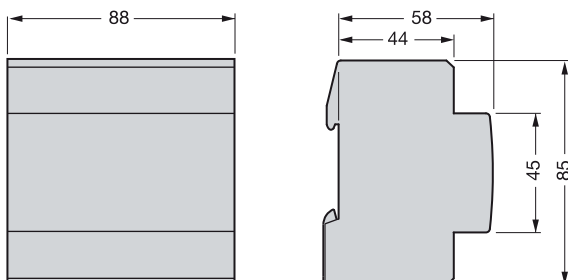
light source	0 W	30 kW
VLV halogen lamps supplied by 1/10V variable transformer fluorescent lamps or compact fluo lamps with electronic ballast variable in 1/10V 	EV106* pilot 1/10 V	
	EV108* pilot 1/10 V multi-dimming (a call of memorised levels)	
	* conditions to respect : a) $\sum I (1/10 V \text{ line}) < 50 \text{ mA}$ b) $\sum I (\text{ballast} + \text{lamp}) < 10 \text{ A} / \text{AC1}$ example : for the lighting of a hall 30 tubes of 2x36W are requested characteristics of used ballasts : $I (1/10 V \text{ line}) = 1 \text{ mA}$ $I (\text{ballast} + \text{lamps}) = 0,31 \text{ A}$ calculation : $\sum I (1/10 V \text{ line}) = 30 \text{ mA} < 50 \text{ mA}$ $\sum I (\text{ballast} + \text{lamp}) = 9,3 \text{ A} < 10 \text{ A}$ after checking, 1 x EV106 or EV108 can pilot this installation	

Choice of dimmers for functioning in a system

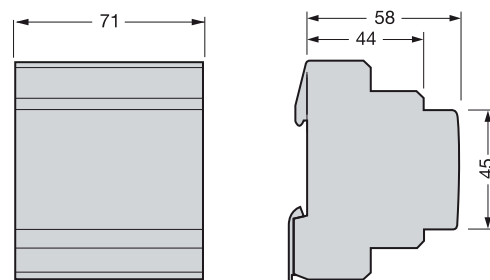
to control high powers	dimmer EV102 (Master position) + pilot dimmers EV100 and/or EV102* (Slave position)
	* conditions to respect : a) $\sum I (1/10 V \text{ line}) < 50 \text{ mA}$ or maximum 30 dimmers
	example : total power to dim : 8,6 kW requested products: 1 x EV102 and 8 x EV100 = 9 kW

Dimensions

dimmers EV100 and EV102



dimmers EV002, EV004, EV106 and EV108



Dimming principle

Only one button is needed for dimming controls (increasing, decreasing) and switching on and off.
 Quick push on button for switch on and off (principle of latching relay). Start always on last memorized level.
 Dimming is obtained by maintaining push button. A new push on button will invert the dimming sens.

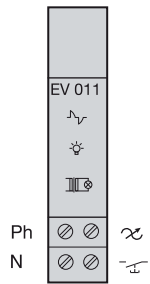
Functions	EV011	EV012	EV002	EV004	EV100	EV102	EV106	EV108	
power indication LED			•	•	•	•	•	•	red LED switches on to indicate 230V supply
protection against overheating	•	•	•	•	•	•			integrated electronic protection. By overheating is the available power and lighting reduced. To remedy to this phenomenon : separate dimmers with a blanking clip and/or reduce the connected load.
overheating LED			•	•	•	•			yellow LED switches lights on by overheating
protection against short-circuits	*	•	•	•	•	•			an electronic self-resetting system protects dimmers against short-circuits of load
memorization of lighting level	•	•	•	•	•	•	•	•	last dimming level is memorized last level is restored at next start
softstart function	•	•	•	•	•	•			progressive start, increases working life of lamps
output contact						•	•	•	state indicator function EV102, or loading switch EV106, EV108
functioning in a system - master (output 1/10V) - slave (input 1/10 V)						•	•	•	master products pilot other dimmers or electronic ballasts via 1/10V connection product piloted by 1/10V connection
ambient lighting level (scenes)				•		•		•	EV004 1 input, EV102 and EV108 2 inputs
call scene with push button				•		•		•	dimming at settled speed to obtain called level
priority setting of scene by switch						•		•	dimming at settled speed to obtain called level Contact closed = priority setting. Dimmers calls previous level by opening of contact (mode 2)
spacing current	•	•	•	•	•	•	•	•	push button with LED until 5mA
dimming control on product			•	•	•	•	•	•	control by 1 or 2 push buttons according to product
Setup									
switching Master / Slave					•	•			EV100, "local" stand-alone or "slave" system EV102, "local" stand-alone, "slave" or "master" system
mini / maxi setup				•	•	•	•	•	mini / maxi setup by display, except EV100 (potentiometer mini 01 to 49 %, maxi 51 to 99 %)
dimming speed						•	•	•	time needed for dimmer starting from normal state to go from 0 to 100 % by push button ; setup from 4 to 99 seconds
dimming speed at start						•	•	•	setup from 0 to 99 seconds to go from 0 to 100%
dimming speed at switch off						•	•	•	setup from 0 to 99 seconds to go from 0 to 100%
time needed to obtain a dimming level (scene)**						•		•	setup from 0 to 99 minutes and 59 seconds to go from 0 to 100%
call scene selection or priority setting scene						•		•	selection call scene (mode 1) or priority setting scene (mode 2) is available for each input
setup of dimming levels (scenes)				•		•		•	setup from 0 to 99%

* fuse integrated

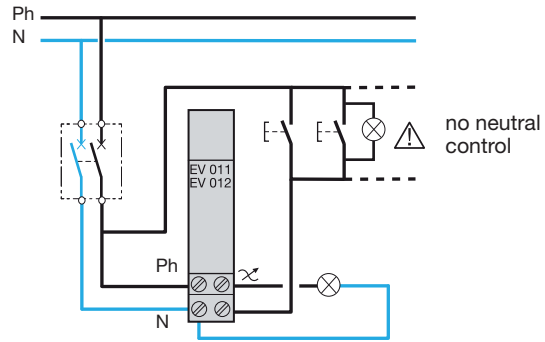
** values seized in always correspond to the time needed to go from 0 to 100% : dimmer reads this signal as a slope (or speed) of constant dimming

Ex. : to go from 50% to 100% in 30 minutes ⇒ rate 60 minutes to go from 0 to 100% that is to say 30 minutes to go from 50 to 100%

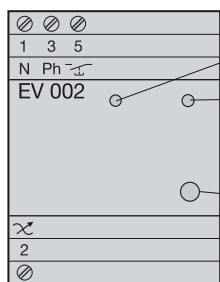
Dimmers 300W EV011 and EV012



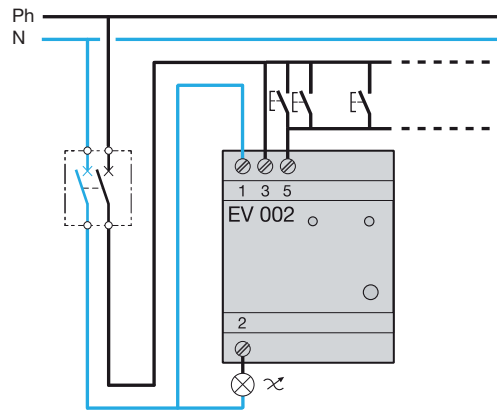
All our dimmers are compatible with push buttons with LED



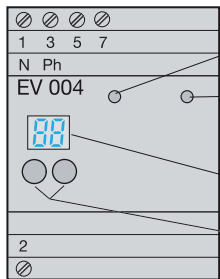
Universal dimmer 600W EV002



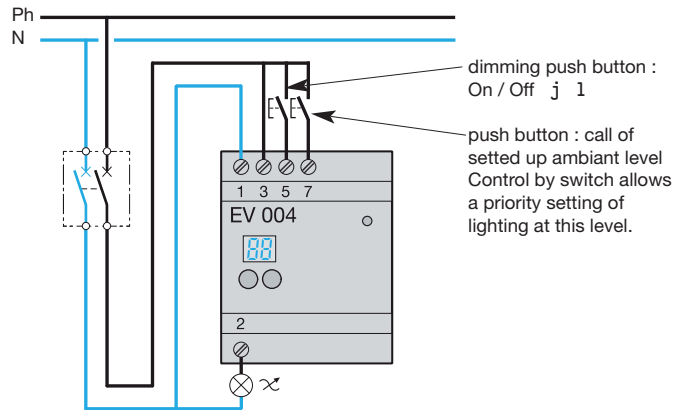
- ① 1 - default pushbutton :
- switched on = overheating
- blinking = overintensity
- ② 2 - LED 230 V :
- switched on = OK 230V
- blinking = no load connected
- ③ 3 - Lighting level switch ON/OFF adjustment



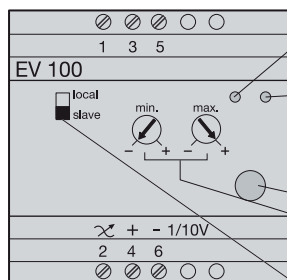
Enhanced universal dimmer 600W EV004



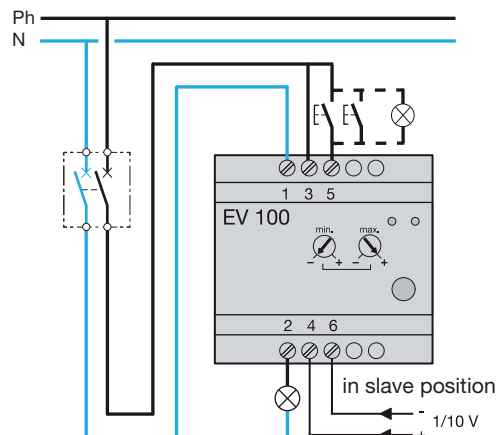
- ① 1 - default push button :
- switched on = overheating
- blinking = overintensity
- ② 2 - LED 230 V :
- switched ON = OK
- blinking = no load connected
display of lighting level in %
- ③ 3 - push buttons for :
- dimming control
- ④ 4 - setup of lighting level - mini / maxi setup



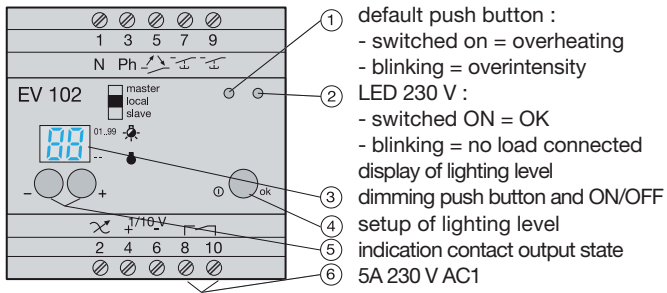
Universal dimmer 1000 W EV100



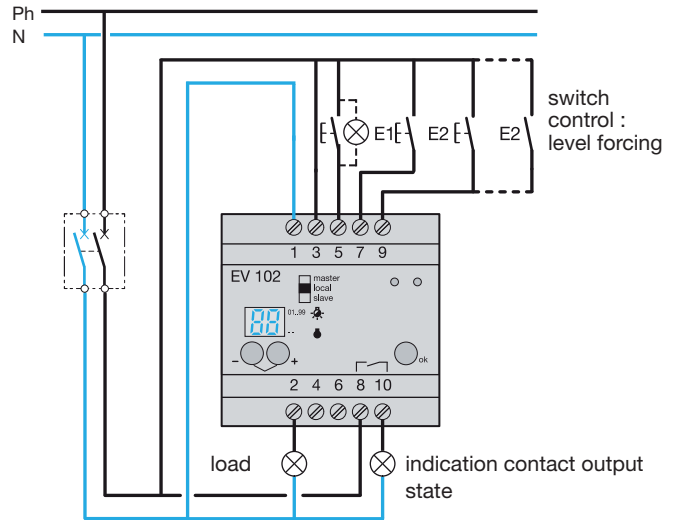
- ① 1 - default push button :
- switched on = overheating
- blinking = overintensity
- ② 2 - LED 230 V :
- switched ON = OK
- blinking = no load connected
- ③ 3 - Lighting level switch ON/OFF adjustment
- ④ 4 - setup potentiometer of dimming range (mini-maxi)
- ⑤ 5 - local : standalone functioning
slave : product piloted by signal of 1/10V connection



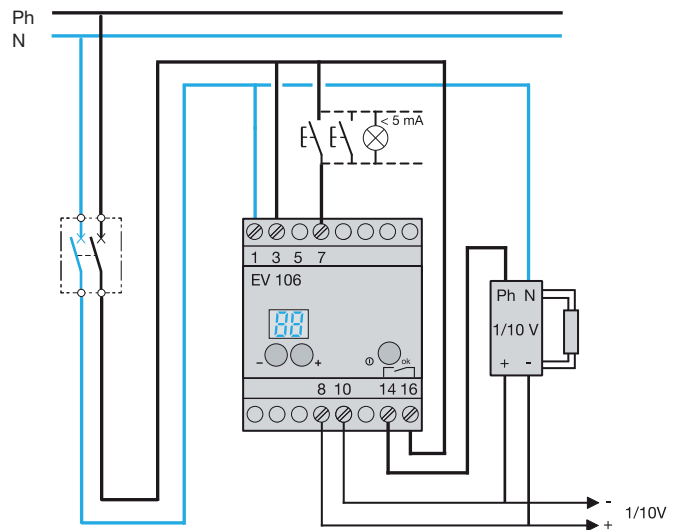
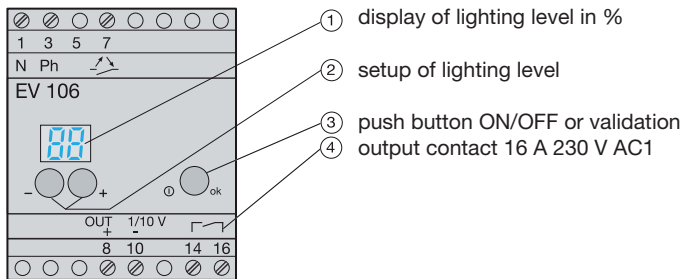
Universal dimmer 1000 W EV102 (with scene / input)



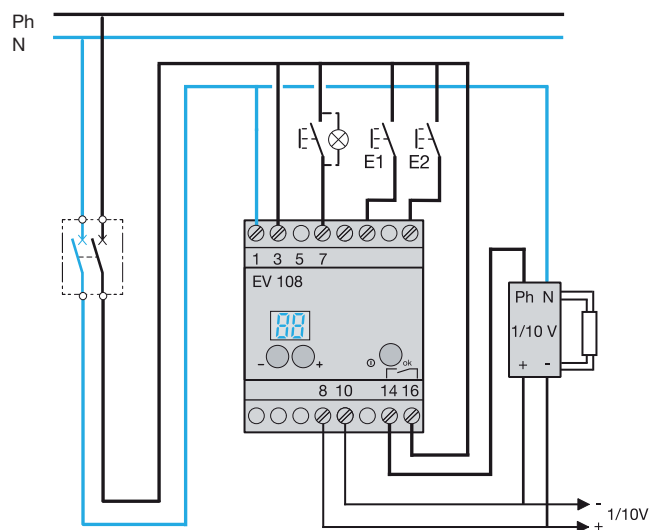
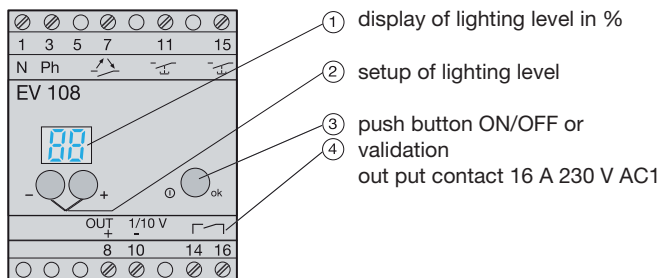
“master - local - slave” mode switch :
- “master” can pilot other EV100 or EV102 via output 1/10 V
- “local” stand-alone functioning of product
- “slave” product piloted by input signal of connection 1/10 V



1/10V pilot dimmer EV 106

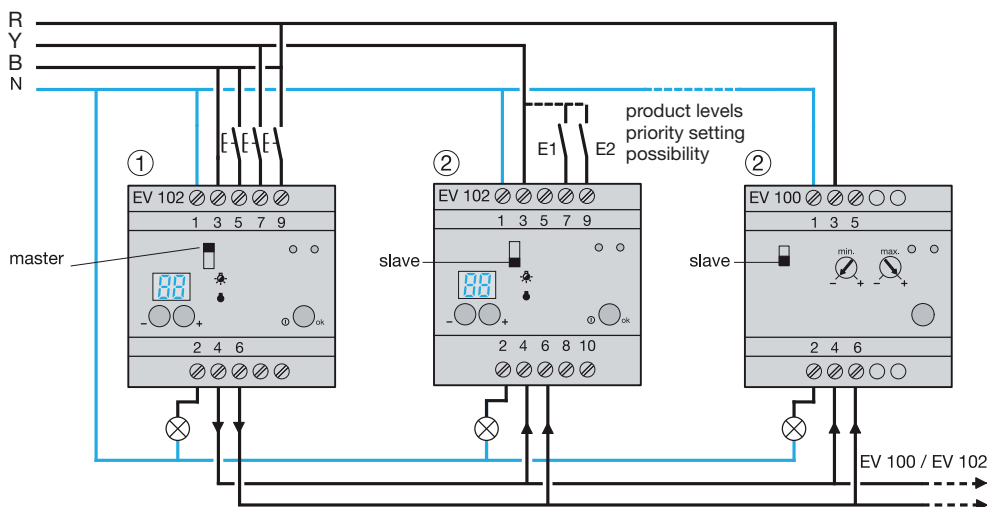


1/10V pilot dimmer EV108 (with scene / input)



Input E1 and E2 can call 2 ambient levels :
- control by push button : called level is applied out of respect for transition speed setted up
- control by switch : called level is applied by priority setting out of respect for transition speed setted up.
When 2 inputs are controled at the same time, a third level becomes available by priority setting (only by setup: mode 2)
Dimming controls by push button have no effect when priority setting is active.

Association of dimmer EV102 with EV100



- ① mode switch in position "master" = output 1/10 V.
- ② mode switch in position "slave" = input 1/10V (in this position only priority settings with E1 and E2 are available)

Remark : it is possible to extract temporarily a product from system by switching from "slave" to "local".

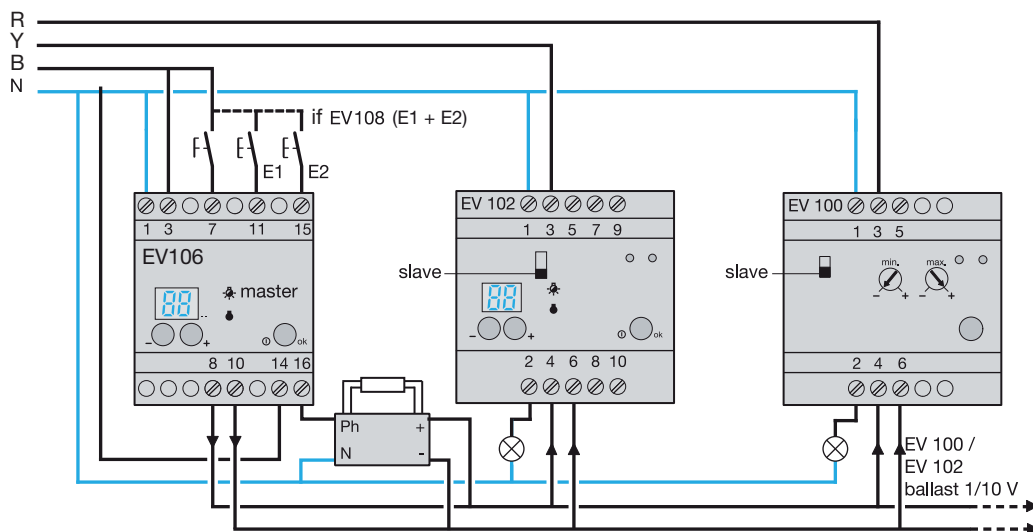
Use of input E1 and E2

(call of setted uplevels)

Inputs E1 and E2 allow to call 2 or 3 setted up lighting ambient levels. Call of levels can be done normally with push button (impulse ≤ 400 ms) or by priority setting with switch or automation (maintained contact). Setup mode 1 or 2 allows to discriminate behaviour of dimmer by cancellation of priority setting.

- **mode 1** (by default), corresponds to normal use.
 - Control by push button, called level is applied out of respect of setted up transition. Dimmer still reacts to the other controls applied.
 - Switch control, called level is applied by priority setting out of respect of setted up transition.
- By cancellation of priority setting, lighting remains at the same level as long as no other control is given.

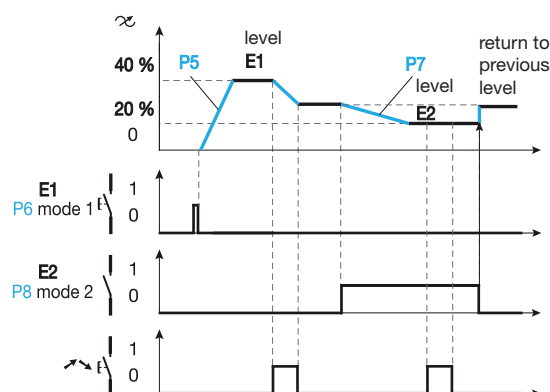
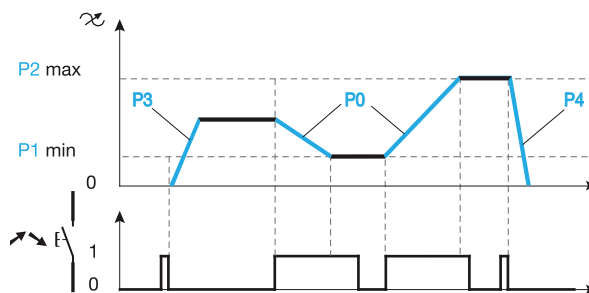
- **mode 2**, particularly adapted for priority setting. Same behaviour as above by call of level.
 - By desactivation of priority setting, dimmer set back to the preceding state. In that mode, when the 2 entries are simultaneously active, a 3rd level becomes available in priority setting ($E1+E2 = E3$)



Parameter settings for dimmers EV102 and EV108

parameter	functions	default value	possible value
E1	ambient level input E1	0 %	0..99 %
E2	ambient level input E2	99 %	0..99 %
E3	ambient level input E3 = E1 + E2	50 %	0..99 %
P0	dimming speed from 0 to 99 %	4"	4" ..99"
P1	mini lighting level	1 %	1 ..49%
P2	maxi lighting level	99 %	51 ..99%
P3	dimming speed at start	0"	0" ..99"
P4	dimming speed at stop	0"	0" ..99"
P5	time to reach ambient level E1	0' - 0"	0' ..99' et 59"
P6	use mode for input E1 : - 1 = call of ambient level, - 2 = priority setting	mode 1	mode 1 mode 2
P7	time to reach ambient level E2	0' - 0"	0' ..99' et 59"
P8	use mode for input E2 : - 1 = call of ambient level, - 2 = priority setting	mode 1	mode 1 mode 2
P9	time to reach ambient level E3	0' - 0"	0' ..99' et 59"

Dimming parameters



Technical specifications

Products	EV011	EV012	EV002	EV004	EV100	EV102
dimming range	20 to 300 W	at 35 °C	20 to 600 W	at 45 °C	20 to 1000 W	
width	1 ■	1 ■	4 ■	4 ■	5 ■	5 ■
supply voltage	230 V ~ (+10 % -15%) 50 Hz					
power dissipation	6 W	6 W	6 W	6 W	15 W	15 W
dimming principle : - cut off at beginning of sequence (triac) - cut off at end of sequence (transistor)	triac		universal, automatic load recognition			
		transistor				
Switching capacity						
230V halogen or incandescent lamps	300 W at 35 °C		600 W at 45 °C		1000 W	
VLV halogen ferromagnetic transformer	300 W at 35 °C	-	600 W at 45 °C		1000 W	
VLV halogen dimming electronic transformer (cos φ ≥ 0,95)	-	300 W at 35 °C	600 W at 45 °C		1000 W	
several circuits, total load > 1000 W functioning in system	-	-	-	-	EV102 in master position + 30 EV100 or EV102 in slave	
1/10 V potentiometer control	-	-	-	-	yes slave position of potentiometer 100 kΩ, 200 mW logarithmic	
Functional characteristics						
on product (dimming function)	-	-	1 push button	2 push button	1 push button	1 push button
by local push button	yes					
by luminous push button	yes spacing current ≤ 5 mA					
ambient level				1 level *	-	2 levels *
levels priority settings				yes *	-	3 levels **
display of dimming level				yes, 0 to 99%	-	yes 0 to 99 %
Other characteristics						
mini / maxi setting				mini 1 to 49% max 51 to 99%	setting via potentiomet.	mini 1 to 49 % max 51 to 99 %
output contact for state indication	no					1 contact NO 5 A ACI 230 V DC1 12V mini 0,1A
memorizing of level and softstart	yes					
protection against overheating	electronic					
protection against short-circuits	fuse	electronic				
maximum length for input push button or 1/10 V connection	50m maxi					
connection : flexible rigid	cage clamps 1 to 6mm ² 1,5 to 10mm ²					
environment : storage temperature working temperature	-20 °C to +60 °C -10 °C to +35 °C		-20 °C to +60 °C -10 °C to +45 °C		-20 °C to +70 °C -10 °C to +40 °C	

(*) Level setting from 0 to 99%. Call of level by push button. Priority setting of level by maintained control (switch).

(**) 3 ambient levels are available in priority setting mode :
 - level 1 if contact E1 is closed
 - level 2 if contact E2 is closed
 - level 3 if contacts E1 + E2 are closed

Requirements :

- To calculate the maximum number of lamps, it is necessary to take into account the power loss of ferromagnetic transformers (around 20%)
The transformer should not be used at less than 75% of its nominal load.
- Electronic transformers : take into account approximatively 5 % power loss.
- Respect recommendations of manufacturer of the lightings.
- **Compact fluorescent lamps with integrated ballast can not be dimmed.**
- Use a heat dissipation inserts (ref. LZ060) between remote control dimmers

Technical specifications

Products	EV106	EV108
width	4 ■	4 ■
supply voltage	230 V ~ (+10 % -15%) 50 Hz	
power dissipation	3 W	3 W
output contact	1 F 10 A 230 V ~ potential free	
load system 1/10 V liaison 1/10 V	output 1 /10 V max 50 mA (electronic ballast) or 30 dimmers EV100 or EV102 ; maximum cable connection 1/10 V: 50 m	
display of lighting level and setting up	yes dimming level from 0 to 99 % easy for programming and for checking all the settings	
Functional characteristics		
on product ON / OFF - by local push button - by illuminated push button wiring length	3 push buttons 1 PB ON / OFF, 1 PB j, 1 PB I yes yes spacing current \leq 5 mA max 50 m	
ambient level (scenes) call scene by push button priority setting by switch scene settings	no	2 inputs = 2 or 3 levels 2 available levels 3 levels from 0 to 99 % E1 and E2 closed = level 3
Dimming speed		
normal dimming by push button	dimming rise time from 4 to 99 seconds from	level 0 to 100 %
dimming speed at start - dimming speed at stop - speed to reach ambient level	no no no	0 to 99 seconds (duration from 0 to 100 %) 0 to 99 seconds (duration from 100 to 0 %) this parameter defines the speed used to reach the scene level (100%) : 0 to 99min. 59s
mini / maxi setup	yes, mini 1 to 49 % ; max from 51 to 99 %	
sofstart and memorization of last level	yes	
connection : flexible rigid	cage clamps 1 to 6mm ² 1,5 to 10mm ²	
environment : storage temperature working temperature	-20 °C to +60 °C -10 °C to +45 °C	

* Values seized in always correspond to the time needed to go from 0 to 100% : dimmer reads this signal as a slope (or speed) of constant dimming

Ex. : to go from 50% to 100% in 30 minutes => rate 60 minutes to go from 0 to 100% that is to say 30 minutes to go from 50 to 100%.

Description:

A photo-electric cell measures the light level and in conjunction with the relay provides ON / OFF control of a circuit.

This device controls lighting circuits in relation to ambient light, based on user settings. Front cover sealability

Applications
Street lighting, display lighting, illuminated signs etc....
On board LED shows status of changeover contact.

4 position override switch allowing :
- auto : normal operating mode
- on : permanently switched on

- off : permanently switched off
- test : setting mode for easy adjustment
output : 1 changeover AC1 contact 16A AC1 230V 8A AC1 (EE701)

Maximum distance: 50m between photocell and controller

Must be used in conjunction with a suitable rated contactor Astronomical time switches




The Hager range is composed of two astronomical time switches EE180/EE181

That range offers the following features :

- Programming of the lighting interruption

- Automatic change of winter / summer time
- Astro program and expert program with individual astro program steps
- Programming for day or group of days (same concept than our existing clocks with key)
- Anticipation ON
- Maintained ON
- Temporary overrides
- Programming of holidays period
- Programming via the PC software and the associated interface (EG003)
- Weekly program

Protected cable clamps capacity:
rigid : 1.5 to 10mm²
flexible : 1 to 6mm²

Designation	Characteristics	Pack qty.	Cat. ref.	
 EE101  EE702	Twilight switch delivered with: a separate surface photo electric cell EE003 (EE100) a separate flush photo electric cell EE002 (EE101)	Voltage rating: 230 V ~ +10-15 % 50 Hz output: 1 changeover 16 A - 250 V ~ AC 1 sensitivity: 2 ranges - 5 to 100 lux - 50 to 2000 lux	1 1	EE100 EE101
	Compact light switch IP 55 / integrated cell	basic 8A (without settings) 230V~ 50 Hz normally open contact (cutting phase) 8A AC1 1000W incandescent Fix lux: 10...30 lux Fix ON delay: 40s/OFF delay: 120s enhanced 16A (with settings) 230V~ 50 Hz normally open contact (cutting phase) 16A AC1 2300W incandescent Fix lux: 2 to 1000 lux Time settings: from 1s to 120s	1 1	EE701 EE702
	Programmable twilight switch with surface cell	daily cycle electromechanical switch weekly cycle electronic program free setting	1 1	EE110 EE171
 EE110	Astronomical time switch (weekly cycle) delivered with key EG005.	1 channel 230V~ 50 Hz changeover contact 16A AC1 operating reserve lithium battery 5 years 2 channels 230V~ 50 Hz 2 changeover contacts 16A AC1 operating reserve lithium battery 5 years	1 1	EE180 EE181

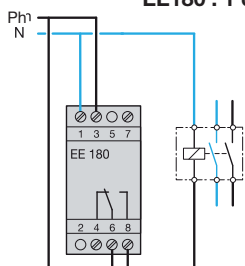


Technical specifications

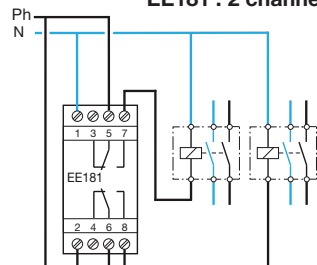
	EE180 (1 channel)	EE181 (2 channels)
Width in ■ 17.5mm	2	2
Supply voltage	230V AC (+10% / -15%), 50/60Hz	
Number of output	1	2
Characteristics of relay	change over contact 16A AC1 250V /10A cos φ = 0,6	
incandescent	2300W	
230V-halogen	2300W	
Connection	terminal n° 5	
flexible	1 to 6mm ²	
rigid	1,5 to 10mm ²	
Environment		
storage temperature	-20°C to +60°C	
working temperature	-10°C to +55°C	
IP and IK	IP 20 IK 3	
Standards	CE + CTICK and CEI 60-669	
Functional characteristics		
display LCD	without backligned screen	
operating reserve	Lithium battery 5 years	
precision	+/- 1,5s/day	
programming key	yes	
automatic change of winter/summer time	yes	
functions available in free programming	weekly programming / permanent override / temporary override	
Astro functions		
astro mode	yes	independent programming for each channel
programming of the lighting interruption	yes (if channel ASTRO)	
temporary override	15 / 30 / 60min.	
maintained ON	adjustment common to the 2 channels	
anticipation ON	adjustment common to the 2 channels	

Electrical connection

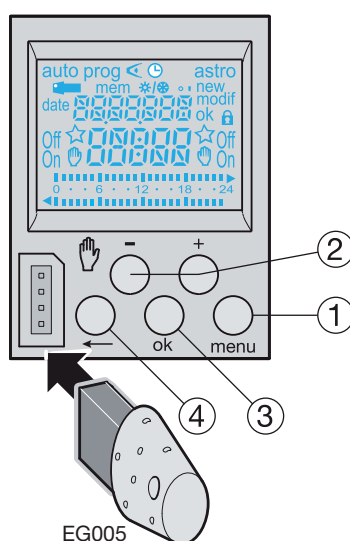
EE180 : 1 channel



EE181 : 2 channels



Presentation



Keys:

- ① **menu** : selection of operating mode
- auto** : mode of running according to the program selected.
- prog** : **new** for programming mode.
- prog** : **modif** to modify an existing program.
- ◀ : checking of the program.
- ⌚ : modification of time, date and selection of the winter / summer time change mode
- astro**: astronomical mode ✨/🌙
- ☆ : indicates that the channel is in astronomical mode
- ② **+and-**: navigation or setting of values.
- A 🖱 : in **auto** mode, selection of overrides,
- b 🖱 or waivers .
- ③ **ok** : to validate flashing information on display.
- ④ ← : to return to the previous step.

You may return into **auto** mode at any moment using **menu**.

If no action is taken for 1 min, the switch returns into **auto** mode.

Technical specifications

	EE100	EE101	EE110	EE171
Width in ■ 17.5mm	3	3	5	3
Electrical characteristics				
voltage supply	230V +10/-15%			
frequency	50Hz			
consumption	1.5VA maximum			
output	1 voltage free changeover contacts			
Maximum switching capacity				
AC1	16A / 250V			
incandescent lamps	2000W			
230V halogen lamps	1000W			
fluorescent lamps	1000W			
non compensated	1000W			
fluorescent lamps, compensated	200W			
in series	1000W			
duo fluorescent lamps	1000W			
Functional characteristics				
lighting level : 2 ranges	5 to 100 lux and 50 to 2000 lux			
ON and OFF delay	15 to 60 seconds			
mounting of cell	surface	flush *	surface	surface
programmable	no	no	yes	yes, free prog.
technology			electromechan.	
cycle			24 hours	7 days
programming setting			15 min.	1 min
accuracy			+/- 6min/year	+/-6min/year
operating reserve			accu 200h after beeing connected for 120h	lithium battery total of 3 years of supply failure
Environment				
working temperature	-30°C to +60°C (cell) -10°C to +50°C (modular device)			
storage temperature	-20°C to +60°C			
Connection				
maximum length between cell and modular device	50 meters			
capacity (modular device)	0.5 to 4mm ²			
capacity (cell)	0.75 to 4mm ²		0.75 to 4mm ²	

Note : * delivered with a 1m cable (2x0.75mm²)
** 8 predefined programs

Mounting the cell

To ensure correct operation of the light sensitive switch, the cell must not be influenced by artificial light or direct solar radiation and should be sheltered from dust and humidity. In case of disconnection of the link between the cell and the light sensitive switch, the output of the device will be switched on. Make sure the light sensitive switch is unplugged before connecting the cell.

Adjustment of the working level

The test position of the override selector 1 makes setting the preset level easier by removing the ON and OFF delay.

Select the sensitivity range which suits your application (selector 1)
5 to 100 lux (low light level) application examples; public lighting, shop windows, signals...

50 to 2000 lux (high light level) application examples; controls of shades

At the appropriate moment of the day, put the selector 1 in test position; turn the potentiometer 2 up to the switching point (the indicator 4 lights); put the selector back to position 'auto' the normal operating mode of the device.

Cells	EE002	EE003
Type	flush mounting	surface mounting
Dimension (mm)	89x48x32	25x25x20 hole Ø 2,5mm
Connection	cable 1m 2x0.75mm ²	0.75 to 4mm ²
Ingress protection	IP54	IP54
Working and storage temperat.	-30°C to +60°C	-30°C to +60°C

Light sensitive switches

Using light sensitive switches can prevent the unnecessary use of lighting circuits where sufficient daylight exists. The benefit of modular devices is the facility to set the ambient lighting level at which the device will operate, and as the device is fitted at the distribution point prevent unauthorised tampering. The remote photocell unit can be mounted up to a distance of 50 metres from the device. Two devices are available the standard EE100 light sensitive switch and an enhanced programmable version the EE171 that also allows time clock control.

Principle of operation

Both devices control lighting systems according to natural illumination;

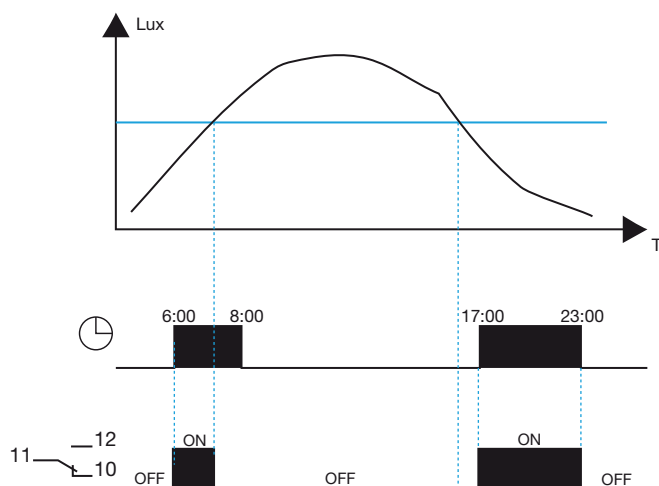
- The user sets the working level;
 - The photo cell measures the external light level
- The output of the EE100 is:
- ON, when the measured level is lower than the pre-set light level
 - OFF, when the measured level is higher than the pre-set light level

The output of the EE171 during the programmed ON time period is:

- ON, when the measured level is lower than the pre-set light level
- OFF, when the measured level is higher than the pre-set light level

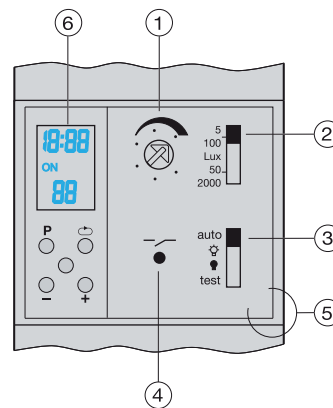
The output of the EE171 during the programmed off time period is:

- OFF, regardless of the lighting level



The light sensitive switches include a built in time delay which avoids unnecessary switching due to temporary factors such as car headlight beams etc...

Description

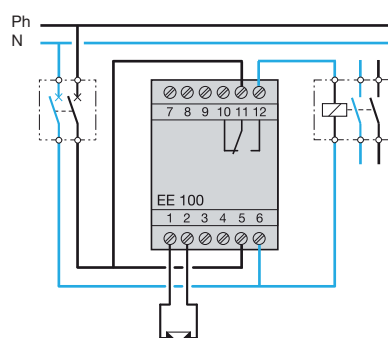


The programmable light sensitive switch EE171 has two main functions:

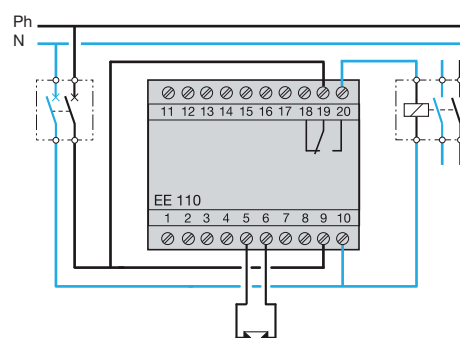
- Light sensitive switch comprising:
 - 1 - override selector switch to allow permanent ON or OFF, auto or test mode
 - 2 - lighting range selector
 - 3 - potentiometer to set light level
 - 4 - indicator to show output switching status
- A programmer to establish the automatic operating cycle. The programmer comprises 4 keys:
 - 5 - ON / OFF to choose whether the circuit is on or off
 - 6 - prog to set the program and scroll program steps
 - 7 - reset
 - 8 - + and - to change settings

Wiring diagram

EE100 - EE101 - EE171



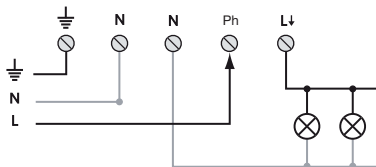
EE110



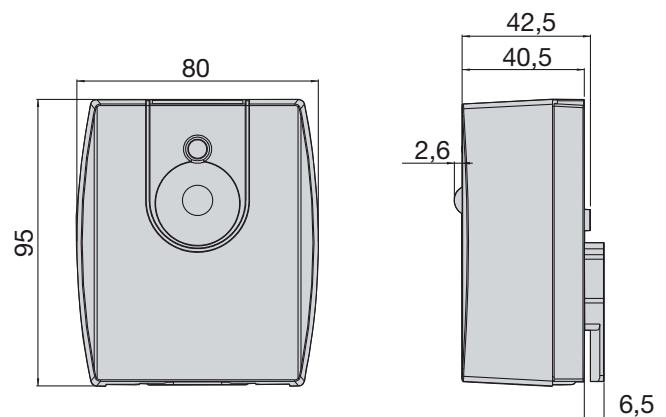
Technical specifications

	EE701	EE702
	Compact light switch basic 10A	Compact light switch enhanced 16A
Dimensions	80 x 40.5 x 95 mm	
Supply voltage	230V AC (+10%/-15%), 50Hz	
Characteristics of relay	NO contact 8A AC1	NO contact 16A AC1
incandescent	1000W	2300W
halogen ELV (12 or 24V) via ferromagnetic or electronic transformer	750 VA	1500 VA
non compensated fluorescent tubes	12x20W	20x20W
compact fluorescents	1000W	2000W
electronic ballast	8x58W	16x58W
Connection		
flexible	1 to 6mm ²	
rigid	1.5 to 10mm ²	
Environment		
storage temperature	-30°C to +60°C	
operating temperature	-25°C to +45°C	
IP / IK	IP55 / IK03	
isolation class	II	
Standards	NFC 15 100 - IEC 60364-1-EN 60669-2-1	
Functional characteristics		
lighting switching-on level	Fixed (lighting switching-on level : 10 lux / lighting switching-off level : 30 lux	Setting by potentiometer from 2 to 1000 lux hysteresis 10%
setting delay	40 seconds	Setting by potentiometer from 1
tripping delay	120 seconds	to 120 seconds
mounting	on wall / on round box / on pillar	

Electrical connections



Dimensions



Light sensitive switch, 2 channel

up to 20000 Lux

By controlling exterior and interior light sources, the light sensitive switches enable great energy savings. Providing an homogeneous lighting areas in the room permit to take the most of the natural light. Examples of use: offices, classrooms, storage rooms, production areas...

Characteristics

“Auto-Test” switch:
 • “Auto” position, channel switching is 30s,
 • For each channel:
 - luminance threshold setting
 - state display
 - switch: manual override, off-switch, sensitivity range selection.

Light sensitive switch EE202

2 more inputs for various automation devices controlling (time switch, presence detector, push button...). It provides an answer to the more restrictives applications.

Some of these products can be linked together to increase the numbers of levels and outputs controlled by one same cell.

Designation	Characteristics	Width in 17,5 mm	Pack qty.	Cat. ref.
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EE200

Two channels light sensitive switch

the output is switched on/off according to the pre-defined lux level

230 V 50/60Hz
 2 contacts NO 16 A 250 V~ AC1

- delivered without cell, can be associate with:
- flush cell EE 002
- or surface cell EE 003
- for each channel :
- threshold setting
- state indication led
- 4 positions selection switch :
 - On
 - Off
 - 2... 200 Lux
 - 200 ...20 000 Lux.

EE 200 delivered with surface cell EE 003	4	1	EE201
---	---	---	--------------



EE202

Two channels light sensitive switch for cascading

As well as EE200, it integrates 2 inputs for 2 operating modes. The selected mode always applies to the both outputs.

same characteristics than EE200 above + additional automations.

input E1 : 230 V, used to connect a contact like: switch, timer...

operating mode selector :
 - mode 1 : automatic
 - mode 2 : half automatic, allows time delayed dispensation (adjustable time: 1 min., 5 min., 10 min, 30 min., 45 min., 1 h 30, 2 h).

delivered without cell, can be associated with :
 - flush cell EE002
 - or surface cell EE003

EE202 delivered with surface cell EE003	4	1	EE203
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EE002



EE003

Cell			
flush cell IP54 for EE100, 101, 110 & 170	1		EE002
surface cell IP54 for EE100, 101, 110 & 170	1		EE003

Electrical characteristics	EE200	EE202
supply voltage	230 V AC +10/-15% 50 Hz	
power consumption	2,4 W max.	
outputs	2 NC	
maximum switching capacity	16 A 250 V~ AC1	
incandescent lamps	2300 W	
230 V halogen lamps	2300 W	
halogen VLV via ferromagnetic transformer	1500 VA	
halogen VLV via electronic transformer	2300 W	
fluorescent lamps in series	3600 W	
compensated fluorescent lamps //	1000 W capacity 112 µF	
compact fluorescents with electronic ballast	450 W	
compact fluorescents with traditionnal ballast	2300 W	
state indicator led	1 red led per channel	
2 sensitivity ranges	2 to 200 lux 200 to 20 000 lux	
ON and OFF delay	30s	
switch of operating mode auto / test	auto = normal operating mode test = to test light level, 30s delay does not apply in this operating mode	
switch of operating mode auto / semi-auto with time delay	no	yes, automatic or semi-automatic
delay in semi-automatic mode	-	from 1 min to 2 hours
association of products	slave, can only be associated with EE202	master or slave, can be associated with max. 10 products
connection		
max. length between cell and switch	50 m, input signal voltage 0 or 230 V	
lmax. length between 2 switches	unpolarised connection 2 wires 1 to 6 mm ² , max. 50 m	
flexible	1 to 6 mm ²	
rigid	1,5 to 10 mm ²	
environment		
working temperature	0°C to +45°C	
storage temperature	-20°C to +60°C	

Functions of EE202

Automatic mode :

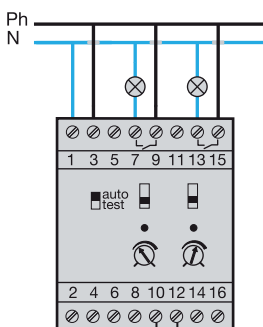
(potentiometer ⑤ is set to mode 1 position)
 In this mode, the light sensitive switch controls outputs when the brightness level is too low, provided E1 input is activated (230V voltage is present).
 An override push button is connected to E2 input and makes it possible to reverse the state of lighting areas.
 Lighting is automatically switched off as soon as E1 is deactivated (0V) or the brightness level is sufficient.

Semi-automatic mode (mode 2) :

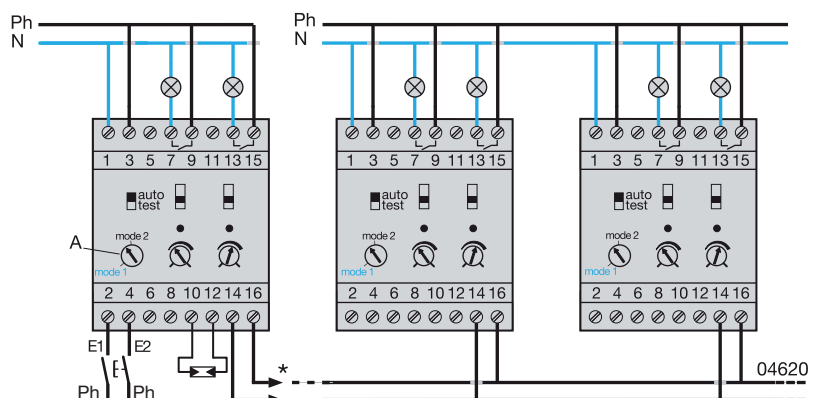
In this mode, the E1 input is used to define authorization periods (230V voltage is present on the lighting input E1).
 A push button connected to the input E2 is used to switch the light ON/OFF.
 Except in authorization periods, the lighting time is delayed.
 The potentiometer is used to adjust the delay.
 During periods of authorization, a push button is used to switch on lighting. Then, the control of lighting in the area depends on thresholds of brightness associated with each output.

Wiring diagram

EE200



EE202



* the link of EE202/EE203 chaining can be used to transmit the lighting level information to several products and extend the number of thresholds and controlled circuits.

Time switches and twilight switches selection chart

Analogue time switches (din rail mounted) :



width in 1 ■ :
EH010, EH011, EH071



width in 5 ■ :
EH191

Technical characteristics	EH010	EH011	EH071	EH209	EH210	EH211	EH271	EH191	EH110A	EH111A	EH171A
width in ■ 17.5mm	1	1	1	2	2	2	2	5	3	3	3
voltage	230V	230V	230V	110 - 230V	110 - 230V	230V	230V	230V	6 to 24V AC/DC	6 to 24V AC/DC	6 to 24V AC/DC
operating cycle	24 h	24 h	7 days	24 h	24 h	24 h	7 days	24 h / 7 days	24 h	24 h	7 days
minimum switching	30 min	30 min	3 h 30	30 min	30 min	30 min	3 h 30	15 min / 2 h	30 min	30 min	4 h
supply failure reserve	-	200 h	200 h	-	-	200 h	200 h	200 h	-	200 h	200 h
manual override	auto / on	auto / on	auto / on	auto / on/off	auto / on/off	auto / on/off	auto / on/off	auto / on/off	auto / on/off	auto / on/off	auto / on/off

Analogue time switches (72 x 72mm) :



EH710, EH711, EH770, EH771, EH712, EH715, EH716

Technical characteristics	EH710	EH711	EH770	EH771	EH712	EH715	EH716
voltage supply	230V	230V	230V	230V	230V	48V DC 110-240VAC	
operating cycle	24 h	24 h	7 days	7 days	24 h	24 h	24 h
minimum switching	20 min	20 min	2 hrs.	2 hrs.	20 min	20 min	20 min
supply failure reserve	-	200 h	-	200 h	-	-	200 h
manual override	on/off	on/off	on/off	on/off	on/off	on/off	on/off

Digital time switches and Twilight switches :



width in 1 ■ :
EG010, EG071



width in 3 ■ :
EG110, EG170, EG210, EG270



width in 4 ■ :
EG403E



EE171

Technical characteristics	Digital time switches (din rail mounted)											Twilight switches		
	EG010	EG071	EG110	EG170	EG103B		EG203B				EG293B	EG493E	EE101	EE100
width in ■ 17.5mm	1	1	3	3	2	3	3	2	4	4	4	3	5	3
operating cycles	24 h	7 days	24 h	7 days	7 days	24 h	7 days	7 days	7 days	1 year	1 year	-	24 h	7 days
program steps	5	20	20	20	56	20	20	56	300	300	300	-	15 min	1 min
voltage supply	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V
n° of channels	1	1	1	1	1	2	2	2	4	2	4	-	1	1

Description
Electromechanical time switches 1 channel for daily or weekly programming.
To control lighting, heating, household appliances, shop windows etc...
To improve comfort and save energy.

Applications
Domestic and commercial premises.

DIN rail mounting

Technical data
- programming by captive segments.
- manual override:
On 1 module devices:
- automatic
- permanent ON
On 3 and 5 module devices:
- automatic
- permanent ON
- permanent OFF

Minimum switching time:
- 15 min for daily versions
- 2 hours for weekly versions
- 15 min and 2 hours on the daily+weekly version

Connection capacity:
1 to 4mm²

Complies with EN 60 730.

Designation	Voltage	Cycle	Width in 17,5 mm	Cat. ref.
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Analogue time switches modular compact	230 V 50 Hz	24h without battery reserve	1	EH010
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1 NO 16 A - 250 V AC1		24h reserve: 200 h	1	EH011
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		7 j reserve: 200h	1	EH071
--	--	----------------------	---	--------------



EH071

Analogue time switches standard modular version	230 V 50 Hz	24 h without hand without battery reserve	2	EH209
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1 NO changeover 16 A - 250 V AC1		24h without battery reserve	2	EH210
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		24h reserve: 200 h	2	EH211
--	--	-----------------------	---	--------------

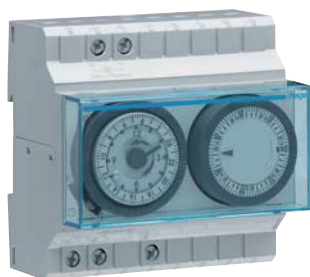
		7j reserve: 200 h	2	EH271
--	--	----------------------	---	--------------

		24h + 7 j reserve: 200h	5	EH191
--	--	----------------------------	---	--------------

	6 to 24 V AC/DC	24h without battery reserve	3	EH110A
--	--------------------	--------------------------------	---	---------------

		24h reserve: 200 h	3	EH111A
--	--	-----------------------	---	---------------

		7 j reserve: 200 h	3	EH171A
--	--	-----------------------	---	---------------



EH191



EH110A

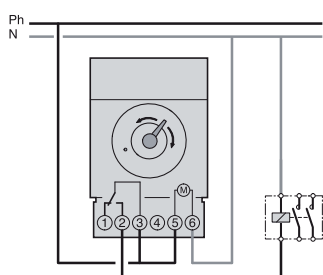
Sealing kit for 3 time switch				EH901
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Wall mounting kit for 3 time switch				EH902
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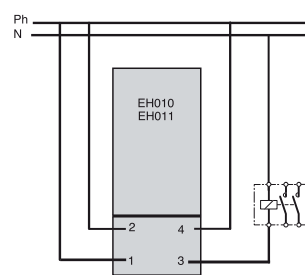
Technical specifications

	EH010	EH011	EH071	EH191
Width in I 17.5mm	1	1	1	5
Version	daily	daily	weekly	daily + weekly
Electrical characteristics				
voltage supply	230V +10/-10%			
frequency	50/60Hz			
consumption	0,5VA			
output	1NO			1 NO changeover
Switching capacity				
AC1	16A/250V			
inductive load (cos φ = 0.6)	4A/250V			
incandescent lamps	900W			
Characteristics				
technology	quartz			
dial	24 h		7 days	24 h and 7 days
switching dial	15 min		1h 45	15 min and 2 h
min. switching	30 min		3 h 30	15 min and 2 h
max. number of switching	96		96	96/84
accuracy	+/- 1 sec per day			
supply failure reserve		200 h	200 h	200 h
reached in		120 h		120 h
manual override	auto/ON/OFF			
Environment				
ingress protection	IP20			
working temperature	-10 to +45°C			
storage temperature	-10 to +50°C			
connection	0,5 to 4mm ²			

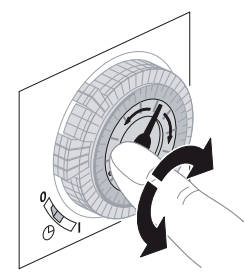
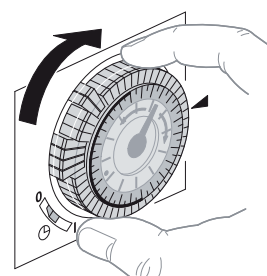
	EH209	EH210	EH211	EH271	EH110A	EH111A	EH171A
Width in I 17.5mm	2	2	2	2	3	3	3
Version	daily	daily	daily	weekly	daily	daily	weekly
Electrical characteristics							
voltage supply	110-230V +10/-15%		230V +10/-15%		6 to 24V AC/DC		
frequency	50/60Hz				50/60 Hz		
consumption	0,5 VA				0,5 VA		
output	1NO changeover				1 NO changeover		
Switching capacity							
AC1	16A/230V				16A/230V		
inductive load (cos φ = 0.6)	4A/230V				4A/230V		
incandescent lamps	1000W				900W		
Characteristics							
technology	quartz				quartz		
dial	24 h			7 days	24 h		7 days
switching dial	15 min			1 h 45	15 min		2 h
min. switching	30 min			3 h 30	30 min		4 h
max. number of switching	48				48		
accuracy	+/- 1 sec per day				± 6 min per year		
supply failure reserve	-	-	200 hours	200 hours	-	72 hours	72 hours
reached in	-	-	120 hours	120 hours	-	120 hours	120 hours
manual override	auto/ON/OFF				auto/ON/OFF		
Environment							
ingress protection	IP20				IP20		
working temperature	-10 to +55°C				-10° to +55°C		
storage temperature	-20° to +70°C				-20° to +70°C		-10° to +55°C
connection	1,5 to 6mm ²				1 to 4mm ²		



EH110 Electrical connections



EH010, EH011 electrical connections



Simple time setting and programming using dual direction dial

Description

For daily or weekly programming.
1 channel for the control of lighting, heating, household appliances, shop windows etc..
To improve comfort and save energy.

Applications

Domestic and commercial premises.

Technical data

- suitable for surface, flush or din rail mounting
- programming by captive segments
- manual override with automatic return to programme
- operating reserve: 200 hours after being connected for 120 hours
- with clock hand
- output: voltage free changeover contact 16A/250V


Daily version

Programming in steps of 10 minutes.
Minimum time between 2 switching intervals: 20 min

Weekly version

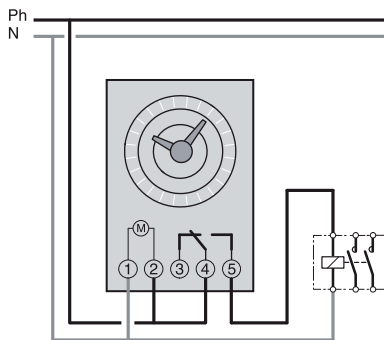
Programming in steps of one hour.
- minimum time between 2 switching intervals: 2 hours
- switching accuracy: 10 min

Complies with EN 60 730-2-7.

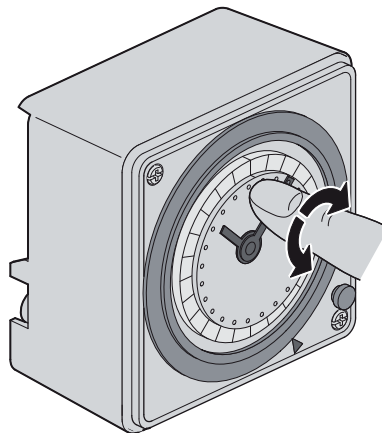
Designation	Characteristics	Pack qty.	Cat. ref.
 EH711	1 channel daily cycle		
	supply : 230V 50/60Hz		
	without battery reserve	1	EH710
	with battery reserve	1	EH711
reserve : 200 hours after being connected for 120 hours			
 EH771	1 channel weekly cycle		
	supply : 230V 50/60Hz		
	without battery reserve	1	EH770
	with battery reserve	1	EH771
reserve : 200 hours after being connected for 120 hours			
1 channel daily cycle	supply : 6 to 24V AC/DC 50/60Hz		
without battery reserve		1	EH710A
Flush mounting kit			EH900

Technical specifications

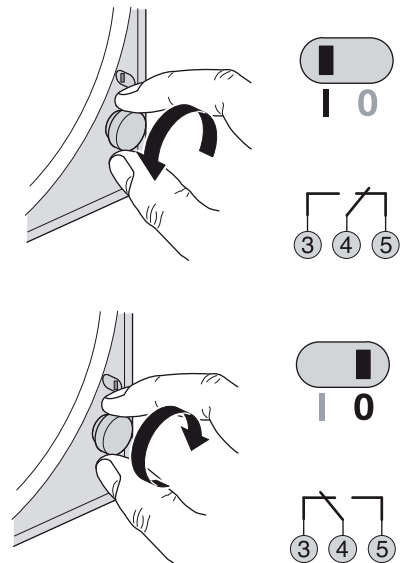
	EH710	EH711	EH770	EH771	EH710A
Dimensions (mm)	72x72x48	72x72x48	72x72x48	72x72x48	72x72x48
Electrical characteristics	daily	daily	weekly	weekly	daily
voltage supply	230V +10/-15% 50/60Hz				110V to 240V AC 50/60Hz 48V DC +10/-15%
consumption	0,5VA				
output	1 changeover				1 N/O
Switching capacity					
AC1	16A/250V				
inductive load (cos φ = 0.6)	3A/250V				
incandescent lighting	1000W				
Characteristics					
technology	quartz				
dial	24h		7 days		24h
switching dial	10min		1 hour		10 min
minimum switching	20min		2 hour		20 min
working accuracy	+/- 1 sec per day				
supply failure reserve	-	200 hours	-	200 hours	-
reached in		120 hours		120 hours	
manual switch	temporary ON or OFF				
Environment					
working temperature	-10 to +50°C				
storage temperature	-20 to +60°C				
connection capacity	1 to 6mm ²				



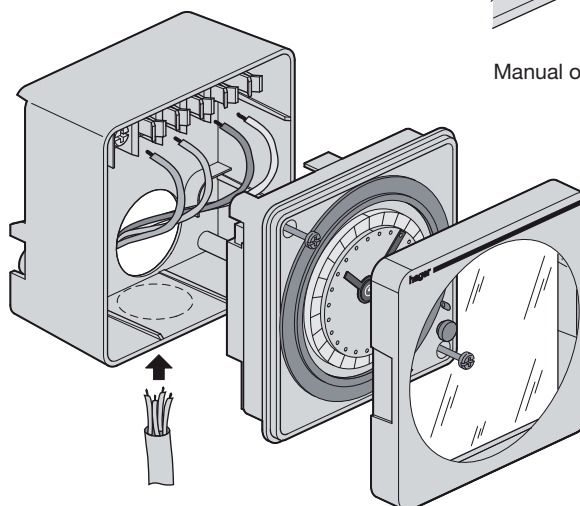
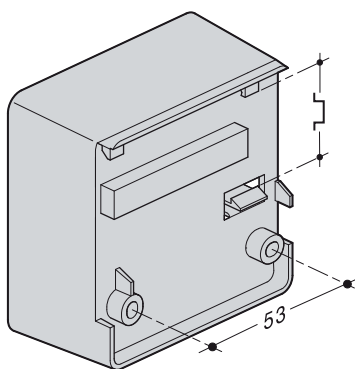
EH710 Electrical connection



Very easy programming with dual direction dial



Manual override



Description

Use : domestic and commercial buildings
For the control of lighting, heating, household appliances, shop windows, signage etc..., to improve comfort and to save energy.

EG103B and EG203B (basic version)

Product set at current time and date when delivered.
Automatic change of summer / winter time.

Programming key :

- to allow easy back up and re-installation of the program to allow permanent program overrides.
- programming per day or group of days
- 56 ON/OFF programme steps
- permanent ON/OFF overrides
- temporary ON/OFF overrides
- bar graph indication showing the daily profile
- programming supply.

EG103E and EG203E (evolution version)

Same characteristics as EG103B and EG203B plus more :
- holidays mode : forcing ON or OFF between two dates
- presence simulation - random switching
- backlighted screen
- impulse programming capability (1s to 30min)

Operating voltage

230V~ 50/60Hz

Designation	Characteristics	Width in ■ 17.5mm	Pack qty.	Cat. ref.
1 channel daily cycle	5 adjustable pre-recorded programs : 6 commutations max per day (3 ON and 3 OFF) 230V 50/60 Hz	1	1	EG010
	capacity : 20 program steps 230V 50/60 Hz	3	1	EG110
2 channels daily cycle	capacity : 20 program steps to be divided between the 2 channels 230V 50/60 Hz	3	1	EG210
1 channel weekly cycle	capacity : 20 program steps 230V 50/60 Hz	1	1	EG071
	capacity : 20 program steps 230V 50/60 Hz	3	1	EG170
	capacity : 56 program steps output : 1 changeover contact μ 16A - 250V~ AC1	2	1	EG103B
	version delivered with key EG005	2	1	EG103E
2 channels weekly cycle	capacity : 56 program steps output : 1 changeover contact μ 16A - AC1 - 12/24 V AC/DC 50/60 Hz	2	1	EG103V
	capacity : 20 program steps to be divided between the 2 channels 230v 50/60 Hz	3	1	EG270
	capacity : 56 program steps output : 2 changeover contacts μ 16A - 250V~ AC1	2	1	EG203B
	version delivered with key EG005	2	1	EG203E



EG071



EG210



EG203E



EG403E



EG493E



EG004



EG006

Designation	Characteristics	Width in 17.5mm	Pack qty.	Cat. ref.
4 channels weekly time switch	voltage rating: 230V~ 50/60 Hz output: 4 changeover contacts 16A - 230V~ AC1	4	1	EG470
	voltage rating: 230V~ 50/60 Hz output: 2 changeover contacts + 2NO contacts 10A - 250V ~ AC1 delivered with programming key	4	1	EG403E
2 channels yearly time switch	voltage rating: 230V~ 50/60 Hz output: 2 changeover contacts 10A - 250V~ AC1	4	1	EG293B
4 channels yearly time switch	voltage rating: 230V~ 50/60 Hz output: 3 changeover contacts 10A - 250V~ AC1 1NO contact: 10A - 250V ~ AC1 delivered with programming key	4	1	EG493E
Programming key	for EG403E, EG293B, EG493E		1	EG007
	for EG103 / EG203		1	EG005
	clock key		1	EG004
Range module			1	EG006
Interface and software	with software on CD		1	EG003
	with USB		1	EG003U

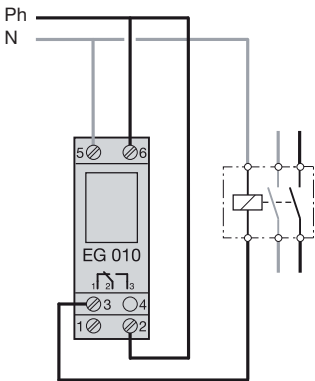
Technical specifications

	EG010	EG110	EG210	EG071	EG170	EG270	EG470
Width in ■ 17.5mm	1	3	3	1	3	3	5
Version	daily	daily	daily	weekly	weekly	weekly	weekly
Electrical characteristics							
voltage supply	230V +15/-15% 50/60Hz		230V +15/-15% 50/60Hz	230V +15/-15% 50/60Hz		230V +15/-15% 50/60Hz	230V +15/-15% 50/60Hz
consumption	1VA						20VA
output	changeover contact						
Switching capacity							
AC1	16A/250V						
inductive load (cos φ = 0.6)	3A/250V						
incandescent lamps	1000W						
Characteristics							
accuracy	+/- 1 sec per day						
supply failure reserve	Lithium battery total of three years						
manual override	permanent ON/OFF	permanent ON/OFF temporary ON/OFF		permanent ON/OFF	permanent ON/OFF temporary ON/OFF		
Environment							
ingress protection	IP20						
working temperature	-10 to +50°C						
storage temperature	-10 to +50°C						
connection	0.5 to 4mm ²						

	EG103B/E	EG203B/E	EG493E	EG293B	EG403E
Width in ■ 17.5mm	2	2	4	4	4
Cycle	weekly	weekly	yearly	yearly	weekly
Channels	1	2	4	2	4
Program step	56	56	300	300	300
Min. switching time	1 min		1 min		
Electrical characteristics					
voltage supply	230V +15%/-15% 50/60Hz		230V +15%/-15% 50/60Hz		
consumption	max 6VA		< 2VA		
output	changeover contact		2 changeover 2 NO contacts	2 changeover	2 changeover 2 NO contacts
Switching capacity					
AC1	μ16A/250V		μ10A/250V		
inductive load (cos φ = 0.6)	μ10A/250V				
incandescent lamps	2300W		1500W		
halogen lighting 230V	2300W		1500W		
compensated fluo. tubes //	400W, C=45μF		400W, C=45μF		
non compensated fluo. tubes	1000W		800W		
compact fluorescent tubes	500W		400W		
min. load switching	100mA/250V		100mA/250V		
Characteristics					
accuracy	± 1,5 second per day		+ 0,2 second per day		
supply failure reserve	lithium battery : 5 years				
manual override	permanent ON/OFF temporary ON/OFF				
Environment					
ingress protection	IP20		IP20		
working temperature	-5 to 45°C		-10 to +45°C		
storage temperature	-20 to +70°C		-20 to +70°C		
connection	flexible: 1 to 6mm ² rigid: 1.5 to 10mm ²		0,75 to 2,5mm ²		

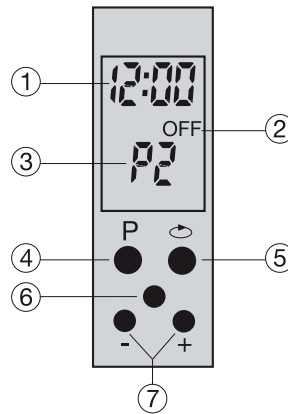
Electrical connections

EG010



5 pre-registered programs:

P	Prog
P0	OFF
P1	ON
P2	6.00 — 23.00
P3	6.00 — 8.00, 17.00 — 23.00
P4	6.00 — 8.00, 11.00 — 13.00, 17.00 — 23.00



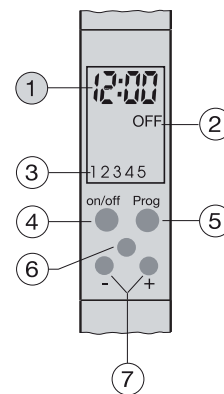
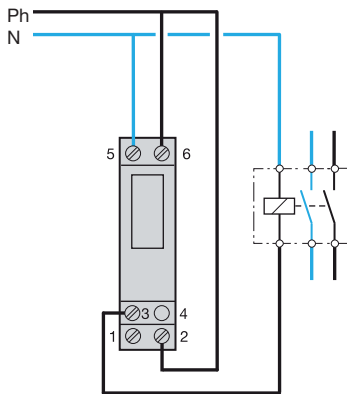
Display :

1. Time
2. Output contact (ON or OFF)
3. Program selected

Buttons :

4. To select the program to apply
5. To scroll program steps
6. Reset
7. + and - : change time settings

EG071



Display :

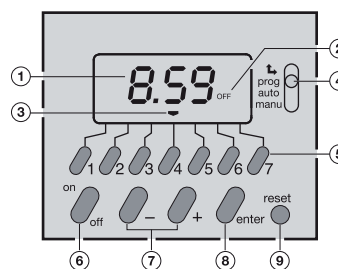
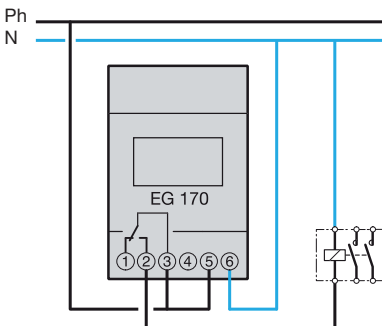
1. Time
2. Circuit status
3. Days

Buttons :

4. To select the program to apply
5. To scroll program steps
6. Reset
7. + and - : change time settings

	EG010	EG071
Electrical characteristics		
voltage supply	230V ±10% 50/60Hz	
consumption	1 VA	
output	1 changeover contact, 16A - 250V AC, 3A - 250V cos φ = 0,6, 1000W incandescent lighting	
Functional characteristics		
number of programs	5 adjustable pre-recorded programs	20 program steps (each program step can be applied to one of several days)
accuracy	± 6 min per year	
supply failure reserve	total of 3 years	
Environment		
working temperature	-10°C to +50°C	
storage temperature	-10°C to +60°C	
Cable capacity	1 to 4mm ²	
Main characteristics	5 programs are pre-recorded. The user just has to select the program which corresponds to its use and modify time switches if necessary	

EG170



Display :

1. Time
2. Circuit status (ON or OFF)
3. Day of the week (1=Monday, 2= Tuesday,...)

Buttons :

4. Mode selector : to select one of the following modes :
 - time setting
 - programming
 - running mode
 - manual override
5. "1" to "7" : selection of the days
6. "ON/OFF" : chooses whether the circuits is ON or OFF.
7. "+" and "-" : changes settings
8. "enter" : to confirm selection
9. "reset"

Technical specifications

Electrical characteristics

- supply : 230 V AC $\pm 15\%$
- frequency : 50/60 Hz
- consumption : max. 6 VA at 50 Hz
- output : 1 changeover contact voltage free (EG103B and EG103E)
2 changeover contacts voltage free (EG203B and EG203E)
- max. breaking capacity :
AC1 : $\mu 16A$ 250 V \sim
DC1 : $\mu 4A$ 12 V \dots
Cos $\phi = 0,6$: $\mu 10A$ 250 V \sim
- incandescent lamps : 2300 W
- halogen lamps : 230 V : 2300 W
- compensated fluorescent lamps // (max. 45 μ F) : 400 W
- non compensated fluorescent lamps, compensated in series : 1000 W
- fluo compact lamps : 500 W
- min. breaking capacity :
AC1 : 100 mA 250 V \sim
DC1 : 100 mA 12 V \dots
- galvanic insulation between supply and output

Functional characteristics

- programming capacity : 56 steps shared on the 2 channels for EG203B and EG203E
- min. time between 2 steps : 1 minute
- accuracy : $\pm 1,5$ sec / 24h
- supply failure reserve : lithium battery total of 5 years of supply failure
- the product switches to watching state (display lighted of) after 1 min without power. It returns into Auto mode at return of power or by push on a button
- ingress protection : IP20

Environment

- working temperature : -5 to +45 °C
- storage temperature : -20 to +70 °C

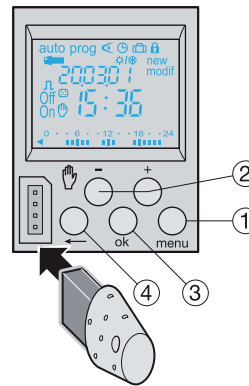
Connection by cage terminals

- flexible : 1 to 6mm²
- rigid : 1,5 to 10mm²

Main characteristics

- product delivered and updated to current date
- automatic change of time schedule summer: winter ☀/❄
- programming key: for temporary override for the copy or the saving of the programme
- programming per day or group of days
- 56 programmes steps ON, OFF or impulse : 1 sec to 30 mn. (EG103E and EG203E)
- permanent priority ON or OFF (fixes),
- temporary overrides ON or OFF (blinking),
- holidays mode : priority setting ON or OFF between two dates (EG103E and EG203E),
- presence simulation (EG103E and EG203E)
- bargraph with daily profile display,
- possibility of locking the keyboard
- programmable power off
- backlighted screen (EG103E and EG203E),
- remote controled temporary overrides (EG103E).

Product presentation



- ① menu : selection of the operating mode
auto : functioning according to the established program
prog : new for the programming
prog : modif to modify an existing program
◀ : checking of the program
⬅ : modification of the hour, the date and the choice of the mode of change of the time schedule summer/winter ☀/❄
- ② : holidays (EG103E and EG203E)
 and - : navigation or adjustment of the values in Auto mode, selection of priority settings, overrides or of random functioning (EG103E and EG203E)
- ③ ok : to validate the blinking info
- ④ ← : return at the preceding step

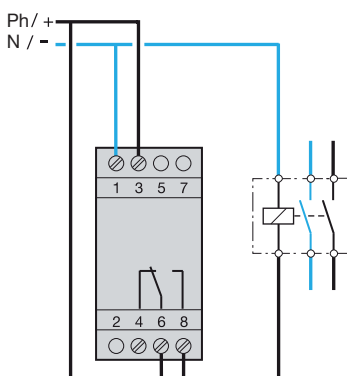
You can return in Auto mode at any time with the menu key. If no action is made during 1 min, the switch returns into Auto mode.

Reset :

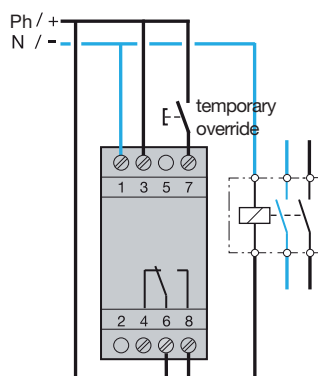
- of programme : it can be completely delated by simultaneous push on the 3 following keys : menu, ok and ← . the hour and the date are maintained
- Total : by simultaneous push on menu and ok keys and ← , the whole content of the product is removed. After a total reset, it is necessary to redefine the hour and the date.

Electrical connection

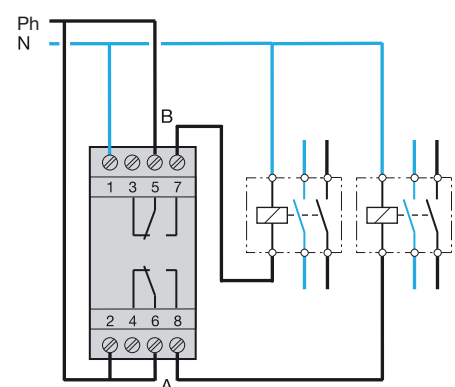
EG103B



EG103E



EG203E / EG203B



EG493E programmer

Electrical characteristics

- supply : 230 V +10 -15% 50/60 Hz
- consumption <2 VA
- output : 2 changeover switches and 2 normally open contact
μ 10 A - 250 V~ AC1

Functional characteristics

- annual cycle
- programming capacity : 300 program steps
- functioning precision : ± 0,2 sec / day

Environment

- working temperature : -10 at +45 °C
- storage temperature : -20 at +70 °C

Connection capacity :

0,75 to 2,5mm²

Main characteristics

• Programming

- Large display with programming instructions.
- 300 program steps (Basic weekly program, 9 sub-programs, specific program step, additional program step).
- Advanced functions :
 - Easter function : the clock calculates each year the new date of events linked to easter.
 - Day of the week function : the clock calculates each year the new date in order to match the day of the week (ex : 2nd Sunday of March)

• Automatic change summer / winter

pre-defined or customized settings

• Programming key (copy, save, override)

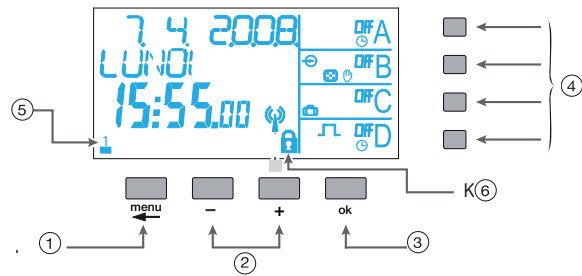
• Additional characteristics

- The output can be defined as ON, OFF, impulse or Cyclic operating.
- Hours counter on each output
- Key board locking via PIN code
- 1 button per channel for manual override (permanent, temporary or random)
- 1 input for external override (changeover, permanent ON or OFF, random, time limited..)

• Casing

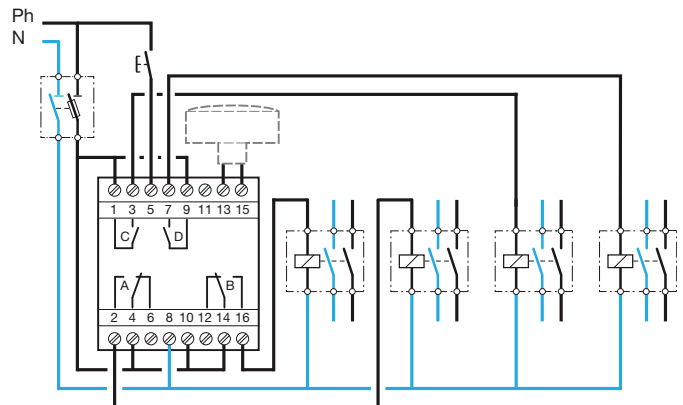
- 4 modules
- Connection with Quick Connect terminals.
- 2 changeover and 2 NO contacts (10A-AC1)

Presentation



- ① enter in program mode and return to previous step
- ② navigation and value setting
- ③ validation
- ④ manual override:
 - auto
 - random
 - temporary override
 - permanent override
- ⑤ selection of the days of the week:
 - 1 = monday
 - 2 = tuesday
 - ...
 - 7 = sunday
- ⑥ PIN number locking

Electrical connection



Description

These devices are made for automatic control of lighting in both the residential and private/public industry sectors. They automatically switch on lighting in case a person in movement is detected and light is needed.

They turn off the light after a preset duration.

EE820/821, EE830/831, EE840/841, EE825/826, EE827/828

- That waterproof detector range (IP55) is mainly dedicated to outdoor applications.
- They are equipped with Fresnel lenses that permit to get a high detection performance.
- Detector 140° for access control and perimeter lighting
- 200° models to survey a house facade
- 360° to cover a house corner
- The fixing accessories allow ceiling and corner mounting.

- Settings
- The timer and the lux level are set locally, via potentiometer.

EE804/805

- Movement detector for the automatic control of lighting in indoor circulating zones.
- Surface mounted (EE804) or flush fitting (EE805).
- Setting
- The timer and the lux level are defined via potentiometers
- Mounting of EE805
- Connecting system conform to false ceiling installation standards (cable clamp, fixing spring and protection cover)
- Surface mounting of EE804
- Connecting on a ceiling box or on mouldings thanks to side pre-cut outs compatible with tehalit.ateha ATA63000 (6 x 30) or ATA12200 (12x20)
- Output
- Potential free relay contact 10A
- Movement detector for the

automatic control of lighting in circulating zones. Surface mounted (EE804) or flush fitting (EE805).

These detectors switch ON when there is a need of light, it turns off the light after a define delay (set via potentiometer)

-Setting

The timer and the lux level are defined via potentiometers

- Mounting of EE805

Connecting system conform to false ceiling installation standards (cable clamp, fixing spring and protection cover).





- Surface mounting of EE804

Connecting on a ceiling box or on mouldings thanks to side pre-cut outs compatible with tehalit.ateha ATA63000 (6 x 30) or ATA12200 (12x20)

- Output

Potential free relay contact 10A

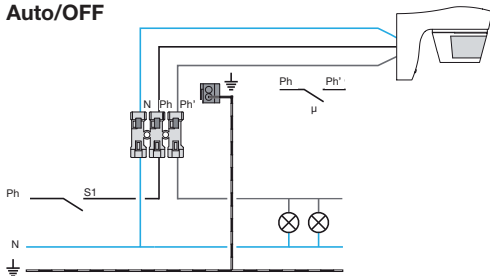
Complies to IEC 60 669-1 and 60 669-2-1.

	Designation	Characteristics	Pack qty.	Cat. ref.
 EE820	Detector surface 230 V ~ 50/60 Hz Lux: 5 to 1000 lux Timer: pulse, 5s to 15 min Contact 10A AC1	140° white	1	EE820
		140° anthracite	1	EE821
		200° white	1	EE830
		200° anthracite	1	EE831
		360° white	1	EE840
		360° anthracite	1	EE841
 EE825	Corner mounting accessory	white for EE820 / EE830	1	EE825
		anthracite for EE821 / EE831	1	EE826
		white for EE840	1	EE855
		anthracite for EE841	1	EE856
 EE827	Ceiling mounting accessory (except EE840 and EE841)	white	1	EE827
		anthracite	1	EE828
 EE804	Detector 360° surface IP21 diam. 105,5 white*	230 V ~ ± 10%, 50/60 Hz	1	EE804
		Fonctions : - 1 open contact 10 A - detection angle 360° Lux: 5 to 1000 lux Timer: 5 s. to 15 min.		
 EE805	Detector 360° flush IP21 diam. 105,5 white*	230 V ~ ± 10%, 50/60 Hz	1	EE805
		Fonctions : - 1 open contact 10 A - detection angle 360° Lux: 5 to 1000 lux Réglage tempo.: 5 s. to 15 min.		

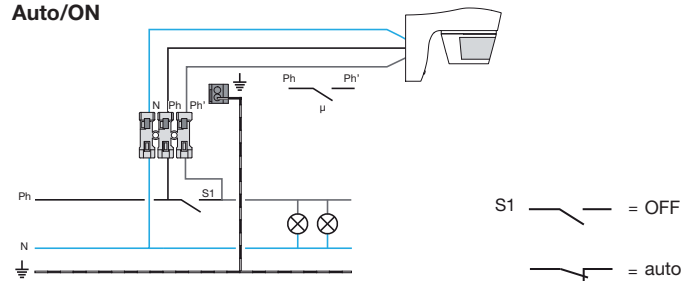
Technical characteristics

	EE820 / EE830 / EE840	EE821 / EE831 / EE841
Functional characteristics		
colours	white	anthracite
detection range	140° / 200° / 360°	
vertical head orientation	tilt 0 to 30°	
horizontal head orientation	pan ± 80°	
shutters	delivered with the products	
ceiling mounting	w/ accessory EE827 (except EE840)	w/ accessory EE828 (except EE841)
corner mounting (inner/outer corner)	w/ accessory EE825 (EE855 for EE840)	w/ accessory EE826 (EE856 for EE841)
Settings		
lux setting via potentiometer	5 to 1000 lux	
timer setting via potentiometer	pulse (1s ON, 9s OFF) or timer 5s to 15 min	
quick setting	auto/test position	
Electrical characteristics		
power supply	230V AC (+10% / -15%), 50Hz/60Hz	
output	10A AC1 , relay cutted phase	
Load type		
incandescent load	1500W	
VLV halogen lamps with conventional transformer	1500VA	
fluorescent tubes with parallel compensation C= 32µF	290W	
electronic ballast	580W	
fluocompact	10 x 20W	
Environment		
IP	55	
IK	04	
working temperature	-20°C to +55°C	
storage temperature	-20°C to +60°C	
Connection		
terminals	quickconnect with manual release	
terminals capacity	1,5 mm ² rigid wires	

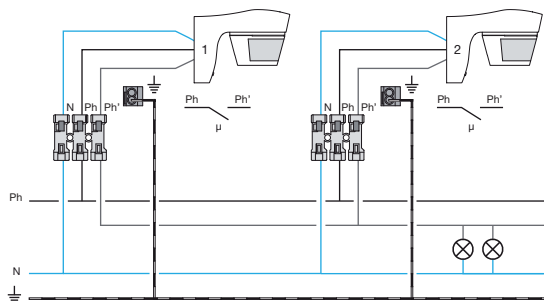
Auto/OFF



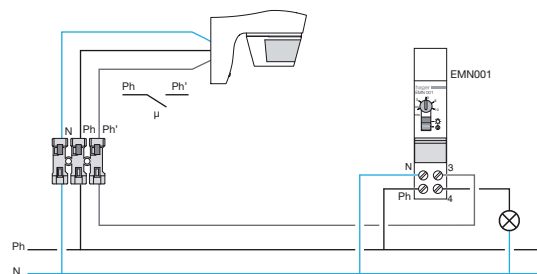
Auto/ON



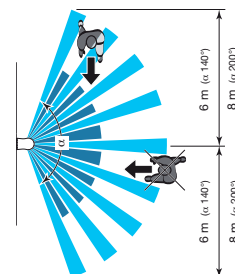
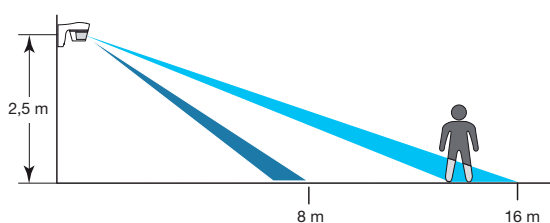
Detectors in parallel



Combination with a timelag



Detection zone



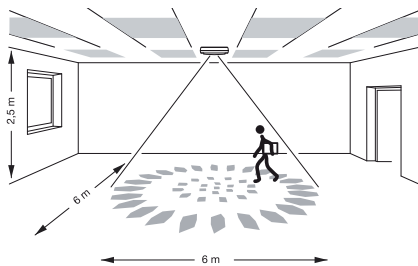
The optimal height of installation is 2,5 m. The detection field must remain free.

EE82x: α = 140°
EE83x: α = 200°

Technical specifications

	EE804	EE805
mounting	wall mounted	flush mounted
voltage supply	230 V AC	
frequency	50 Hz	
brightness level	5 to 1000 lux	
lighting output operating time	5 s. to 15 mn	
breaking capacity AC1	10 A	
- incandescent	1000 W	
- halogen 230 V	1000 W	
- halogen ELV via ferro.transfo.	500 VA	
- halogen ELV via electro.transfo.	500 VA	
- non compensated fluorescent tubes	1000 W	
- compensated fluorescent tubes	2 x 58 W or 3 x 36 W or 6 x 18 W	
- electronic ballast	8 x 58 W	
- fluocompact	10 x 20 W	
terminal capacity	1 to 2,5 mm ²	
IP	IP21 / IK03	
working temperature	0°C to + 45°C	
product dimension	EE804 : Ø 105 x p.54	EE805 : Ø 85 x p.80

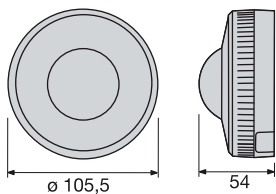
Detection area EE804 - EE805



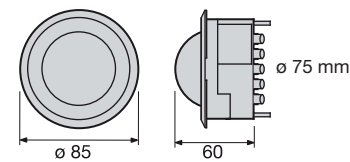
Mounting - Motion detectors 360° EE804 - EE805

ceiling mouting
They are particularly intended for use in interior traffic areas such as corridors, entrance halls...

Dimensions EE804

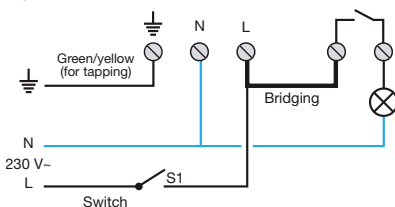


EE805



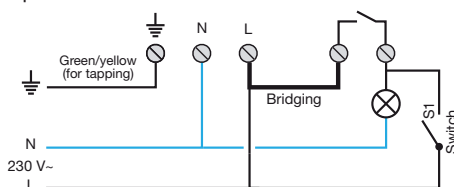
Electrical connections EE804

Operation Auto/OFF



S1 Open = stop
S1 Closed = automatic mode

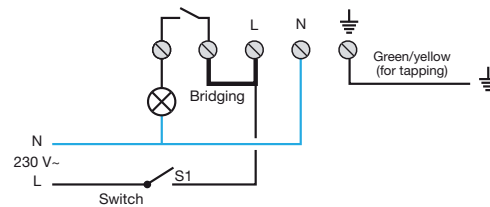
Operation Auto/ON



S1 Open = automatic mode
S1 Closed = permanent switch on

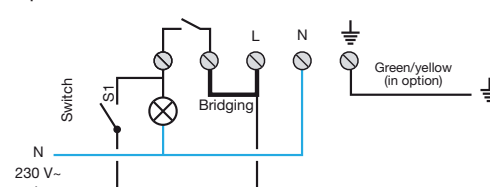
EE805

Operation Auto/OFF



S1 Open = stop
S1 Closed = automatic mode

Operation Auto/ON



S1 open = automatic mode
S1 closed = permanent switch on

Description

EE810, EE811 and EE812

High performance presence detector that will be used in premises or in passage areas, where they increase comfort and reduce drastically the energy costs.

Combination of a presence area and a motion area.

The presence area is especially interesting in offices, where the motion area may be used in long corridors.
Head rotation for detection area adjustment.
Settings via potentiometers.

Applications

EE810 - 1 channel detector

Direct control of a light load or

used as a slave for detection area enlargement.
Lux level and ON delay setting via potentiometers.
Test mode in order to set lux level and the detection pattern.

EE811 - 2 channels detector

Light relay output for direct control of a light load.
Presence output potential free relay.
Lux level, on delay setting for light channel and presence channel via potentiometers.
Input for slave (EE810) and/or derogation push button.

EE812 - Light regulator 1/10V

Light regulator with 1/10V output in order to control electronic

ballasts and/or Hager dimmers EV100/EV102. Detector especially dedicated for energy saving and comfort purpose.
Input for slave (EE810) and/or derogation pushbutton in order to modify the setpoints.
Lux level, On delay for light channel and min level via potentiometers.
3 functional modes :
no regulation, regulation with local setpoint, regulation with remote setpoint.

EE813 : accessory to surface mounting.

Complies with IEC 60 609-1 and 60 669-2-1.

Designation	Characteristics	Pack qty.	Cat. ref.
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EE810

Presence detector 1 channel <ul style="list-style-type: none"> • relay output light channel - lux level and on delay (duration or pulse) defined via potentiometers • Slave output for association with EE811/EE812 - Lux OFF 	230V~ 50Hz μ16A AC1 triac output 0.8A	1	EE810
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Presence detector 2 channels <ul style="list-style-type: none"> • Relay output light channel - lux level and On delay define via potentiometers - input slave / derogation - 230V input used with push button to toggle the light channel state or with slave in order to enlarge the detection area • Relay output presence channel - on delay presence defined via potentiometer 	230V~ 50Hz μ16A AC1 230V input 50Hz μ2 A AC1	1	EE811
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Presence detector 1/10V <ul style="list-style-type: none"> • Relay output used to switch ON/OFF the electronic ballast • 1/10V output used to control an electronic ballast or Hager dimmers EV100/EV102 • 230V input used with push button to toggle the channel or change the setpoint or with slave in order to enlarge the detection area • 3 functional modes defined via potentiometers mode 1 : no regulation mode 2 : regulation with local setpoint via potentiometer mode 3 : regulation with setpoint defined via a remote push button 	230V~ 50Hz μ10 A AC1 1/10V 50mA 230V input 50Hz	1	EE812
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EE813

Accessory mounting accessory for surface mounting can be used with EE810, EE811, EE812		1	EE813
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Description

High performance presence detector that will be used in premises or in passage areas, where they increase comfort and reduce drastically the energy costs.
Settings via potentiometers or via remote control EE807

EE815 - presence detector

ON/OFF
Direct control of a light load
Lux level and ON delay settings

EE816 - presence detector for light regulation

3 functional modes
DALi/DSI bus output

Customer remote control EE808 for override operation.

Designation	Characteristics	Pack qty.	Cat. ref.
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EE816

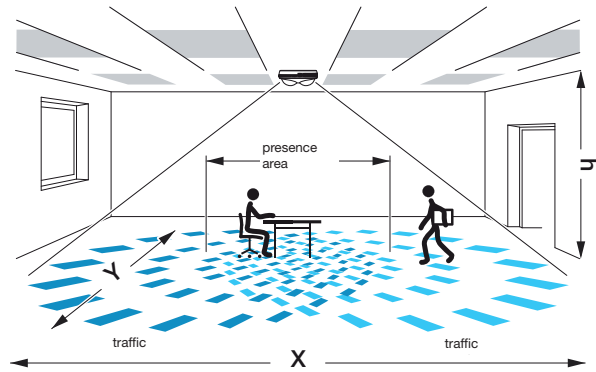
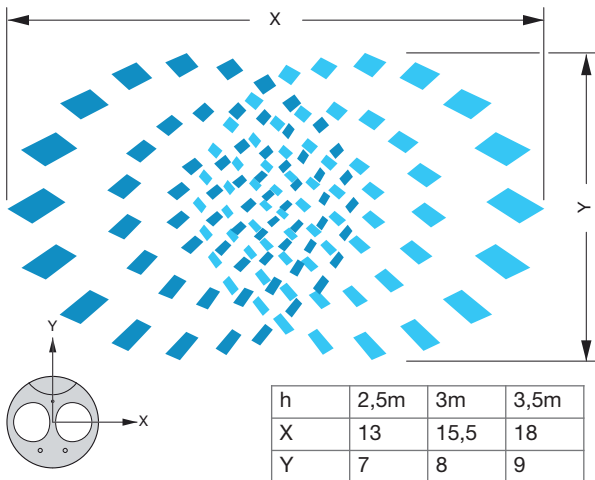
Presence detector monobloc on/off	switched phase 16A AC1 230V power supply: 230V AC detection angle 360°	1	EE815
Presence detector monobloc DALi/DSI for lighting regulation	DALi/DSI bus power supply: 230V AC detection angle 360°	1	EE816



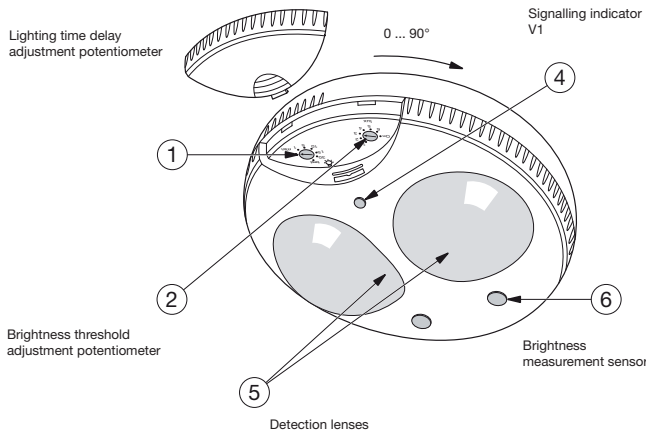
EE807

Remote control for the settings	infra red remote control	1	EE807
Remote control for the customer	infra red remote control	1	EE808

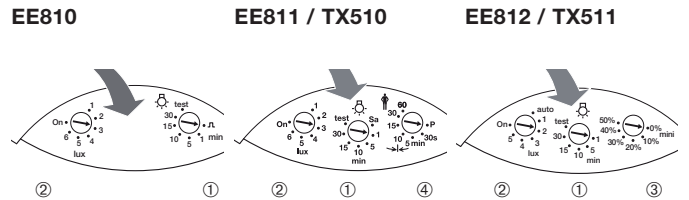
EE810/EE811/EE812
detection areas



Description



Adjustment potentiometers



- ① on delay ② light regulation
- ③ residual lighting ④ time delay with the interlocking (output 2)
- mode 1 :** potentiometer > 10 s = time delay with the interlocking **15 min** (use : correction of the setpoint, heating, etc.)
- mode 2 :** potentiometer ≤ 10 s = time delay with the interlocking **15 s** (use : ventilation/ventilation, synoptic lighting, ...)

Technical specifications

References	EE810	EE811	EE812
Type	presence detector	presence detector	presence detector
	1 channel	2 channels	1/10V
Supply voltage	230V~ +10%/-15% / 50Hz		
Settings	potentiometer : auto (400 Lux) 5 to 1200 Lux, OFF		
output brightness 1/3	potentiometer : 1 - 30 min, test, impulsions (EE810)		
output temporisation 1	potentiometer : 30 s - 1 h		
output temporisation 2/3			
residual brightness	-	-	Potentiometer 0-50%
Breaking capacity			
output 1 (lighting)	16 A AC+, incandescent lamps, halogen: 1500W flu with electronic ballast: 580W flu parrallel compensated: 290W/32µF		10A AC1
output 2 (presence)	-	2A AC1	
output 3 (brightness setting)	-	-	1-10V current : 50 mA
Input command 50 m max.	-	230V commutation	230V commutation / dimming
LED	OFF, auto, ON : movement/test		
Power consumption	1,2 W	1,1 W	1 W
Ingress protection	IP41		
Connection	1 - 4mm ²		
Temperature	storage: -10°C to +60°C working: 0°C to +45°C		

Test mode :

this mode makes it possible to validate the detection area :

- potentiometer ① in position "test"
- indicator V1 - ④ will indicate any detection by lighting for one second if the level of illumination is lower than the preset threshold. This lighting output S1 is not controlled in this mode, the time settings will remain ignored.

Instances of lighting levels

position of potentiometer	Lux value	Application
1	5	-
2	100	corridor
3	200	corridor, WC
4	100	VDU work
5	500	offices
6	800-1200	classrooms laboratory
ON	measurement of brightness @inhibited	

regulation set point is set at 400 Lux

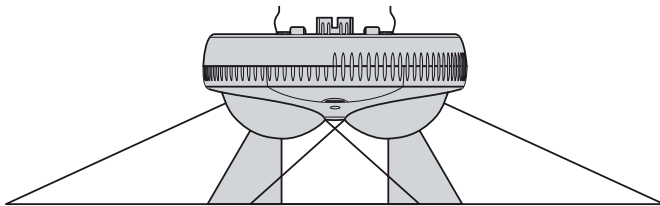
Lighting measurement

In addition to one density of higher detection, the difference between one presence detector and a conventional detector of movements reside at the level of their principle of detection. The detector of movements will be activated in the event of detection of movements in the darkness. If the latter is transformed into lighting during the capture, the detector of movements will not extinguish however the light. One presence detector must be able to fill of such tasks and to make the difference between the natural and artificial light.

The measurement of lighting carried out since the ceiling can be different from the measured lighting, because it will be influenced by the provision of the windows, the form and the reflective properties of the walls and the pieces of furniture, etc measurement moreover will be delayed in order to avoid inopportune commutations.

Presence detection

based on a solution patented by Hager, the optical part presence detection rests on a double lens making it possible to obtain a zone of rectangular capture of form. The head of the detector can also swivel to adjust the detection zone. The latter is subdivided in two sections equipped with a density higher than the center and a density to reduce in the direction length. in the offices, these detectors should thus be assembled directly above the places of work, resp. in the direction length for an installation in corridors (zones of circulation).



movement detection	presence detection	movement detection
13 x 7 m (installation max. high 2,5 m)		

Detection zone

Covering a rectangular detection zone of 13 x 7m, the Hager presence detectors represent an ideal solution for the offices, classrooms, toilets, corridors, markets and garages. In the event of assembly of two detectors in order to increase the range of detection, it is then recommended to respect a zone of covering of approximately a meter. Only two detectors will be thus necessary to cover a 25m length market. A possibility of circuit Master/Slave exists for the commutation of only one group of luminaries. The presence detector principal one (Master : EE812 or EE811) measurement the lighting and the presence, then commutates and controls the electric consumers. Auxiliary presence detectors (Slave : EE810) detect only the presence and will presence detector announce this one to principal, which will carry out commutation then by taking account of the lighting. The diagrams of wiring are illustrated in the respective instructions.

Assembly

The behavior of commutation will be determined by the passage of people in the zone of capture of the detector. In exceptional cases, an inopportune commutation can be caused by various influences. The sources of potential parasites should already be evaluated during the study of the project, resp. eliminated before the assembly.

Obstacles decreasing the range of the detector :

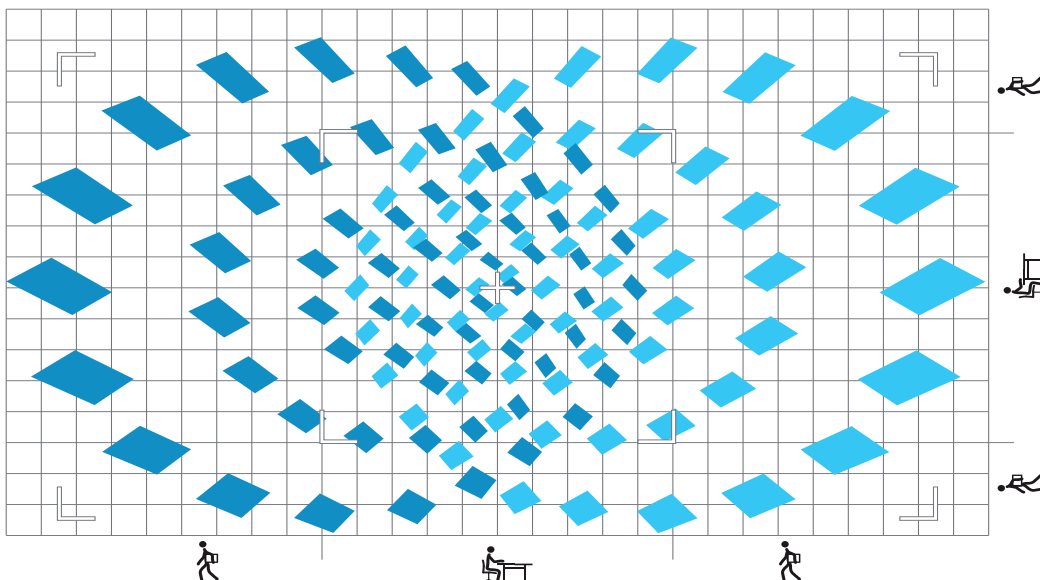
- the partition walls, plants or racks, etc can limit the range of detection.

Simulated movements :

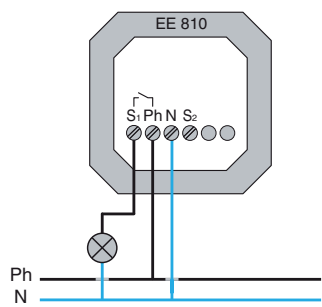
- the presence detectors capture fast modifications of temperature in the environment of the detector as being movements, for example at the time of or the stop starting of lowers with hot air, ventilators etc when the flow of air is directed directly on the lenses or of the objects near the zone of capture of the detector.
- objects being heated slowly do not have a negative influence and do not cause inopportune commutation. A side distance > 0,5m should however be respected. Proximity of the conduits of heating and the bodies of radiators.
- luminaries switching on themselves and dying out near the zone of detection can simulate a displacement (p e.g of the lamps incandescence or halogen located at a distance < 1m).
- objects moving such as mobile machines, robots, posters can also cause an inopportune detection.

Detection zone - scale 1:100

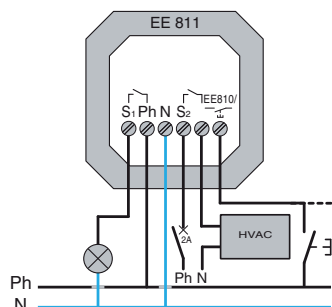
assembly height 2,5 m



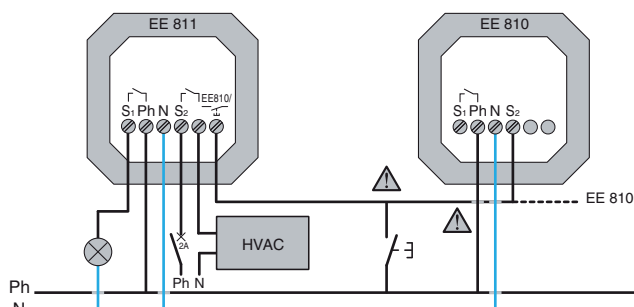
EE810



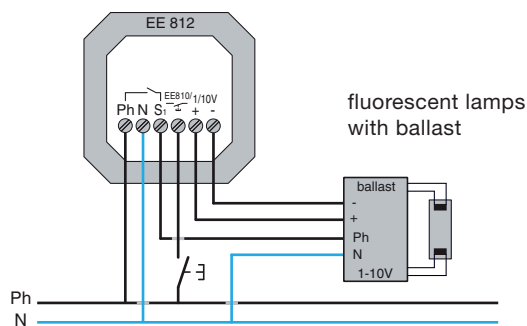
EE811



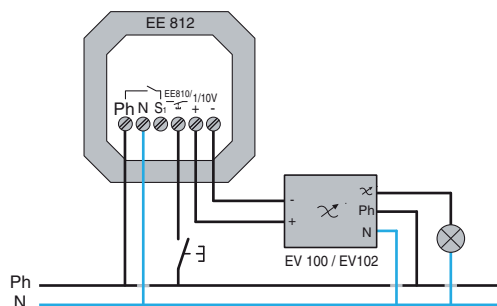
EE811 Master + EE810 Slave



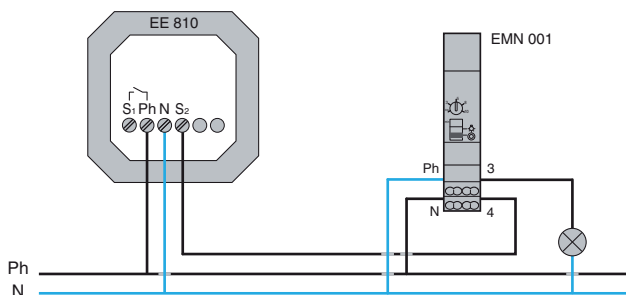
EE812 + ballast, EE812 + EV100 / EV102



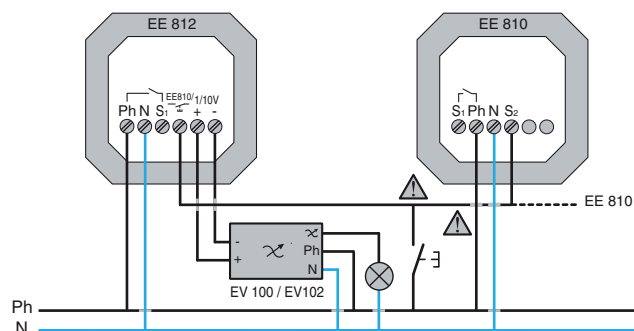
fluorescent lamps with ballast



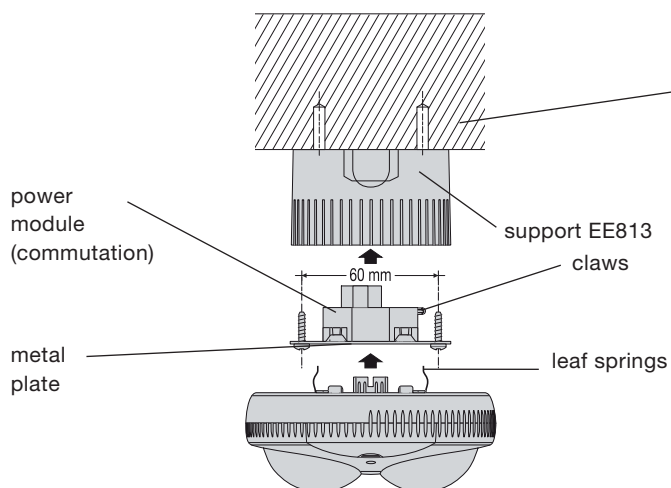
EE810 + EM001N / EM003



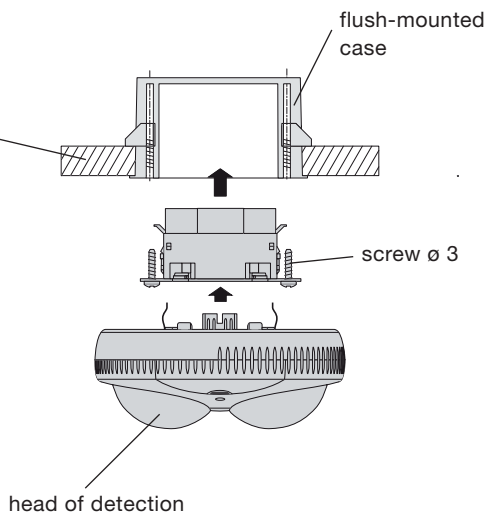
EE812 Master + EE810 Slave



Apparent assembly



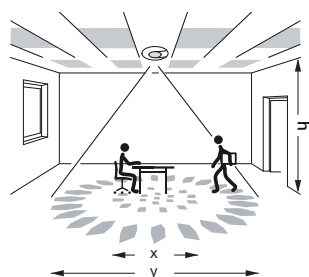
Flush-mounted assembly



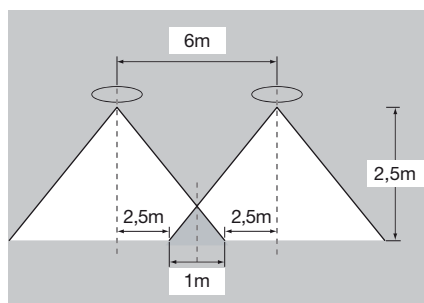
Technical characteristics

	EE815	EE816
detection range	motion area: diameter 7m (product installed at 2,5m height) presence area: diameter 5m (product installed at 2,5m height)	
supply voltage	230 V AC +10% -15%	
frequency	50/60 Hz	
local lux threshold setting	5 to 1000 lux	3 modes available
local time setting	1 min to 1 hr	
commissioning via installer remote control	EE807 for power up, absence / presence mode, timer, active / passive cell	EE807 for power up, absence / presence mode, timer, active / passive cell
control with IR user remote control	EE808 for ON/OFF override	EE808 for ON/OFF override and dimming up/down
output	16A AC1 relay output (cut live): - 2300W incandescent or 230V halogen: > 26000 cycles - 1500W VLV halogen lamps with ferromagnetic or electronic transformer: > 35000 cycles - 1000W / 130 µF parallel compensated fluo tubes: > 50000 cycles - 23 x 23W fluo-compact with electronic ballast: > 20000 cycles	14V / 50mA (for a DALI bus with 24 ballasts) - No isolation between the mains and the DALI bus !
push button input	phase input for absence / presence detection (semi-automatic / automatic mode) same phase as power supply	to dim up / down and absence / presence detection (semi-automatic / automatic mode) same phase as power supply
terminals	for 1,5mm ² rigid / flexible wires	
power dissipation	300mW	60mW
isolation class	II	
protection	IP41 / IK03	
operating temperature	-10°C to +45°C	
storage temperature	-20°C to +60°C	
standards	IEC 60669-1, IEC 60669-2-1	

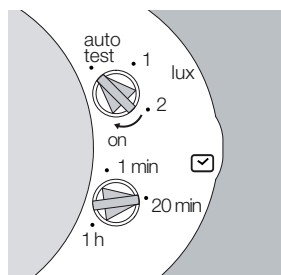
Detection areas



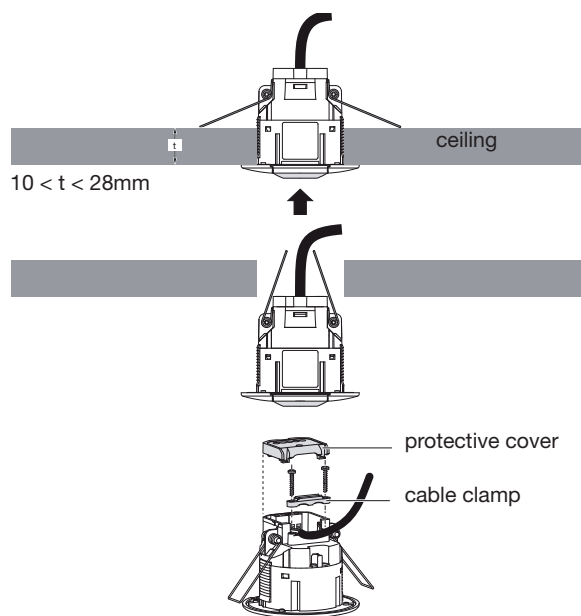
h	2,5m	3m	3,5m
x	5m	5m	5m
y	7m	8m	9m



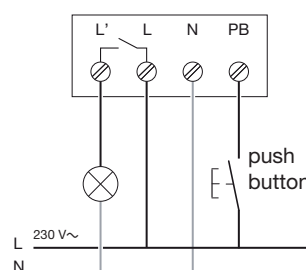
Settings EE815 / EE816



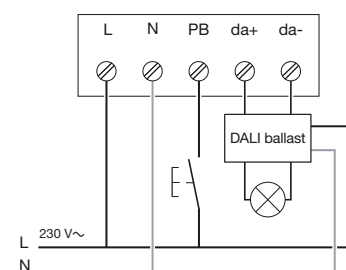
Mounting



Wiring diagram EE815



Wiring diagram EE816



Description

An integrated microprocessor guarantee a permanent adjustment for the detection sensitivity of the ambient conditions variations.

Advantages: a longer lifespan, a permanent reliability (more than ten years operation) and a minimum risk of false alarm.

Your benefits



- Signal processing technology, self-diagnostic every 10 seconds
- Additional optical signal: permanent white indicator turns on in the event of smoke detection

- Standalone unit: detector and alarm run in an autonomous way according to the optical diffuse light process
- Sound indication of power supply fault or clogged detection head, with automatic dispensation function in case of darkness in the room. An integrated photoelectric cell delays the warning for 12 hours to respect the sleep
- Red led indicator signalling smoke detection
- Anti-dust hood to prevent dirt
- Possibility of temporary disconnecting (15 min.)
- Flexibility: can be used as a

standalone unit or inter-connected in a wired network of up to 40 detectors

- Strength: large operating temperature range: from -10° to +55°C
- Locking to prevent unauthorized removal of the detector (offices, schools, locative buildings...)
- Power supply: 9V battery or 230V~/9V battery

Complies with standard: DIN EN 14604

	Designation	Characteristics	Pack qty.	Cat. ref.
 <p>TG500A</p>	Battery powered smoke detectors 9V alkaline battery battery life: approximately 4 years. possibility of using Ultralife lithium battery with approximately 10 years lifespan	white	1	TG500A
		silver	1	TG500B
		brown	1	TG500C
		Mains powered smoke detectors 230V~/ 9V alkaline battery battery life: approximately 10 years. (no lithium battery)		
 <p>TG500B</p>		white	1	TG501A
		silver	1	TG501B
		brown	1	TG501C

Description
 This product system uses radio waves to send operating order to devices for domestic or tertiary applications.






It controls:
 - electrical circuits from the switchboard
 - automation devices such as:
 - lighting

- thermostat
- roller shutters and blinds
- garage doors

It is composed of:
 - 3 remotes
 portable device for sending operating orders to receivers
 - a receiver
 inside the switchboard
 - 2 output modules

with potential-free AC1 16A contacts
 - a radio receiver
 with one 16A output contact

Controls:
 - ON
 - OFF
 - ON/OFF (latching relay)
 - monostable (push button)

Designation	Characteristics	Width in mm	Pack qty.	Cat. ref.
 TU202	Remote control (RF) - frequency: 433 MHz - transmission security: open-ended encoding and Hager encryption - 3V lithium cell power - range in a free field: TU202: 50 m max. TU204, 209: 100 m max. - IP30	Key ring type: 2 buttons, 2 inputs - with battery - attaches to key ring 4 buttons, 4 inputs - with battery - wall mounting bracket	1	TU202
 TU204		8 buttons, 3 channels, 24 inputs - with battery - wall mounting bracket	1	TU209
 TU301	Radio receiver 1 channel, IP55	contact rating AC1 16A - 250V~	1	TU301
 TU350	Radio receiver - receives orders from the remotes - transmits the orders to the switchboard output modules TU302 and TU304	power supplied by TU302 ou TU304 wall mounted with 4 screws	1	TU350
 TU304	Output module Controls: - ON, - OFF, - ON / OFF (latching relay), - monostable (push button)	potential-free AC1 16A contacts 230 V ~ 50 Hz 2 channels 4 channels	6 6	1 1 TU302 TU304

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