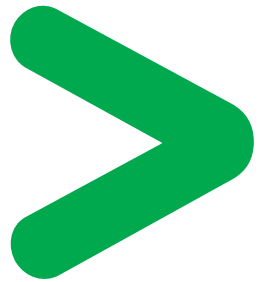
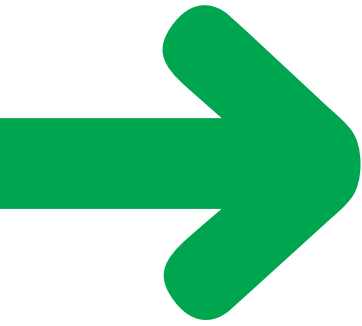


# Acti 9

Ready to install  
Distribution and  
control products





# Introduction

Schneider Electric's Ready to Install offer brings together the company's range of solutions for the distribution, protection, control and management of electrical systems. As a global specialist in energy management, Schneider Electric offers integrated solutions making energy safer, more reliable, efficient and productive.

The Ready to Install offer includes a comprehensive range of distribution boards, panel boards, switchgear, protection devices, control and command solutions, metering and measurement products and Integrated Installation Solutions.

Our products are highly compatible and complement each other, allowing you to provide your customers with integrated, tailored solutions. For easy identification, products previously known under the Merlin Gerin and Mita brands are now being labelled as Schneider Electric so customers can spot our quality solutions at a glance.

Whether you're specifying equipment for a major project or buying a selection of components for a simple maintenance installation, our range is unequalled. When you choose a system bearing our name you have the reassurance it is of the highest quality. Wherever you are located and whatever your need, we are committed to meeting your requirements.

The Ready to Install offer now includes our award winning Acti 9 product range, winner of Select's Best New Product category.





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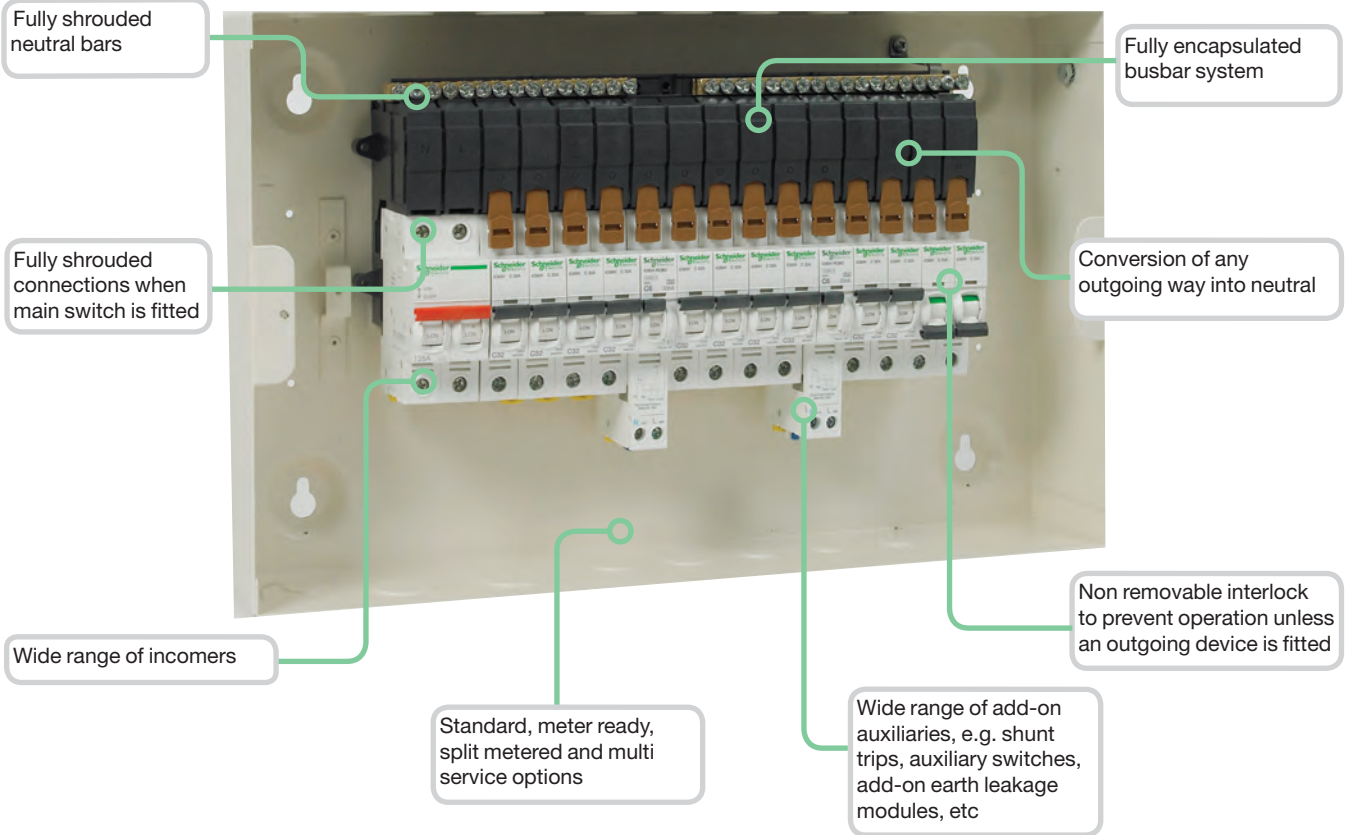
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## Acti 9 Isobar A type single phase distribution boards

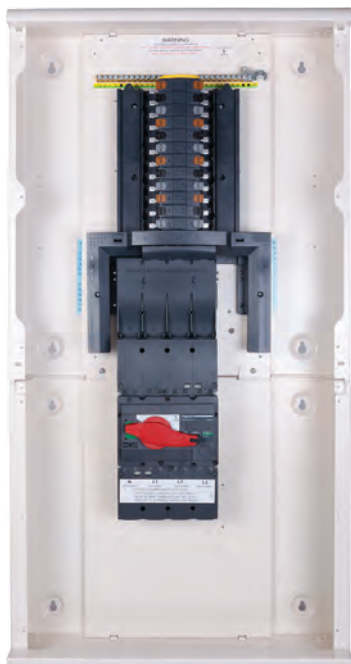
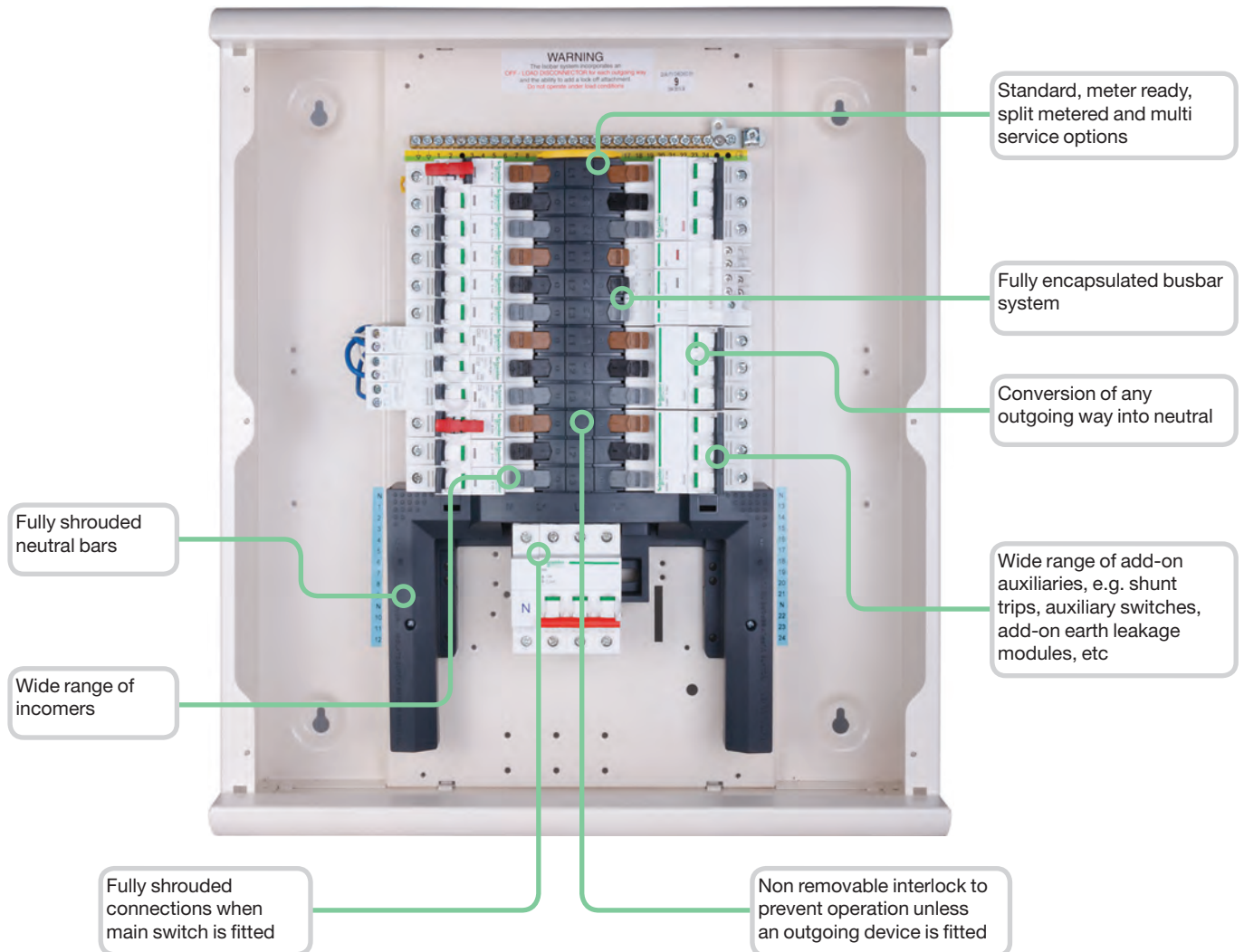
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- Fully type tested conditional short circuit rating of 16kA to BS EN 61439-3
- High performance MCB 10kA BS EN 60898 15kA BS EN 60947-2 in B, C or D curve single and double pole
- 125A busbar rating
- Isobar disconnection to BS EN 60947-3 ensuring unused outgoing ways are isolated
- Option of switching outgoing neutral on all boards using distributed neutral kit
- Terminal block for feeding up to 100A
- Range of incomers: switch disconnectors, residual current devices, terminal blocks
- Single pole RCBO for new or retrofit maintaining device density
- Full range of device accessories and auxiliaries
- Knockouts for cable gland and conduit mixed to suit the installation needs without loss of space
- Split metering options

## Acti 9 IsoBar B type 3 phase distribution boards

1



- Fully type tested conditional short circuit rating of 25kA to BS EN 61439-3
- High performance MCB 10kA BS EN 60898 15kA BS EN 60947-2 in B, C or D curve 1, 2, 3, 4 pole
- 250A busbar rating
- Isobar disconnection to BS EN 60947-3 ensuring unused outgoing ways are isolated
- Option of switching outgoing neutral on all boards using distributed neutral kit
- Terminal block for feeding up to 100A
- Range of incomers: switch disconnectors, residual current devices, terminal blocks, mccb
- Single pole RCBO for new or retrofit maintaining device density
- Full range of device accessories and auxiliaries
- Knockouts for cable gland and conduit mixed to suit the installation needs without loss of space
- Removable insulated pan assembly
- Fully shrouded neutral
- Split neutral bars
- Removable gland plates
- Optional metering, dual supply, surge protection and contactor on incoming
- Metered extension enclosures



BS EN 61439-3

IEC 61439-3

- Acti 9 Isobar is a complete range of single and 3 phase distribution boards for commercial and industrial applications
- Standard distribution boards up to 24 ways
- Multi service distribution boards up to 24 ways
- Dual incomer distribution boards up to 24 ways
- Split load distribution boards up to 24 ways
- Split metered distribution boards up to 20 ways
- Any outgoing way can be converted to switch the Neutral



Alternating current (AC) 50Hz

withstand	110v	230/240v
conditional	25kA	25kA
unconditional	25kA/50mS	25kA/50mS
	17kA/200mS	17kA/200mS

Direct current (DC)

	24v	48v
unconditional	25kA/50mS	25kA/50mS

Catalogue numbers

Acti 9 Isobar Standard distribution boards busbar rating 125 amp

Incomers not included	No of SP ways	No of DP ways*
SEA9AN2	2	1
SEA9AN6	6	3
SEA9AN10	10	5
SEA9AN14	14	7
SEA9AN18	18	9
SEA9AN27	27	12

\*When used with distribution neutral

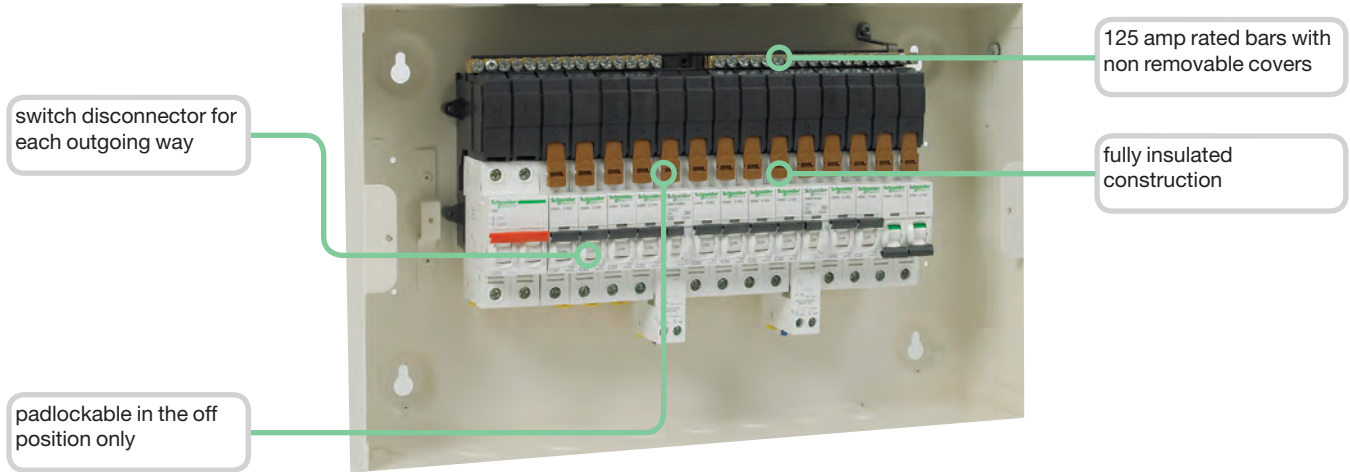


Acti 9 Isobar Multi service distribution boards busbar rating 125 amp

Incomers not included	No of SP ways	Useable DIN rail 9mm ways
SEA9AN108MS	10	8
SEA9AN1432MS	14	32
SEA9AN616MS	6	16
SEA9AN624MS	6	24
SEA9AN148MS	14	8

Acti 9 Isobar Split load distribution boards busbar rating 125 amp

Incomers not included	Unprotected way	Protected ways
SEA9AN96SL	9	6
SEA9AN510SL	5	10
SEA9AN56SL	5	6



Technical data Standard, Meter ready, Split metered Acti 9 Isobar

Main characteristics		110v	230/240v	
<b>According to BE EN 61439-3</b>				
Withstand	conditional	25kA	25kA	
	unconditional	25kA/50mS	25kA/50mS	
		17kA/200mS	17kA/200mS	
insulation voltage (Ui)		500V	500V	
Pollution degree		3	3	
Rated inpulse withstand voltage (Uimp)		6kV	6kV	
Current rating (A)	direct connection	125A	Terminal block	
	Switch disconnecter	125A	Power switch	
	RCCB sensitivities (mA)	30, 100, 300, 300TD, 100A		
Degree of protection (IEC 60529)		External IP30 Internal IP20		
Endurance (O-C) Isobar switch disconnecter		3000		
Overvoltage category		IV		
Operating temperature		-35 to +70°C		
Storage teperature		-40 to +80°C		
Connections				
Rating	Tightening torque	Copper lugs	Cables bare	Device
125 amp		■	50mm	DIN switch disconnecter
125 amp		■	50mm	Terminal block
100 amp		■	35mm	RCCB



Acti 9 Isobar Dual supply distribution boards busbar rating 125 amp

Incomers not included	Unprotected way	Protected ways
SEA9AN106DS	10	6
SEA9AN26DS	2	6
SEA9AN66DS	6	6

Acti 9 Isobar Split metered distribution boards busbar rating 100 amp direct connected meters

Incoming switch disconnecter included	Meter type	No of SP ways	No of SP ways
SEA9AN6S6	40A direct connected	6	6
SEA9AN10S10	63A direct connected	10	10
SEA9AN14S14	63A direct connected	14	14

Total load 2 row 50A per row  
1 row 40A per split

1

### Weight (kG) - Dimensions (mm)

Standard	Multi service	Split load	Dual Incomer	Split metered	kG	Height	Width	Depth
2 way	■	■	■	■	1.8	300	200	117
6 way	■	■	■	■	2.5	300	273	117
10 way	■	■	2 - 6	■	3.0	300	345	117
14 way	6 - 16, 10 - 8	5 - 6	6 - 6	■	4.8	300	417	117
18 way	6 - 24, 10 - 16, 14 - 8	5 - 10, 9 - 6	10 - 6	6 - 6	5.7	300	489	117
27 way	14 - 32	10 - 10, 14 - 14	■	10 - 10	8.9	530	417	117

SEA91252



SEA9R1263



SEA9TB1252



### Incomers

Switch disconnector		Rating (A)	No of poles
SEA91252		125	2
Residual current circuit breaker 230/240vAC		Rating (A)	No of poles
Sensitivity (mA)			
SEA9R41263	30	63	2
SEA9R12263	100	63	2
SEA9R44263	300	63	2
SEA9211280	30	80	2
SEA9R12280	100	80	2
SEA9R14280	300	80	2
SEA9R15280	300 TD	80	2
SEA9R11291	30	100	2
SEA9R12291	100	100	2
SEA9R14291	300	100	2
SEA9R15291	300 TD	100	2
Terminal block		Rating (A)	No of poles
SEA9TB1252		125	2

### DIN rail only enclosures

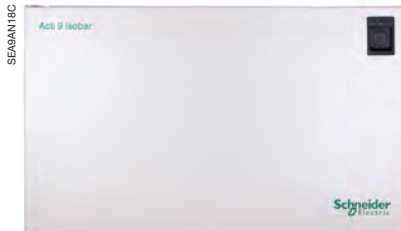
Reference	Description	Number of rows	Dimensions as
SEA9DE16	8 SP way module enclosure	1	SEA9AN6
SEA9DE24	12 SP way module enclosure	1	SEA9AN10
SEA9DE32	16 SP way module enclosure	1	SEA9AN14
SEA9DE40	20 SP way module enclosure	1	SEA9AN18
SEA9DE64	32 SP way module enclosure	2	SEA9AN27



Accessories

Flush mounting kits		
Reference		No of ways
SEA9AN6FK	Flush mounting kit	6
SEA9AN10FK	Flush mounting kit	10
SEA9AN14FK	Flush mounting kit	14
SEA9AN18FK	Flush mounting kit	18
Distributed neutral kits		
Reference		No of ways
SEA9NA6	Distributed neutral for 6 way SP+N	6
SEA9NA10	Distributed neutral for 10 way SP+N	10
SEA9NA14	Distributed neutral for 14 way SP+N	14
SEA9NA18	Distributed neutral for 18 way SP+N	18
SEA9NA27	Distributed neutral for 27 way SP+N	27
SEA9NKIT	Phase to neutral conversion kit (pack 4)	
Reference	Description	
SEA9BL	Door lock	
SEA9PD	Padlock kit for door	
SEA9BP	Blank pole	
SEA9BP25	Pack of 25 x 5 pole filler	
SEA9BP5	single 5 pole filler	
SEA9TB1001	100 amp terminal block 1 pole	
SEA9ANWL	SP&N LABELS	

Acti 9 Isobar A type pan assemblies					
Reference		No of ways	Height	Width	Depth
SEA9AN6PS	Supplied without distributed neutral	6	202	200	87
SEA9AN10PS	Supplied without distributed neutral	10	202	272	87
SEA9AN14PS	Supplied without distributed neutral	14	202	344	87
SEA9AN18PS	Supplied without distributed neutral	18	202	416	87



Doors and covers	
Reference	
SEA9AN6C	6 way door and cover
SEA9AN10C	10 way door and cover
SEA9AN14C	14 way door and cover
SEA9AN18C	18 way door and cover
SEA9AN27C	27 way door and cover



### BS EN 61439-3 IEC 61439-3

- Acti 9 Isobar is a complete range of single and 3 phase
- distribution boards for commercial and industrial applications
- Standard distribution boards up to 24 ways
- Meter ready distribution boards up to 24 ways
- Split metered distribution boards up to 22 ways
- Any outgoing way can be converted to switch the Neutral

#### Alternating current (AC) 50Hz

withstand	230/240v	400v	415v
conditional	25kA	25kA	25kA
unconditional	25kA/50mS	25kA/50mS	25kA/50mS
	17kA/200mS	17kA/200mS	17kA/200mS

#### Direct current (DC)

	24v	48v	
unconditional	25kA/50mS	25kA/50mS	

### Catalogue numbers

#### Acti 9 Isobar Standard distribution boards busbar rating 250 amp

	No of TP ways	No of SP ways	No of DP ways*
SEA9BN4	4	12	6
SEA9BN6	6	18	9
SEA9BN8	8	24	12
SEA9BN12	12	36	18
SEA9BN16	16	48	24
SEA9BN18	18	54	26
SEA9BN24	24	72	36

#### Acti 9 Isobar Meter ready distribution boards busbar rating 250 amp

	No of TP ways	No of SP ways	No of DP ways
SEA9BN6M	6	18	9
SEA9BN8M	8	24	12
SEA9BN12M	12	36	18
SEA9BN16M	16	48	24
SEA9BN18M	18	54	26
SEA9BN24M	24	72	36

\*Metering kits page 1/10

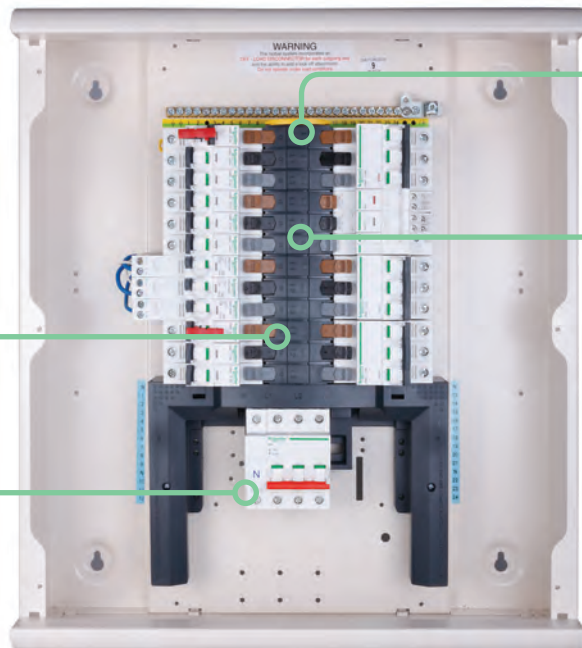
#### Acti 9 Isobar Split metered\* distribution boards busbar rating 125 amp switch disconnector fitted

	Lower pan assembly No of TP ways	No of SP ways	Upper pan assembly No of TP ways	No of SP ways
SEA9BN1254S8	6	18	8	24
SEA9BN1256S8	8	24	8	24
SEA9BN12512S8	14	42	8	24
SEA9BN12514S6	16	48	6	18
SEA9BN12516S4	18	54	4	12

#### Acti 9 Isobar Split metered\* distribution boards busbar rating 250 amp - incomer supplied separately

	Lower pan assembly No of TP ways	No of SP ways	Upper pan assembly No of TP ways	No of SP ways
SEA9BN25012S8	14	42	8	24
SEA9BN25014S6	16	48	6	18
SEA9BN25016S4	18	54	4	12

\*MID 3 Phase kWh kit Modbus communications and pulsed output

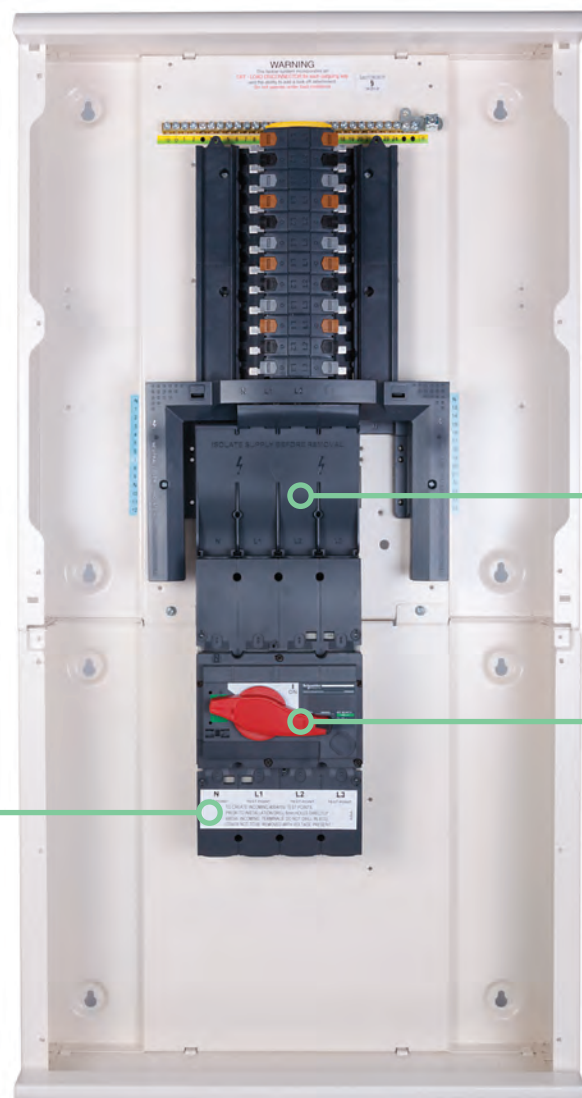


250 amp rated bars with non removable covers

fully insulated construction

interlocked switch disconnecter for each outgoing way

padlockable in the off position only



fully shrouded connections

padlockable handle

voltage test points

1

Metering kits				
Acti 9 Standard distribution boards			Rating (A)	Connection
SEA9BNKWH	MID 3 Phase kWh kit Modbus communications and pulsed output	Height 270 (mm)	250	via CT
SEA9BNKWHP	MID 3 Phase kWh kit pulsed output	Height 270 (mm)	250	via CT
SEA9BNMETE	Metering enclosure for standard Acti 9 Isobar boards for PM meters	height 270 (mm)	250	via CT
Acti 9 Meter ready distribution boards			Rating (A)	Connection
SEA9BN3155	MID 3 Phase kWh kit Modbus communications	Integral	63	direct
SEA9BN3110	MID 3 Phase kWh kit pulsed output	Integral	63	direct
SEA9BN3255	MID 3 Phase kWh kit Modbus communications	Height 135 (mm)	125	via CT
SEA9BN3210	MID 3 Phase kWh kit pulsed output	Height 135 (mm)	125	via CT

Incomers for 250 amp split metered boards			
Supplied with connections and less enclosure		Rating (A)	No. of poles
SEA9NCB1604SM	160A 4P MCCB for A9 split meter board	160	4
SEA9NCB2004SM	200A 4P MCCB for A9 split meter board	200	4
SEA9NCB2504SM	250A 4P MCCB for A9 split meter board	250	4
SEA9NI1604SM	160A 4P Switch for A9 split meter board	160	4
SEA9NI2004SM	200A 4P Switch for A9 split meter board	200	4
SEA9NI2504SM	250A 4P Switch for A9 split meter board	250	4

### Connections

Rating	Copper lugs	Bare cables	Device
125 amp		50mm	DIN switch disconnecter/Terminal block
		95mm with spreader connection	Interpact DIN Switch Disconnecter
160 -250 amp	95mm	185mm with cable clamps	Interpact Switch Disconnecter
	95mm	185mm with cable clamps	NSX Moulded case circuit breaker
	120 mm		Terminal block

### Technical data Standard, Meter ready, Split metered Acti 9 Isobar

Main characteristics		230/240v	400v	415v
Withstand	conditional	25kA	25kA	25kA
	unconditional	25kA/50mS	25kA/50mS	25kA/50mS
		17kA/200mS	17kA/200mS	17kA/200mS
Insulation voltage (Ui)		500vAC	500vAC	500vAC
Pollution degree		3	3	3
Rated impulse withstand voltage (Uimp)		6kV	6kV	6kV
Current rating (A)	direct connection	125/250	6kV	6kV
	Switch disconnecter	125	DIN mounted Power switch	
	MCCB	160-200-250	Interpact	
Degree of protection (IEC 60529)		External IP30 or IP55		
		Internal IP20		
Endurance (O-C) Isobar switch disconnecter		3000		
Overvoltage category		IV		
Operating temperature		-35 to +70°C		
Storage temperature		-40 to +80°C		



### Main characteristics Acti 9 Isobar IP55

According to BE EN 61439-3		230/240v	400v	415v
Withstand	conditional	25kA	25kA	25kA
	unconditional	25kA/50mS	25kA/50mS	25kA/50mS
		17kA/200mS	17kA/200mS	17kA/200mS
Insulation voltage (Ui)		500vAC		
Pollution degree		3		
Rated inpulse withstand voltage (Uimp)		6kV		
Current rating (A)		125A		
Degree of protection (IEC 60529)		External IP55 Internal IP20		
Endurance (O-C) Isobar switch disconnecter		3000		
Overvoltage category		IV		
Operating temperature		-35 to +70°C		
Storage teperature		-40 to +80°C		

### Catalogue numbers

#### Acti 9 Isobar Standard IP55 distribution boards busbar rating 125 amp steel door

	No of TP ways	No of SP ways	No of DP ways
SEA9BN6HDGR	6	18	9
SEA9BN8HDGR	8	24	12
SEA9BN12HDGR	12	36	18
SEA9BN16HDGR	16	48	24

#### Acti 9 Isobar Standard IP55 distribution boards busbar rating 125 amp transparent door

	No of TP ways	No of SP ways	No of DP ways
SEA9BN6HDGK	6	18	9
SEA9BN8HDGK	8	24	12
SEA9BN12HDGK	12	36	18
SEA9BN16HDGK	16	48	24

### Acti 9 Isobar and Acti 9 Isobar IP55

#### Weight (kG) - Dimensions (mm)

Standard	Meter ready	Split meter	kG	Height	Width	Depth
4 way	■	■	9	484	470	139
6 way	6 way	■	10.5	484	470	138
8 way	6 way	■	11	538	470	138
12 way	12 way	■	13.5	700	470	139
16 way	16 way	■	16	808	470	139
18 way	18 way	■	16.2	862	470	139
24 way	24 way	■	22	1024		139
■	■	125	28	1294	470	139
■	■	250	32	1694	470	139
250 amp incoming section		■	4	400	470	130
IP55			kG	Height	Width	Depth
6 way		■	32.4	650	600	330
8 way		■	32.9	650	600	330
12 way		■	40.1	800	600	330
16 way		■	41.4	800	600	330



1



Incomers							
Switch disconnector	Rating (A)	No of poles	Standard	Meter ready	Split Metered	IP55	
SEA91253N	125	3P+N	Int	Int	Int	Int	
SEA91254	125	4	Int	Int	Int	Int	
SEA9NI1603	160	3P+N	Ext	Ext	Ext	■	
SEA9NI1604	160	4	Ext	Ext	Ext	■	
SEA9NI2003	200	3P+N	Ext	Ext	Ext	■	
SEA9NI2004	200	4	Ext	Ext	Ext	■	
SEA9NI2254	225	4	Ext	Ext	Ext	■	
SEA9NI2503	250	3P+N	Ext	Ext	Ext	■	
SEA9NI2504	250	4	Ext	Ext	Ext	n ■	
Moulded Case Circuit Breaker	Rating (A)	No of poles	Standard	Meter ready	Split metered	IP55	
SEA9NCB1004	70-100	4	Ext	Ext	Ext	■	
SEA9NCB1604	112-160	4	Ext	Ext	Ext	■	
SEA9NCB2004	140-200	4	Ext	Ext	Ext	■	
SEA9NCB2504	175-250	4	Ext	Ext	Ext	■	
Residual current circuit breaker sensitivity (mA)	Rating (A)	No of poles	Standard	Meter ready	Split metered	IP55	
SEA9R41463	30	63	4	Int	Int	Int	
SEA9R12463	100	63	4	Int	Int	Int	
SEA9R44463	300	63	4	Int	Int	Int	
SEA9R15463	300/time delayed	63	4	Int	Int	Int	
SEA9R11480	30	80	4	Int	Int	Int	
SEA9R14491	300	100	4	Int	Int	Int	
SEA9R15491	300/time delayed	100	4	Int	Int	Int	
SEA9NI160RCCB	adjustable	160	■	Ext	Ext	■	
Terminals for direct connection	Rating (A)	No of poles	Standard	Meter ready	Split metered	IP55	
SEA9TB1254	125	4	Int	Int	Int	Int	
SEA9NTB2504	250	4	Ext	Ext	Ext	■	
Dual source incomer	Rating (A)	No of poles	Standard	Meter ready	Split metered	IP55	
SEA9NDSI	*270mm enclosure	125	4	Ext	Ext	Ext	■
Contactor incomer	Rating (A)	No of poles	Standard	Meter ready	Split metered	IP55	
SEA9BN100CCI	*270mm enclosure	100	4	Ext	Ext	Ext	■
Dual metered extension enclosure MID 3 Phase kWh kit Modbus communications and pulsed output	Rating (A)	No of poles	Standard	Meter ready	Split metered	IP55	
SEA9BNDM160SD	Interpact SD	160	4	Ext	■	■	■
SEA9BNDM200SD	Interpact SD	200	4	Ext	■	■	■
SEA9BNDM250SD	Interpact SD	250	4	Ext	■	■	■
SEA9BNDM160M	NSX MCCB	160	4	Ext	■	■	■
SEA9BNDM200M	NSX MCCB	200	4	Ext	■	■	■
SEA9BNDM250M	NSX MCCB	250	4	Ext	■	■	■
Single phasing kits	Rating (A)	No of poles	Standard	Meter ready	Split metered	IP55	
SEA9125SPEV	125	4	Int	Int	Int	Int	
SEA9250SPEV	250	4	Int	Int	Int	■	

Int= Internal to the distribution board  
Ext = in 400mm high extension enclosures  
■ = not applicable



Top or bottom extension enclosures height 270 (mm)		■ not applicable		
Switch disconnecter	Description			
SEA9BNEXN	Plain front cover for additional wiring space			
SEA9BNEX034N	Mounting of DIN devices, overall door and cutout for 17 x 18mm poles			
SEA9BNEXA14N	Single phase add on distribution board 14 way			



Side extension enclosures				
Reference	Description	No of rows	Total 18mm SP ways	Dimensions as
SEA9BN4SXS	Slotted front cover + overall door	2	34	SEA9BN4
SEA9BN8SXS	Slotted front cover + overall door	2	34	SEA9BN8
SEA9BN12SXS	Slotted front cover + overall door	3	51	SEA9BN12
SEA9BN16SXS	Slotted front cover + overall door	4	68	SEA9BN16
SEA9BN24SXS	Slotted front cover + overall door	5	85	SEA9BN24
SEA9BN4SXP	Plain front cover+ overall door	2	34	SEA9BN4
SEA9BN8SXP	Plain front cover+ overall door	2	34	SEA9BN8
SEA9BN12SXP	Plain front cover+ overall door	3	51	SEA9BN12
SEA9BN16SXP	Plain front cover+ overall door	4	68	SEA9BN16
SEA9BN24SXP	Plain front cover+ overall door	5	85	SEA9BN24



Accessories	
Reference	Description
SEA9BL	Door lock
SEA9PD	Padlock kit for door
SEA9NEK1	Extra earth terminal bar 14 hole
SEA9NEK2	Extra earth terminal bar 20 hole
SEA9NEK3	Extra earth terminal 26 hole
SEA9BN63SPL	Split load kit 63 amp
SEA9BNSJKN	Side joining kit
SEA9BNTJKA	Top/bottom joining kit for enc/ext/enc
SEA9BNTJKB	Top bottom kit replacing gland plate
SEA9BNTJKN	Joining kit B board top/bottom
SEA9BP	Blank pole
SEA9BP25	Pack of 25 x 5 pole filler
SEA9BP5	Single 5 pole filler
SEA9TB1001	100 amp terminal block 1 pole
SEA9BNBCE7	Clean earth B boards 7 hole
SEA9BNBCE13	Clean earth B boards 13 hole
SEA9BNBCE25	Clean earth B boards 25 hole
SEA9BNWL	TP&N Labels
SEA9NB4	Distributed neutral for 4 way TP+N
SEA9NB6	Distributed neutral for 6 way TP+N
SEA9NB8	Distributed neutral for 8 way TP+N
SEA9NB12	Distributed neutral for 12 way TP+N
SEA9NB16	Distributed neutral for 16 way TP+N
SEA9NB18	Distributed neutral for 18 way TP+N
SEA9NB24	Distributed neutral for 24 way TP+N
SEA9NKIT	Phase to neutral conversion kit (pack 4)



1

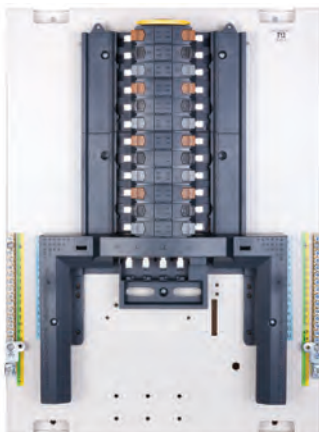
SEA9BN6PS



SEA9BN8P



SEA9BN8E



SEA9BN6TN



### Pan assemblies - 3 phase without distributed neutral, supplied without mounting plate

Reference	Description
SEA9BN4PS	Pan assembly 4 way TP&N
SEA9BN6PS	Pan assembly 6 way TP&N
SEA9BN8PS	Pan assembly 8 way TP&N
SEA9BN12PS	Pan assembly 12 way TP&N
SEA9BN16PS	Pan assembly 16 way TP&N
SEA9BN18PS	Pan assembly 18 way TP&N
SEA9BN24PS	Pan assembly 24 way TP&N

### Pan assemblies - replacement for Acti 9 Isobar and Isobar 4c distribution boards

Reference	Description
SEA9BN4P	B board replacement pan assembly
SEA9BN6P	B board replacement pan assembly
SEA9BN8P	B board replacement pan assembly
SEA9BN12P	B board replacement pan assembly
SEA9BN16P	B board replacement pan assembly
SEA9BN18P	B board replacement pan assembly
SEA9BN24P	B board replacement pan assembly

### Pan assemblies - for switchboard mounting supplied with earths and neutral, phase coloured IsoBar switch disconnectors

Reference	Description
SEA9BN4E	Pan assembly 4 way TP+ earth and neutral
SEA9BN6E	Pan assembly 6 way TP+ earth and neutral
SEA9BN8E	Pan assembly 8 way TP+ earth and neutral
SEA9BN12E	Pan assembly 12 way TP+ earth and neutral
SEA9BN16E	Pan assembly 16 way TP+ earth and neutral
SEA9BN18E	Pan assembly 18 way TP+ earth and neutral
SEA9BN24E	Pan assembly 24 way TP+ earth and neutral

### Pan assemblies - for switchboard mounting supplied with earths and neutral, black IsoBar switch disconnectors

Reference	Description
SEA9BN4PEV	Pan assembly 4 way TP+ earth and neutral
SEA9BN6PEV	Pan assembly 6 way TP+ earth and neutral
SEA9BN8PEV	Pan assembly 8 way TP+ earth and neutral
SEA9BN12PEV	Pan assembly 12 way TP+ earth and neutral
SEA9BN16PEV	Pan assembly 16 way TP+ earth and neutral
SEA9BN18PEV	Pan assembly 18 way TP+ earth and neutral
SEA9BN24PEV	Pan assembly 24 way TP+ earth and neutral

### Pan assemblies - 3 phase without distributed neutral, supplied fitted on a mounting plate

Reference	Description
SEA9BN4TN	4 TP&N way panel fixing pan assembly
SEA9BN6TN	6 TP&N way panel fixing pan assembly
SEA9BN8TN	8 TP&N way panel fixing pan assembly
SEA9BN12TN	12 TP&N way panel fixing pan assembly
SEA9BN16TN	16 TP&N way panel fixing pan assembly
SEA9BN18TN	18 TP&N way panel fixing pan assembly
SEA9BN24TN	24 TP&N way panel fixing pan assembly

### Door and cover assemblies

Reference	Description
SEA9BN4C	4 way door and cover
SEA9BN6C	6 way door and cover
SEA9BN8C	8 way door and cover
SEA9BN12C	12 way door and cover
SEA9BN16C	16 way door and cover
SEA9BN18C	18 way door and cover
SEA9BN24C	24 way door and cover

SEA9BINCKIT

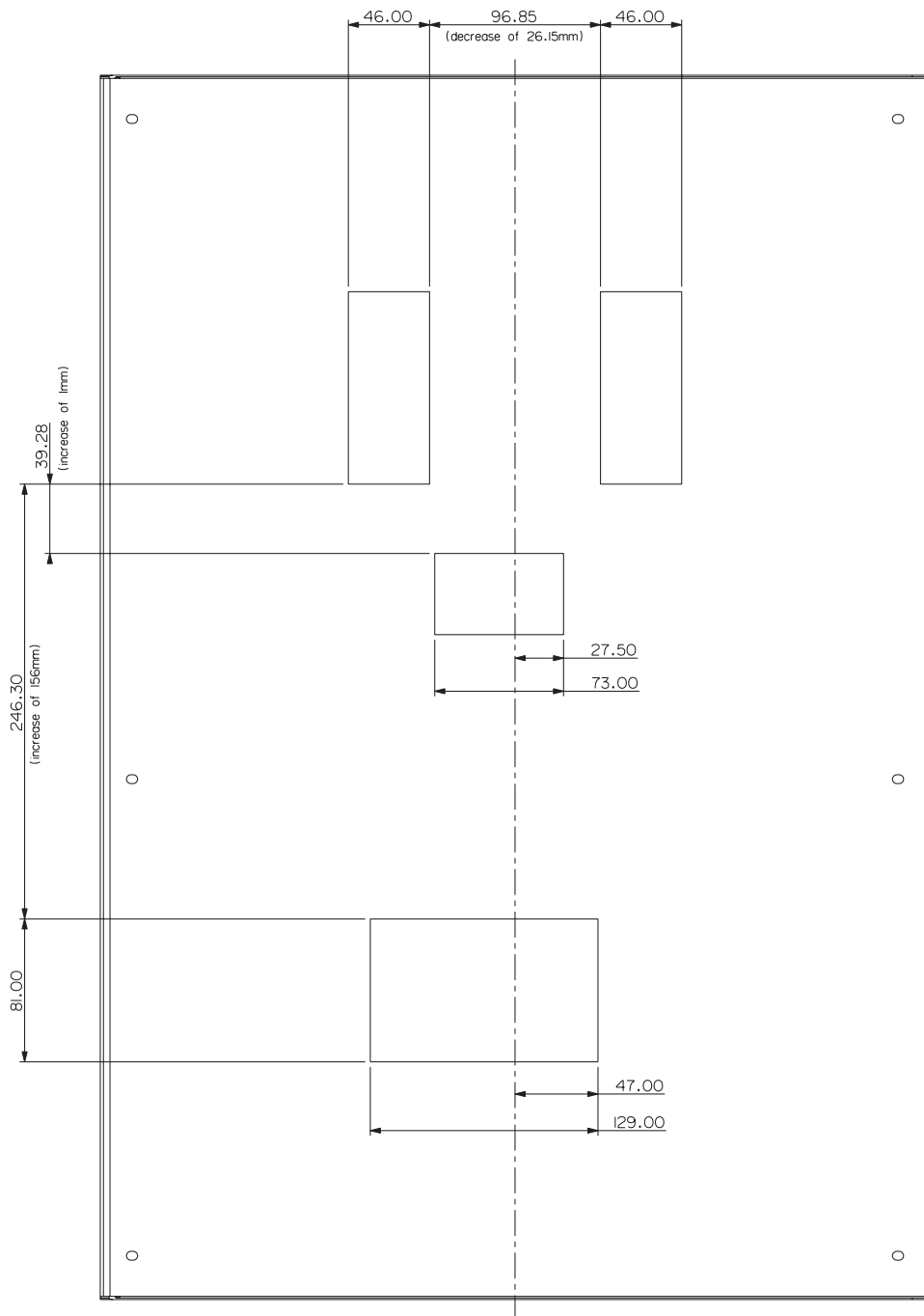


Pan assemblies - accessories

Reference	Description
SEA9NPB250TB	250 amp incoming terminal block
SEA9BINCKIT	MCCB/Interpact connection kit

1

Dimensions (mm)





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<i>iC60H circuit breakers (curve B, C, D)</i> .....	<i>pages 2/2 to 2/4</i>
<i>iC60H RCB0 10, 30 and 100 mA</i> .....	<i>pages 2/5 to 2/7</i>
<b><i>Vigi iC60 add-on residual current devices</i></b> .....	<b><i>pages 2/8 to 2/12</i></b>
A type .....	pages 2/8 to 2/9
SI type .....	page 2/10
AC type .....	pages 2/11 to 2/12
<b><i>iID residual current circuit breakers</i></b> .....	<b><i>pages 2/13 to 2/16</i></b>
A type .....	page 2/13
SI type .....	page 2/14
AC, A, SI type .....	pages 2/15 to 2/16
<i>Electrical auxiliaries for iC60, iID, iDPN Vigi, RCA and ARA</i> . . .	<i>pages 2/17 to 2/23</i>
<i>Accessories for iC60, iID, iDPN Vigi, Reflex iC60, RCA ARA and iSW</i> .....	<i>pages 2/24 to 2/29</i>





BS/EN 60947-2  
BS/EN 60898-1

- iC60H circuit breakers are multi-standard circuit breakers which combine the following functions:
  - circuit protection against short-circuit currents,
  - circuit protection against overload currents,
  - suitable for industrial isolation according to IEC/EN 60947-2, standard.
  - fault tripping indication by a red mechanical indicator in circuit breaker front face.

**Alternating current (AC) 50/60 Hz**

Breaking capacity (Icu) according to IEC/EN 60947-2						Service breaking capacity (Ics)
	Voltage (Ue)					
Ph/Ph (2P, 3P, 4P)	12 to 133 V	220 to 240 V	380 to 415 V	440 V		100 % of Icu
Ph/N (1P)	12 to 60 V	100 to 133 V	220 to 240 V	-		
Rating (In)	1 to 4 A	70 kA	70 kA	70 kA	50 kA	
	6 to 40 A	42 kA	30 kA	15 kA	10 kA	50 % of Icu
	50/63 A	42 kA	-	15 kA	10 kA	50 % of Icu

Breaking capacity (Icn) according to IEC/EN 60898-1	
	Voltage (Ue)
Ph/Ph	400 V
Ph/N	230 V
Rating (In)	1 to 63 A
	10000 A

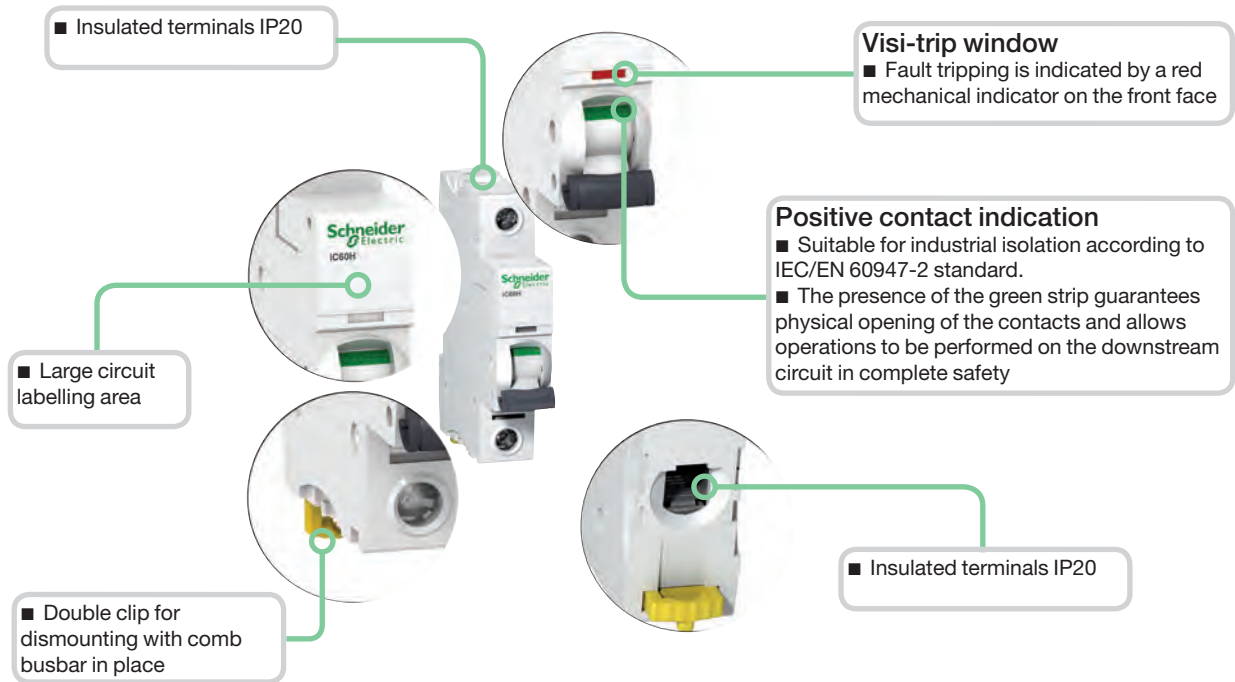
**Direct current (DC)**

Breaking capacity (Icu) according to IEC/EN 60947-2						Service breaking capacity (Ics)
	Voltage (Ue)					
Between +/-	12 to 48 V	72 V	100 to 133 V		220 to 250 V	100 % of Icu
Number of poles	1P		2P (in series)	3P (in series)	4P (in series)	
Rating (In)	1 to 63 A	20 kA	10 kA	10 kA	10 kA	

Catalogue numbers

iC60H circuit breaker						
Type	1P			2P		
Calibre (In)	Courbe			Courbe		
	B	C	D	B	C	D
1 A	A9F53101	A9F54101	A9F55101	A9F53201	A9F54201	A9F55201
2 A	A9F53102	A9F54102	A9F55102	A9F53202	A9F54202	A9F55202
3 A	A9F53103	-	-	-	-	-
4 A	A9F53104	A9F54104	A9F55104	A9F53204	A9F54204	A9F55204
6 A	A9F53106	A9F54106	A9F55106	A9F53206	A9F54206	A9F55206
10 A	A9F53110	A9F54110	A9F55110	A9F53210	A9F54210	A9F55210
16 A	A9F53116	A9F54116	A9F55116	A9F53216	A9F54216	A9F55216
20 A	A9F53120	A9F54120	A9F55120	A9F53220	A9F54220	A9F55220
25 A	A9F53125	A9F54125	A9F55125	A9F53225	A9F54225	A9F55225
32 A	A9F53132	A9F54132	A9F55132	A9F53232	A9F54232	A9F55232
40 A	A9F53140	A9F54140	A9F55140	A9F53240	A9F54240	A9F55240
50 A	A9F53150	A9F54150	A9F55150	A9F53250	A9F54250	A9F55250
63 A	A9F53163	A9F54163	A9F55163	A9F53263	A9F54263	A9F55263
Width in 9-mm modules	2			4		

(1) VDE approved only.



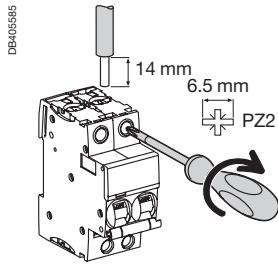
- Increased product service life thanks to:
  - overvoltage resistance by high level of industrial performances conception (pollution degree, rated impulse withstand voltage and insulation voltage),
  - high performance limitation (see limitation curves),
  - fast closing independent of the speed of actuation of the toggle.
- Remote indication, open/closed/tripped, by optional auxiliary contacts.
- Top or bottom electrical feeding.

3P			4P			
E46095			E46097			
1	3	5	1	3	5	7
2	4	6	2	4	6	8
Courbe			Courbe			
B	C	D	B	C	D	
A9F53301	A9F54301	A9F55301	A9F53401	A9F54401	A9F55401	
A9F53302	A9F54302	A9F55302	A9F53402	A9F54402	A9F55402	
-	-	-	-	-	-	
A9F53304	A9F54304	A9F55304	A9F53404	A9F54404	A9F55404	
A9F53306	A9F54306	A9F55306	A9F53406	A9F54406	A9F55406	
A9F53310	A9F54310	A9F55310	A9F53410	A9F54410	A9F55410	
A9F53316	A9F54316	A9F55316	A9F53416	A9F54416	A9F55416	
A9F53320	A9F54320	A9F55320	A9F53420	A9F54420	A9F55420	
A9F53325	A9F54325	A9F55325	A9F53425	A9F54425	A9F55425	
A9F53332	A9F54332	A9F55332	A9F53432	A9F54432	A9F55432	
A9F53340	A9F54340	A9F55340	A9F53440	A9F54440	A9F55440	
A9F53350	A9F54350	A9F55350	A9F53450	A9F54450	A9F55450	
A9F53363	A9F54363	A9F55363	A9F53463	A9F54463	A9F55463	
6			8			

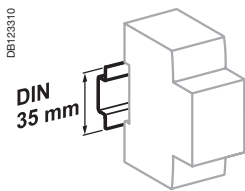


2

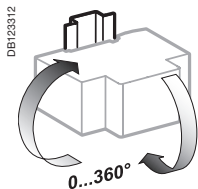
### Connection



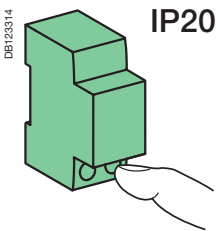
Rating	Tightening torque	Without accessory		With accessories			
		Copper cables Rigid	Copper cables Flexible or ferrule	50 mm <sup>2</sup> Al terminal	Screw-on connection for ring terminal	Multi-cables terminal Rigid cables	Multi-cables terminal Flexible cables
1 to 25 A	2 N.m	DB122945	DB122946	DB122945	DB119789	-	-
32 to 63 A	3.5 N.m	1 to 25 mm <sup>2</sup>	1 to 16 mm <sup>2</sup>	-	Ø 5 mm	3 x 16 mm <sup>2</sup>	3 x 10 mm <sup>2</sup>
		1 to 35 mm <sup>2</sup>	1 to 25 mm <sup>2</sup>	50 mm <sup>2</sup>			



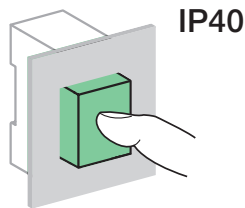
Clip on DIN rail 35 mm.



Indifferent position of installation.



IP20



IP40

### Technical data

#### Main characteristics

##### According to IEC/EN 60947-2

Insulation voltage (Ui)	500 V AC
Pollution degree	3
Rated impulse withstand voltage (Uimp)	6 kV
Thermal tripping	Reference temperature
Magnetic tripping	B curve
	C curve
	D curve
Utilization category	A

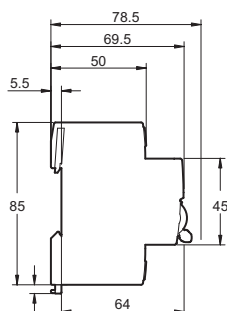
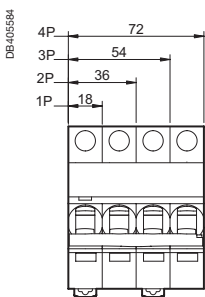
##### According to IEC/EN 60898-1

Limitation class	3
Rated making and breaking capacity of an individual pole (Icn1)	Icn1 = Icn

#### Additional characteristics

Breaking capacity under 1 pole with IT 380-415 V isolated neutral system (case of double fault)	40 A	4 kA
	50/63 A	3 kA
Degree of protection (IEC 60529)	Device only	IP20
	Device in modular enclosure	IP40
Endurance (O-C)	Electrical	10,000 cycles
	Mechanical	20,000 cycles
Overvoltage category (IEC 60364)		IV
Operating temperature		-35°C to +70°C
Storage temperature		-40°C to +85°C
Tropicalization (IEC 60068-1)		Treatment 2 (relative humidity 95 % to 55°C)

### Dimensions (mm)



### Weight (g)

#### Circuit-breaker

Type	iC60H
1P	125
2P	250
3P	375
4P	500



IEC 61009-1,  
IEC 61009-2-2,  
BS EN 61009-1

- The single-phase iC60H RCBO's self-contained residual current device carries out complete protection of final circuits:
  - protection against short-circuits and cable overloads
  - protection of persons against electric shock by direct contact (10, 30 mA sensitivities),
  - protection of persons against electric shock by indirect contact (100 mA sensitivity),
  - protection of equipment against fires set by leakage currents (100 mA sensitivity).
- The neutral is not interrupted when the device is tripped. Hence iC60H RCBO can be used on most circuits, except for the ones operating under TT or IT earthing systems.



### Alternating current (AC) 50/60 Hz

Breaking capacity (I<sub>cn</sub>) according to IEC 61009-1

Ph/N	Voltage (U <sub>e</sub> )	
	110 V	240 V
Rating (I <sub>n</sub> )	6 to 45 A	10000 A

### Accessory

#### Padlocking device

- Used to lock the toggle in the "open" or "closed" position by 4 mm diameter padlock (not supplied).

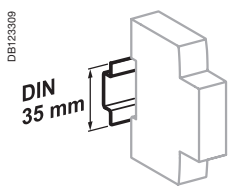
## Catalogue numbers

iC60H RCBO 10000							
1P+N			A			Width in 9-mm modules	
B curve	Voltage rating (V)	Sensitivity (I <sub>Δn</sub> )	10 mA	30 mA	100 mA		
	240	Rating (I <sub>n</sub> )	6 A	-	A9D31806	2	
			10 A	-	A9D31810		
			16 A	-	A9D31816		
			20 A	-	A9D31820		
			25 A	-	A9D31825		
			32 A	-	A9D31832		
			40 A	-	A9D31840		
			45 A	-	A9D31845		
	110	Rating (I <sub>n</sub> )	10 A	-	A9D19810	2	
			16 A	-	A9D19816		
			20 A	-	A9D19820		
			25 A	-	A9D19825		
			32 A	-	A9D19832		
	240	Rating (I <sub>n</sub> )	6 A	A9D10806	A9D11806	A9D12806	
			10 A	A9D10810	A9D11810	A9D12810	
			16 A	A9D10816	A9D11816	A9D12816	
			20 A	A9D10820	A9D11820	A9D12820	
			25 A	A9D10825	A9D11825	A9D12825	
			32 A	A9D10832	A9D11832	A9D12832	
			40 A	A9D10840	A9D11840	A9D12840	
			45 A	A9D10845	A9D11845	A9D12845	
		Operating frequency			50...60 Hz		

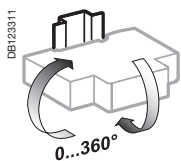
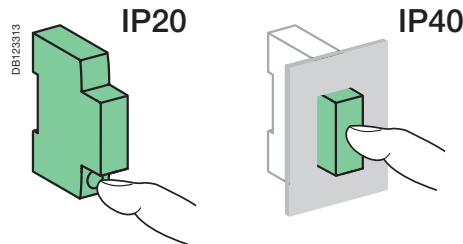
Accessory	
Type	
Padlocking device (bag of 10 pieces)	A9A27049

### Technical data

Main characteristics		iC60H RCBO
Insulation voltage (Ui)		400 V AC
Rated impulse withstand voltage (Uimp)		4 kV
Rated residual operating current (IΔn)		10, 30, 100 mA
Thermal tripping	Reference temperature	50°C
Limitation class		3
Surge current withstand (8/20 μs) without tripping		250 A
Rated nominal breaking capacity (Icn)		10,000 A
Phase/earth rated residual breaking and making capacity (IΔm)		7,500 A
Additional characteristics		
Degree of protection	Device only	IP20
	Device in modular enclosure	IP40
Endurance (O-C)	Electrical	5,000 cycles
	Mechanical	20,000 cycles
Operating temperature		-15°C to +40°C
Storage temperature		-40°C to +85°C
Tropicalization		Treatment 2



Clip on DIN rail 35 mm.

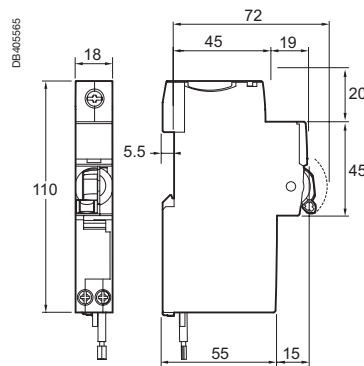


Indifferent position of installation.

### Weight (g)

iC60 RCBO	
iC60H RCBO	205

### Dimensions (mm)

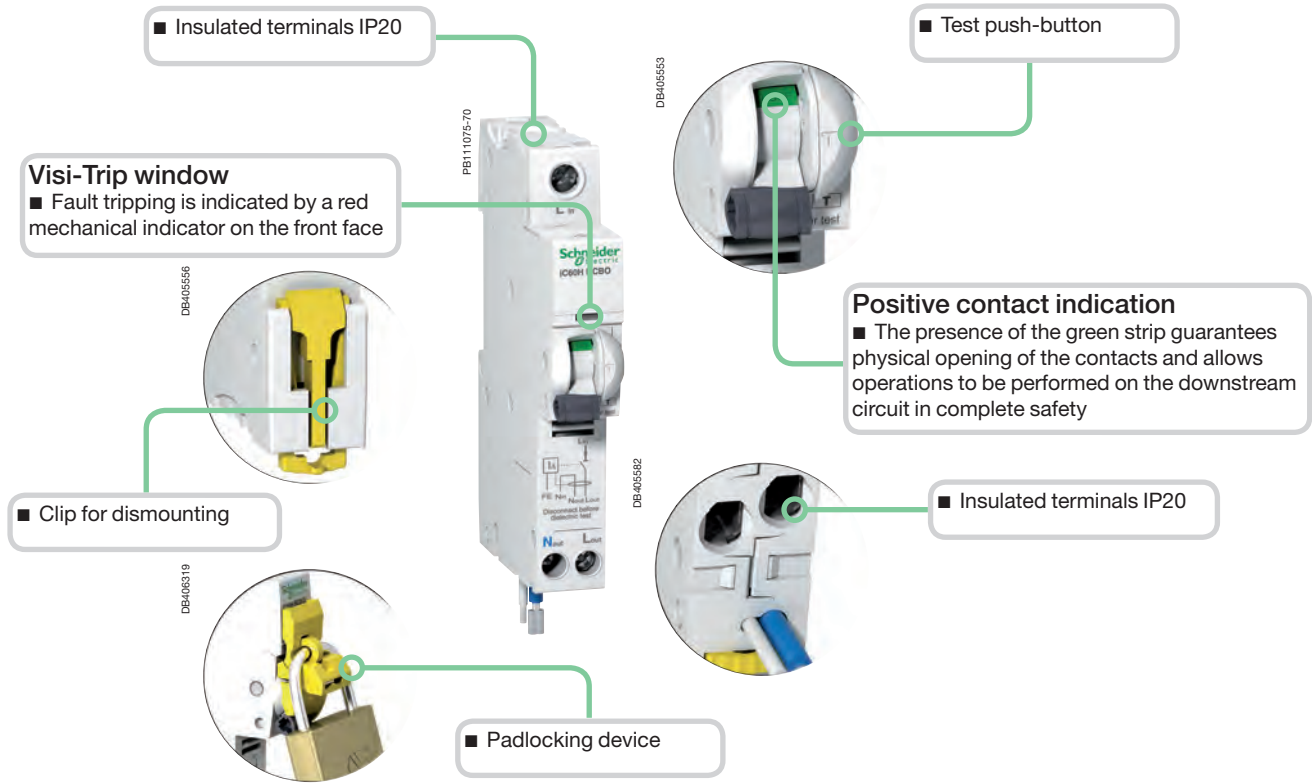


iC60N RCBO, iC60H RCBO

# Protection Circuit protection

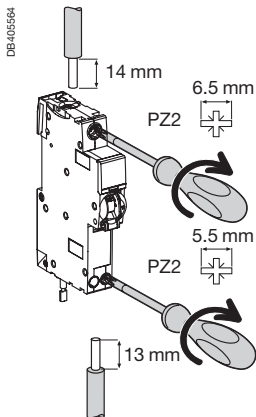
# iC60H RCBO 10, 30 and 100mA (cont.)

2



- Increased product service life thanks to fast closing independent of the speed of actuation of the toggle.
- Remote indication, open/closed/tripped, by optional auxiliary contacts.

## Connection



Type	Rating	Tightening torque	Copper cables	
			Rigid	Flexible
N in and L in	6 to 45 A	3.5 N.m	DB122345 	DB122346 
L out and N out			1 to 25 mm <sup>2</sup>	1 to 16 mm <sup>2</sup>
			1 to 16 mm <sup>2</sup>	1 to 10 mm <sup>2</sup>



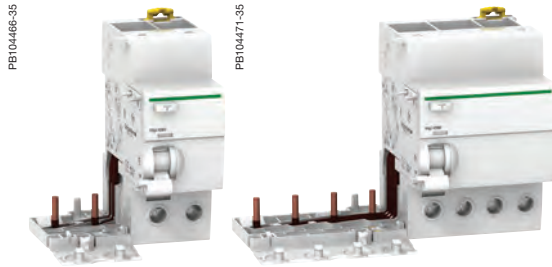
IEC/EN 61009-1

- Combined with iC60 circuit breaker, the Vigi iC60 provide:
  - protection of persons against electric shock by direct contact (30 mA),
  - protection of persons against electric shock by indirect contact ( $\geq 100$  mA),
  - protection of installations against the risk of fire (300 mA),
  - use with 1/2 pole or 3/4 pole iC60H.

### Catalogue numbers

Vigi iC60 add-on residual current devices						
Type	A				Width in 9 mm modules	
Product	Vigi iC60					
Auxiliaries	Without auxiliaries					
		Sensitivity	30 mA	100 mA	300 mA	
<p>DB122462</p>	Rating	25 A			3	
		63 A	A9V02663 A9V01663*	A9V03663	A9V06663	4
<p>DB122464</p>	Rating	63 A	A9V02763	-	A9V06763	6
Voltage rating (Ue)		230 - 240 V, 400 - 415 V Except * 110 V				
Operating frequency		50/60 Hz				

IEC/EN 61009-1

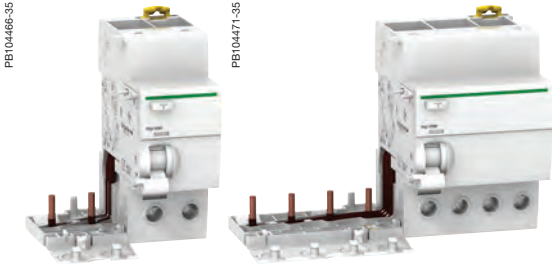


- Combined with iC60 circuit breaker, the Vigi iC60 provide:
  - protection of persons against electric shock by direct contact (30 mA),
  - protection of persons against electric shock by indirect contact ( $\geq 100$  mA),
  - protection of installations against the risk of fire (300 mA or 500 mA),
  - use with 2 pole or 4 pole iC60H only.

## Catalogue numbers

Vigi iC60 add-on residual current devices									
Type	A							Width in 9 mm modules	
Product	Vigi iC60								
Auxiliaries	Without auxiliaries								
2P	Sensitivity	30 mA	100 mA	300 mA	500 mA	300 mA	1000 mA		
 <small>DB122462</small>	Rating	25 A	A9V51225	A9V22225	A9V54225	A9V26225	-	3	
		63 A	A9V51263	A9V22263	A9V54263	A9V26263	A9V25263	A9V29263	4
3P	Sensitivity	30 mA	100 mA	300 mA	500 mA	300 mA	1000 mA		
 <small>DB122463</small>	Rating	25 A	A9V51325	A9V22325	A9V54325	A9V26325	-	6	
		63 A	A9V51363	-	A9V54363	A9V26363	A9V25363	A9V29363	7
4P	Sensitivity	30 mA	100 mA	300 mA	500 mA	300 mA	1000 mA		
 <small>DB122464</small>	Rating	25 A	A9V51425	A9V22425	A9V54425	A9V26425	-	6	
		63 A	A9V51463	A9V22463	A9V54463	A9V26463	A9V25463	A9V29463	7
Voltage rating (Ue)		230 - 240 V, 400 - 415 V							
Operating frequency		50/60 Hz							

### IEC/EN 61009-1



- Combined with iC60 circuit breaker, the Vigi iC60 provide:
  - protection of persons against electric shock by direct contact ( $\leq 30$  mA),
  - protection of persons against electric shock by indirect contact ( $\geq 300$  mA),
  - protection of installations against the risk of fire (300 mA),
  - use with 2 pole or 4 pole iC60H only.

The **SI** type provides increased immunity from electrical interference and polluted or corrosive environments.

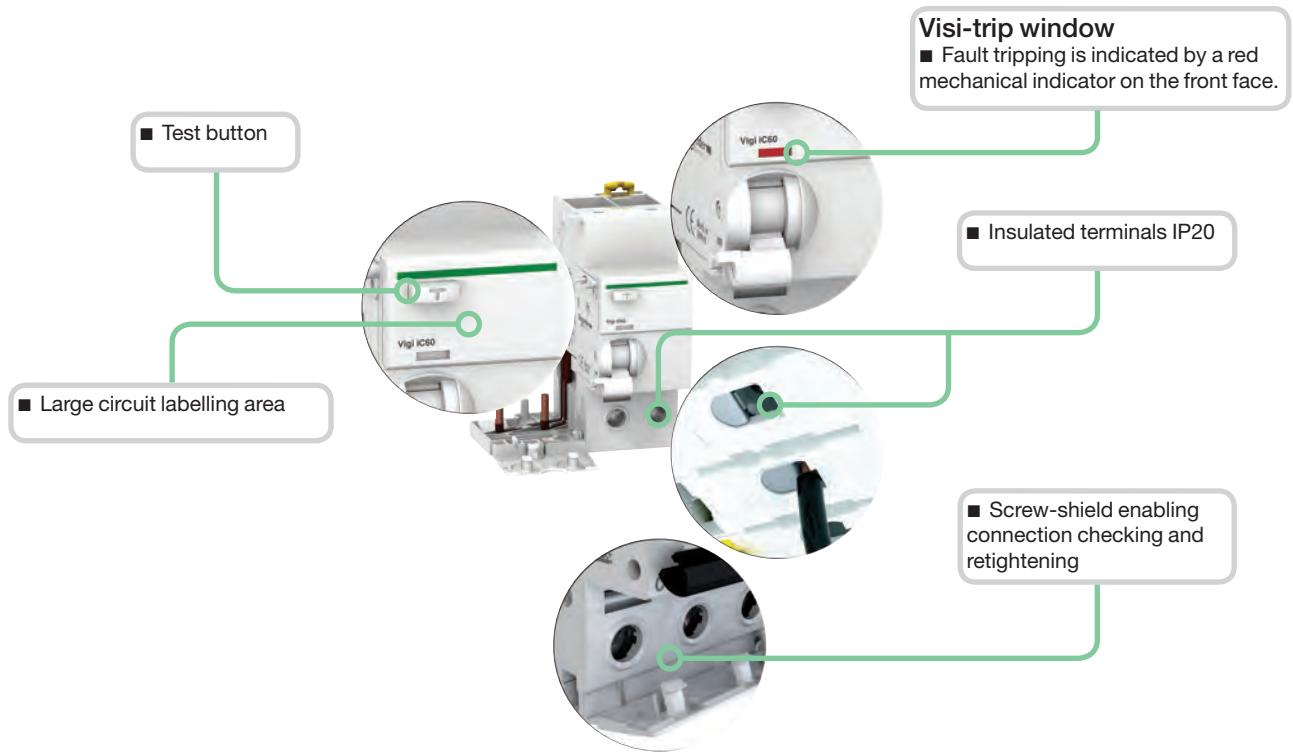
### Catalogue numbers

Vigi iC60 add-on residual current devices							
Type	SI						Width in 9 mm modules
Product	Vigi iC60						
Auxiliaries	Without auxiliaries						
		Sensitivity	10 mA	30 mA	300 mA	1000 mA	
DB122462 	Rating	25 A	<b>A9V30225</b>	<b>A9V61225</b>	-	-	3
		40 A	-	<b>A9V61240</b>	-	-	4
		63 A	-	<b>A9V61263</b>	<b>A9V65263</b>	<b>A9V39263</b>	4
DB122463 	Rating	25 A	-	<b>A9V61325</b>	-	-	6
		40 A	-	<b>A9V61340</b>	-	-	7
		63 A	-	<b>A9V61363</b>	<b>A9V65363</b>	<b>A9V39363</b>	7
DB122464 	Rating	25 A	-	<b>A9V61425</b>	-	-	6
		40 A	-	<b>A9V61440</b>	-	-	7
		63 A	-	<b>A9V61463</b>	<b>A9V65463</b>	<b>A9V39463</b>	7
Voltage rating (Ue)			230 - 240 V, 400 - 415 V				
Operating frequency			50/60 Hz				
Accessories			Module CA907000				

# Protection Earth leakage protection

# Vigi iC60 add-on residual current devices (AC type)

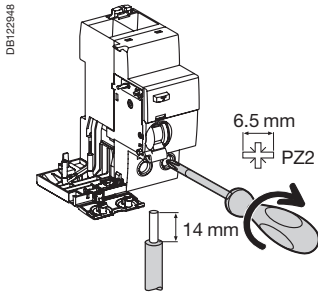
PE104465-40



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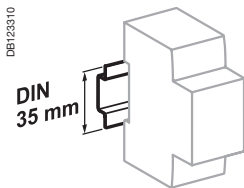


## Connection

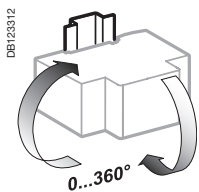


Type	Rating	Tightening torque	Copper cables	
			Rigid	Flexible or ferrule
Vigi iC60	25 A	2 N.m	1 to 25 mm <sup>2</sup>	1 to 16 mm <sup>2</sup>
	40 to 63 A	3.5 N.m	1 to 35 mm <sup>2</sup>	1 to 25 mm <sup>2</sup>

2



Clip on DIN rail 35 mm.



Indifferent position of installation.

## Technical data

### Main characteristics

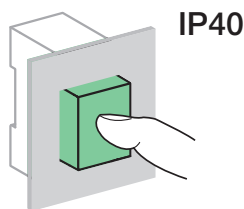
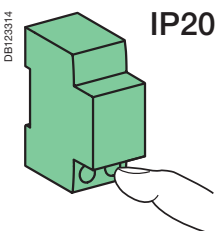
Insulation voltage (Ui)	500 V
Pollution degree	3
Rated impulse withstand voltage (Uimp)	6 kV

### According to IEC/EN 61009-1

Surge current withstand (8/20 μs) without tripping	A type (no selective Ⓜ)	250 Å
	A type (selective Ⓜ)	3 kÅ

### Additional characteristics

Degree of protection	Device only	IP20
	Device in modular enclosure	IP40 Insulation classe II
Operating temperature	AC type	-5°C to +60°C
	A and SI types	-25°C to +60°C
Storage temperature		-40°C to +85°C



# Protection Earth leakage protection

# iID residual current circuit breakers (A type)



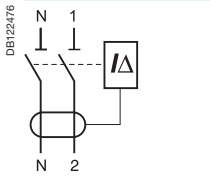

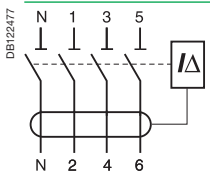


IEC/EN 61008-1

- The iID residual current circuit breakers provide:
  - protection of persons against electric shock by direct contact ( $\leq 30$  mA),
  - protection of persons against electric shock by indirect contact ( $\geq 100$  mA),
  - protection of installations against the risk of fire (300 mA or 500 mA).

2

## Catalogue numbers

iID residual current circuit breakers									
Type	A 							Width in 9 mm module	
Product	iID								
Auxiliaries									
<b>2P</b>	<b>Sensitivity</b>	<b>10 mA</b>	<b>30 mA</b>	<b>100 mA</b>	<b>300 mA</b>	<b>500 mA</b>	<b>300 mA </b>		
	Rating	16 A	A9R20216	-	-	-	-	4	
		25 A	A9R20225	A9R21225	-	A9R24225	-		
		40 A	-	A9R21240	-	A9R24240	-		A9R25240
		63 A	-	A9R21263	-	A9R24263	-		A9R25263
		100 A	-	A9R21291	-	A9R24291	-		A9R25291
<b>4P</b>	<b>Sensitivity</b>	<b>10 mA</b>	<b>30 mA</b>	<b>100 mA</b>	<b>300 mA</b>	<b>500 mA</b>	<b>300 mA </b>		
	Rating	25 A	-	A9R21425	-	A9R24425	-	8	
		40 A	-	A9R21440	A9R22440	A9R24440	A9R26440		A9R25440
		63 A	-	A9R21463	A9R22463	A9R24463	A9R26463		A9R25463
		80 A	-	A9R21480	-	A9R24480	-		A9R25480
		100 A	-	A9R21491	-	A9R24491	A9R26491		A9R25491
Voltage rating (Ue)	2P	230 - 240 V							
	4P	400 - 415 V							
Operating frequency	50/60 Hz								

# Protection Earth leakage protection

# iID residual current circuit breakers (SI type)

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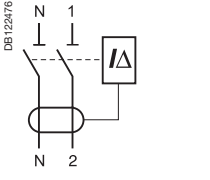
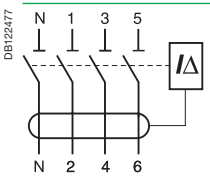


## IEC/EN 61008-1

- The iID residual current circuit breakers provide:
  - protection of persons against electric shock by direct contact ( $\leq 30$  mA),
  - protection of persons against electric shock by indirect contact ( $\geq 300$  mA),
  - protection of installations against the risk of fire (300 mA or 500 mA).

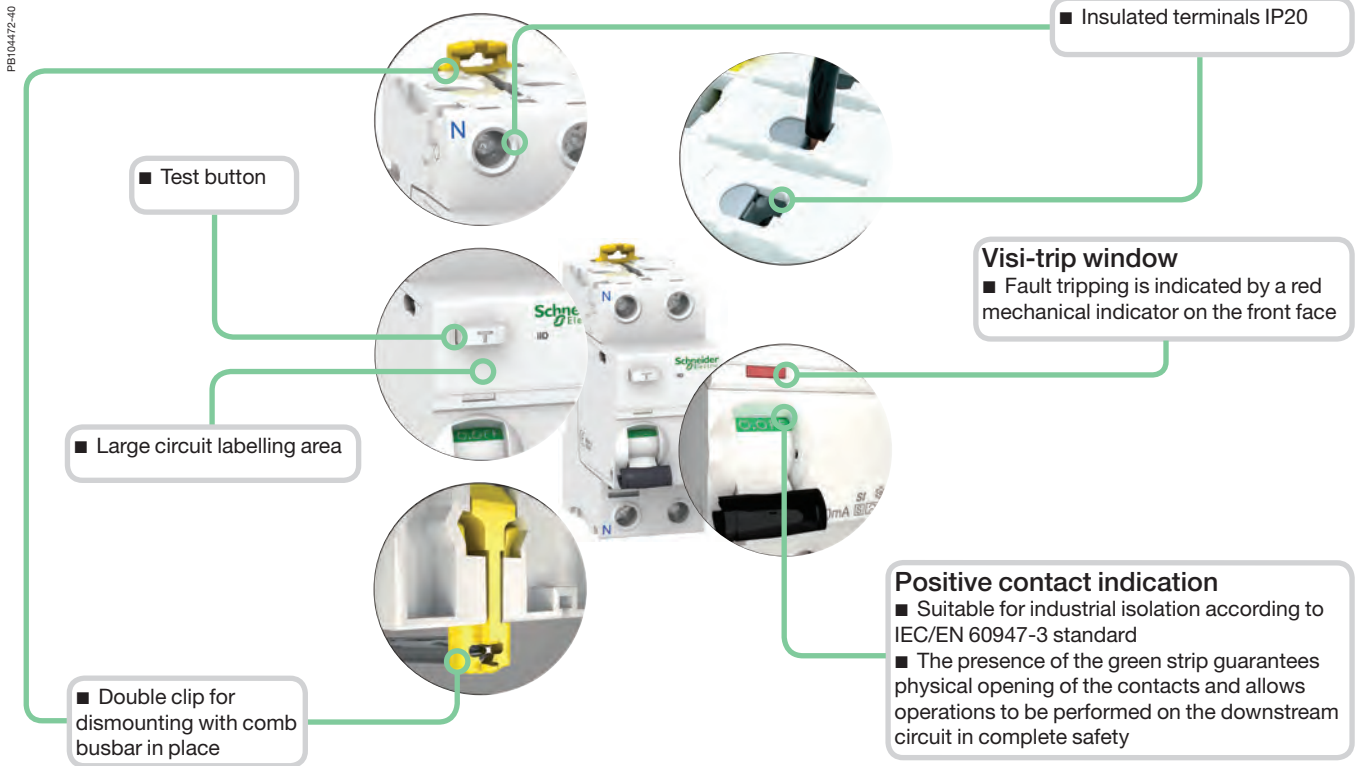
The **SI** type provides increased immunity from electrical interference and polluted or corrosive environments.

## Catalogue numbers

iID residual current circuit breakers							
Type	SI 						Width in 9 mm module
Product	iID						
Auxiliaries							
2P	Sensitivity	10 mA	30 mA	300 mA	300 mA 	500 mA 	
	Rating	16 A	-	-	-	-	4
		25 A	A9R30225	A9R61225	-	-	
		40 A	-	A9R61240	-	A9R35240	
		63 A	-	A9R61263	-	A9R35263	
		100 A	-	-	-	A9R35291	
	Rating	25 A	-	A9R61425	-	-	8
		40 A	-	A9R61440	-	A9R35440	
		63 A	-	A9R61463	A9R34463	A9R35463	
		80 A	-	A9R31480	-	A9R35480	
		100 A	-	A9R31491	A9R34491	A9R35491	
Voltage rating (Ue)	2P	230 - 240 V					
	4P	400 - 415 V					
Operating frequency	50/60 Hz						

# Protection Earth leakage protection

# iID residual current circuit breakers (AC, A, S/ types)



### **S/ type**

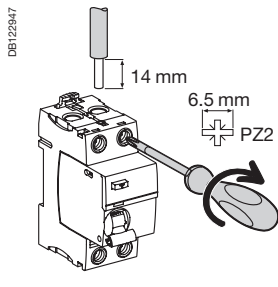
The **S/** type provides increased immunity from electrical interference and polluted or corrosive environments.

# Protection Earth leakage protection

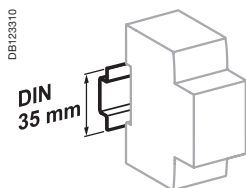
# iID residual current circuit breakers (AC, A, SI types) (cont.)

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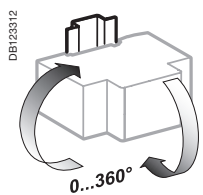
## Connection



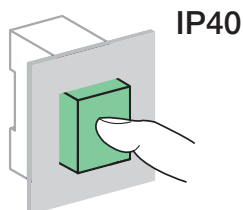
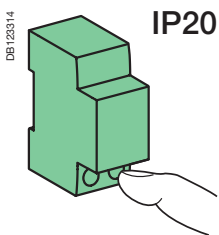
Type	Tightening torque	Without accessory		With accessories*			
		Copper cables		50 mm <sup>2</sup> Al terminal	Screw-on connection for ring terminal	Multi-cables terminal	
		Rigid	Flexible or ferrule			Rigid cables	Flexible cables
iID	3.5 N.m	1 to 35 mm <sup>2</sup>	1 to 25 mm <sup>2</sup>	50 mm <sup>2</sup>	Ø 5 mm	3 x 16 mm <sup>2</sup>	3 x 10 mm <sup>2</sup>



Clip on DIN rail 35 mm.



Indifferent position of installation.



## Technical data

Main characteristics		
Insulation voltage (Ui)	500 V	
Pollution degree	3	
Rated impulse withstand voltage (Uimp)	6 kV	
According to IEC/EN 61008-1		
Making and breaking capacity (Im/IΔm)	1500 A	
Surge current withstand (8/20 μs) without tripping	AC and A types (no selective $\square$ )	250 Å
	AC, A types (selective $\square$ )	3 kÅ
	SI type	3 kÅ
Conditional rated short circuit current (Inc/IΔc)	With C60H	15 kA
	With fuse	10,000 A
Additional characteristics		
Degree of protection	Device only	IP20
	Device in modular enclosure	IP40 Insulation classe II
Endurance (O-C)	Electrical (AC1)	16 to 63 A
		80 to 100 A
Operating temperature	AC type	-5°C to +60°C
	A and SI types	-25°C to +60°C
Storage temperature	-40°C to +85°C	

# Protection

## Circuit protection

### Earth leakage protection

# Electrical auxiliaries for iC60, iID, iDPN Vigi, RCA and ARA

- The electrical auxiliaries are combined with iC60 circuit breakers, iID residual current circuit breakers, remote tripping switch disconnectors iSW-NA, RCA remote controls and ARA automatic reclosers; they enable tripping or remote indication of their position (open/closed/tripped) upon a fault.
- They are fastened by clips (without tools) to the left side of the breaker.
- The iOF/SD+OF auxiliary is a 2-in-1 product: via a mechanical selector switch, it provides two contacts, OF+SD or OF+OF.
- The iOF+SD24 auxiliary can report open/closed (OF) status information and intentional or fault tripping of the associated device (SD) to the Acti9 Smartlink or a programmable logic controller via the TI24 interface (24 V DC).

### Tripping auxiliaries:

#### IEC/EN 60947-1

- iMN: undervoltage release
- iMNs: delayed undervoltage release
- iMNx: undervoltage release, independant from supply voltage
- iMX: shunt release
- iMX+OF: shunt release with open/close contact.

#### EN 50550

- iMSU: overvoltage release

### Indication auxiliaries:

#### IEC/EN 60947-5-1

- iOF: open/close contact
- iSD: fault indicating contact
- iOF/SD+OF: open/close contact and switchable OF or SD contact.

#### IEC/EN 60947-5-4

- iOF+SD24: open/close contact OF and default indicating contact SD with Ti24 interface.

2

DB404939



The mounting order for the various auxiliaries must be complied with. The tripping auxiliaries (iMN, iMX) should be mounted first, as close as possible to the circuit breaker or the residual current circuit breaker. Then, the indicating auxiliaries (iOF, iSD) should be mounted, complying with their position shown in the following table.

Indicating auxiliaries

PB10474-25



PB10475-25



DB123593



1 (iOF/SD+OF or iOF+SD24 or iSD)	1 iOF/SD+OF
1 iOF	1 (iSD or iOF or iOF/SD+OF)
None	1 iOF+SD24
None	None
1 iSD	1 iSD
None	1 (iSD or iOF or iOF/SD+OF or iOF+SD24)
1 iOF	1 (iSD or iOF or iOF/SD+OF)
None	1 (iSD or iOF or iOF/SD+OF or iOF+SD24)
1 iOF	1 (iSD or iOF or iOF/SD+OF)

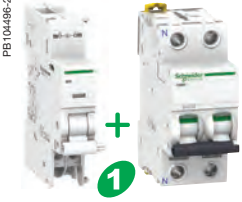












Tripping devices must be mounted first. Comply with the position of the SD function.

\*iSW-NA: the iSD auxiliary contact must be associated with an auxiliary (iMN, iMX, iMX+OF); it indicates that the remote tripping switch disconnector has been tripped open.

Protection  
 Circuit protection  
 Earth leakage protection

Electrical auxiliaries for  
 iC60, iID, RCA and ARA (cont.)

Tripping auxiliaries	Remote control	Device	Vigi iC60
PB104466-25 	ARA automatic recloser or RCA remote control	iC60 circuit breaker or iID residual current circuit breaker	Vigi iC60 add-on residual current device
1 (iMN, iMNs, iMNx or iMX, iMX+OF or iMSU) max.	-	PB104437-25  <i>iC60</i>	PB104466-25  <i>Vigi iC60</i>
2 (iMN, iMNs, iMNx or iMX, iMX+OF or iMSU) max.	-		
2 (iMN, iMNs, iMNx or iMX, iMX+OF or iMSU) max.	-		
3 iMSU max.	-		
1 (iMN, iMNs, iMNx or iMX, iMX+OF or iMSU) max.	-		
		PB104472-25  <i>iID/iSW-NA</i>	
1 (iMN, iMNs, iMNx or iMX, iMX+OF or iMSU) max.			
None	PB106256-25  <i>ARA</i>	PB104437-25  <i>iC60</i>	PB104466-25  <i>Vigi iC60</i>
		PB104472-25  <i>iID</i>	
1 (iMX or iMN or iMSU) max.			
None	PB106253-25  <i>RCA</i>	PB104437-25  <i>iC60</i>	PB104437-25  <i>Vigi iC60</i>






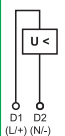

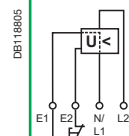
# Protection

## Circuit protection

### Earth leakage protection

# Electrical auxiliaries for iC60, iID, iDPN Vigi, RCA and ARA

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		Tripping					
Auxiliaries		iMN		iMNs		iMNx	
Type		Undervoltage release					
		Instantaneous		Delayed		Independent of the supply voltage	
							
Function		<ul style="list-style-type: none"> <li>Trips the device with which it is combined when its input voltage decreases (between 70 % and 35 % <math>U_n</math>). Prevents device closing again until its input voltage is restored</li> </ul>		<ul style="list-style-type: none"> <li>Not tripping on transient voltage dip (up to 0.2 s)</li> </ul>		<ul style="list-style-type: none"> <li>Tripping of the associated device by opening of the control circuit (e.g. push-button, dry contact)</li> <li>A drop in the supply voltage does not trip the associated device</li> <li>A locking push-button control allows the circuit protected (e.g. machine control) to be placed in safety configuration</li> </ul>	
Wiring diagrams							
Use		<ul style="list-style-type: none"> <li>Emergency stoppage by normally closed push button</li> <li>Ensures the safety of power supply circuits for several machines by preventing "uncontrolled" restarting</li> </ul>				<ul style="list-style-type: none"> <li>Emergency stoppage with fail-safe principle</li> <li>Insensitive to control circuit voltage variation to increase service continuity</li> </ul> <p><b>Important: Before any servicing operation switch off the mains power supply (voltage presence at terminals E1/E2)</b></p>	
Catalogue numbers		A9A26960	A9A26961	A9A26959	A9A26963	A9A26969	A9A26971
iC60, iID, iDPN Vigi, RCA and ARA		■	■	■	■	■	■
iC60, iID double terminals		■	■	■	■	■	■
<b>Technical specifications</b>							
Rated voltage ( $U_e$ )	V AC	220...240	48	115	220...240	220...240	380...415
	V DC	-	48	-	-	-	-
Standardised operating and non-response to voltage times ( $U_a$ )*		-	-	-	-	-	-
Maximum operating time		-	-	-	-	-	-
Minimum non-response time		-	-	-	-	-	-
Operating frequency	Hz	50/60		400	50/60		50/60
Red mechanical indicator		On front face			On front face		On front face
Test function		-			-		-
Width in 9 mm modules		2			2		2
Operating current		-			-		-
Number of contacts		-			-		-
Operating temperature	°C	-35...+70			-35...+70		-35...+70
Storage temperature	°C	-40...+85			-40...+85		-40...+85




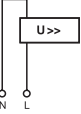
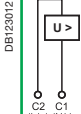
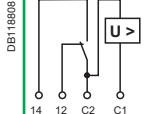
\*( $U_a$ )  
Voltages measured between the phase and the neutral conductor, at which the iMSU device must control the associated protective device.





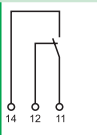
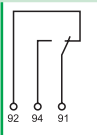
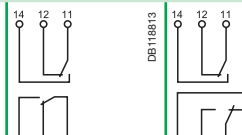
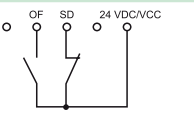
# Protection

## Circuit protection

### Earth leakage protection

# Electrical auxiliaries for iC60, iID, iDPN Vigi, RCA and ARA (cont.)

iMSU						iMX			iMX+OF		
Overvoltage release						Shunt release			With Open/Close auxiliary contact		
											
<ul style="list-style-type: none"> <li>Switches off the power supply by opening the breaker with which it is combined, in the event that the phase/neutral voltage is exceeded (loss of neutral). For a four-phase network, use three iMSU tripping auxiliaries</li> </ul>						<ul style="list-style-type: none"> <li>Trips the breaker when powered</li> </ul>			<ul style="list-style-type: none"> <li>Includes an open/close contact (OF) to indicate the "open" or "closed" position of the breaker</li> </ul>		
											
<ul style="list-style-type: none"> <li>Protection of equipment against overvoltages on the electrical network (neutral conductor break)</li> <li>Voltage monitoring between phase and neutral conductors</li> </ul>						<ul style="list-style-type: none"> <li>Emergency stoppage by normally open push button</li> </ul>			<ul style="list-style-type: none"> <li>Emergency stoppage by normally open push button</li> <li>Remote indication of the position of the associated breaker</li> </ul>		
A9A26500						A9A26476	A9A26477	A9A26478	A9A26946	A9A26947	A9A26948
■						■	■	■	■	■	■
■						■	■	■	■	■	■
230						100...415	48	12...24	100...415	48	12...24
-						110...130	48	12...24	110...130	48	12...24
255 V AC	275 V AC	300 V AC	350 V AC	400 V AC	-	-	-	-	-	-	
No tripping	15 s	5 s	0.75 s	0.20 s	-	-	-	-	-	-	
	3 s	1 s	0.25 s	0.07 s	-	-	-	-	-	-	
50/60						50/60			50/60		
On front face						On front face			On front face		
-						-			-		
2						2			2		
-						-			≤ 24 V DC      10 mA mini, 6 A maxi 48 V DC      2 A ≤ 130 V DC      1 A ≤ 240 V AC      6 A 415 V AC      3 A 1 NO/NC		
-35...+70						-35...+70			-35...+70		
-40...+85						-40...+85			-40...+85		

		Indication						
Auxiliaries		iOF	iSD	iOF/SD+OF	iOF+SD24			
Type		Open/close auxiliary contact	Fault indicating contact	Double open/close or fault indicating contact	Double open/close and fault indicating contact			
								
Function		<ul style="list-style-type: none"> <li>Changeover contact indicates "open" or "closed" position of the breaker</li> </ul>	<ul style="list-style-type: none"> <li>Changeover contact indicates position of the breaker; upon:                             <ul style="list-style-type: none"> <li>electrical fault</li> <li>action on tripping auxiliary</li> </ul> </li> <li>Same indication as VISI-TRIP</li> </ul>	<ul style="list-style-type: none"> <li>The iOF/SD+OF auxiliary is a 2-in-1 product: via a mechanical selector switch, it provides two contacts, OF+SD or OF+OF</li> </ul>	<ul style="list-style-type: none"> <li>2 contacts (1 NO + 1 NC) can report the signalling information of the associated device to the Acti 9 Smartlink or a programmable logic controller:                             <ul style="list-style-type: none"> <li>electrical fault</li> <li>actuation of the tripping auxiliary</li> <li>"Open" or "Closed" position of the associated device</li> </ul> </li> </ul>			
Wiring diagrams								
				OF position      SD position				
Use		<ul style="list-style-type: none"> <li>Remote indication of the position of the associated breaker</li> </ul>	<ul style="list-style-type: none"> <li>Remote indication of tripping upon a fault of the associated breaker</li> </ul>	<ul style="list-style-type: none"> <li>Remote indication of position and/or tripping upon a fault of the associated breaker</li> </ul>	<ul style="list-style-type: none"> <li>Remote indication of position and tripping upon a fault of the associated breaker</li> </ul>			
Catalogue numbers		A9A26924	A9A26869	A9A26927	A9A26855	A9A26929	A9A26897	
iC60, iID, iDPN Vigi, RCA and ARA		■	-	■	-	■	■	
iC60, iID double terminals		-	■	-	■	■	■	
Technical specifications								
Rated voltage (Ue)	V AC	240...415		240...415		240...415		-
	V DC	24...130		24...130		24...130		24
Operating frequency	Hz	50/60		50/60		50/60		-
		-		On front face		On front face		On front face
Test function		On toggle		On toggle		On toggle		On toggle
Width in 9 mm modules		1		1		1		1
Operating current	24 V DC	10 mA mini, 6 A maxi		10 mA mini, 6 A maxi		10 mA mini, 6 A maxi		2 mA mini, 50 mA maxi
	48 V DC	2 A		2 A		2 A		-
	60 V DC	1.5 A		1.5 A		1.5 A		-
	130 V DC	1 A		1 A		1 A		-
	240 V AC	6 A		6 A		6 A		-
Number of contacts		1 NO/NC		1 NO/NC		1 NO/NC + 1 NO/NC		1 NO/NC
	°C	-35...+70		-35...+70		-35...+70		-25...+70
Operating temperature		-35...+70		-35...+70		-35...+70		-25...+70
Storage temperature		-40...+85		-40...+85		-40...+85		-40...+85

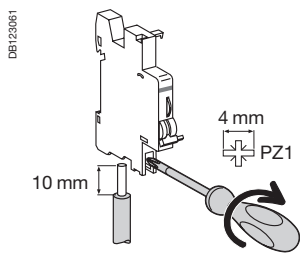
# Protection

## Circuit protection

## Earth leakage protection

# Electrical auxiliaries for iC60, iID, iDPN Vigi, RCA and ARA (cont.)

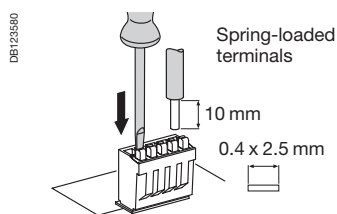
### Connection



Type	Tightening torque	Copper cables		Multi-cables terminal	
		Rigid	Flexible	Rigid cables	Cables with ferrule
		DB122945	DB123007	DB123011	DB123008
Indication auxiliaries	1 N.m	1 to 4 mm <sup>2</sup>	0.5 to 2.5 mm <sup>2</sup>	2 x 2.5 mm <sup>2</sup>	2 x 1.5 mm <sup>2</sup>
Tripping auxiliaries	1 N.m	1 to 6 mm <sup>2</sup>	0.5 to 4 mm <sup>2</sup>	2 x 2.5 mm <sup>2</sup>	2 x 2.5 mm <sup>2</sup>

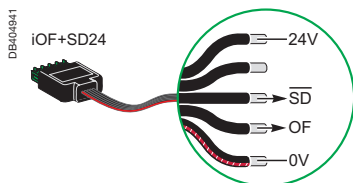
2

### Ti24 connector connection



Type	Catalogue numbers	Copper cables	
		Rigid	Flexible
		DB122945	DB123553
Ti24 interface	A9XC2412	1 x 0.5 to 1.5 mm <sup>2</sup>	1 x 0.5 to 1.5 mm <sup>2</sup>

### Ti24 prefabricated cables connection



Type	Catalogue numbers	Length
<b>Connection for Acti 9 Smartlink</b>		
6 short prefabricated	A9XCAS06	100 mm
6 medium-sized prefabricated	A9XCAM06	160 mm
6 long prefabricated	A9XCAL06	870 mm
<b>Connection for PLC type terminals</b>		
6 long prefabricated on a single side	A9XCAU06	870 mm




# Protection

## Circuit protection

### Earth leakage protection


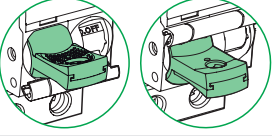
# Accessories for iC60, iID, iDPN Vigi, Reflex iC60, RCA, ARA and iSW

2

		Mounting								
Accessories	Rotary handle			Plug-in base						
PB104509-35				PB106297_10			PB104508-35			
Function		<p><b>Front or side-mounted control</b></p> <ul style="list-style-type: none"> <li>■ Degree of protection: IP55 rotary handle</li> <li>■ Installation: <ul style="list-style-type: none"> <li>□ the control mechanism is mounted on the device</li> <li>□ the rotary handle is fixed to the front or side of the enclosure</li> </ul> </li> <li>■ Front-mounted (on door or faceplate)</li> <li>■ Prevents the door from opening when the device is in the ON position (can be deactivated)</li> <li>■ Can be padlocked when the device is in the "open" position (can be padlocked with the device in the "closed" position subject to adaptation)</li> <li>■ Can be locked by padlock of (dia. 5 to 8 mm), not supplied with the device</li> <li>■ Pushbutton: iID test available in the front face of the rotary handle</li> </ul>			<ul style="list-style-type: none"> <li>■ The Laser Square tool brings the accuracy to align the circuit breaker and the rotary handle</li> </ul>		<p><b>Allows a breaker to be removed or replaced quickly, without handling the connections</b></p> <ul style="list-style-type: none"> <li>■ Degree of protection: IP20</li> <li>■ Consists of: <ul style="list-style-type: none"> <li>□ a base to be fastened on a rail (or panel)</li> <li>□ 2 "blades" to be fastened in the device's terminals</li> </ul> </li> <li>■ Connection: tunnel terminals for cable up to 35 mm<sup>2</sup> rigid, 25 mm<sup>2</sup> flexible,</li> <li>■ Installation: <ul style="list-style-type: none"> <li>□ in universal enclosure</li> <li>□ on horizontal rail</li> </ul> </li> <li>■ Height: 178 mm</li> <li>■ Not compatible with Vigi iC60 and auxiliaries</li> <li>■ Can be locked by padlock of (dia. 6 mm), not supplied with the device</li> </ul>			
Catalogue numbers	A9A27005	A9A27006	A9A27008	GVAPL01	A9A27003 (1 per pole)					
	Operating sub-assembly									
	+	+								
	Black handle	Red handle	No handle							
Set of	1	1	1	1	1					
Suitability										
iC60	■ 2P, 3P, 4P									
iSW	■ 2P, 3P, 4P									
iC60 + Vigi iC60	■ 2P, 3P, 4P									
iID	■				■ ≤ 63 A					
Reflex iC60 or RCA+iC60 or ARA+iC60	-									
ARA+iID	-									

Protection  
 Circuit protection  
 Earth leakage protection

Accessories for iC60, iID, iDPN Vigi,  
 Reflex iC60, RCA, ARA and iSW (cont.)

Padlocking device			
PB104492.15			
DB123599			
<p>Used to padlock breaker in open or closed position</p> <ul style="list-style-type: none"> <li>■ Padlock diameter: 3 to 6 mm</li> <li>■ Sealable (max. diameter: 1.2 mm)</li> <li>■ Locking in ON position does not prevent tripping of the breaker in the event of faults</li> <li>■ Suitable for IEC/EN 60947-2 compliant disconnection</li> </ul>			
	<b>MCB</b>	<b>MCB in ISOBAR</b>	<b>RCBO</b>
	A9A26970	SELA	A9A27049
	10	3	10
	■		
	■		
	■		
	■		
	■		

# Protection

## Circuit protection

### Earth leakage protection

# Accessories for iC60, iID, iDPN Vigi, Reflex iC60, RCA, ARA, iSW (cont.)

2

Security						
Accessories	Screw shield		Terminal shield		Inter-pole barrier	Spacer
						
Function	Prevents any contact with the connecting screws <ul style="list-style-type: none"> <li>■ Upgrades degree of protection to IP20D</li> <li>■ Sealable, max. diameter 1.2 mm</li> </ul>		Prevents any contact with the terminals <ul style="list-style-type: none"> <li>■ Upgrades degree of protection to IP20D</li> <li>■ Sealable, max. diameter 1.2 mm</li> <li>■ Set of two, for upstream and downstream terminals</li> <li>■ For 3 poles: A9A26975 + A9A26976</li> <li>■ For 4 poles: 2 X A9A26976</li> </ul>		Enhances insulation between connections: cables, terminals, lugs, etc	<ul style="list-style-type: none"> <li>■ Used to:               <ul style="list-style-type: none"> <li><input type="checkbox"/> complete rows</li> <li><input type="checkbox"/> separate devices.</li> </ul> </li> <li>Width: 1 x 9 mm module</li> <li>■ Allows cable routing from one row to another, (above and below), up to 6 mm<sup>2</sup></li> </ul>
Catalogue numbers	A9A26982	A9A26981	A9A26975	A9A26976	A9A27001	A9A27062 DIN mounted A9A27063 Breaker mounted
Set of	12 x 1 pole	20 x 4 poles (splittable)	2 x 1 pole	2 x 2 poles	10	5
<b>Suitability</b>						
iC60	-	■	■	■	■	■
iSW	-	-	■	■	■	■
Vigi iC60	■	-	-	-	-	■
iID	-	■	-	■	■	■
Reflex iC60 or RCA+iC60 or ARA+iC60	-	■	■	■	■	■
ARA+iID	-	■	-	■	■	■

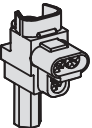
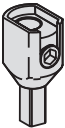




# Protection

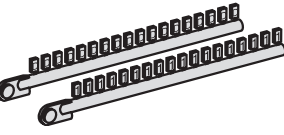
## Circuit protection

### Earth leakage protection

# Accessories for iC60, iID, iDPN Vigi, Reflex iC60, RCA, ARA, iSW (cont.)

2

		Connection		
Accessories	Multi-cable terminal		50 mm <sup>2</sup> terminal Al	Screw-on connection for ring terminal
				
<b>Function</b>				
	For 3 copper cables: ■ Rigid up to 16 mm <sup>2</sup> ■ Flexible up to 10 mm <sup>2</sup>		For aluminium cables from 16 to 50 mm <sup>2</sup>	For lug tipped cables, front or rear mounting
				
Catalogue numbers	19091	19096	27060	27053
Set of	4	3	1	8
iC60 ≤ 25 A	-	-	-	■
Reflex iC60 ≤ 25 A	-	-	-	■
iC60 > 25 A	■	■	■	■
Reflex iC60 40 A, iSW	-	-	-	■
Vigi iC60	-	-	-	-
iID	■	■	■	■
iDPN Vigi	-	-	-	■
iSW-NA	■	■	■	■
Tightening torque	2 N.m		10 N.m	2 N.m
Length stripping	11 mm		13 mm	-
Tools to use	Dia. 5 mm or PZ2		Hc 1/5" or 5 mm	Dia. 5mm

		Marking					
Accessories	Marker strip						
							
<b>Used for connection identification</b>							
Catalogue numbers	0: AB1-R0 1: AB1-R1 2: AB1-R2 3: AB1-R3 4: AB1-R4	5: AB1-R5 6: AB1-R6 7: AB1-R7 8: AB1-R8 9: AB1-R9	A: AB1-GA B: AB1-GB C: AB1-GC D: AB1-GD E: AB1-GE F: AB1-GF G: AB1-GG H: AB1-GH I: AB1-GI	J: AB1-GJ K: AB1-GK L: AB1-GL M: AB1-GM N: AB1-GN O: AB1-GO P: AB1-GP Q: AB1-GQ R: AB1-GR	S: AB1-GS T: AB1-GT U: AB1-GU V: AB1-GV W: AB1-GW X: AB1-GX Y: AB1-GY Z: AB1-GZ	+: AB1-R12 -: AB1-R13 blank: AB1-RV	
Set of	250						
iC60, Reflex iC60, iSW	■ 4 markers max. per pole						
Vigi iC60	■ 4 markers max. per device						
iID	■ 4 markers max. per device						
iDPN Vigi	■ 4 markers max. per device						
iSW-NA	■ 4 markers max. per device						



# Protection

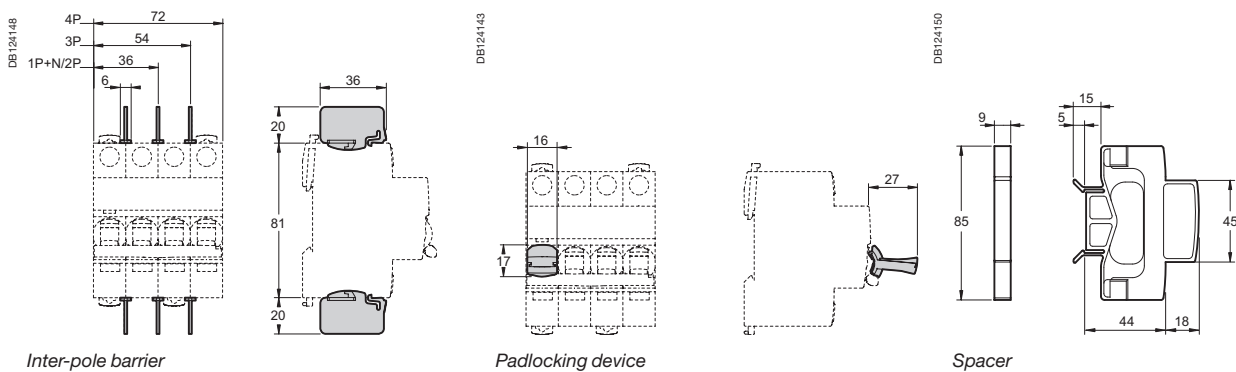
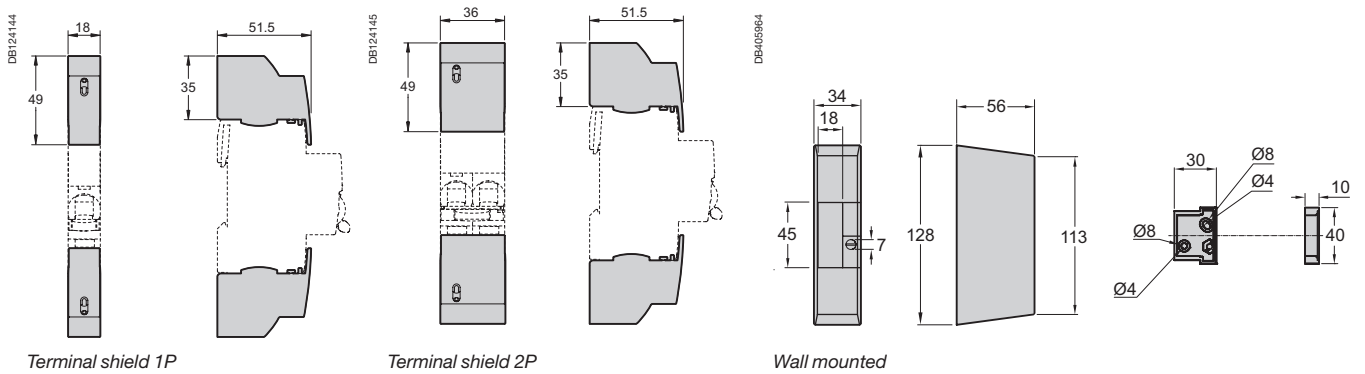
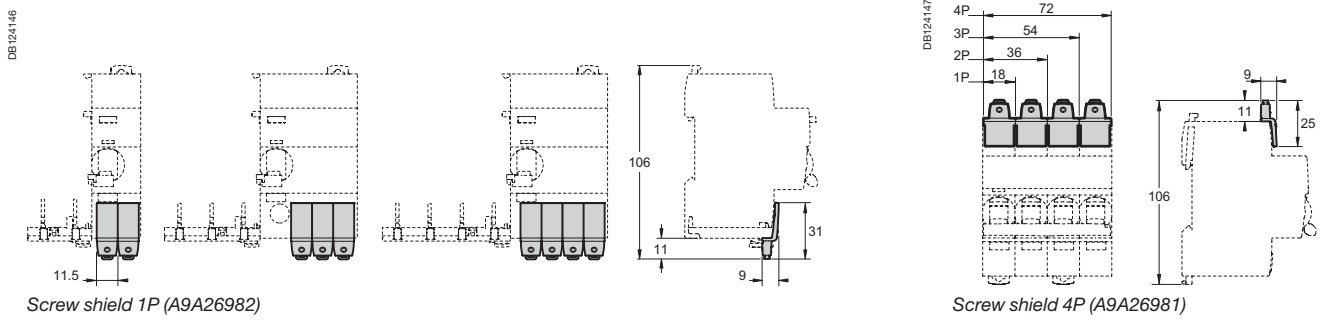
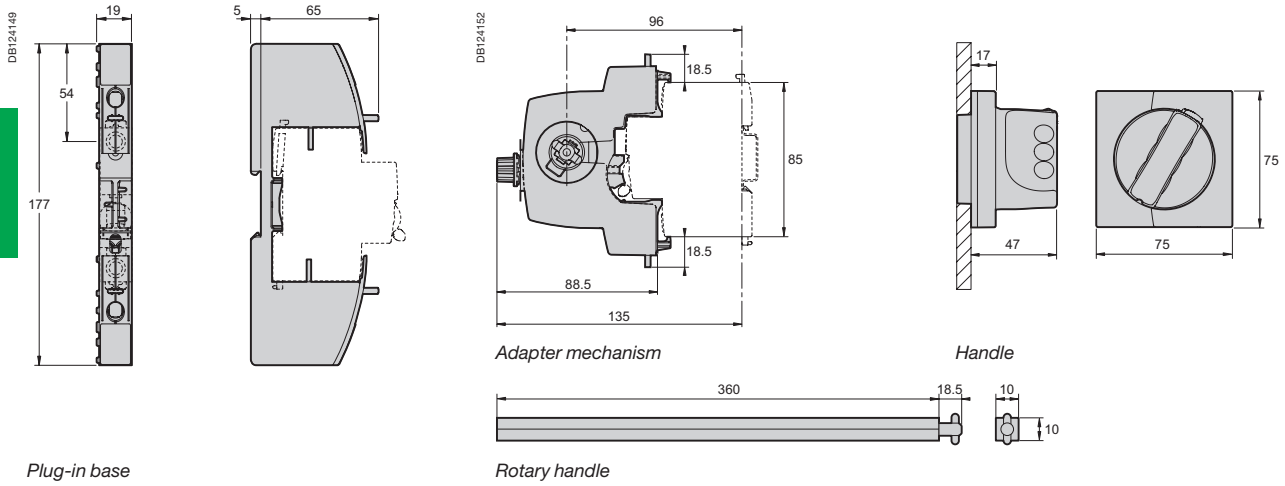
## Circuit protection

### Earth leakage protection

# Accessories for iC60, iID, iDPN Vigi, Reflex iC60, RCA, ARA, iSW (cont.)

2

## Dimensions (mm)

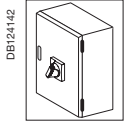


# Protection Circuit protection Earth leakage protection

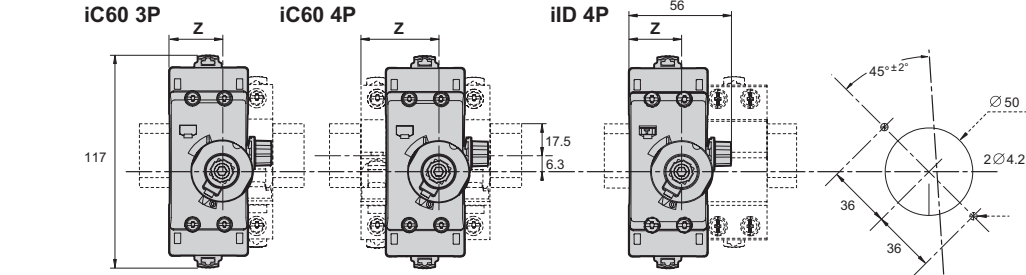
## Accessories for iC60, iID, iDPN Vigi, Reflex iC60, RCA, ARA, iSW (cont.)

### Rotary handle installation

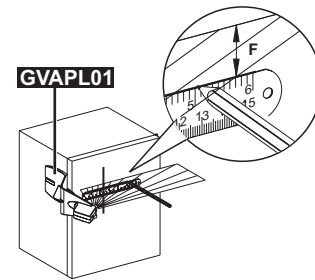
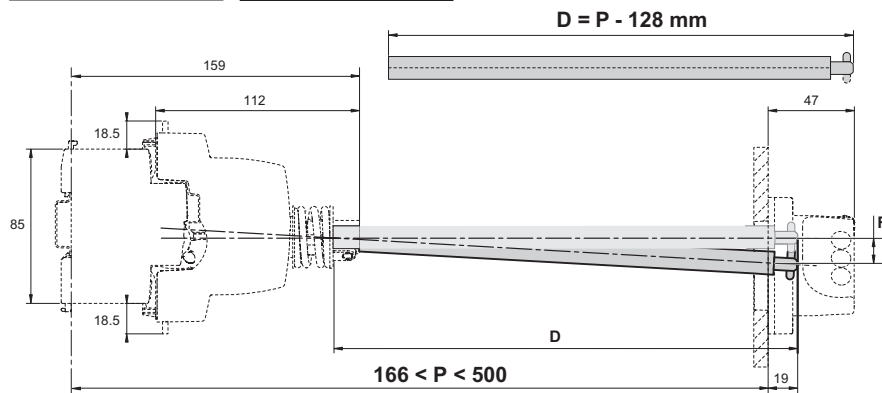
#### Dimensions (mm)



iC60	Z (mm)
2P	25.3
2P + Vigi	25.3
3P	25.3
3P + Vigi	43
4P	43
4P + Vigi	43

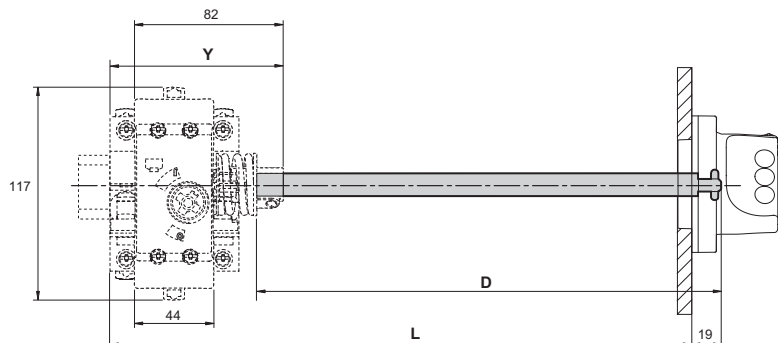
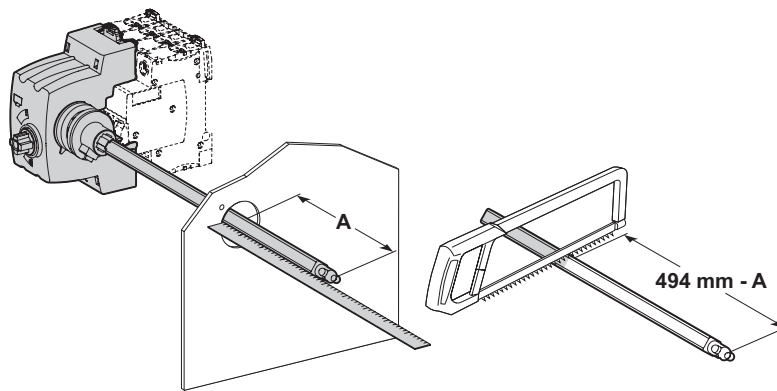
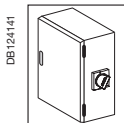


iID	Z (mm)
2P	25.3
4P	25.3



P (mm)	F (mm)
300	5
500	11

Rotary handle: front mounted control



iC60	X (mm)	Y (mm)
2P	44.5	76.8
2P + Vigi	44.5	76.8
3P	44.5	76.8
3P + Vigi	62	94.5
4P	62	94.5
4P + Vigi	62	94.5

iID/iSW-NA	X (mm)	Y (mm)
2P	44.5	76.8
4P	44.5	76.8



Rotary handle: side mounted control



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<i>iDPN circuit breakers</i> .....	<i>pages 3/2 to 3/4</i>
<i>Residual current devices iDPN Vigi</i> .....	<i>pages 3/5 to 3/7</i>
<i>iC120H circuit breakers (curves B, C, D)</i> .....	<i>pages 3/8 to 3/10</i>
<b><i>Vigi iC120 add-on residual current devices</i></b> .....	<b><i>pages 3/11 to 3/15</i></b>
Type AC .....	page 3/11
Type A .....	page 3/12
Type SI .....	page 3/13
Technical .....	pages 3/14 to 3/15
<b><i>Accessories for iC120, DPN, DPN Vigi, C60H-DC, SW60-DC, C60NA-DC, C60PV-DC, iSW devices</i></b> .....	<b><i>pages 3/16 to 3/19</i></b>
Installation .....	page 3/16
Safety .....	page 3/17
Connection .....	page 3/18
Identification .....	page 3/19
<b><i>Electrical auxiliaries for iC120, DPN, DPN Vigi, ID, C60H-DC, SW60-DC, C60PV-DC, C60NA-DC devices</i></b> .....	<b><i>pages 3/20 to 3/23</i></b>
Tripping .....	pages 3/20 to 3/21
Identification .....	page 3/22
Connection .....	page 3/23
<b><i>P25M</i></b> .....	<b><i>pages 3/24 to 3/27</i></b>
Electrical auxiliaries .....	page 3/26
Accessories .....	page 3/27



The protection of property and people against direct or indirect contacts, insulation faults and fire hazards is implemented by residual current devices obtained by the combination of a circuit breaker and an earth leakage module.

## IEC/EN 60898-1

The circuit breakers are designed for protection against short-circuit and overload currents, for the control and disconnection of final distribution circuits in service sector, agricultural and industrial applications, in TT earthing system or with multiple earthed neutral (TN-S) requiring neutral cutoff without its protective device.

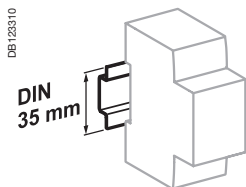
3



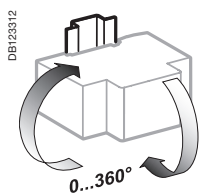
## Catalogue numbers

iDPN N circuit breakers		
	6000	
Type	1P+N	
Auxiliaries	Modules CA907008 and CA907010	
Vigi	Module CA902013	
Rating (In)	B curve	C curve
1 A	-	A9N21552
2 A	-	A9N21553
3 A	-	A9N21554
4 A	A9N17515	A9N21722
6 A	A9N17516	A9N21555
10 A	A9N17517	A9N21556
13 A	A9N17518	A9N21725
16 A	A9N17519	A9N21557
20 A	A9N17520	A9N21558
25 A	A9N17521	A9N21559
32 A	A9N17522	A9N21560
40 A	A9N17523	A9N21561
Width in 9-mm modules	2	
Accessories	Module LIN001 and CA907010	

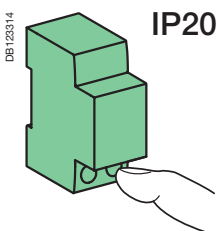
(\*) Libro catalogue number, IMQ approval



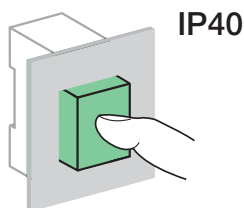
Clip on DIN rail 35 mm.



Indifferent position of installation.



IP20



IP40

## Technical data

Main characteristics		iDPN N
Insulation voltage (Ui)	Phase-to-neutral	400 V
	Phase-to-phase	440 V
Voltage rating (Ue)	Phase-to-neutral	230 V
	Phase-to-phase	400 V
Magnetic tripping	B curve	3 to 5 I <sub>n</sub> ■
	C curve	5 to 10 I <sub>n</sub> ■
	D curve	10 to 14 I <sub>n</sub> ■

### According to IEC/EN 60898-1

Limitation class	3
Rated breaking capacity (I <sub>cn</sub> )	6000 A
Service breaking capacity (I <sub>cs</sub> )	100 % I <sub>cn</sub>
Rated breaking and making capacity on a single pole (I <sub>cn1</sub> )	I <sub>cn1</sub> = I <sub>cn</sub>

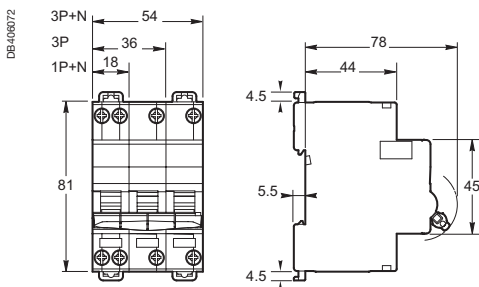
### According to IEC 60947-2

Rated impulse withstand voltage (U <sub>imp</sub> )	4 kV
Breaking capacity (I <sub>cu</sub> )	10 kA
Service breaking capacity (I <sub>cs</sub> )	75 % I <sub>cu</sub>
Pollution degree	3

### Additional characteristics

Degree of protection (IEC 60529)	Device only		
	Device in modular enclosure		
Endurance (O-C)	Electrical	≤ 20 A	20000 cycles
		≥ 25 A	10000 cycles
	Mechanical	20000 cycles	
Operating temperature	-25°C to +70°C		
Storage temperature	-40°C to +70°C		
Tropicalization (IEC 60068-1)	Treatment 2 (relative humidity of 95 % at 55°C)		
Neutral opening and closing shifted relative to phases	No surge upon operation of the device		

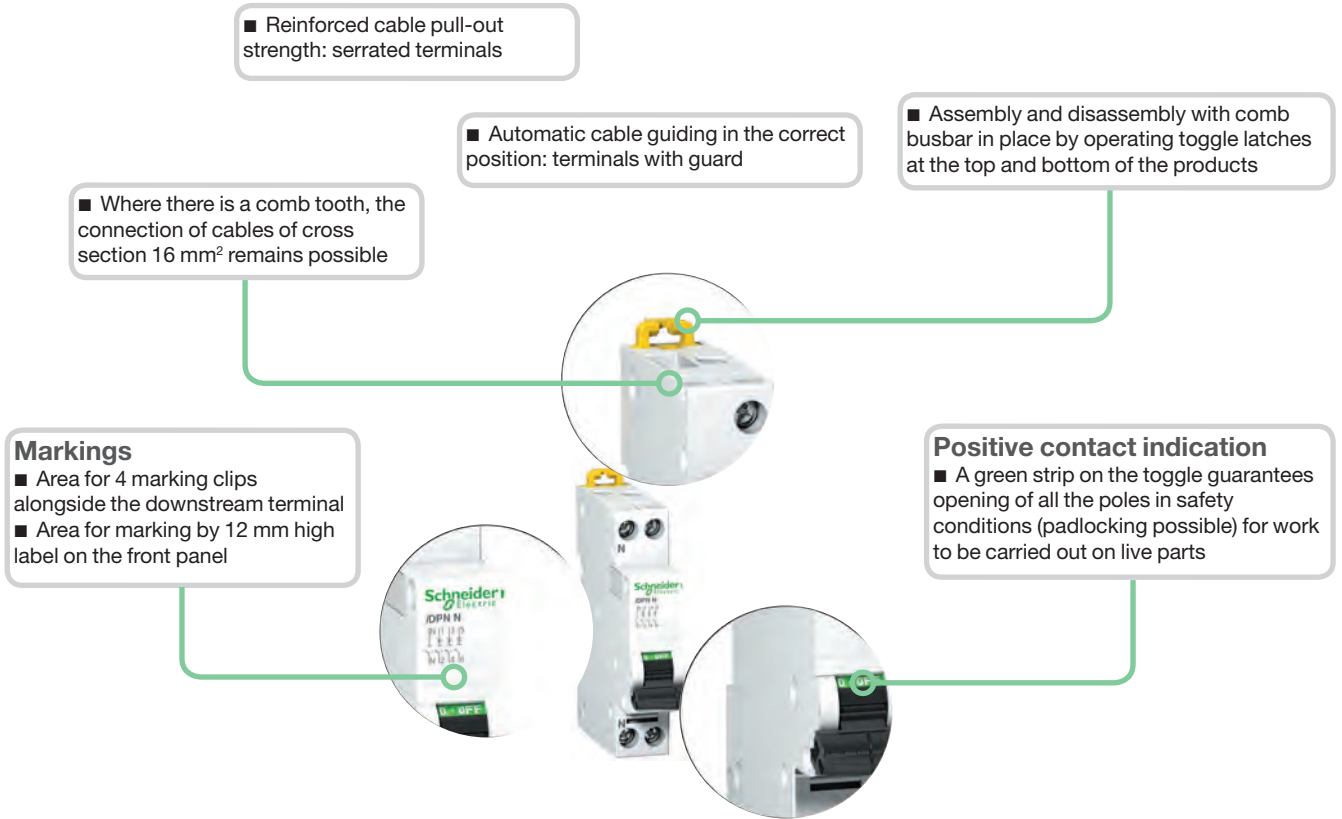
## Dimensions (mm)



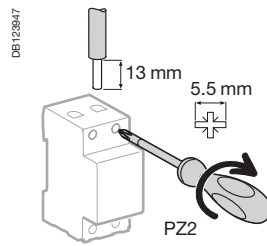
## Weight (g)

Circuit breaker	
Type	iDPN
1P+N	115

3



### Connection



Rating	Tightening torque	Copper cables	
		Rigid	Flexible or with ferrule
DT40, <i>iDPN</i> , C40	2 N.m	DBI122945	DBI122946
DT60	3.5 N.m	0.75 to 16 mm <sup>2</sup>	0.33 to 10 mm <sup>2</sup>
		0.5 to 35 mm <sup>2</sup>	0.5 to 25 mm <sup>2</sup>

■ Connection by comb busbar or cables (as per EN 50027).



IEC/EN 61009

- The iDPN Vigi residual current device provide complete protection for final circuits (against overcurrents and insulation faults):
  - protection for users against electric shocks by direct contacts ( $\leq 30$  mA),
  - protection for users against electric shocks by indirect contacts (300 mA),
  - protection of the installations against fire risks (300 mA).



iDPN H Vigi

iDPN N Vigi [6000]			
Type	AC	Width in 9 mm modules	
<b>Auxiliaries</b>			
<b>1P+N Curve B</b>	<b>Sensitivity</b>	<b>30 mA</b>	
	Rating (In)		4
	4 A	A9D55604	
	6 A	A9D55606	
	10 A	A9D55610	
	16 A	A9D55616	
	20 A	A9D55620	
	25 A	A9D55625	
	32 A	A9D55632	
40 A	A9D55640		
<b>1P+N Curve C</b>	<b>Sensitivity</b>	<b>30 mA</b>	
	Rating (In)		4
	6 A	A9D31606	
	10 A	A9D31610	
	16 A	A9D31616	
	20 A	A9D31620	
	25 A	A9D31625	
	32 A	A9D31632	
	40 A	A9D31640	
Voltage rating (Ue)		230 V AC	
Operating frequency		50 Hz	



# Protection

## Earth leakage protection

# Residual current devices

## iDPN Vigi (cont.)

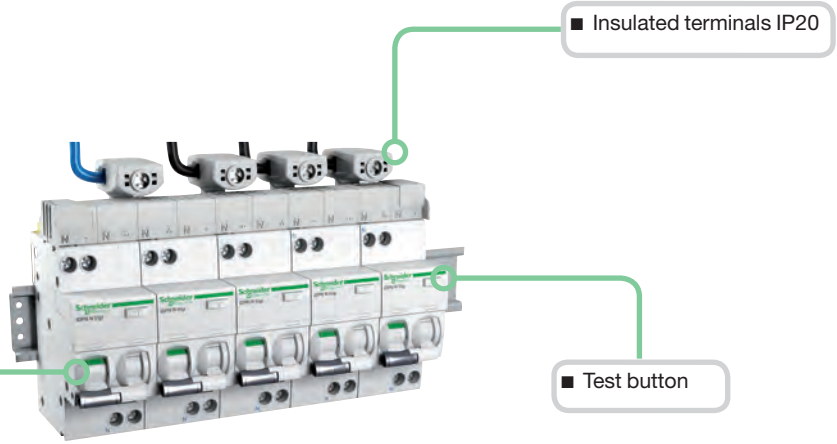
DB4019588-40

3

■ Fast contact closure

**Visi-trip double window**

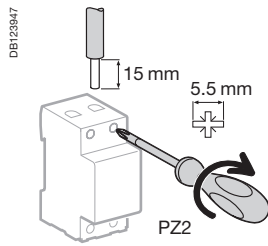
- Fault tripping circuit breaker is indicated by a red mechanical indicator on the front face.
- Earth fault is indicated by a red mechanical indicator on the front face





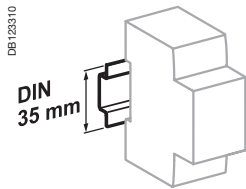
**Positive contact indication**

- A green strip on the toggle guarantees opening of all the poles in safety conditions (padlocking possible) for work to be carried out on live parts

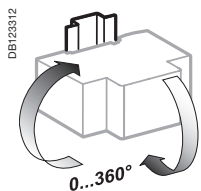
### Connection



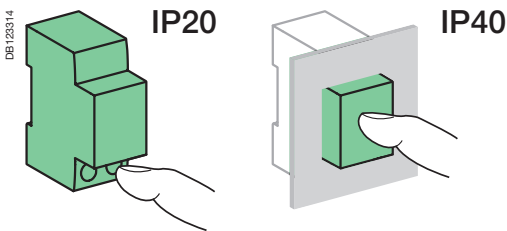
Rating	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
4 to 40 A	2 N.m	 DB122945	 DB122946
		1 to 16 mm <sup>2</sup>	1 to 10 mm <sup>2</sup>



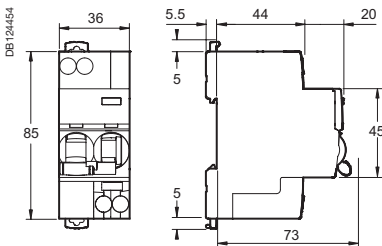
Clip on DIN rail 35 mm.



Indifferent position of installation.



Dimensions (mm)



Technical data

Main characteristics			
Insulation voltage (Ui)		400 V AC	
Pollution degree		3	
Rated impulse withstand voltage (Uimp)		4 kV	
Setting temperature for ratings		30°C	
Magnetic tripping	Curve B	Between 3 and 5 In	
	Curve C	Between 5 and 10 In	
According to EN 61009			
Limitation class			
Rated breaking capacity (Icn)		6000 A	
Rated residual breaking and making capacity (IΔm)		6000 A	
8/20 μs impulse withstand	Type AC	250 Å	
	Type A	250 Å	
Additional characteristics			
Earth leakage protection with instantaneous tripping		30 mA	
Degree of protection (IEC 60529)	Device only	IP20	
	Device in modular enclosure	IP40 Insulation classe II	
Endurance (O-C)	Electrical	≤ 20 A	20,000 cycles
		≥ 25 A	10,000 cycles
	Mechanical		20,000 cycles
Overvoltage category (IEC 60364)			III
Operating temperature	Type AC		-5°C to +60°C
	Type A, <b>SI</b>		-25°C to +60°C
Storage temperature			-40°C to +85°C
Tropicalization (IEC 60068-1)			Treatment 2 (relative humidity 95 % to 55°C)

Weight (g)

Residual current device	
Type	iDPN Vigi
1P+N	125



3



IEC/EN 60898-1, IEC 60947-2

iC120H circuit breakers are multistandard circuit breakers that combine the following functions:

- circuit protection against short-circuit currents
- circuit protection against overload currents
- suitability for isolation in the industrial sector to IEC/EN 60947-2
- fault tripping and indication by adding auxiliaries.

Alternating current (AC) 50/60 Hz

Breaking capacity (Icu) to IEC/EN 60947-2						Service breaking capacity (Ics)
Type	Voltage (V)					
1P	12 to 130 V	220 to 240 V	380 to 415 V	440 V		50 % of Icu
Rating (In) 63 to 125 A	30 kA	15 kA	4,5 kA <sup>(1)</sup>	-		
2P, 3P, 4P	12 to 130 V	220 to 240 V	380 to 415 V	440 V		50 % of Icu
63 to 125 A	-	30 kA	15 kA	10 kA		

Breaking capacity (Icn) to IEC/EN 60898-1

Type	Voltage (V)		Service breaking capacity (Ics)
1P, 2P, 3P, 4P	230 to 400 V		
Rating (In) 63 to 125 A	15000 A		

<sup>(1)</sup> One-pole breaking capacity in IT isolated neutral system (double fault).

Direct current (DC)

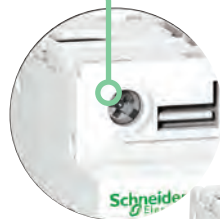
Breaking capacity (Icu) according to IEC/EN 60947-2						Service breaking capacity (Ics)
Between +/-	Voltage (Ue)					
	12 to 125 V	≤ 144 V	≤ 250 V	≤ 375 V	≤ 500 V	100 % of Icu
Number of poles	1P		2P	3P	4P	
Rating (In) 63 to 125 A	20 kA	15 kA	15 kA	15 kA	15 kA	

Catalogue numbers

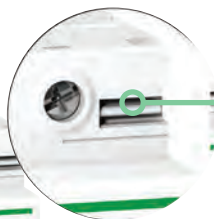
iC120H circuit breaker						
Type	1P			2P		
Vigi iC120	Vigi iC120 add-on residual current device, module CA902016			Vigi iC120 add-on residual current device, module CA902016		
Rating (In)	Curve			Curve		
	B	C	D	B	C	D
63 A	A9N18401	A9N18445	A9N18489	A9N18412	A9N18456	A9N18500
80 A	A9N18402	A9N18446	A9N18490	A9N18413	A9N18457	A9N18501
100 A	A9N18403	A9N18447	A9N18491	A9N18414	A9N18458	A9N18502
125 A	A9N18404	A9N18448	A9N18492	A9N18415	A9N18459	A9N18503
Width in 9 mm modules	3			6		

PB107916-40

■ Terminals insulated to IP20



■ Location for 4 clip-on terminal markers



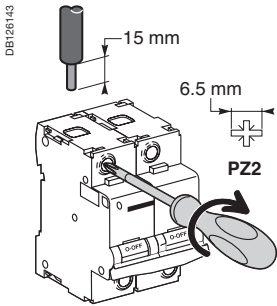
**Positive contact indication**

- Suitability for isolation in the industrial sector to IEC/EN 60947-2.
- The presence of the green strip guarantees that the contacts open physically and allows work to be carried out safely on the downstream circuit.

- Longer product service life thanks to:
  - good overvoltage withstand capacity: products designed to provide a high industrial performance level (degree of pollution, rated impulse withstand voltage and insulation voltage).
  - high limitation performances (see limitation curves).
  - fast closure independent of toggle operating speed.
  - Remote indication of the open/closed/tripped state by auxiliary contacts (optional).
  - Power supply from above or below.

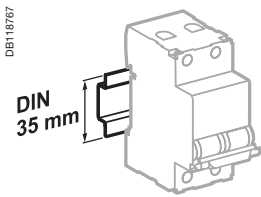
3P			4P		
Vigi iC120 add-on residual current device, module CA902016			Vigi iC120 add-on residual current device, module CA902016		
Curve			Curve		
<b>B</b>	<b>C</b>	<b>D</b>	<b>B</b>	<b>C</b>	<b>D</b>
A9N18423	A9N18467	A9N18511	A9N18434	A9N18478	A9N18522
A9N18424	A9N18468	A9N18512	A9N18435	A9N18479	A9N18523
A9N18425	A9N18469	A9N18513	A9N18436	A9N18480	A9N18524
A9N18426	A9N18470	A9N18514	A9N18437	A9N18481	A9N18525
9			12		

### Connection

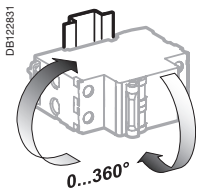


Rating	Tightening torque	Without access.		With accessories			
		Copper cables	50 mm <sup>2</sup> Al term.	Screw-on connection for ring terminal <sup>(1)</sup>	Multi-cable terminal		
		Rigid	Flexible or with ferrule		Rigid cables	Flexible cables	
		DB122945	DB122946	DB122935	DB118789	DB118787	
63 to 125 A	3.5 N.m	1 to 50 mm <sup>2</sup>	1.5 to 35 mm <sup>2</sup>	16 to 50 mm <sup>2</sup>	Ø 5 mm	3 x 16 mm <sup>2</sup>	3 x 10 mm <sup>2</sup>

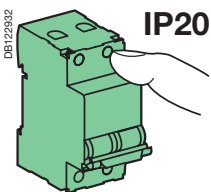
(1) For lugs up to 63 A, front or rear accessories.



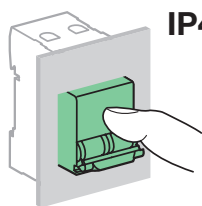
Clips onto 35 mm DIN rail.



Any installation position.



IP20



IP40

### Technical data

#### Main characteristics

##### To IEC/EN 60947-2

Insulation voltage (Ui)	500 V AC	
Degree of pollution	3	
Rated impulse withstand voltage (Uimp)	6 kV	
Thermal tripping	Reference temperature	50°C

##### To IEC/EN 60898-1

Magnetic tripping	Curve B	3 and 5 In
	Curve C	5 and 10 In
	Curve D	10 and 14 In
Limitation class		3

#### Additional characteristics

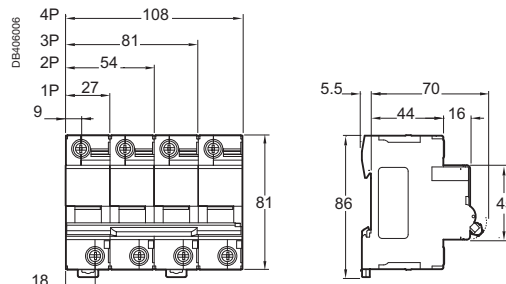
Degree of protection (IEC 60529)	Device only	IP20	
	Device in a modular enclosure	IP40 (IPXXD)	
Endurance (O-C)	Electrical	63 A	10000 cycles (O-C)
		80...125 A	5000 cycles (O-C)
	Mechanical	20000 cycles	
Operating temperature		-30°C to +70°C	
Storage temperature		-40°C to +80°C	
Tropicalisation (IEC 60068-1)		Treatment 2 (relative humidity 95% at 55°C)	

### Weight (g)

#### Circuit breaker

Type	iC120H
1P	205
2P	410
3P	615
4P	820

### Dimensions (mm)



# Protection Earth leakage protection

# Vigi iC120 add-on residual current devices (type AC)

## EN 61009

When a Vigi iC120 device is combined with a iC120 circuit breaker, it provides the following functions:

- protection of persons against electric shock by direct contact (30 mA),
- protection of persons against electric shock by indirect contact ( $\geq 300$  mA),
- protection of installations against fire hazards (300 mA to 1000 mA).



2P



3P



4P

## Catalogue numbers

Vigi iC120 add-on residual current devices							
Type	AC	Vigi iC120					Width in 9 mm modules
Product	Sensitivity	30 mA	300 mA	500 mA	300 mA	1000 mA	
<b>2P</b>  <small>class. 077</small>		A9N18563	A9N18564	A9N18565	A9N18544	A9N18545	7
<b>3P</b>  <small>class. 079</small>		A9N18566	A9N18567	A9N18568	A9N18546	A9N18547	10
<b>4P</b>  <small>class. 078B</small>		A9N18569	A9N18570	A9N18571	A9N18548	A9N18549	10
Operating voltage (Ue)	230...415 V						
Operating frequency	50/60 Hz						



EN 61009

PB107924-30



2P

PB107925-30



3P

PB107926-30



4P

When a Vigi iC120 device is combined with a iC120 circuit breaker, it provides the following functions:

- protection of persons against electric shock by direct contact (30 mA),
- protection of persons against electric shock by indirect contact ( $\geq 300$  mA),
- protection of installations against fire hazards (300 mA to 1000 mA).

3

### Catalogue numbers

Vigi iC120 add-on residual current devices								
Type	A							Width in 9 mm modules
Product	Vigi iC120							
	Sensitivity	30 mA	300 mA	500 mA	300 mA	500 mA	1000 mA	
<b>2P</b> 		A9N18572	A9N18573	A9N18574	-	-	-	7
<b>3P</b> 		A9N18575	A9N18576	A9N18577	-	-	-	10
<b>4P</b> 		A9N18578	A9N18579	A9N18580	A9N18587	A9N18588	A9N18589	10
Operating voltage (Ue)	230...415 V							
Operating frequency	50/60 Hz							



EN 61009

PE107924-30



2P

PE107925-30



3P

PE107926-30



4P

When a Vigi iC120 device is combined with a iC120 circuit breaker, it provides the following functions:

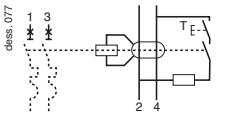
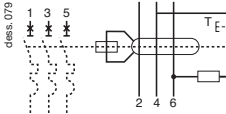
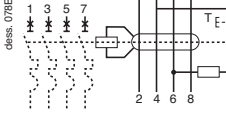
- protection of persons against electric shock by direct contact (30 mA),
- protection of persons against electric shock by indirect contact ( $\geq 300$  mA),
- protection of installations against fire hazards (300 mA to 1000 mA).

**Special feature of type SI**

They are appropriate for operating in environments with:

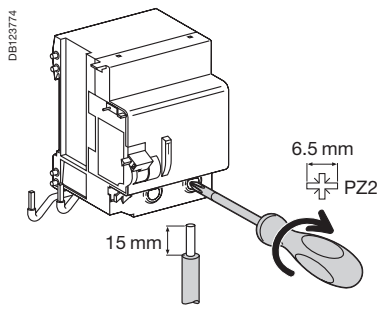
- high risk of nuisance tripping: frequent lightning strikes, IT system, presence of electronic ballasts, frequency converters, presence of switchgear incorporating lighting type interference filters, computer system, etc.
- blind sources:
  - presence of harmonics or high frequency rejections
  - presence of DC components: diodes, diode bridges, switch-mode power supplies, etc.
- protected against nuisance tripping caused by transient voltage surges (lightning strike, operation of switchgear on the network, etc.)

## Catalogue numbers

Vigi iC120 add-on residual current devices							
Type Product	SI	Vigi iC120					Width in 9 mm modules
<b>2P</b> 	Sensitivity	30 mA	300 mA	500 mA	300 mA	1000 mA	
		A9N18591	A9N18592	-	A9N18556	A9N18557	7
<b>3P</b> 	Sensitivity	30 mA	300 mA	500 mA	300 mA	1000 mA	
		A9N18594	A9N18595	-	A9N18558	A9N18559	10
<b>4P</b> 	Sensitivity	30 mA	300 mA	500 mA	300 mA	1000 mA	
		A9N18597 A9N18554	A9N18598 A9N18555	A9N18599	A9N18560	A9N18561	10
Operating voltage (Ue)		230...415 V					
Operating frequency		50/60 Hz					

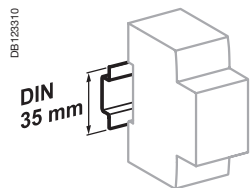


## Connection

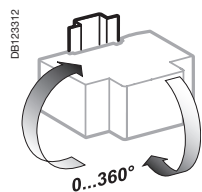


Type	Sensitivity	Tightening torque	Copper cables	
			Rigid	Flexible or with ferrule
Vigi iC120	30...1000 mA	3.5 N.m	1 to 50 mm <sup>2</sup>	1 to 35 mm <sup>2</sup>

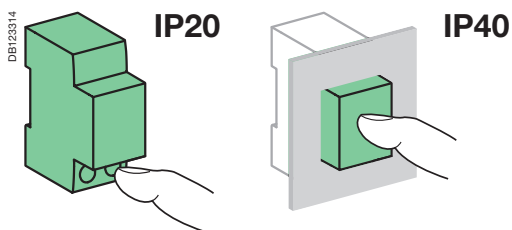
3



Clips onto 35 mm DIN rail.



Any installation position.



## Technical data

### Main characteristics

#### To IEC 60947-2

Insulation voltage (Ui)	500 V AC
Degree of pollution	3
Rated impulse withstand voltage (Uimp)	6 kV

#### To EN 61009

Impulse current withstand (8/20 μs) without tripping	Types AC and A (non-selective ☒)	250 Å
	Types AC and A (selective ☒)	3 kÅ
	Types SI (non-selective ☒)	3 kÅ
	Types SI (selective ☒)	5 kÅ

### Additional characteristics

Degree of protection	Device only	IP20
	Device in a modular enclosure	IP40 Insulation class II
Operating temperature	Type AC	-5°C to +60°C
	Types A and SI	-25°C to +60°C
Storage temperature		-40°C to +85°C

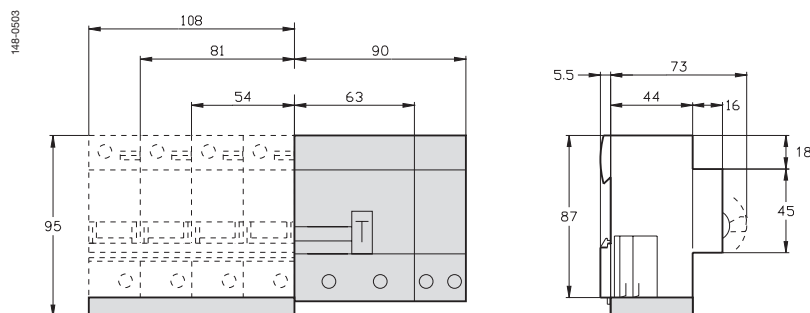
## Weight (g)

### Add-on residual current devices

Type	Vigi iC120
2P	325
3P	500
4P	580

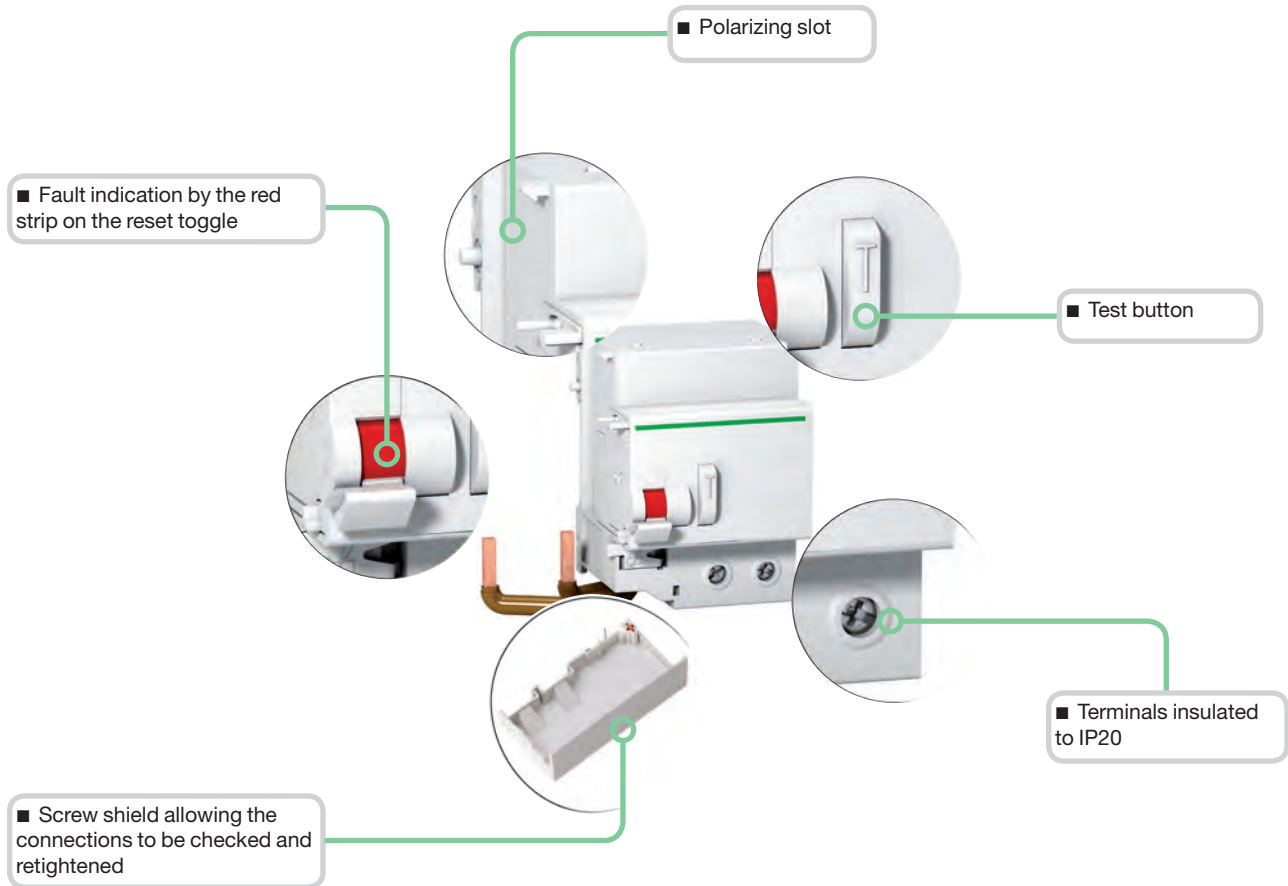
## Dimensions (mm)

### iC120 + Vigi iC120



## Protection Earth leakage protection

## Vigi iC120 add-on residual current devices (types AC, A and SI) (cont.)



3

### Type *SI*

The *SI* type provides increased immunity from electrical interference and polluted or corrosive environments.




# Protection

## Circuit protection

### Earth leakage protection






# Accessories for iC120, DPN, DPN Vigi, C60H-DC, SW60-DC, C60NA-DC, C60PV-DC, iSW devices

3

		Installation						
Accessories		Rotary handle		Plug-in base		Padlocking device		
								
Function		<p><b>Front or side control of 2, 3 and 4-pole circuit breakers</b></p> <ul style="list-style-type: none"> <li>■ Degree of protection: IP40</li> <li>■ A complete rotary handle consists of:               <ul style="list-style-type: none"> <li>□ a circuit-breaker operating sub-assembly, cat. no. <b>27046</b>,</li> <li>□ a handle cat. no. <b>27047</b> or a handle cat. no. <b>27048</b></li> </ul> </li> <li>■ Installation:               <ul style="list-style-type: none"> <li>□ the circuit-breaker operating sub-assembly cat. no. <b>27046</b> is fixed to the circuit breaker</li> <li>□ the removable handle cat. no. <b>27047</b> is mounted on the removable front panel or on the enclosure door</li> <li>□ the fixed handle cat. no. <b>27048</b> is fixed to the front or side panel of the enclosure</li> </ul> </li> </ul>		<p><b>Allows a circuit breaker to be quickly removed or replaced, without touching the connections</b></p> <ul style="list-style-type: none"> <li>■ Degree of protection: IP20</li> <li>■ It consists of:               <ul style="list-style-type: none"> <li>□ a base to be fixed to a rail (or panel)</li> <li>□ 2 "blades" to be fixed in the device terminals</li> </ul> </li> <li>■ Connection: tunnel terminals for cables up to 50 mm<sup>2</sup> (rigid) or 35 mm<sup>2</sup> (flexible)</li> <li>■ Installation:               <ul style="list-style-type: none"> <li>□ on backplate</li> <li>□ on a horizontal rail</li> </ul> </li> <li>■ Centreline between two rows: 200 mm</li> <li>■ Only on the circuit breaker, without a Vigi device or auxiliary</li> <li>■ Padlocking option (8 mm dia. padlock not supplied)</li> </ul>		<p><b>Used to padlock a circuit breaker in the "open" or "closed" position</b></p> <ul style="list-style-type: none"> <li>■ Diameter of the padlock: 8 mm max.</li> <li>■ Locking in the ON position does not prevent the circuit breaker from tripping in the event of a fault</li> <li>■ Isolation: in conformity with IEC/EN 60947-2.</li> </ul>		
Cat. numbers		<b>27047</b> Removable extended handle	<b>27048</b> Fixed handle	<b>27046</b> Operating sub-assembly	<b>26996</b> (1 per pole)	<b>26997</b> (1 per pole)	<b>27145</b>	<b>26970</b>
Set of		1	1	1	1	1	4	2
<b>Suitable for the following devices:</b>								
<b>iC120</b>	■ 2P, 3P, 4P	–	–	–	–	■ ≤ 63 A	■	–
<b>iC120 + Vigi iC120</b>	■ 2P, 3P, 4P	–	–	–	–	–	■	–
<b>DPN, DPN Vigi</b>	■ 3P, 4P	–	–	–	–	–	–	■
<b>C60H-DC</b>	■ 2P	■	–	–	–	–	–	■
<b>SW60-DC, C60NA-DC, C60PV-DC</b>	–	–	–	–	–	–	–	■
<b>iSW</b>	■ iSW ≥ at 4 modules of 9 mm	–	–	–	■ iSW 40 to 63 A	–	–	■

Protection  
Circuit protection  
Earth leakage protection















Accessories for iC120, DPN, DPN Vigi,  
C60H-DC, SW60-DC, C60NA-DC,  
C60PV-DC, iSW devices (cont.)


Safety							
Accessories	Screw shield		Terminal shield		Interpole barrier	Spacer	
 0568770_SE-33	 PB124114	 0568699_SE-38	 DB123898	 PB104483-35			
Function	<p>Prevents all contact with the fixing screws</p> <ul style="list-style-type: none"> <li>■ The degree of protection becomes IP40</li> <li>■ Sealable, max. diameter 1.2 mm</li> <li>■ Dividable</li> </ul>		<p>Prevents all contact with the terminals</p> <ul style="list-style-type: none"> <li>■ Degree of protection becomes IP40</li> <li>■ Sealable, max. diameter 1.2 mm</li> </ul>		<p>Improves the insulation between the connections: cables, terminals, lugs, etc.</p>		
			<ul style="list-style-type: none"> <li>■ 1P</li> </ul>	<ul style="list-style-type: none"> <li>■ 1P</li> </ul>	<ul style="list-style-type: none"> <li>■ 2P</li> </ul>	<ul style="list-style-type: none"> <li>■ Used to:               <ul style="list-style-type: none"> <li>□ complete the rows</li> <li>□ separate the devices</li> <li>■ Width: 1 x 9 mm module</li> <li>■ Allows that 2 cables are routed from one row to another (above and below), up to 6 mm<sup>2</sup></li> </ul> </li> </ul>	
			<ul style="list-style-type: none"> <li>■ 3P: 1 x 26975 + 1 x 26976</li> <li>■ 4P: 2 x 26976</li> </ul>				
Cat. numbers	18527	26981	18526	26975	26976	27001	A9N27062
Set of	2 (4P dividable)		2 (for upstream/downstream terminal)		10	1	
Suitable for the following devices:							
iC120	■	–	■	–	–	■	■
Vigi iC120	–	–	–	–	–	–	■
DPN, DPN Vigi	–	–	–	–	–	–	■
C60H-DC	–	■	–	■	■	■	■
SW60-DC, C60NA-DC, C60PV-DC	–	■	–	–	–	■	■
iSW	–	■ iSW 40 to 125 A	–	■ iSW 40 to 125 A	■ iSW 40 to 125 A	■ iSW 40 to 125 A	■

Protection  
Circuit protection  
Earth leakage protection

Accessories for iC120, DPN, DPN Vigi,  
C60H-DC, SW60-DC, C60NA-DC,  
C60PV-DC, iSW devices (cont.)

3

		Connection				
Accessories	Multi-cable terminal	50 mm <sup>2</sup> Al terminal	Screw-on connection for ring terminal	Connection kit for ring terminals	Terminal for rear connector	
						
						
Function	<b>For 3 copper cables:</b> ■ Rigid up to 16 mm <sup>2</sup> ■ Flexible up to 10 mm <sup>2</sup>		<b>For 16 to 50 mm<sup>2</sup> aluminium cables</b>	<b>For lug tipped cables, front or rear mounting</b>	<b>For terminal up to 63 A, front or rear access (screw Ø 5 mm)</b> ■ It incorporates a "conductive" part and an "insulating" part which ensures the phase-to-phase clearance	<b>For cable up to 50 mm<sup>2</sup> or by terminal</b> ■ Supplied with a 1P terminal shield
						
<b>Cat. numbers</b>	19091	19096	27060	27053	17400	18528
<b>Set of</b>	4	3	1	8	2	2
<b>iC120</b>	■	■	■	■	-	■
<b>Vigi iC120</b>	■	■	■	-	-	-
<b>DPN, DPN Vigi</b>	-	-	-	■	-	-
<b>C60H-DC, iSW 40 to 125 A</b>	■	■	■	■	■	-
<b>SW60-DC, C60NA-DC</b>	■	■	■	■	-	-
<b>C60PV-DC</b>	-	-	-	■	-	-
<b>Tightening torque</b>	2 N.m		10 N.m	2 N.m	-	-
<b>Stripping length</b>	11 mm		13 mm	-	-	-
<b>Tools to be used</b>	Diameter 5 mm or PZ2		Hc 1/5" or 5 mm	Diameter 5 mm	Diameter 5 mm	-

		Identification			
<b>Accessories</b>	<b>Clip-on terminal marker strip</b>				
031204D_SEF-23					
<b>Function</b>	<b>For connection identification</b>				
<b>Cat. numbers</b>	0: AB1-R0	A: AB1-GA	K: AB1-GK	U: AB1-GU	
	1: AB1-R1	B: AB1-GB	L: AB1-GL	V: AB1-GV	
	2: AB1-R2	C: AB1-GC	M: AB1-GM	W: AB1-GW	
	3: AB1-R3	D: AB1-GD	N: AB1-GN	X: AB1-GX	
	4: AB1-R4	E: AB1-GE	O: AB1-GO	Y: AB1-GY	
	5: AB1-R5	F: AB1-GF	P: AB1-GP	Z: AB1-GZ	
	6: AB1-R6	G: AB1-GG	Q: AB1-GQ	+: AB1-R12	
	7: AB1-R7	H: AB1-GH	R: AB1-GR	-: AB1-R13	
	8: AB1-R8	I: AB1-GI	S: AB1-GS	Blank : AB1-RV	
	9: AB1-R9	J: AB1-GJ	T: AB1-GT		
<b>Set of</b>	<b>250</b>				
<b>iC120</b>	■ 4 markers max. per pole				
<b>Vigi iC120</b>	■ 4 markers max. per device				
<b>DPN, DPN Vigi</b>	■ 4 markers max. per pole				
<b>C60H-DC, SW60-DC, C60NA-DC, C60PV-DC</b>	■ 4 markers max. per pole				




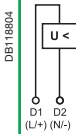
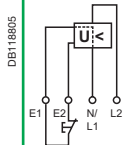
# Protection

## Circuit protection

### Earth leakage protection

# Electrical auxiliaries for iC120, DPN, DPN Vigi, ID, C60H-DC, SW60-DC, C60PV-DC, C60NA-DC devices

3




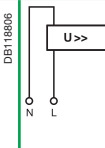
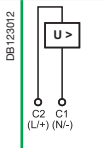
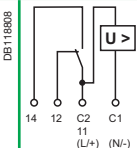
		Tripping					
Auxiliaries		MN		MNs		MNx	
Type		Undervoltage release					
		Instantaneous		Delayed		Independent of the supply voltage	
							
Function		<ul style="list-style-type: none"> <li>Causes the device with which it is associated to trip when its input voltage decreases (between 70 % and 35 % of <math>U_n</math>). Prevents the device from closing until its input voltage has been restored</li> </ul>		<ul style="list-style-type: none"> <li>No tripping in the event of transient voltage dips (up to 0.2 s)</li> </ul>		<ul style="list-style-type: none"> <li>Tripping of the associated device by opening of the control circuit (e.g. push-button, dry contact)</li> <li>A drop in the supply voltage does not trip the associated device</li> <li>A locking push-button control allows the circuit protected (e.g. machine control) to be placed in safety configuration</li> </ul>	
Wiring diagrams							
Utilization		<ul style="list-style-type: none"> <li>Emergency stop via a normally-closed pushbutton</li> <li>Ensures the safety of the power supply circuits of several machines by preventing accidental startups</li> </ul>		<ul style="list-style-type: none"> <li>Fail-safe emergency stop</li> <li>Insensitive to the variation in the control circuit voltage to improve continuity of service</li> <li><b>Important: Before any servicing operation switch off the mains power supply (voltage presence at terminals E1/E2)</b></li> </ul>			
Catalogue numbers		A9N26960	A9N26961	A9N26959	A9N26963	A9N26969	A9N26971
iC120, DPN, DPN Vigi, ID		■	■	■	■	■	■
C60H-DC, SW60-DC, C60PV-DC, C60NA-DC		■	■	■	■	■	■
<b>Technical specifications</b>							
Rated voltage ( $U_e$ )	V AC	220...240	48	115	220...240	230	400
	V DC	-	48	-	-	-	-
Standardised operating and non-response to voltage times ( $U_a$ )*		-	-	-	-	-	-
Maximum operating time		-	-	-	-	-	-
Minimum non-response time		-	-	-	-	-	-
Operating frequency	Hz	50/60		400	50/60	50/60	
Mechanical state indicator light, red		On front face			On front face		On front face
Test function		-			-		-
Width in 9 mm modules		2			2		2
Operating current		-			-		-
Number of contacts		-			-		-
Operating temperature	°C	-25...+50			-25...+50		-25...+50
Storage temperature	°C	-40...+85			-40...+85		-40...+85
<b>Standards</b>							
IEC/EN 60947-1		■		■		■	
IEC/EN 60947-5-1		-		-		-	
EN 60947-2		■		■		-	
EN 62019-2 <sup>(1)</sup>		-		-		-	

(1) For iC120, DPN.

\*( $U_a$ ): Voltages measured between the phase and the neutral conductor, at which the MSU device must control the associated protective device.

**Protection**  
**Circuit protection**  
**Earth leakage protection**

**Electrical auxiliaries for iC120, DPN, DPN Vigi, ID, C60H-DC, SW60-DC, C60PV-DC, C60NA-DC devices (cont.)**

MSU						MX			MX+OF															
Voltage threshold release						Shunt release			With Open/Close auxiliary contact															
																								
<ul style="list-style-type: none"> <li>Cuts off the power supply by opening the device with which it is associated when the phase/neutral voltage is exceeded (loss of neutral). For a four-phase network, use three MSU tripping auxiliaries</li> </ul>						<ul style="list-style-type: none"> <li>Trips the associated device when it is powered on</li> </ul>			<ul style="list-style-type: none"> <li>Includes an open/close contact (OF) to indicate the "open" or "closed" position of the breaker</li> </ul>															
																								
<ul style="list-style-type: none"> <li>Protection of the devices against overvoltages on the electrical network (break in the neutral conductor)</li> <li>Monitoring the voltage between the phase conductor and the neutral conductor</li> </ul>						<ul style="list-style-type: none"> <li>Emergency stop via a normally-open pushbutton.</li> </ul>			<ul style="list-style-type: none"> <li>Emergency stop via a normally-open pushbutton</li> <li>Remote indication of the position of the associated device</li> </ul>															
<b>A9N26500</b>						<b>A9N26476</b>			<b>A9N26477</b>			<b>A9N26478</b>			<b>A9N26946</b>			<b>A9N26947</b>			<b>A9N26948</b>			
■						■			■			■			■			■			■			
-						■			■			■			■			■			■			
230						100...415			48			12...24			100...415			48			12...24			
-						110...130			48			12...24			110...130			48			12...24			
255 V AC		275 V AC		300 V AC		350 V AC		400 V AC		-			-			-			-			-		
No tripping		15 s		5 s		0.75 s		0.20 s		-			-			-			-			-		
		3 s		1 s		0.25 s		0.07 s		-			-			-			-			-		
50/60						50/60			50/60			50/60			50/60			50/60			50/60			
On front face						On front face			On front face			On front face			On front face			On front face			On front face			
-						-			-			-			-			-			-			
2						2			2			2			2			2			2			
-						-			-			-			3 A / 415 V AC			6 A / ≤ 240 V AC			-			
-						-			-			-			1 NO/NC			-			-			
-25...+50						-25...+50			-25...+50			-25...+50			-25...+50			-25...+50			-25...+50			
-40...+85						-40...+85			-40...+85			-40...+85			-40...+85			-40...+85			-40...+85			
■						■			■			■			■			■			■			
-						-			-			-			-			-			-			
-						-			-			-			-			-			-			
-						-			-			-			-			-			-			



# Protection Circuit protection Earth leakage protection

# Electrical auxiliaries for iC120, DPN, DPN Vigi, ID, C60H-DC, SW60-DC, C60PV-DC, C60NA-DC devices (cont.)

3

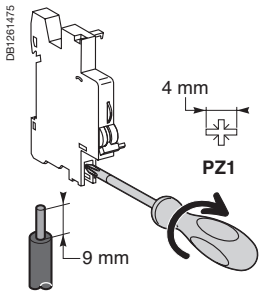
		Indication				
Auxiliaries		OF.S	OF	SD	OF+SD/OF	OF+SD24
Type		Open/closed auxiliary contact	Open/closed auxiliary contact	Fault indicating contact	Double open/closed or fault indicating contact	Double open/closed and fault indicating contact
Function		<ul style="list-style-type: none"> <li>Changeover contact indicating the "open" or "closed" position of the associated device</li> </ul> <p><b>⚠ Compulsory for the addition of tripping or indication auxiliaries on a residual current circuit breaker ID</b></p>	<ul style="list-style-type: none"> <li>Changeover contact indicating the "open" or "closed" position of the associated device</li> </ul>	<ul style="list-style-type: none"> <li>Changeover contact indicating the position of the associated device in the event of:                             <ul style="list-style-type: none"> <li>electrical fault</li> <li>action on the tripping auxiliary</li> </ul> </li> </ul> <p><b>⚠ Not compatible with a ID residual current circuit breaker, use an OF+SD/OF in the SD position</b></p>	<ul style="list-style-type: none"> <li>The OF+SD/OF auxiliary is a two-in-one product: choice of OF + SD or OF + OF contact via the selector switch</li> </ul>	<ul style="list-style-type: none"> <li>2 contacts (1 NO + 1 NC) can report the signalling information of the associated device to the Acti 9 Smartlink or a programmable logic controller:                             <ul style="list-style-type: none"> <li>electrical fault</li> <li>actuation of the tripping auxiliary</li> <li>"Open" or "Closed" position of the associated device</li> </ul> </li> </ul>
Wiring diagrams						
Utilization		<ul style="list-style-type: none"> <li>Remote indication of the position of the associated device</li> </ul>	<ul style="list-style-type: none"> <li>Remote indication of the position of the associated device</li> </ul>	<ul style="list-style-type: none"> <li>Remote fault tripping indication of the associated device</li> </ul>	<ul style="list-style-type: none"> <li>Remote position and/or fault tripping indication of the associated device</li> </ul>	<ul style="list-style-type: none"> <li>Remote indication of position and tripping upon a fault of the associated breaker</li> </ul>
Catalogue numbers		<b>A9N26923</b>	<b>A9N26924</b>	<b>A9N26927</b>	<b>A9N26929</b>	<b>A9N26899</b>
ID		■	■	■	■	■
iC120, DPN, DPN Vigi, C60H-DC, C60H-DC, SW60-DC, C60PV-DC, C60NA-DC		–	■	■	■	■
<b>Technical specifications</b>						
Rated voltage (Ue)	V AC	24...415	24...415	24...415	24...415	–
	V DC	24...130	24...130	24...130	24...130	24
Operating frequency	Hz	50/60	50/60	50/60	50/60	–
		–	–	On front face	On front face	On front face
Mechanical state indicator		–	–	On front face	On front face	On front face
Test function		–	On front face	On front face	On front face	On toggle
Width in 9 mm modules		1	1	1	1	1
Operating current		3 A /415 V AC 6 A / ≤ 240 V AC				2 mA mini, 100 mA maxi
Number of contacts		1 NO/NC	1 NO/NC	1 NO/NC	1 NO/NC + 1 NO/NC	1 NO + 1 NC
Operating temperature	°C	-25...+50	-25...+50	-25...+50	-25...+50	-25...+70
	°C	-40...+85	-40...+85	-40...+85	-40...+85	-40...+85
<b>Standards</b>						
IEC/EN 60947-1		–	–	–	–	–
IEC/EN 60947-5-1		■	■	■	■	■ IEC 60947-5-4
EN 60947-2		–	–	–	–	–
EN 62019-2 <sup>(1)</sup>		■	■	■	■	–

(1) For iC120, DPN.

**Protection**  
**Circuit protection**  
**Earth leakage protection**

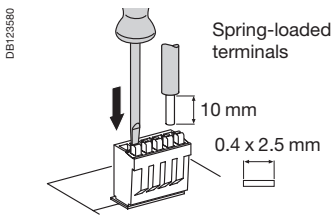
**Electrical auxiliaries for iC120, DPN, DPN Vigi, ID, C60H-DC, SW60-DC, C60PV-DC, C60NA-DC devices (cont.)**

**Connection**



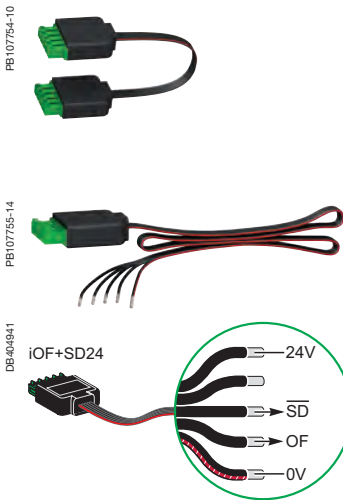
Type	Tightening torque	Copper cables	
		Rigid	Flexible or with ferrule
Indication and tripping auxiliaries	1 N.m	DB122945 0.5 to 2.5 mm <sup>2</sup>	DB122946 2 x 1.5 mm <sup>2</sup>

**Ti24 connector connection**



Type	Catalogue numbers	Copper cables	
		Rigid	Flexible
Ti24 interface	<b>A9XC2412</b>	DB122945 1 x 0.5 to 1.5 mm <sup>2</sup>	DB123593 1 x 0.5 to 1.5 mm <sup>2</sup>

**Ti24 prefabricated cables connection**

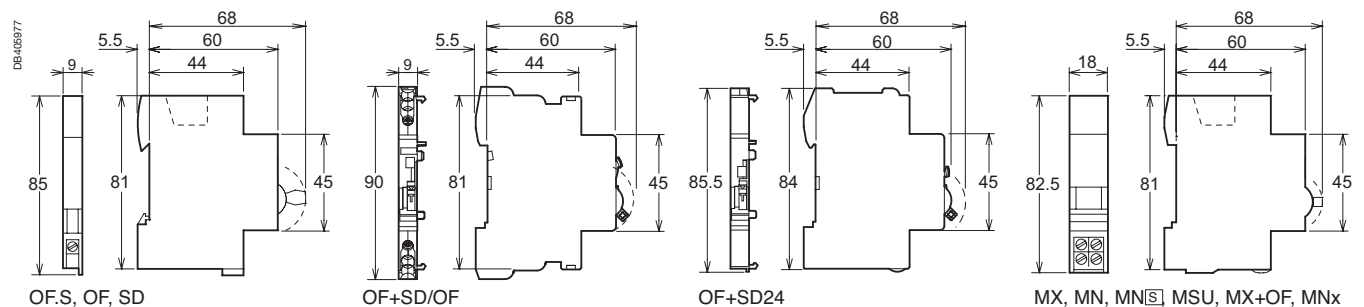


Type	Cat. no.	Length
<b>Connection for Acti 9 Smartlink</b>		
6 short prefabricated	<b>A9XCAS06</b>	100 mm
6 medium-sized prefabricated	<b>A9XCAM06</b>	160 mm
6 long prefabricated	<b>A9XCAL06</b>	870 mm
<b>Connection for PLC type terminals</b>		
6 long prefabricated on a single side	<b>A9XCAU06</b>	870 mm

**Weight (g)**

Electrical auxiliaries	
Type	Weight (g)
MN	66
MNs	66
MNx	73
MSU	66
MX	60
MX+OF	65
OF.S	33
OF	30
SD	30
OF+SD/OF	38
OF+SD24	28

**Dimensions (mm)**



# Load protection Motor starter protection

## P25M

3



### IEC 60947-2 and IEC 60947-4-1 (in combination)

They protect single-phase or three-phase motors with manual local control. This protection includes:

- isolation
- manual or remote control
- short-circuit protection (magnetic)
- overload protection (thermal).

### Breaking capacity to IEC 60947-2

Rating (A)	Voltage (V)										
	230...240		400...415		440		500		690		
	Icu kA	Ics %	Icu kA	Ics %	Icu kA	Ics %	Icu kA	Ics %	Icu kA	Ics %	
0.16 to 1.6	Unlimited									3	75
2.5	Unlimited									3	75
4	Unlimited									3	75
6.3	Unlimited									50	100
10	Unlimited									15	100
14	Unlimited									15	50
18	Unlimited									15	50
23	50	100	15	40	6	50	4	75	3	75	
25	50	100	15	40	6	50	4	75	3	75	

The limiting unit increases the breaking capacity up to 100 kA at 415 V.

### Catalogue numbers

Type	Motor characteristics						P25M circuit breaker				
	Standardised power (kW) of three-phase 50/60 Hz motors in category AC3						Rating In (A)	Setting	Cat. no.	Width in 9 mm modules	
	Voltage (V AC)										
	230	400	415	440	500	690					
<b>3P</b>	-	-	-	-	-	-	0.16	0.1-0.16	<b>21100</b>	5	
	-	-	-	-	-	-	0.25	0.16-0.25	<b>21101</b>	5	
	-	-	-	-	-	-	0.40	0.25-0.40	<b>21102</b>	5	
	-	-	-	-	-	0.37	0.63	0.40-0.63	<b>21103</b>	5	
	-	-	-	0.37	0.37	0.55	1.0	0.63-1	<b>21104</b>	5	
	-	0.37	-	0.55	0.75	1.1	1.6	1-1.6	<b>21105</b>	5	
	0.37	0.75	1.1	1.1	1.1	1.5	2.5	1.6-2.5	<b>21106</b>	5	
	0.75	1.5	1.5	1.5	2.2	3	4.0	2.5-4	<b>21107</b>	5	
	1.1	2.2	2.2	3	3.7	4	6.3	4-6.3	<b>21108</b>	5	
	2.2	4	4	4	5.5	7.5	10	6-10	<b>21109</b>	5	
	3	5.5	5.5	7.5	9	11	14	9-14	<b>21110</b>	5	
	4	7.5	9	9	10	15	18	13-18	<b>21111</b>	5	
	5.5	9	11	11	11	18.5	23	17-23	<b>21112</b>	5	
	5.5	11	11	11	15	22	25	20-25	<b>21113</b>	5	

### Limiting unit

Type	Rating In (A)	Cat. no.	Width in 9 mm modules
<b>3P</b>	63	<b>21115</b>	5

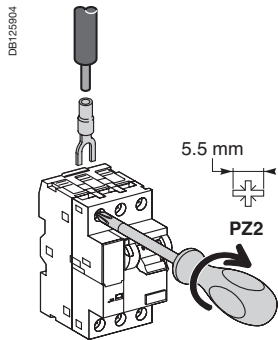


(1) The neutral pole comes equipped with a locked tube.

# Load protection Motor starter protection

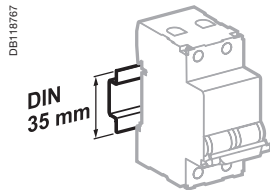
## P25M (cont.)

### Connection

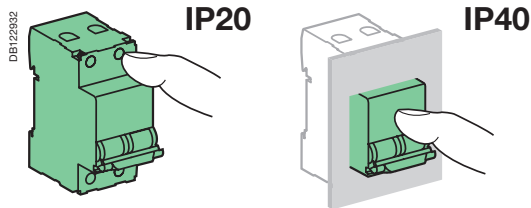
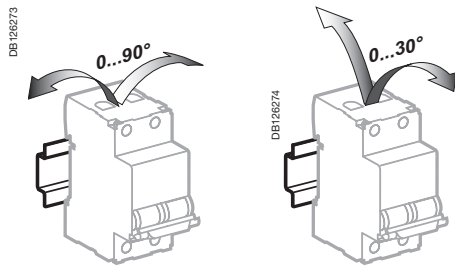


### P25M

Tightening torque	Terminal clamps		With insulated connector	Limiting unit
	Rigid Cu	Flexible Cu	Flexible Cu	Tunnel terminals
1.7 N.m.	2 x 1 ... 6 mm <sup>2</sup>		2 x 1.5 ... 6 mm <sup>2</sup>	Flexible or rigid Cu



Mounted on 35 mm DIN rail.



### Weight (g)

P25M	260
Limiting unit	130

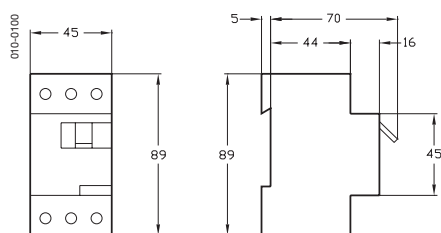
### Technical data

Electrical characteristics	
Operating voltage (Ue)	690 V AC
Insulation voltage (Ui)	690 V
Rated impulse withstand voltage (Uimp)	6 kV
Endurance (O-C)	Electrical AC3
Thermal trip unit	Sensitive to missing phase
Settings	Factory < settings range Simultaneously on the front face On current drawn in nominal operation
Ratings (In)	0.16 to 25 A adjustable
Temperature compensation	-20°C to +40 °C in an enclosure
Magnetic trip unit	12 x the In rating (±20 %)

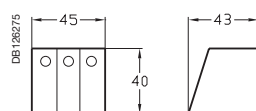
Other characteristics	
Padlocking device on the front face	
Tropicalisation	Treatment 2 (relative humidity 95 % at 55°C)
Operating temperature	-20 ...+60°C
Storage temperature	-40 ...+80°C

Rated operating current (Ie) of auxiliary contacts under the rated operating voltage (Ue)					
Operating voltage (Ue)		Operating current			
(V AC)	(V DC)	Position contact		fault tripping contact	
		AC 15 (A AC)	DC 13 (A DC)	AC 14 (A AC)	DC 13 (A DC)
415	220	2.2	0.5	-	-
240	110	3.3	1.3	-	-
130	60	4.5	3	0.5	0.15
48	48	6	5	1	0.3
24	24	-	6	1.5	1

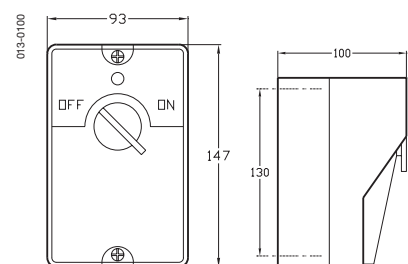
### Dimensions (mm)



Circuit breaker



Limiting unit only

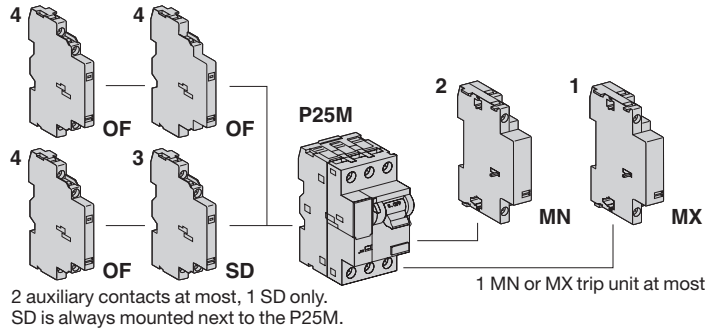


Insulating enclosure

## Connection

Cables			
	Rigid	Flexible	Flexible with ferrule
Mini	1 x 1 to 2.5 mm <sup>2</sup>	1 x 0.75 to 2.5 mm <sup>2</sup>	1 x 0.75 to 1.5 mm <sup>2</sup>
Maxi	2 x 1 to 2.5 mm <sup>2</sup>	2 x 0.75 to 2.5 mm <sup>2</sup>	2 x 0.75 to 1.5 mm <sup>2</sup>
Tightening torque	1.4 N.m		

The electrical auxiliaries allow remote tripping or position or fault indication of the PM25 circuit breakers.



# 3

## Catalogue numbers

### Trip units

Type	Control voltage (V AC)	Width in 9 mm modules	Cat. no.
<b>1 MX shunt release</b>			
<ul style="list-style-type: none"> <li>Emergency stoppage by normally open push button</li> <li>Causes tripping of the associated device when powered</li> </ul>	220...240	2	21127
	380...415	2	21128
<b>2 MN undervoltage release</b>			
<ul style="list-style-type: none"> <li>Emergency stoppage by normally closed push button</li> <li>Ensures the safety of power supply circuits for several machines by preventing untimely restarting</li> <li>Causes tripping of the circuit breaker with which it is associated when its input voltage decreases (between 70% and 35% of Un)</li> <li>Prevents closing of the device until its input voltage has been restored</li> </ul>	220...240	2	21129
	380...415	2	21130

### Auxiliary contacts

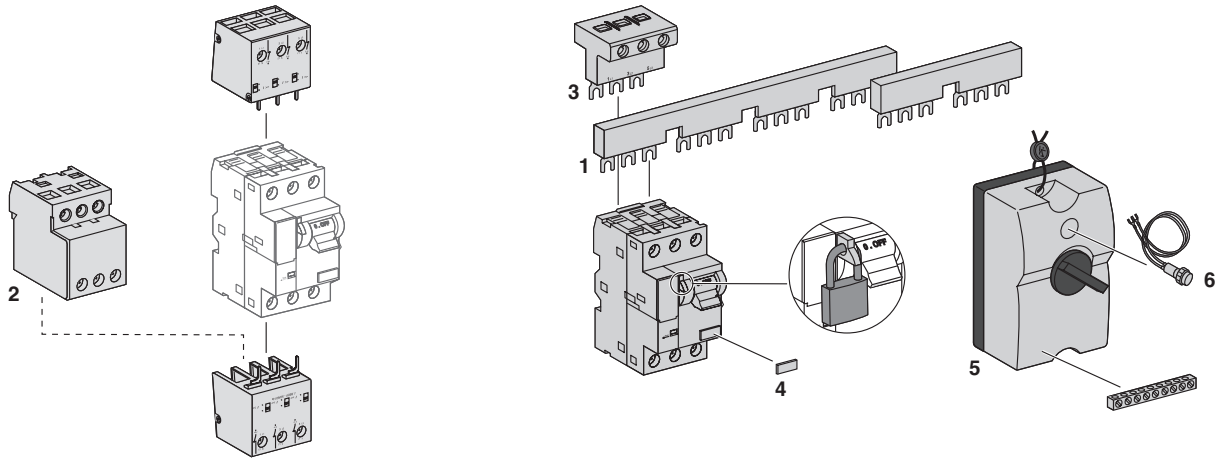
Type	Width in 9 mm modules	Cat. no.
<b>3 Position and fault tripping indication contacts</b>		
F + SD.F	1	21118
O + SD.F	1	21119
F + SD.O	1	21120
O + SD.O	1	21121
<b>4 Position contacts</b>		
O + F	1	21117
F + F	1	21116

"O ": normally closed contact  
 "F ": normally open contact  
 SD: contact indicating the position of the associated device in the event of an electrical fault  
 SD.F: to indicate a closed contact fault  
 SD.O: to indicate an open contact fault

# Load protection Motor starter protection

# P25M Accessories

Accessories make it easier to integrate the circuit breakers and extend their use.



3

## Catalogue numbers

	Type	Cat. no.
<b>1 Comb busbars</b> 	2 P25M feeders	GV2G254
	4 P25M feeders	GV2G454
	Protection end-piece	GV2G10
<b>2 Downstream terminal block</b> 		GV2G05+LA9E07
	GV2G05: Downstream terminal block LA9E07: Cover for downstream terminal block	
<b>3 Insulated connector</b> 		GV2G09
<b>4 Clip-on terminal markers</b>	see module CM907003E	
<b>5 Insulating enclosure</b> Individual installation of a P25M circuit breaker with an auxiliary contact block and trip unit. Double insulation and sealed to IP55. L = 93, H = 147, P = 100 (mm)		21133
<b>6 Neon indicator light</b> 230-240 V AC 400-415 V AC	Green	GV2SN23
	Red	GV2SN24
	Green	GV2SN33
	Red	GV2SN34



**Surge arresters** ..... **pages 4/2 to 4/7**  
iPRF1 12.5r/PRF1 Master/PRD1 25r/PRD1 Master  
Type 1 and 2 LV ..... pages 4/2 to 4/6  
Features ..... page 4/7

**Withdrawable surge arresters** ..... **pages 4/8 to 4/17**  
iPRD Type 2 or 3 LV ..... pages 4/8 to 4/11  
iQuick PRD Type 2 or Type 3 ..... pages 4/12 to 4/14  
iPRD-DC Type 2 for photovoltaic applications ..... pages 4/15 to 4/17



# Protection Load protection

# iPRF1 12.5r/PRF1 Master/ PRD1 25r/PRD1 Master Type 1 and 2 LV surge arresters

The Type 1 range of surge arresters meets the normative withstand capability of current wave type 10/350  $\mu$ s (8/20  $\mu$ s for Type 2 surge arresters). It is suitable for use with TT, TN-S, TN-C and 230 V IT earthing connection systems (neutral point connection). In addition, the PRF1 Master surge arrester covers the 400 V IT system. iPRF1 12.5r and PRD1 surge arresters are fitted with a remote transfer contact to send "end-of-life indication" information. PRD1 surge arresters are fitted with easy-to-replace withdrawable cartridges.

**iPRF1 12.5r/PRF1 Master/PRD1 25r/PRD1 Master**  
The Type 1 surge arrester is recommended for electrical installations in the service sector and industrial buildings protected by a lightning conductor or by a meshed cage. It protects electrical installations against direct lightning strikes. It is used to conduct the direct lightning current, propagating from the earth conductor to the network conductors. It must be installed with an upstream disconnection device, such as a fuse or circuit-breaker, whose breaking capacity must be at least equal to the maximum prospective short-circuit current at the installation point. iPRF1 12.5r and PRD1 25r surge arresters also provide Type 2 protection and protect the electrical installation by finely clipping the lightning wave overvoltages.

4



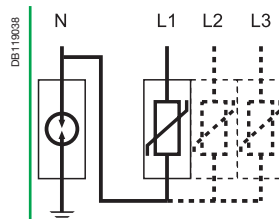
iPRF1 12.5r



PRD1 25r

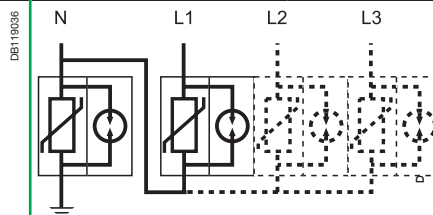


PRD1 Master



iPRF1 12.5r (1P+N, 3P+N)

Type	Product solution	
<b>Fixed surge arrester</b>	<b>1P+N</b>	<b>3P+N</b>
iPRF1 12.5r T1, T2	A9L16632	A9L16634



PRD1 25r (1P+N, 3P+N)

Cartridge surge arrester	1P+N	3P+N
PRD1 25r T1 + T2	16330	16332
PRD1 Master T1	16361	16363

	Neutral point connection
	TT, TN-S
	TT, TN-S
	TT, TN-S

(1) Version without indicator light.

# Protection Load protection

## iPRF1 12.5r/PRF1 Master/ PRD1 25r/PRD1 Master Type 1 and 2 LV surge arresters (cont.)

4

Type	Nb. of poles	Width	I imp (kA) (10/350) Impulse current		I max (kA) (8/20) Maximal discharge current	In - kA Rated discharge current	Up - kV Degree of protection	Un - V Nominal line voltage	Uc - V Maximum steady state voltage	
			Surge arrester	Surge arrester + disconnecter						
<b>Fixed surge arrester</b>		<b>9 mm modules</b>								
<b>iPRF1 12.5r</b>	Type 1 + 2									
	1P+N	4	12.5/50 N/PE		50	25	1.5	230	350	<b>A9L16632</b>
	3P+N	8	12.5/50 N/PE		50	25	1.5	230 / 400	350	<b>A9L16634</b>
<b>Withdrawable surge arrester</b>										
<b>PRD1 25r</b>	Type 1 + 2									
	1P+N	8	25/100 N/PE		40	25	1.5	230/400	350	<b>16330</b>
	3P+N	16	25/100 N/PE		40	25	1.5	230/400	350	<b>16332</b>
<b>PRD1 Master</b>	Type 1									
	1P+N	8	25/100 N/PE		-	25	1.5	230/400	350	<b>16361</b>
	3P+N	16	25/100 N/PE		-	25	1.5	230/400	350	<b>16363</b>
<b>Spare cartridge</b>										
C1 Master-350	-	4	-	-	-	25	1.5	-	350	<b>16314</b>
C1 25-350	-	23 mm	-	-	-	25	1.5	-	350	<b>16315</b>
C2 40-350	-	12 mm	-	-	-	20	1.4	-	350	<b>16316</b>
C1 Neutral-350	-	4	-	-	-	-	-	-	350	<b>16317</b>

Surge arresters	Spare cartridge		
	Phase		Neutral
	Type 1	Type 2	
<b>PRD1 25r</b>			
PRD1 25r 1P+N	<b>16315</b>	<b>16316</b>	<b>16317</b>
PRD1 25r 3P	3 x <b>16315</b>	3 x <b>16316</b>	-
<b>PRD1 Master</b>			
PRD1 Master 1P+N	<b>16314</b>	-	<b>16317</b>
PRD1 Master 3P+N	3 x <b>16314</b>	-	<b>16317</b>

DB 12370



Accessories		
Type	Number of poles	
4P Wiring comb busbars	4	<b>16643</b>
6P Wiring comb busbars	6	<b>16644</b>
8P Wiring comb busbars	8	<b>16645</b>
200 mm flexible cable (PRF1 Master)		<b>16646</b>

Technical data

		iPRF1 12.5r	PRF1 Master	PRD1 25r	PRD1 Master
Operating frequency		50 Hz	50/60 Hz	50 Hz	50 Hz
Degree of protection	Front panel	IP40	IP40	IP40	IP40
	Terminals	IP20	IP20	IP20	IP20
	Impacts	IK05	IK05	IK05	IK05
Response time		≤ 25 ns	≤ 1 μs	≤ 25 ns	≤ 100 ns
End-of-life indication		Green: correct operation	-	White: correct operation	White: correct operation
		Red: at end of life	-	Red: at end of life	Red: at end of life
Remote notification		1.5 A/250 V AC	-	1 A/250 V AC. 0.2 A/125 V DC	1 A/250 V AC. 0.2 A/125 V DC
By tunnel terminal	Rigid cable	10...35 mm <sup>2</sup>	10...50 mm <sup>2</sup>	2.5...35 mm <sup>2</sup>	10...35 mm <sup>2</sup>
	Flexible cable	10...25 mm <sup>2</sup>	10...35 mm <sup>2</sup>	2.5...25 mm <sup>2</sup>	10...25 mm <sup>2</sup>
Operating temperature		-25°C to +60°C	-40°C to +85°C	-25°C to +60°C	-25°C to +60°C
Standards	Type 1	IEC 61643-1 [T1]. EN 61643-11 Type 1	IEC 61643-1 [T1]. EN 61643-11 Type 1	IEC 61643-1 [T1]. EN 61643-11 Type 1	IEC 61643-1 [T1]. EN 61643-11 Type 1
	Type 2	IEC 61643-1 [T2]. EN 61643-11 Type 2	-	IEC 61643-1 [T2]. EN 61643-11 Type 2	-
Certification		CE	KEMAKEUR, CE	KEMAKEUR, CE	CE

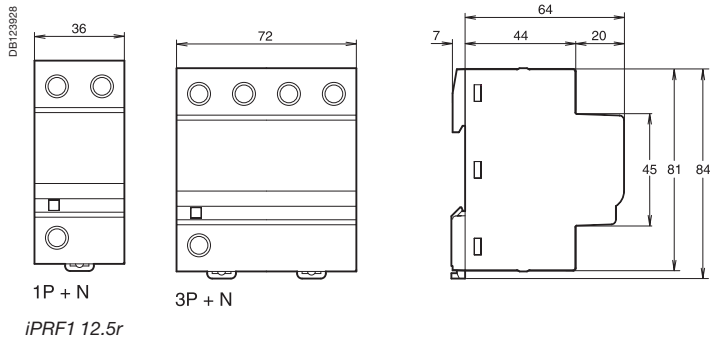
Choice of disconnector / surge arrester

Type	Iimp :impulse current	Isc: prospective short-circuit current at the installation point				
		10 kA	15 kA	25 kA	36 kA	50 kA
iPRF1 12.5r	12.5 kA	C120N 80 A curve C	C120H 80 A curve C or NG125N 80 A curve C	NG125N 80 A curve C	NG125H 80 A curve C	NG125L 80 A curve C
PRF1 Master	35 kA	Compact NSX160B 160 A TM		Compact NSX160F 160 A	Compact NSX160N 160 A	
PRD1 25r	25 kA	NG125N 80 A curve C		-		
PRD1 Master	25 kA	NG125N 80 A curve C		NG125H 80 A curve C	NG125L 80 A curve C	

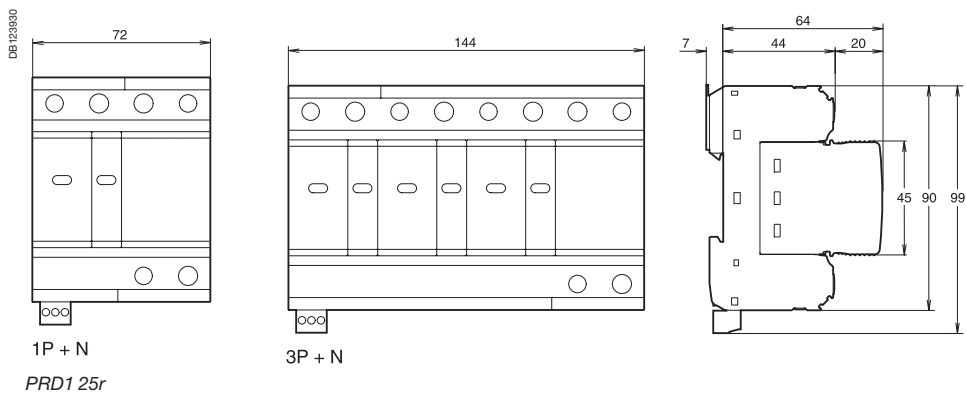
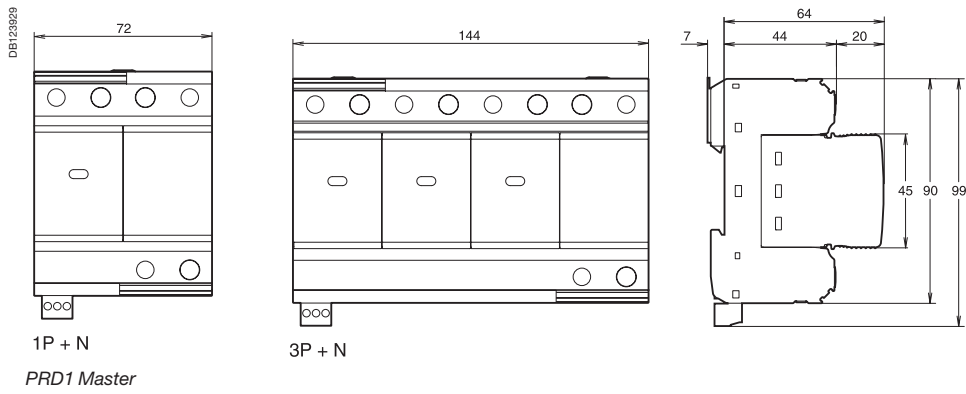
# Protection Load protection

# iPRF1 12.5r/PRF1 Master/ PRD1 25r/PRD1 Master Type 1 and 2 LV surge arresters (cont.)

## Dimensions (mm)



4



# Protection

## Load protection

### iPRD, iPRD IT surge arresters

PB110281-60

**Satisfactory operation indication**

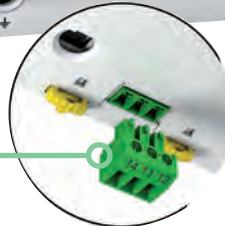
- By mechanical indicator
- white: operating
- red: cartridge must be replaced



**Terminals**

- IP20

■ Transfer to Acti 9 Smartlink



### Connection iPRD surge arrester with its short circuit disconnecter

PB110289-50

**Reversible**

- The surge arrester base can be turned over to allow the phase/neutral/earth cables to enter through either the top or the bottom

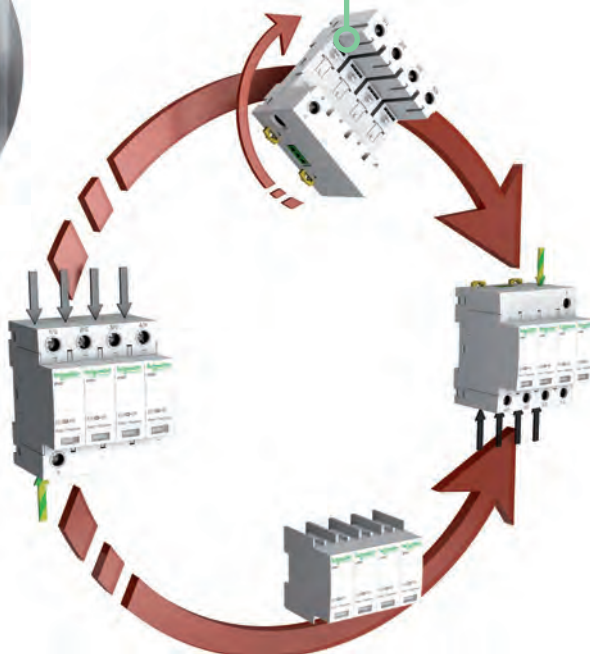
PB110793-50



Surge arrester iPRD 3P+N + iC60 3P+N for TT or TN-S (Incoming through the top without comb busbar)



Surge arrester iPRD 3P+N + iC60 3P+N for TT or TN-S (Incoming through the bottom with comb busbar)



PB110287-90

# Protection

## Load protection

# iPRD surge arresters

## Type 2 or 3 LV withdrawable surge arrester

iPRD withdrawable surge arresters allow quick replacement of damaged cartridges.



1P+N



3P+N

4

Rated discharge current (Imax) / Nominal discharge current (In)	Type of protection		Network		Earthing system	Transfer	Surge arrester name	Width in mod. of 9 mm
	Incoming	Secondary	1P+N	3P+N				
<b>65 kA / 20 kA</b>								
Very high risk level (strongly exposed site)	iPRD65		A9L16557		TT & TN-S	■	iPRD65r 1P+N	4
				A9L16559	TT & TN-S	■	iPRD65r 3P+N	8
<b>40 kA / 15 kA</b>								
High risk level	iPRD40		A9L16562		TT & TN-S	■	iPRD40r 1P+N	4
			A9L16567		TT & TN-S		iPRD40 1P+N	
				A9L16564	TT & TN-S	■	iPRD40r 3P+N	8
				A9L16569	TT & TN-S		iPRD40 3P+N	
<b>20 kA / 5 kA</b>								
Medium risk level	iPRD20		A9L16672		TT & TN-S	■	iPRD20r 1P+N	4
			A9L16572		TT & TN-S		iPRD20 1P+N	
				A9L16674	TT & TN-S	■	iPRD20r 3P+N	8
				A9L16574	TT & TN-S		iPRD20 3P+N	
<b>8 kA / 2.5 kA</b>								
Secondary protection: placed near the loads to be protected when they are at a distance of more than 30 m from the incoming surge arrester		iPRD8	A9L16677		TT & TN-S	■	iPRD8r 1P+N	4
			A9L16577		TT & TN-S		iPRD8 1P+N	
				A9L16679	TT & TN-S	■	iPRD8r 3P+N	8
				A9L16579	TT & TN-S		iPRD8 3P+N	

\* **CM**: common mode (phase to earth and neutral to earth).



Cartridge

Spare cartridges		
Type	Spare cartridges for	Cat. no
C 65-340	iPRD65r	A9L16681
C 40-340	iPRD40, iPRD40r	A9L16685
C 20-340	iPRD20, iPRD20r	A9L16687
C 8-340	iPRD8, iPRD8r	A9L16689
C neutral	All products	A9L16691

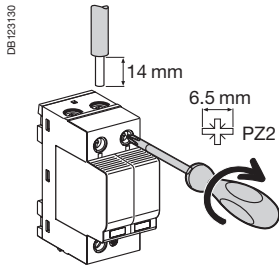
Surge arrester/circuit breaker association	
Type of surge arrester	Associated circuit breaker
iPRD65	Curve C 50 A
iPRD40	Curve C 40 A
iPRD20	Curve C 25 A
iPRD8	Curve C 20 A

	Up - (kV) Voltage protection level			Un - (V) Rated voltage network	Uc - (V) Maximum continuous operating voltage		
	CM*		DM*		CM*		DM*
	L/±	N/±	L/N		L/±	N/±	L/N
	-	≤ 1.5	≤ 1.5	230	-	260	340
	-	≤ 1.5	≤ 1.5	230/400	-	260	340
	-	≤ 1.4	≤ 1.4	230	-	260	340
	-	≤ 1.4	≤ 1.4	230	-	260	340
	-	≤ 1.4	≤ 1.4	230/400	-	260	340
	-	≤ 1.4	≤ 1.4	230/400	-	260	340
	-	≤ 1.4	≤ 1.1	230	-	260	340
	-	≤ 1.4	≤ 1.1	230	-	260	340
	-	≤ 1.4	≤ 1.1	230/400	-	260	340
	-	≤ 1.4	≤ 1.1	230/400	-	260	340
<b>Type 2 / Type 3</b>							
	-	≤ 1.4 / ≤ 1	≤ 1 / ≤ 1.1	230	-	260	340
	-	≤ 1.4 / ≤ 1	≤ 1 / ≤ 1.1	230	-	260	340
	-	≤ 1.4 / ≤ 1	≤ 1 / ≤ 1.1	230/400	-	260	340
	-	≤ 1.4 / ≤ 1	≤ 1 / ≤ 1.1	230/400	-	260	340

\* **DM**: differential mode (phase to neutral). **(1) Uoc**: combined waveform voltage: 10 kV.



Connection



Type	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
iPRD	2 N.m	2.5 to 25 mm <sup>2</sup>	2.5 to 16 mm <sup>2</sup>

4

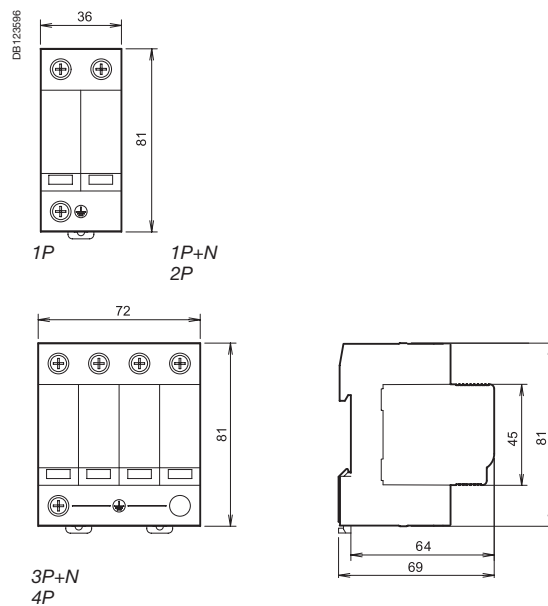
Technical data

Main characteristics		
Operating frequency	50/60 Hz	
Operating voltage (Ue)	230/400 V AC	
Permanent operating current (Ic)	< 1 mA	
Response time	< 25 ns	
End of life indication: by mechanical indicator	White	In operation
	Red	At end of life
End of life remote indication	By contact NO, NC 250 V / 0.25 A	
Additional characteristics		
Operating temperature	-25°C to +60°C	
Type of connection terminals	Tunnel terminals, 2.5 to 35 mm <sup>2</sup>	
Standards	IEC 61643-1 <u>T2</u> and EN 61643-11 Type 2	

Weight (g)

Surge arrester	
Type	iPRD
1P	115
2P	220
3P	340
4P	450

Dimensions (mm)



# Surge protection Load protection

# Withdrawable surge arrester iQuick PRD Type 2 or Type 3

Withdrawable surge arrester iQuick PRD allow damaged cartridges to be replaced quickly. They offer remote reporting of the "cartridge must be changed" message.



PB106430-29

4



PB106428-29



DB123837

Replacement cartridges.

## IEC 61643-1 T2, EN 61643-11 Type 2

They protect electrical and electronic equipment against lightning-induced surges. Withdrawable surge arrester iQuick PRD surge arresters are prewired, incorporating their end-of-life disconnecter.

Each surge arrester in the range has a specific use:

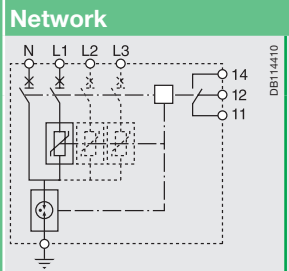
### ■ incoming protection (type 2):

- iQuick PRD40r is recommended for a high risk level
- iQuick PRD20r is recommended for a moderate risk level

### ■ secondary protection (type 2 or 3):

- iQuick PRD8r provides secondary protection for the loads to be protected and is cascade-mounted with the incoming surge arresters. This surge arrester is required as close as possible to the loads to be protected when they are located more than 30 metres away from the incoming surge arrester.

Maximum discharge current (Imax) / Nominal discharge current (In)	Type of protection		Network	
	Incoming protection	Secondary protection	1P+N	3P+N
<b>40 kA / 20 kA</b>				
High risk level	iQuick PRD40r		A9L16292	A9L16294
<b>20 kA / 5 kA</b>				
Moderate risk level	iQuick PRD20r		A9L16295	A9L16297
<b>8 kA / 2 kA</b>				
Secondary protection: placed near the loads to be protected when they are at a distance of more than 30 m from the incoming surge arrester		iQuick PRD8r	A9L16298	A9L16300



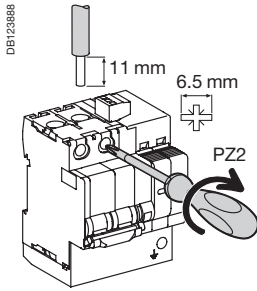
## Replacement cartridges

Type	Replacement cartridges for	Cat. no.
C 40-350	iQuick PRD40r	A9L16310
C 20-350	iQuick PRD20r	A9L16311
C 8-350	iQuick PRD8r	A9L16312
C neutral-350	All products	A9L16313

# Surge protection Load protection

# Withdrawable surge arrester iQuick PRD Type 2 or Type 3 (cont.)

## Connection



Type	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
iQuick PRD Ph / N 8r/20r Ph / N 40r ⊥	2.5 N.m		
		2.5 to 25 mm <sup>2</sup>	2.5 to 25 mm <sup>2</sup>
		2.5 to 35 mm <sup>2</sup> 25 mm <sup>2</sup> max.	2.5 to 35 mm <sup>2</sup> 25 mm <sup>2</sup> max.

Earthing system	Transfert	Name of surge arrester	Width in 9 mm modules	Up – (kV) Voltage protection level			Un – (V) Nominal mains voltage	Uc – (V) Maximum continuous operating voltage		
				CM*		DM*		CM*		DM*
				L/⊥	N/⊥	L/N		L/⊥	N/⊥	L/N
<b>iQuick PRD40r</b>										
TT & TN-S	■	1P+N	8	1.5	1.5	2.5	230	-	264	350
TT & TN-S	■	3P+N	15	1.5	1.5	2.5	230/400	-	264	350
<b>iQuick PRD20r</b>										
TT & TN-S	■	1P+N	8	1.5	1.5	1.5	230	-	264	350
TT & TN-S	■	3P+N	15	1.5	1.5	1.5	230/400	-	264	350
<b>iQuick PRD8r (2)      Type 2 / Type 3</b>										
TT & TN-S	■	1P+N	8	1.5/1.4	1.5/1.5	1.2/1.4	230	-	264	350
TT & TN-S	■	3P+N	15	1.5/1.4	1.5/1.5	1.2/1.4	230/400	-	264	350

\* **CM** common mode (between phase/earth and neutral/earth). \* **DM**: differential mode (between phase and neutral).  
 (1) Up (MCB + SPD): total value measured between Modular Circuit Breaker (MCB) terminal block and PE surge arrester device terminal block (SPD).  
 (2) Uoc: open-circuit voltage in combined wave: 10 kV.



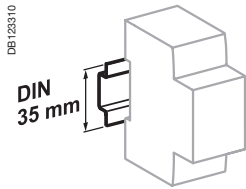
Pragma: the earth terminal block needs 1 support kit and 1 terminal block kit.

## Accessories

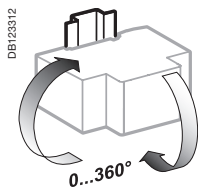
Earth terminal block support				Cat. no.
Type				
Support kit 	L = 4 blocks	Batch of 1		<b>PRA90053</b>
25 mm <sup>2</sup> terminal block kit 	L = 1 block	Batch of 5		<b>PRA90046</b>

# Surge protection Load protection

# Withdrawable surge arrester iQuick PRD Type 2 or Type 3 (cont.)



Clip on DIN rail 35 mm.



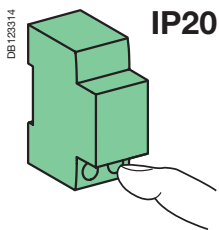
Indifferent position of installation.

4

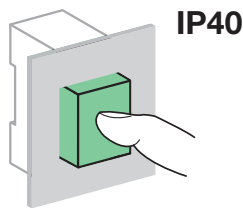
## Technical data

Main characteristics			
Operating frequency	50/60 Hz		
Operating voltage (Ue)	230/400 V AC		
Disconnecter short-circuit withstand (Isc)	25 kA (50 Hz)		
Permanent operating current (Ic)	<1 mA		
Response time	<25 ns		
Status indication	By the cartridges	White	Operational
		Red	At end of life
	By white mechanical indicator/handle ON		Operational
	By red mechanical indicator/handle OFF		At end of life
Remote indication end of life	By the NO/NC remote indication contact 250 V AC / 2 A		

Additional characteristics		
Degree of protection	Device only	IP20, IK05
	Device in modular enclosure	IP40
Operating temperature	-25°C to +70°C	
Storage temperature	-40°C to +80°C	
Certifications	NF, KEMA KEUR (iQuick PRD 8r, 20r)	



IP20

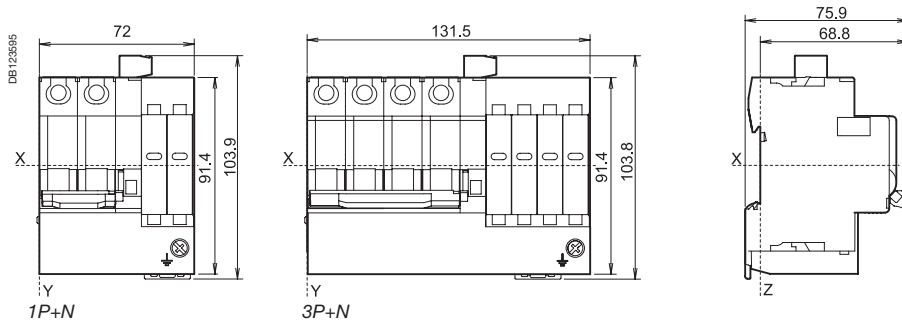


IP40

## Weight (g)

Surge arresters		
Type	iQuick PRD8r/20r	iQuick PRD40r
1P+N	435	445
3P+N	810	850

## Dimensions (mm)





IEC 61643-1 T2  
EN 61643-11 Type 2  
UTE C 61740-5 T2  
prEN 50539-1 T2



iPRD-DC40r 600PV

iPRD-DC direct current surge arresters are designed to protect against overvoltages due to a lightning strike: of the "DC" input to the inverter and of photovoltaic panels.

It should be installed in a switchboard inside the building. If the switchboard is located outside, it must be weatherproof.

Withdrawable iPRD-DC surge arresters allow damaged cartridges to be replaced quickly. They offer remote reporting of the "cartridge must be changed" message.

### Catalogue numbers

Internal diagram	Imax (kA) Maximum discharge current	In (kA) Nominal discharge current	Up (kV) Protection level			U <sub>CPV</sub> (V) <sup>(1)</sup> Maximum steady state voltage			Width in module of 9 mm	Cat. no.
			L+/-	L-/±	L+/L-	L+/-	L-/±	L+/L-		
<b>iPRD-DC40r 600PV</b>										
	40	15	1.6	1.6	2.8	600	600	840	6	A9L16434
<b>iPRD-DC40r 1000PV</b>										
	40	15	3.9	3.9	3.9	1000	1000	1000	6	A9L16436

(1)  $U_{cpv} \geq 1.2 \times U_{oc\ stc}$  ( $U_{oc\ stc}$ : maximum no-load voltage of the photovoltaic generator "photovoltaic module manufacturer's data")



Replacement cartridges



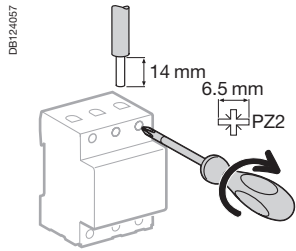
Replacement cartridges		
Type	Replacement cartridges for	Cat. no.
C 40-600PV	iPRD-DC40r 600PV	A9L16683
C 40-1000PV	iPRD-DC40r 1000PV	A9L16692
C neutral PV	iPRD-DC40r 600PV	A9L16690

# Protection Load protection

## iPRD-DC surge arresters

Withdrawable surge arresters type 2 for photovoltaic applications (cont.)

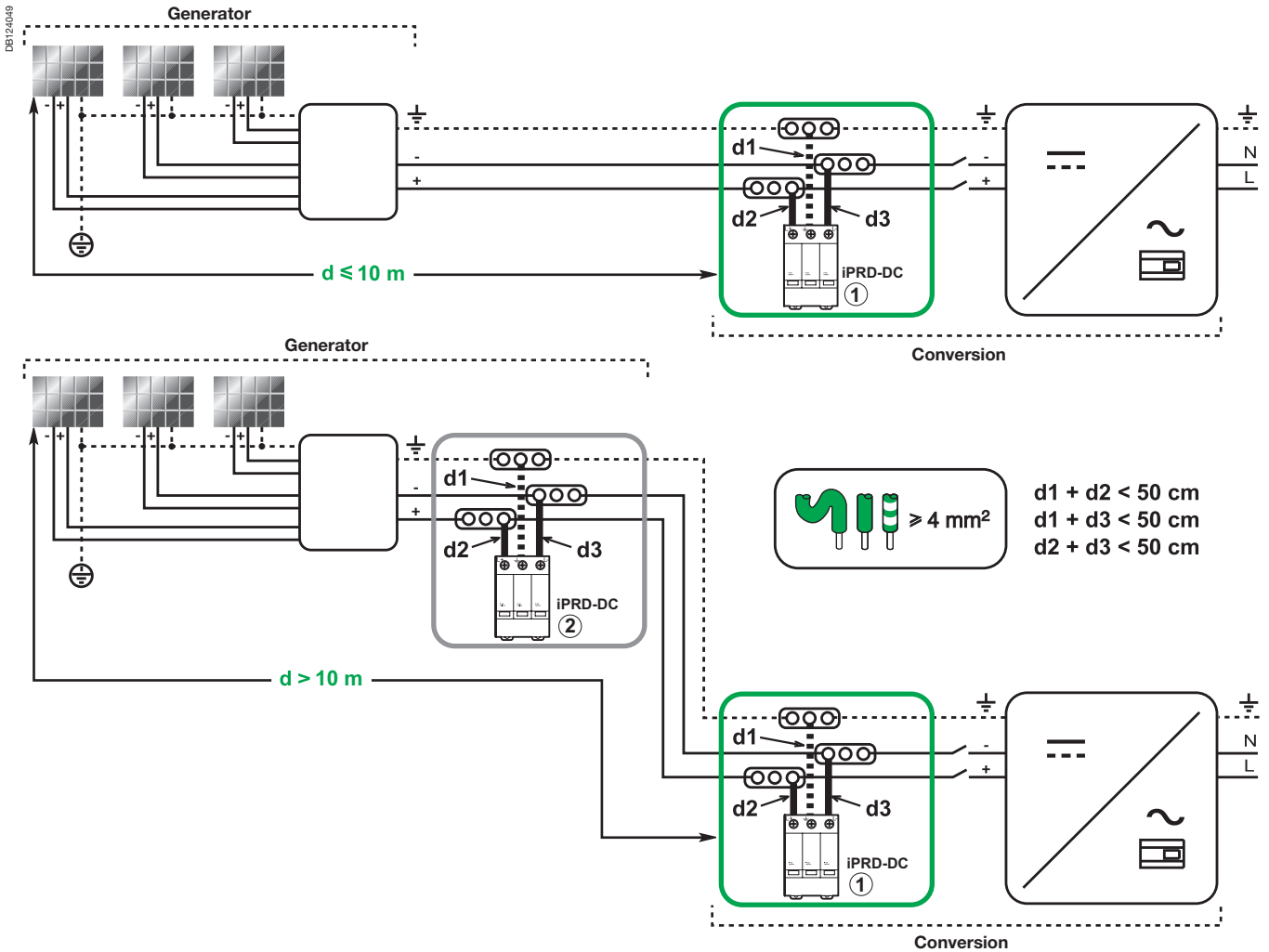
### Connection



Type	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
iPRD-DC	2 N.m	2.5 to 25 mm <sup>2</sup>	2.5 to 16 mm <sup>2</sup>

4

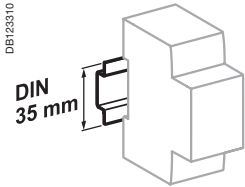
Depending on the distance between the "generator" part and the "conversion" part, it may be necessary to install two surge arresters or more, to ensure protection of each of the two parts.



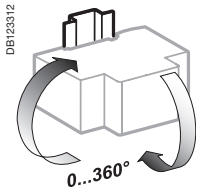
# Protection Load protection

## iPRD-DC surge arresters

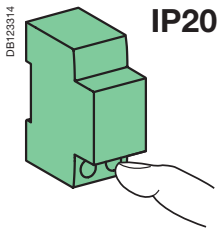
Withdrawable surge arresters type 2 for photovoltaic applications (cont.)



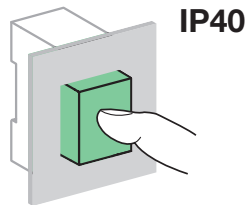
Clip on DIN rail 35 mm.



Indifferent position of installation.



IP20



IP40

### Technical data

#### Main characteristics

Type of network	Isolated direct current
Temps de réponse	< 25 ns
Short circuit current ( $I_{SCPV}$ )	30 A
Type of surge arresters	Type 2
Type of self-protection	Circuit opened by integrated thermal disconnecter

#### Additional characteristics

Degree of protection (IEC 60529)	Device only	IP20	
	Device in modular enclosure	IP40	
	Chocs	IK03	
End-of-life indication	By the cartridges	White	Operational
		Red	At end of life
	By the NO/NC remote indication contact	250 V AC / 0.25 A	
Operating temperature		-25°C to +60°C	
Storage temperature		-40°C to +85°C	
Tropicalization (IEC 60068-1)		Treatment 2 (relative humidity of 95 % at 55°C)	

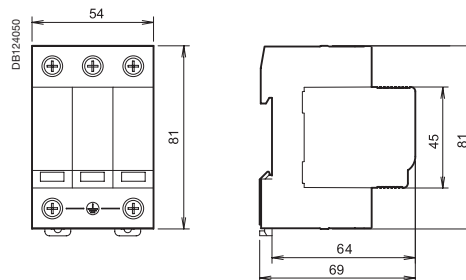
### Weight (g)

#### Surge arresters

##### Type

iPRD-DC40r 600PV	400
iPRD-DC40r 1000PV	400

### Dimensions (mm)







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<b>REDS, REDtest</b> .....	<b>pages 5/2 to 5/8</b>
Residual current circuit breakers .....	page 5/2
Coordination table .....	page 5/3
Operation .....	pages 5/3 to 5/5
Wiring .....	page 5/6
Technical .....	pages 5/7 to 5/8
<b>RED A type 30 mA</b> .....	<b>pages 5/9 to 5/13</b>
Residual current circuit breakers .....	page 5/9
Coordination table .....	page 5/9
Operation .....	pages 5/10 to 5/11
Wiring .....	page 5/12
Technical .....	page 5/13

# Protect Earth leakage protection Automatic recloser

## REDs, REDtest

DB122858



IMQ only for REDs,  
cat. no. 18687 and 18689

Country approval pictograms

PB101790\_SE-40



REDs 2P

PB104000\_SE-40



REDs 4P

PB101788\_SE-40



REDtest

### IEC 61008, EN 61008

The REDs and the REDtest, **RE**sidual current **D**evice recloser, is made up of a residual current device and a recloser.

The **REDs** and **REDtest RESidual current Devices** offer the following functions:

- protection of people against direct and indirect contacts
- protection of installations against insulation faults
- disconnection of on-load electric circuits, already protected against overloads and short-circuits
- automatic restart after insulation monitoring of the downstream circuit.

REDtest provides the following additional functions:

- automatic and periodical test of the device, without breaking downstream circuit (REDtest).

**Only used on TT and TN-S earthing grounding systems.**

Residual current circuit breakers	2P	4P
Making and breaking capacity, rated residual current ( $I_{\Delta m} = I_m$ )	630 A	630 A
Breaking capacity in association with protection device	6000 A (gL 63 A)	10,000 A (gL 80 A)

### Catalogue numbers

#### REDs residual current circuit breakers REDs

A type				Width in mod. of 9 mm
--------	--	--	--	-----------------------

2P	Sensitivity	30 mA	300 mA	
	Rating	25 A	<b>18687</b>	8
		40 A	<b>18689</b>	
		63 A	<b>18691</b>	

Voltage rating (Ue)	230 V		
Frequency rating	50 Hz		

4P	Sensitivity	30 mA	300 mA	
	Rating	25 A	<b>18264</b>	14
		40 A	<b>18266</b>	
		63 A	<b>18268</b>	

Voltage rating (Ue)	400 V		
Frequency rating	50 Hz		

#### REDtest residual current circuit breakers

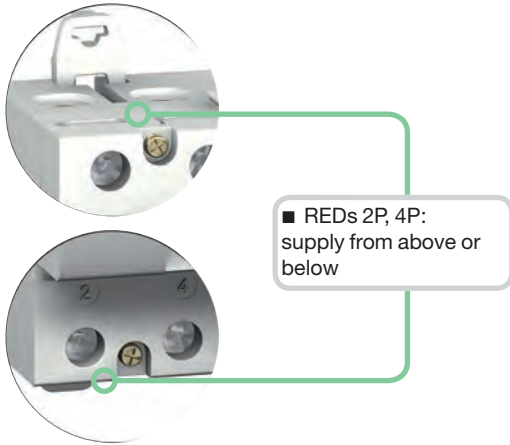
A Type			Width in mod. of 9 mm
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2P	Sensitivity	30 mA	
	Rating	25 A	<b>18280</b>
		40 A	<b>18281</b>

Voltage rating (Ue)	230 V		
Frequency rating	50 Hz		

# Protect Earth leakage protection Automatic recloser

## REDs, REDtest (cont.)



### Coordination table, max short-circuit current (kA rms)

#### Circuit-breakers, fuse / A type REDs, REDtest coordination

		Circuit-breakers					Fuse	
		DPN	DPN N	iC60	C120	NG125	gL 63	gL 80
<b>REDs A type 2P</b>								
Network 230 V	25 A	6	6	10	10	10	6	-
	40 A	6	6	10	10	10	6	-
	L/N	63 A	-	-	10	10	10	6
<b>REDs A type 4P</b>								
Network 400 V	25 A	6	10	10	10	10	-	10
	40 A	6	10	10	10	10	-	10
	L/N	63 A	-	10	10	10	-	10
<b>REDtest A type 2P</b>								
Network 230 V	25 A	6	6	6	6	6	6	-
	40 A	6	6	6	6	6	6	-
	L/N							

DB122863

		Circuit-breaker (MCB) or Fuse (FU)		
		≤ 25 A	≤ 40 A	≤ 63 A
REDs / REDtest	25 A	■	—	—
	40 A	■	■	—
REDs	63 A	■	■	■

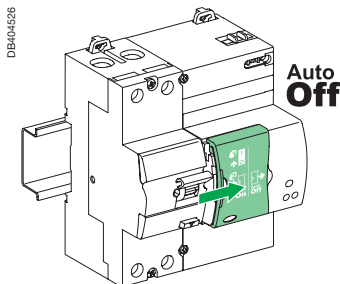


Fig. 1

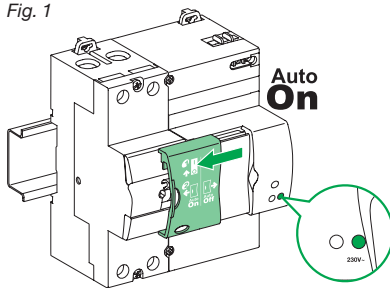


Fig. 2

## Operation

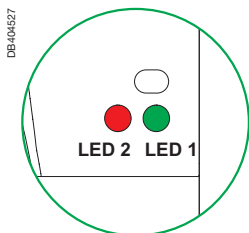
### REDs

The REDs operates in the residual current device mode, without automatic restart, when the sliding cover is open, i.e. to the right in the Auto Off position (Fig. 1).

The automatic restart mode and the Autotest are activated, when the sliding cover is closed, i.e. to the left in the Auto On position (Fig. 2).

### Test

**⚠ This is only possible in manual mode, i.e. sliding cover open in the Auto Off position. You can then manually test the device by pressing the Test key. The downstream installation is then temporarily broken. You must then manually reclose the RED by activating the O-I lever to power supply the downstream circuit.**



	LED 1	LED 2
Test good	Green ON	OFF
Fault yellow ON	OFF	-

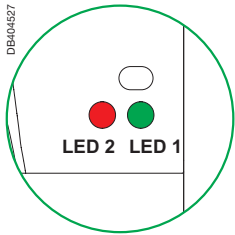
### REDtest

■ The REDtest carries out automatic testing of earth leakage protection every months.

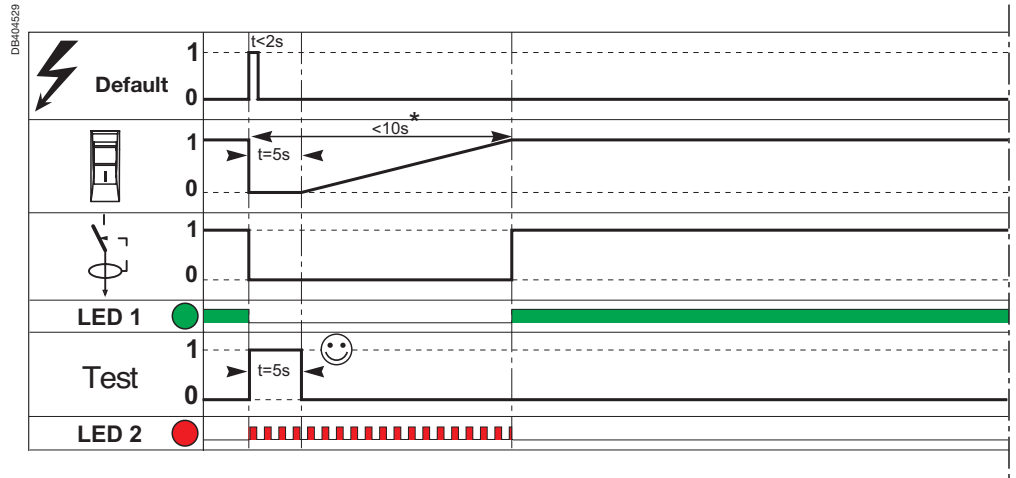
The test consists in opening and reclosing the REDtest, during which time continuity of supply of the downstream installation is guaranteed.

**Autotest:** after checking installation insulation, the REDtest monitors its residual current device, without breaking the downstream power supply (bypass by bypass contact).

### Operation ON mode: temporary network fault REDS, REDtest



(\*) Reclosing time.



The built-in automatic recloser automatically recloses the residual current device after checking insulation of the downstream circuit.  
 Rd: lower level of insulation resistance, if  $R < R_d$  = no reclose  
 Rdo: higher level of insulation resistance, if  $R_d > R_{do}$  = reclose

5

$I\Delta n$	30 mA	300 mA
Rd	8 k $\Omega$	2.5 k $\Omega$
Rdo	16 k $\Omega$	5 k $\Omega$

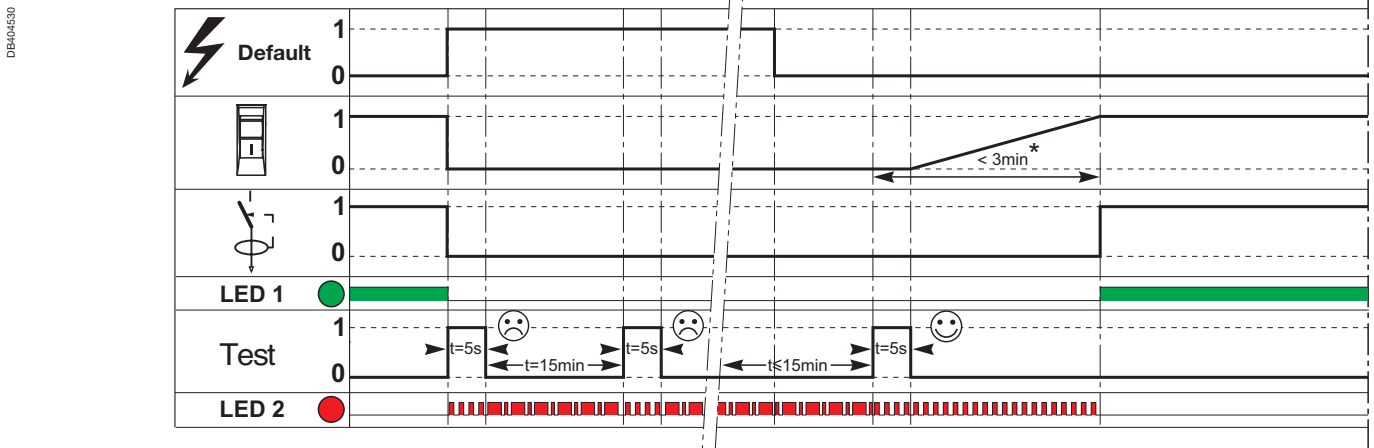
### Operation ON mode: long network fault

#### REDS

If the circuit is faulty, the switch is prohibited from reclosing. After a time delay of 15 minutes, the downstream circuit insulation is rechecked.

There are then two possibilities:

- the installation is still faulty (the resistance to earth is lower than Rd): in this case a new check will be carried out in 15 minutes.
- the fault was temporary and has disappeared (the resistance to earth is higher than Rdo): the recloser automatically recloses the REDs.



(\*) Reclosing time.

# Protect Earth leakage protection Automatic recloser

## REDs, REDtest (cont.)

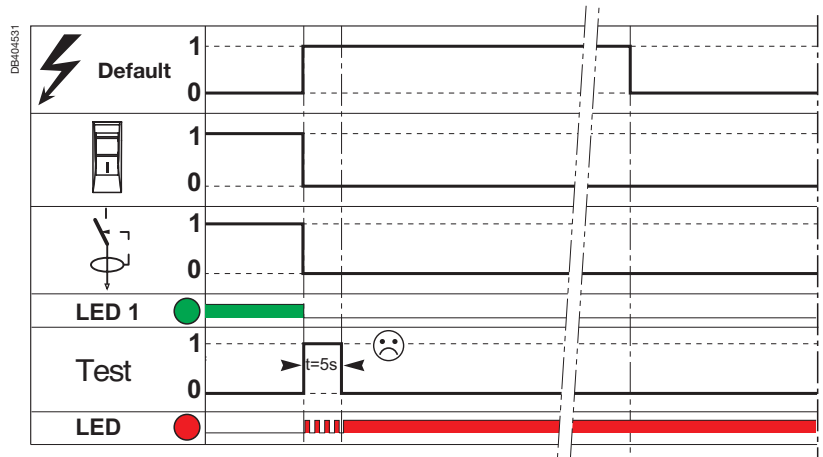
$I\Delta n$	30 mA
Rd	30 kΩ
Rdo	70 kΩ

### Operation ON mode: long network fault (cont.)

#### REDtest

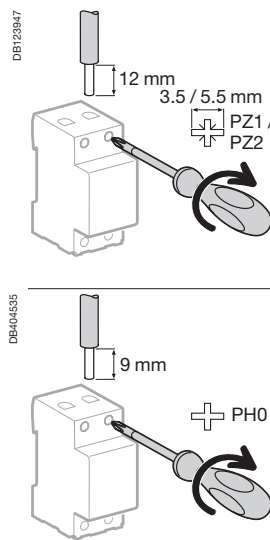
If the circuit is faulty for a length of time "greater than 5 seconds", the switch is prohibited from reclosing.

- The installation is faulty: the earth resistance is lower than Rd.



5

### Connection

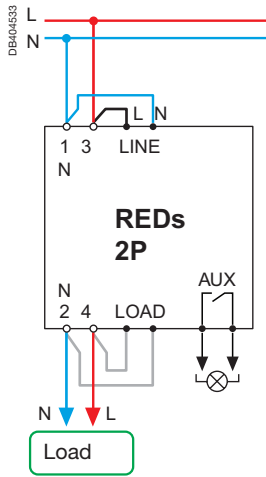


Type	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
<b>N, L</b>	2 N.m	35 mm <sup>2</sup>	35 mm <sup>2</sup>
<b>AUX</b>	0.4 N.m	2.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>

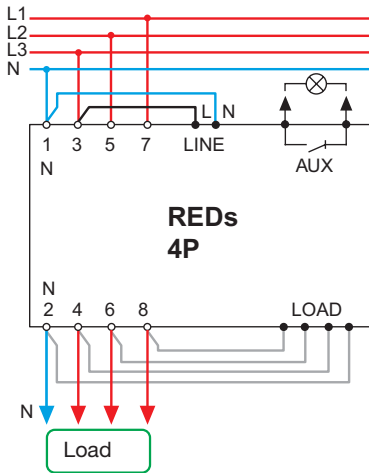
Connection by tunnel terminal with guard

# Protect Earth leakage protection Automatic recloser

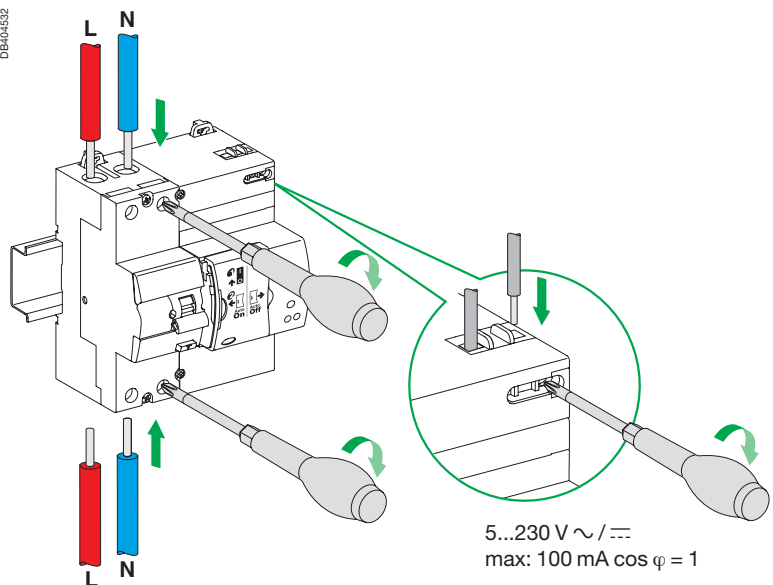
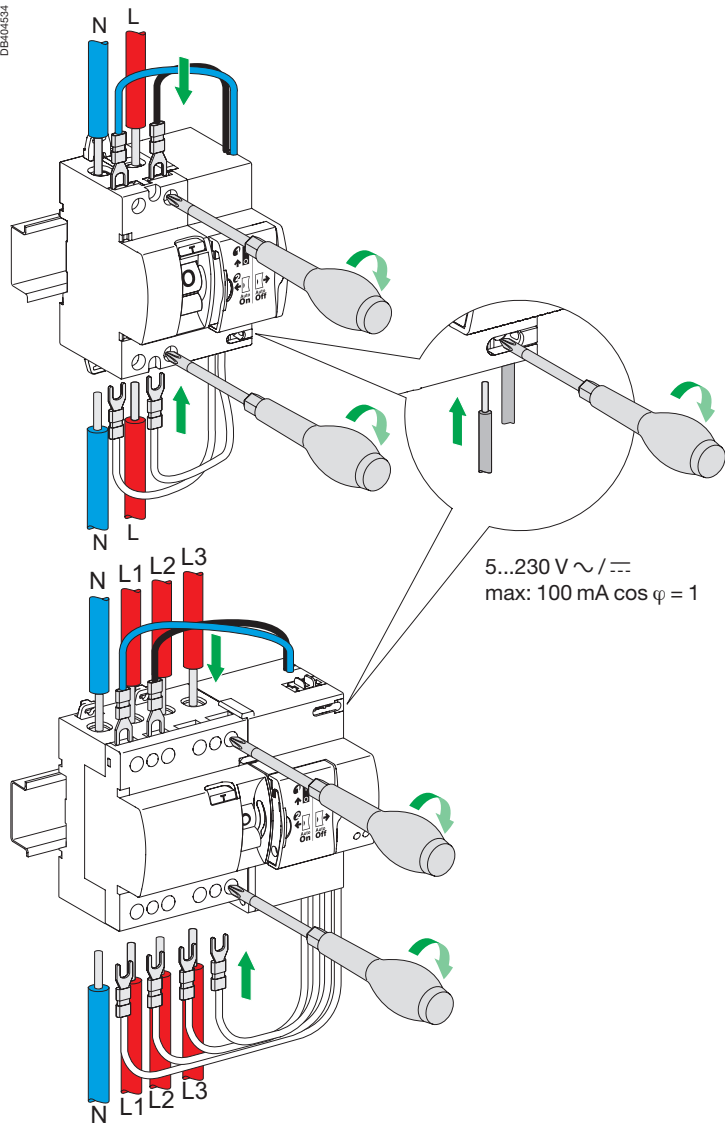
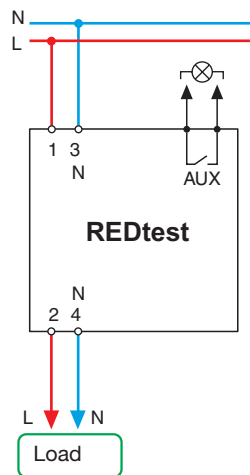
## REDs, REDtest (cont.)



Wiring of non-polarized white wires



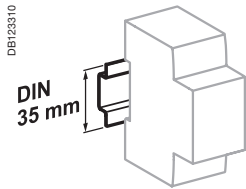
Wiring of non-polarized white wires



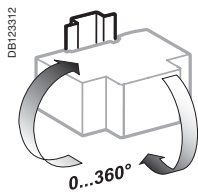
5

# Protect Earth leakage protection Automatic recloser

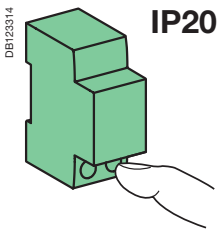
## REDs, REDtest (cont.)



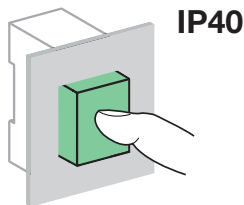
Clip on DIN rail 35 mm.



Indifferent position of installation.



IP20



IP40

### Technical data

Main characteristics	2P	4P
<b>Common technical data</b>	<b>REDs, REDtest</b>	<b>REDs</b>
Earthing grounding systems	TT and TN-S only	
Impulse withstand voltage (Uimp)	4 kV	
Insulation voltage (Ui)	500 V	
8/20 µs wave immunity level	250 Å	
Tropicalisation	Treatment 2 (relative humidity: 95 % at 55°C)	
Operating temperature	-5°C to +40°C	
Storage temperature	-20°C to +60°C	
Protection class	IP20 at terminals	
<b>Additional characteristics</b>		
<b>Residual current device</b>		
Tripping time	IΔn: ≤ 300 ms	
	5 IΔn: ≤ 40 ms	
Number of cycles (O-C)	1 000	4 000
Fixed sensitivity releases for all ratings	Instantaneous release	
Test button min operating voltage	■ 100 V	170 V
	■ 195 V (REDtest)	
<b>Recloser</b>		
Max duration of a restart cycle	90 s	< 10 s
Maximum number of consecutive restart attempts (if no earth fault)	3	
Min interval between 2 closings	180 s	30 s
Insulation fault presence monitoring	Yes	
Restart in event of transient insulation fault	Yes	
Stopping restart cycle if insulation fault present	■ Yes, during 15 minutes	
	■ Yes (REDtest)	
Not operating resistance to earth (Rd)	8 kΩ (30 mA), 2.5 kΩ (300 mA)	
Operating resistance to earth (Rdo)	16 kΩ (30 mA), 5 kΩ (300 mA)	
Power consumed by the electronics	■ REDs: 0 VA	
	■ REDtest: 8 VA	
<b>Indication</b>		
REDs status indication	Mechanical: by O-I (open-closed) 2-position lever	
	■ Electrical: by 2 indicator lights on the front panel:	
	□ left: red/yellow LED	
	□ right: green LED	
	Remote: by 1 built-in auxiliary contact	
<b>Auxiliary contact</b>		
Voltage rating (Ue)	5...230 V AC/DC	
Insulation voltage (Ui)	350 V	
Current rating (In)	Min: 0.6 mA	
	Max: 100 mA, power factor = 1	
Type	Configurable: intermittent 1 Hz or NO	
Connection by tunnel terminal	Flexible or rigid cable: max 2.5 mm²	

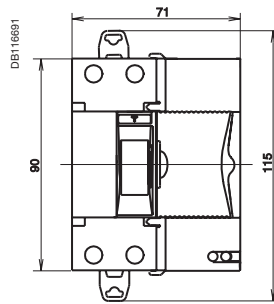
5



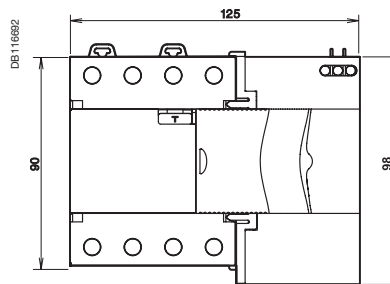
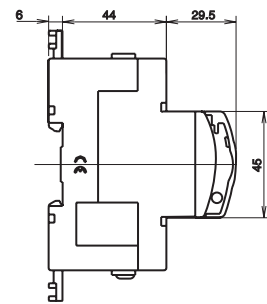
Weight (g)

Reclosers	2P	4P
REDs	360	<ul style="list-style-type: none"> <li>■ 25/40 A: 670</li> <li>■ 63 A:</li> <li>□ 30 mA: 720</li> <li>□ 300 mA: 680</li> </ul>
REDtest	370	-

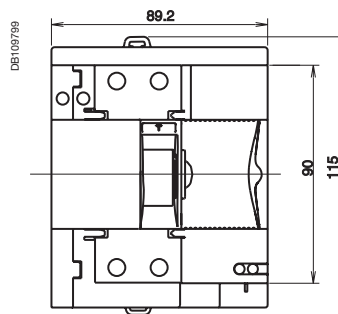
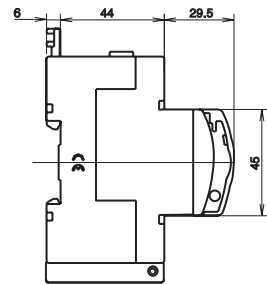
Dimensions (mm)



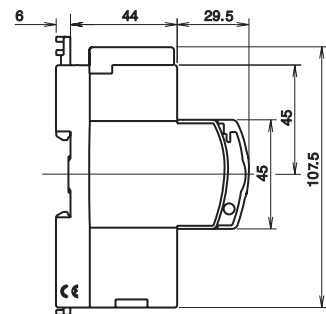
REDs 2P



REDs 4P

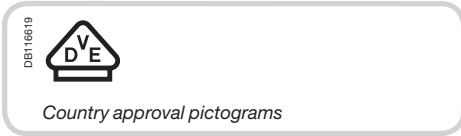


REDtest



# Protect Earth leakage protection Automatic recloser

## RED A type 30 mA



### IEC 61008, EN 61008

The RED REsidual current Device recloser, is made up of a residual current device and a recloser.

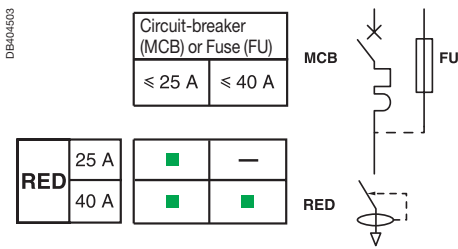
- protection of people against direct and indirect contacts
- protection of installations against insulation faults
- disconnection of on-load electric circuits, already protected against overloads and short-circuits
- automatic restart after insulation monitoring of the downstream circuit.

### Catalogue numbers

Residual current circuit breaker RED			
Type			Width in mod. of 9 mm
2P	Rating	Sensitivity 30 mA	8
	25 A	18693	
	40 A	18695	
Voltage rating (Ue)		230 V	
Frequency rating		50 Hz	



18681



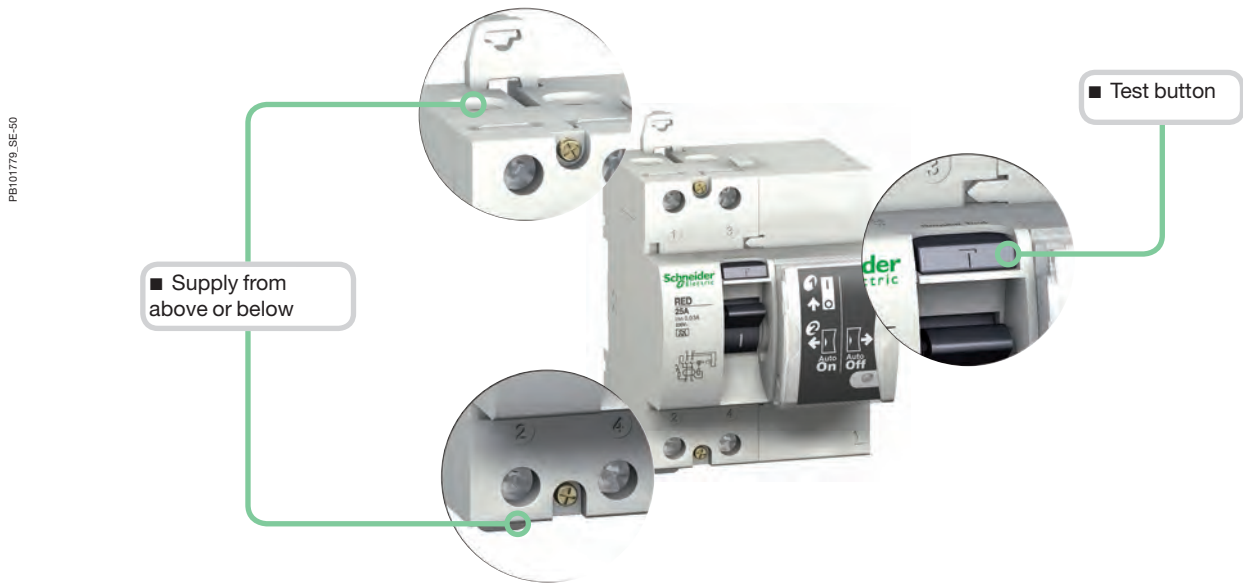
### Coordination table, max short-circuit current (kA rms)

#### Circuit-breakers, fuse / RED type A

RED A Type	Circuit-breakers							Fuse
	C32	K60	DT40	DT40N	C60	C120	NG125	gL 63
Network 230 V	25 A	4.5	6	6	6	6	6	6
L/N	40 A	4.5	6	6	6	6	6	6

# Protect Earth leakage protection Automatic recloser

**RED**  
A type  
30 mA (cont.)



# 5

## Operation

### Recloser

The built-in automatic recloser automatically recloses the residual current device after checking insulation of the downstream circuit. If the resistance to earth is lower than  $R_d$ , then RED reclosing is prohibited. If the resistance to earth is higher than  $R_{do}$ , then RED reclosing is allowed.

### Residual current device

The RED operate in the residual current device mode, without automatic restart, when the sliding cover is open, i.e. to the right in the Auto Off position (Fig. 1).

The automatic restart mode and the Autotest are activated, when the sliding cover is closed, i.e. to the left in the Auto On position (Fig. 2).

### Test

**⚠ This is only possible in manual mode, i.e. sliding cover open in the Auto Off position. You can then manually test the device by pressing the Test key. The downstream installation is then temporarily broken. You must then manually reclose the RED by activating the O-I lever to power supply the downstream circuit.**

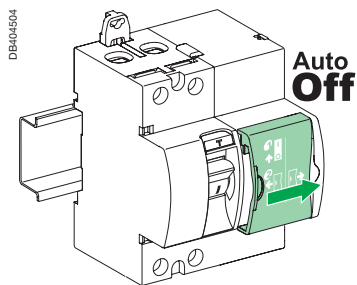


Fig. 1

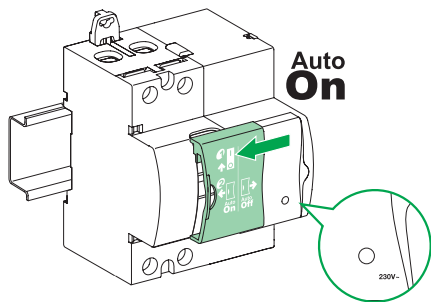


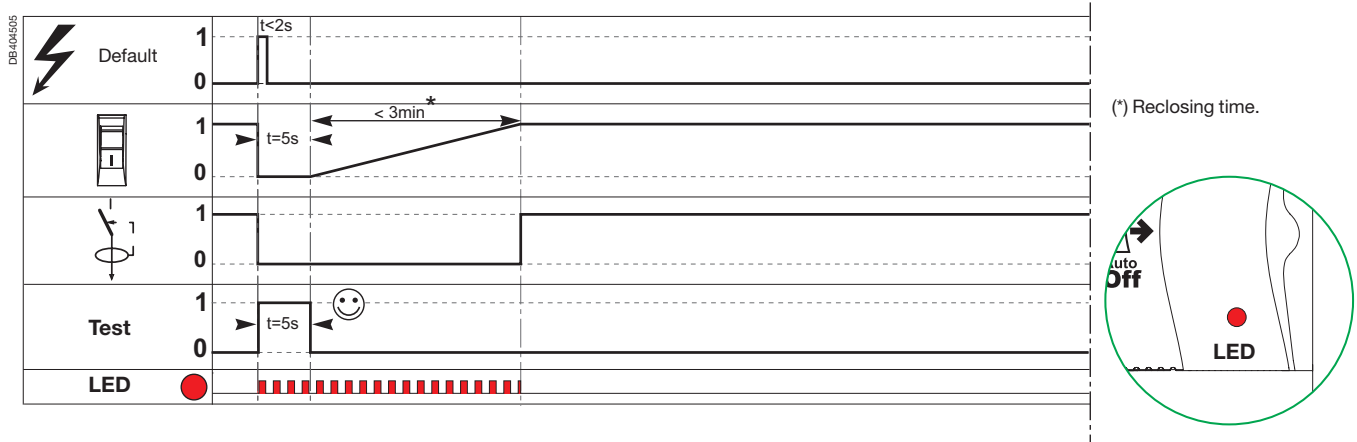
Fig. 2

# Protect Earth leakage protection Automatic recloser

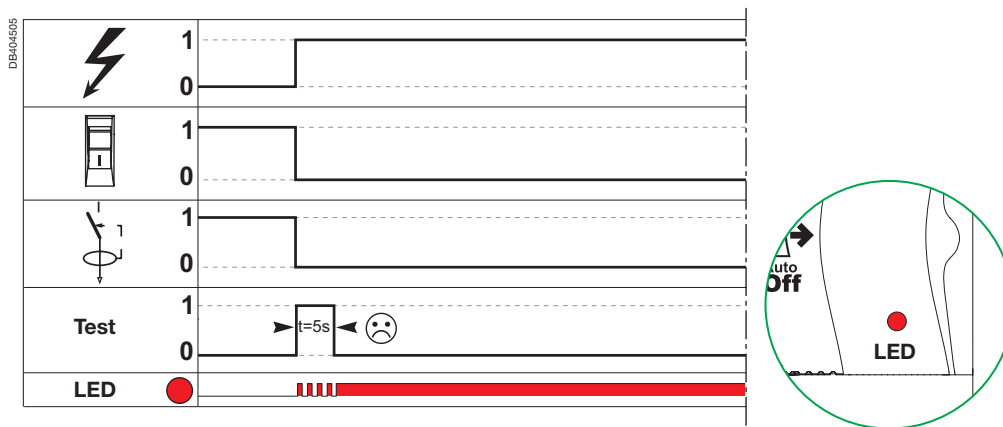
**RED**  
A type  
30 mA (cont.)

## Operation ON mode

### Temporary network fault



### Long network fault



**5**

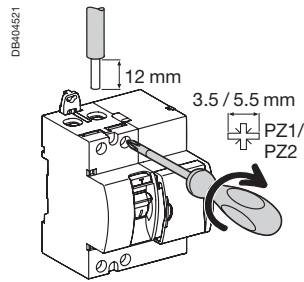
$I\Delta n$	30 mA	300 mA
Rd	8 k $\Omega$	2.5 k $\Omega$
Rdo	16 k $\Omega$	5 k $\Omega$

Rd: lower level of insulation resistance, if  $R < R_d$  = no reclose  
Rdo: higher level of insulation resistance, if  $R_d > R_{do}$  = reclose

Protect  
Earth leakage protection  
Automatic recloser

RED  
A type  
30 mA (cont.)

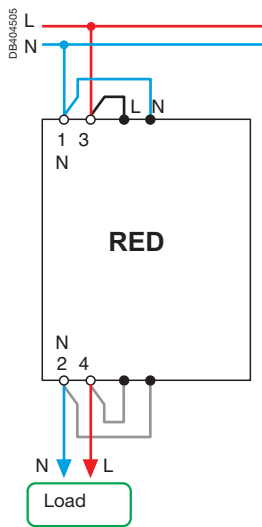
Connection



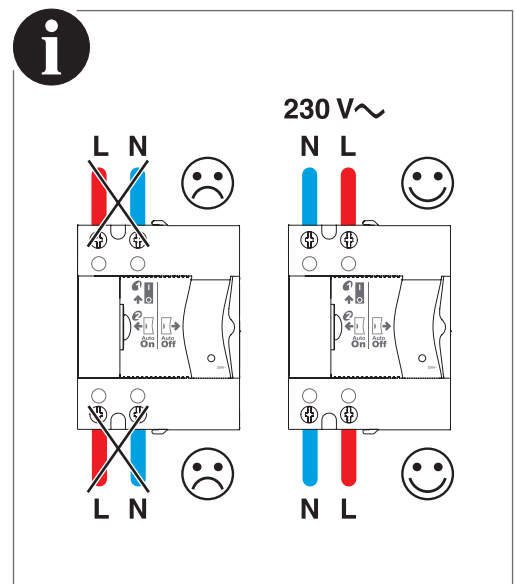
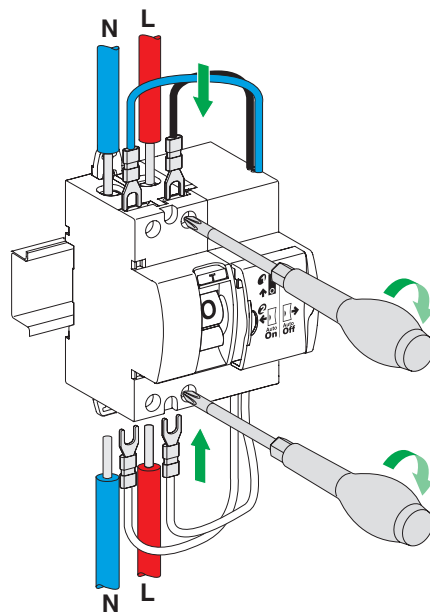
Calibre	Tightening torque	Copper cables	
		Rigid	Flexible or ferrule
25 to 40 A	2 N.m	DB122945 	DB122946 
		35 mm <sup>2</sup>	25 mm <sup>2</sup>

Connection by tunnel terminal with guard

5

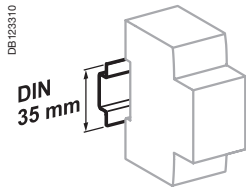


Wiring of non-polarized white wires

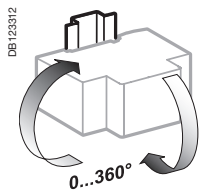


# Protect Earth leakage protection Automatic recloser

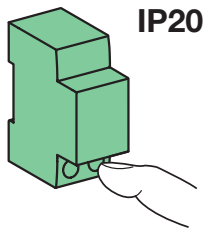
## RED A type 30 mA (cont.)



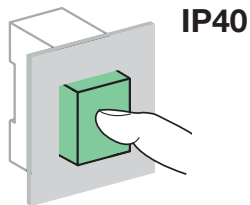
Clip on DIN rail 35 mm.



Indifferent position of installation.



IP20



IP40

### Technical data

#### Main characteristics

##### RED 25...63 A A type

Earthing grounding systems	TT and TN-S only
Impulse withstand voltage (Uimp)	4 kV
Insulation voltage (Ui)	500 V
8/20 μs wave immunity level	250 Å
Tropicalisation	Treatment 2 (relative humidity: 95 % at 55°C)
Operating temperature	-5°C to +40°C
Storage temperature	-20°C to +60°C
Protection class	IP20 at terminals

#### Additional characteristics

##### Residual current device

Making and breaking capacity, rated residual current ( $I_{\Delta n} = I_m$ )	630 A
Breaking capacity in association with protection device	6000 A (gL 63 A)
Tripping time	$I_{\Delta n}: \leq 300$ ms $5 I_{\Delta n}: \leq 40$ ms
Number of cycles (O-C)	Mechanical: 1 000
Fixed sensitivity releases for all ratings	Instantaneous release
Test button min operating voltage	100 V

##### Recloser

Max duration of a restart cycle	90 s
Number of restart operations	15/hour
Maximum number of consecutive restart attempts (if no earth fault)	3
Min interval between 2 closings	180 s
Insulation fault presence monitoring	Yes
Restart in event of transient insulation fault	Yes
Stopping restart cycle if insulation fault present	Yes
Not operating resistance to earth (Rd)	20 kΩ
Operating resistance to earth (Rdo)	70 kΩ
Power consumed by the electronics	S = 0 VA

##### Indication

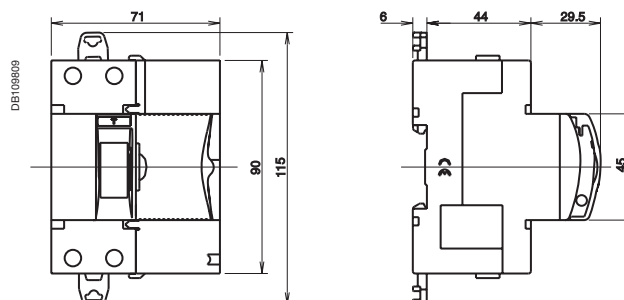
RED status indication	Mechanical: by O-I (open-closed) 2-position lever Electrical: by 1 red indicator light on the front panel
-----------------------	--

### Weight (g)

#### Recloser

RED	350
-----	-----

### Dimensions (mm)





***Reflex iC60H* . . . . . pages 6/2 to 6/6**

- Miniature circuit breakers . . . . . page 6/2
- Features . . . . . page 6/3
- Operating modes . . . . . page 6/4
- Power and control connection . . . . . page 6/5
- Technical data . . . . . page 6/6

***ARA automatic reclosures* . . . . . pages 6/7 to 6/11**

- ARA automatic reclosures . . . . . page 6/7
- Operating principle . . . . . page 6/8
- Permanent fault diagrams . . . . . page 6/9
- Features . . . . . page 6/10
- Connection and technical data . . . . . page 6/11

***RCA remote controls* . . . . . pages 6/12 to 6/15**

- RCA remote controls . . . . . page 6/12
- Modes . . . . . page 6/13
- Features . . . . . page 6/14
- Connection and technical data . . . . . page 6/15

***Acti 9 smartlink* . . . . . pages 6/16 to 6/20**

- Functions . . . . . page 6/16
- Features and connectable devices . . . . . page 6/17
- Installation . . . . . page 6/18
- Connection . . . . . page 6/19
- Technical characteristics . . . . . page 6/20



# Control, remote control Integrated control circuit breakers

## Reflex iC60H (curves B, C, D)

PB106238-40



ComReady

PB106238-40



6

### IEC/EN 60947-2

The Reflex iC60 devices are integrated control circuit breakers which combine the following main functions in a single device:

- Remote control by latched and/or impulse-type order according to the 3 operating modes to be chosen by the user.
- Circuit breaker, to provide:
  - circuit protection against short-circuit currents,
  - circuit protection against overload currents,
  - disconnection in the industrial sector.

Resetting after a fault is performed manually, by the resetting handle.

The version with Ti24 allows direct interfacing of the Reflex iC60 with a PLC, to:

- Execute remote control (Y3).
- Indicate the state of the control circuit (O/C) and circuit-breaker state information (auto/OFF).

The Ti24 interface also allows fast, reliable connection of the Reflex iC60 to the Acti 9 Smartlink thanks to the prefabricated cables.

The iMDU auxiliary allows the Reflex iC60 to be controlled in 24/48 V AC/DC.

Alternating current (AC) 50 Hz				
Ultimate breaking capacity (Icu) as per IEC/EN 60947-2				Service breaking capacity (Ics)
		Voltage (Ue)		
Ph/Ph (2P, 3P, 4P)	220 to 240 V		380 to 415 V	
<b>Reflex iC60H</b>				
Rating (In)	10 to 40 A	30 kA	15 kA	50 % of Icu

### Catalogue numbers

Reflex iC60 circuit breaker									
Type	2P			3P			4P		
Rating (In)	Curve			Curve			Curve		
	B	C	D	B	C	D	B	C	D
<b>Reflex iC60H</b>									
<b>With Ti24 interface</b>									
10 A	A9C64210	A9C65210	A9C66210	A9C64310	A9C65310	A9C66310	A9C64410	A9C65410	A9C66410
16 A	A9C64216	A9C65216	A9C66216	A9C64316	A9C65316	A9C66316	A9C64416	A9C65416	A9C66416
25 A	A9C64225	A9C65225	A9C66225	A9C64325	A9C65325	A9C66325	A9C64425	A9C65425	A9C66425
40 A	A9C64240	A9C65240	-	A9C64340	A9C65340	-	A9C64440	A9C65440	-
Width in 9 mm modules	9			11			13		

# Control, remote control Integrated control circuit breakers

## Reflex iC60H (curves B, C, D) (cont.)

**■ Tripping and disconnection device capable of:**  
 disconnecting and padlocking (Ø 3 to 6 mm not supplied) in "open" position  
 neutralizing remote control

**■ Ti24 interface for direct link to PLC and Acti 9 Smartlink**

**ComReady**

**■ IP20 insulated terminals**

**■ Bistable operation:**  
 does not change state in the event of electrical power outage

**■ Operating state indicator lamp**

**■ Resetting handle**

**VisiSafe**  
 Positive contact indication  
 Uimp: 6 kV  
 Ui: 500 V  
 Degree of pollution: level 3

**■ Pushbutton:**  
 manual control: opening/closing  
 choice of operating "modes"

- Longer product service life thanks to:
  - good overvoltage withstand capacity: products designed to provide a high industrial performance level (degree of pollution, rated impulse withstand voltage and insulation voltage),
  - high limitation performances,
  - fast closure independent of the speed of resetting of the operating handle.

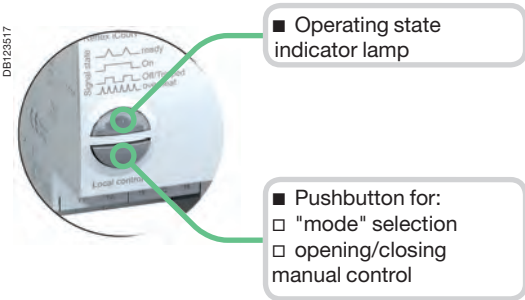
### Legend

Ti24 interface	
+24VDC	V DC power supply
Y3	Remote control by latched order
auto/OFF	Circuit-breaker state information
O/C	Control circuit state information (open/closed)
0V	V DC power supply

Y1	Latched order control
Y2	Control by impulse-type
N	230 V AC power supply
P	
O/C	Control circuit state indication contact
auto/OFF	Circuit-breaker tripping indication contact

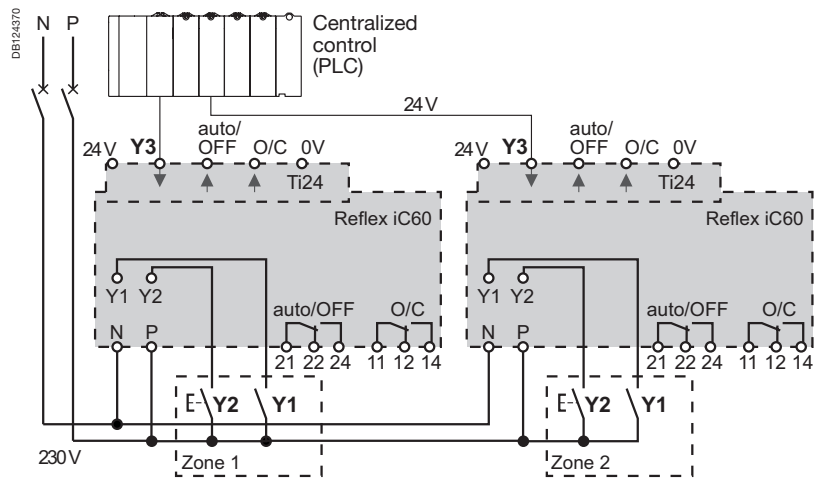
# Control, remote control Integrated control circuit breakers

## Reflex iC60H (curves B, C, D) (cont.)



Remote control is possible by 3 operating modes to be set using the pushbutton on the front panel.

### Three types of control: Y1, Y2, Y3



### Operating modes

#### Mode 1: Reflex iC60 opening/closing, locally or centrally controlled

- The opening/closing orders come from various control points, and they are taken into account in their order of arrival
- Y1: latched order local control
- Y2: impulse-type local control
- Y3: latched order centralized control

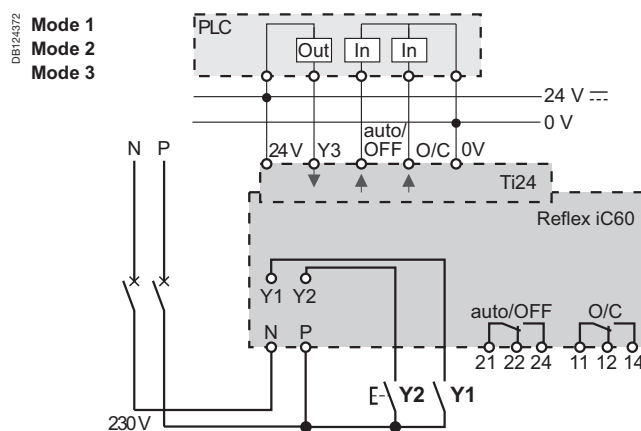
#### Mode 2: Reflex iC60 opening/closing, possible inhibition of local impulse-type control

- Y1 is used to inhibit Y2
- Y1: local opening/Y2 inhibition latched order control
- Y2: impulse-type local opening/closing control
- Y3: latched order centralized opening/closing control

#### Mode 3: Reflex iC60 opening/closing, possible inhibition of centralised latched order control

- Y1 is used to inhibit Y3
- Y3 inhibition local latched order control
- Y2: impulse-type local opening/closing control
- Y3: latched order centralized opening/closing control

### Reflex iC60 with Ti24 interface



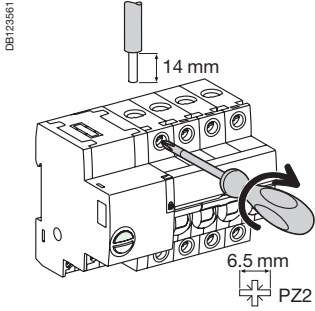
### Table of modes

	Mode 1	Mode 2	Mode 3
Reflex iC60 with interface Ti24	■ Possible mode	■ Possible mode	■ Default mode

# Control, remote control Integrated control circuit breakers

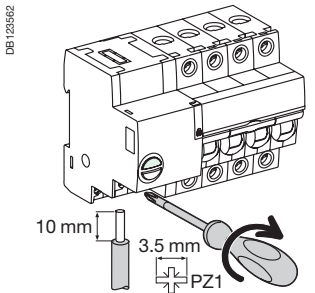
# Reflex iC60H (curves B, C, D) (cont.)

## Power connection

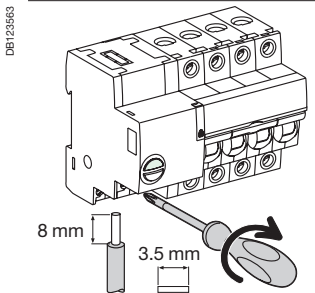


Terminal	Rating	Tightening torque	Without accessories		With accessories			
			Copper cables		Al terminal 50 mm <sup>2</sup>	Screw-on connection for ring terminal	Multi-cable terminal	
			Rigid	Flexible or with ferrule			Rigid cables	Flexible cables
<b>Power</b>	10 to 25 A 40 to 63 A	2 N.m 3.5 N.m	DB122945 1 to 25 mm <sup>2</sup> 1 to 35 mm <sup>2</sup>	DB122946 1 to 16 mm <sup>2</sup> 1 to 25 mm <sup>2</sup>	DB122935 - 50 mm <sup>2</sup>	DB118789 Ø 5 mm	DB118787 - 3 x 16 mm <sup>2</sup> 3 x 10 mm <sup>2</sup>	

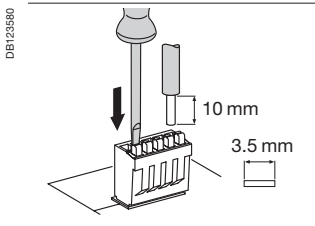
## Control connection



Terminal	Tightening torque	Without accessories		
		Copper cables		
		Rigid	Flexible	Flexible with ferrule
<b>Power supply (N/P) Inputs (Y1/Y2)</b>	1 N.m	DB122945 1 to 10 mm <sup>2</sup>	DB123553 1 to 6 mm <sup>2</sup>	DB123554 1 to 4 mm <sup>2</sup>



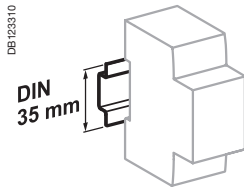
<b>Outputs (O/C, auto/OFF)</b>	0.7 N.m	1 to 2.5 mm <sup>2</sup>	1 to 2.5 mm <sup>2</sup>	1 to 1.5 mm <sup>2</sup>
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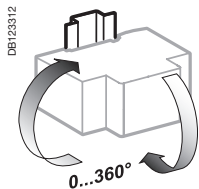
<b>Ti24 interface</b>	Spring-loaded terminals	0.5 to 1.5 mm <sup>2</sup>	0.5 to 1.5 mm <sup>2</sup>	0.5 to 1.5 mm <sup>2</sup>
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# Control, remote control Integrated control circuit breakers

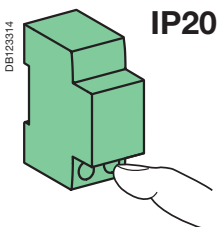
# Reflex iC60H (curves B, C, D) (cont.)



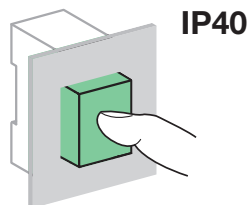
Clip on DIN rail 35 mm.



Indifferent position of installation.



IP20



IP40

6

## Technical data

Control circuit		
Supply voltage (Ue) (N/P)		230 V AC - 50 Hz
Control voltage (Uc)	Inputs (Y1/Y2)	230 V AC - 5 mA (24...48 V AC/DC, with iMDU auxiliary)
	Input (Y3)	24 V DC - 5.5 mA
Min. duration of control impulse (Y2)		≥ 250 ms
Response time (Y2)		≤ 200 ms
Consumption		≤ 1 W
Inrush consumption		< 1000 VA
Length of control wires	Inputs (Y1/Y2)	Cable: 100 m Wires in a sheath: 500 m
	Input (Y3)	500 m
Inrush current at 230 V - 50 Hz	2P	4.2 Å
	3P	8.2 Å
	4P	16.2 Å
Power circuit		
Max. working voltage (Ue)		400 V AC
Insulation voltage (Ui)		500 V
Rated impulse withstand voltage (Uimp)	Set to Disconnected	6 kV
	Set to Ready	4 kV
Thermal tripping	Reference temperature	50°C
Magnetic tripping	Curve B	4 In ± 20 %
	Curve C	8 In ± 20 %
	Curve D	12 In ± 20 %
Overvoltage category (IEC 60364)		IV
Temperature derating		See module CA908007
Indication / Remote control		
Potential-free changeover contact outputs (O/C, auto/OFF)	Min.	24 V DC - 100 mA
	Max	230 V AC - 1 A
Ti24 interface (as per IEC 61131)		
Outputs (O/C, auto/OFF)	Ti24 interface	24 V DC - 100 mA max
Endurance (O-C)		
Electrical	AC1 - AC7a	Up to 50,000 cycles <sup>(1)</sup>
	AC5a - AC5b	Up to 15,000 cycles <sup>(1)</sup>
	AC7c	Up to 20,000 cycles <sup>(1)</sup>
Mechanical		50,000 cycles
Additional characteristics		
Degree of protection (IEC 60529)	Device only	IP20
	Device in a modular enclosure	IP40 Insulation class II
Degree of pollution		3
Operating temperature		-25°C to +60°C
Storage temperature		-40°C to +85°C
Tropicalization		Treatment 2 (relative humidity of 93 % at 40°C)
Immunity to voltage dips		IEC 61000-4-11 class III
Immunity to power supply frequency variations		IEC 61000-4-28 and IACS E10
Immunity to harmonics		IEC 61000-4-13 class 2
Immunity to electrostatic discharges	Air	8 kV, IEC 61 000-4-2
	Contacts	4 kV, IEC 61 000-4-2
Immunity to stray magnetic fields		10 V/m up to 3 GHz, IEC 61000-4-3
Immunity to fast transients		4 kV from 5 to 100 kHz, IEC 61000-4-4
Immunity to shock waves		IEC 61000-4-5
Immunity to power frequency magnetic fields		10 V from 150 kHz to 80 MHz, IEC 61000-4-6
Immunity to grid frequency magnetic fields		Level 4 30 A/m to IEC 61000-4-8 and IEC 61000-4-9
Conducted emissions		CISPR 11/22
Radiated emissions		CISPR 11/22

(1) See the derating table according to the load types and ratings

# Control Remote control

# ARA automatic reclosers For iC60 circuit breakers and iID residual current circuit breakers



ARA iC60



ARA iID

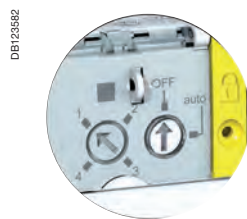
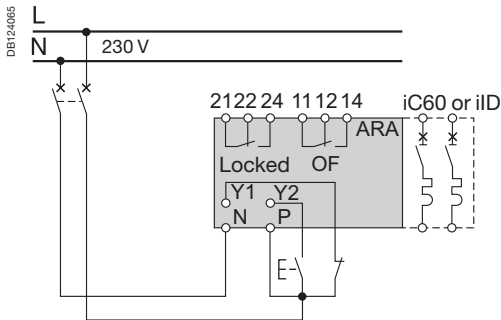
The ARA reclosing auxiliary can:

- Perform automatic reclosing of the associated protection device, after tripping.
- Increase the availability of installations without supervision, isolated, hard of access and demanding very great availability (mobile telephony systems, motorways, pumping stations, airports, railways, meteorological stations, service stations, automatic teller machines, public lighting, tunnels, etc.), by restoring them to operation without intervention by personnel in the event of a transient fault (atmospheric disturbances, industrial overvoltages, etc.).
- For the ARA iC60, the operator can choose predefined reclosing program which allows the safety and availability of facilities to be reconciled taking into account the facility's environment.
- The circuit is placed in safety configuration by the padlocking device.

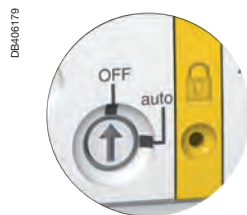
## Catalogue numbers

ARA iC60				
For circuit breaker				Width in 9 mm modules
1P, 1P+N, 2P	Number of programs	Voltage		
	4	230 V AC, 50/60 Hz	A9C70132	7
3P, 4P				
	4	230 V AC, 50/60 Hz	A9C70134	7
ARA iID				
For residual current circuit breaker				Width in 9 mm modules
2P	Number of programs	Voltage		
	1	230 V AC, 50/60 Hz	A9C70342	7
4P				
	1	230 V AC, 50/60 Hz	A9C70344	7
Auxiliaries			See module CA907000 and CA907002	

## Diagram



ARA iC60



ARA iID

Legend		
Type	Application	
1 2 4 3	Choice of program (ARA iC60)	
Y1	"Remote" inhibition of automatic reclosing	
Y2	Remote control of final reclosing	
N	230 V power supply	
P		
Locked	Automatic recloser inhibition indication contact	
OF	Indicates the state of the circuit breaker or residual current circuit breaker (opened or closed)	
Indicator lamp	Flashing green	ARA automatic recloser operational
	Flashing red	Reclosing cycle in progress
	Fixed red	ARA automatic recloser locked at end of reclosing cycle: circuit breaker or residual current circuit breaker tripped (open)
	Flashing orange	ARA automatic recloser not operational

### Operating principle

The ARA automatic recloser makes a number of attempts at reclosing depending on the program chosen by the user.

The program includes the following settings:

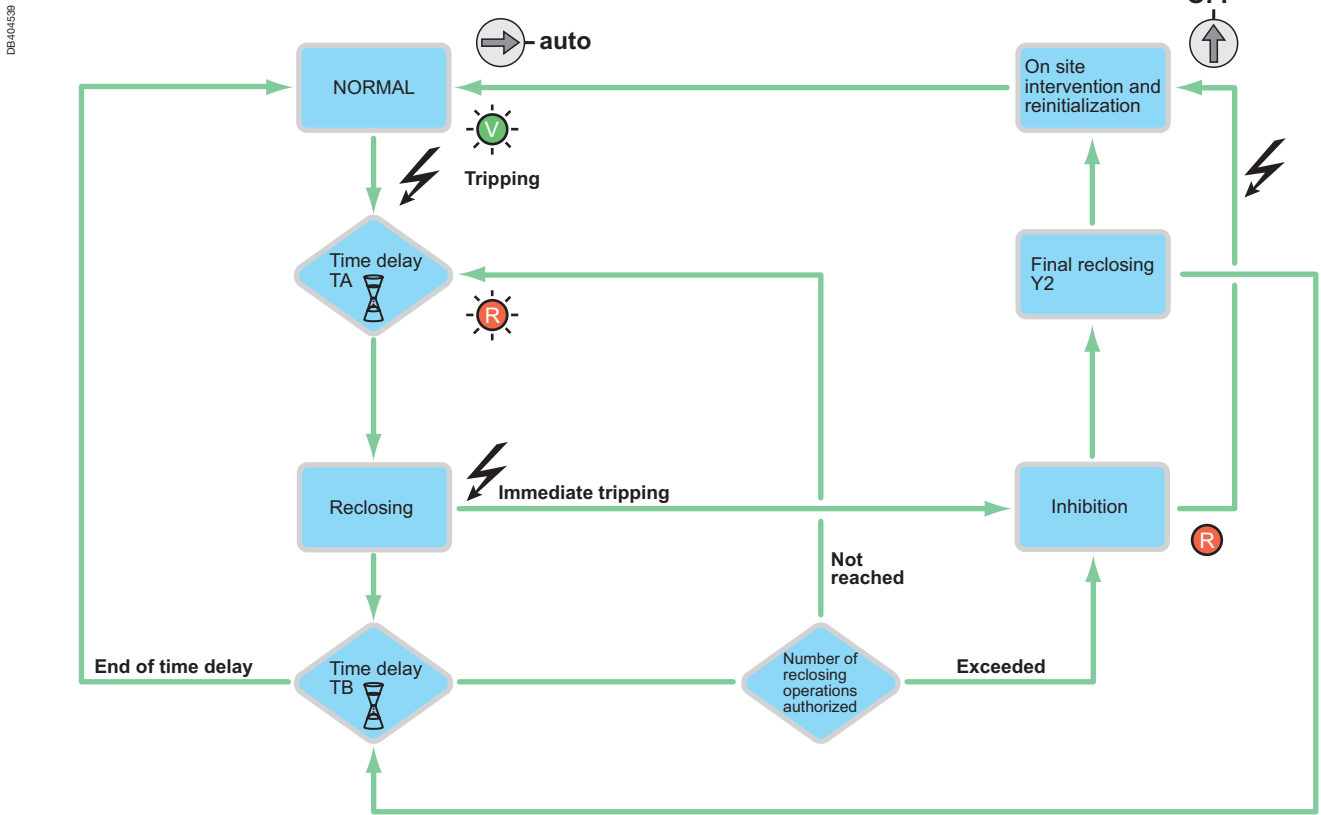
- A time delay before reclosing (TA).
- A reinitialization time delay (TB).
- A maximum number of reclosing attempts.

If, following these attempts, the fault is still present, the device places itself in waiting for manual reclosing, or final remote reclosing (Y2).

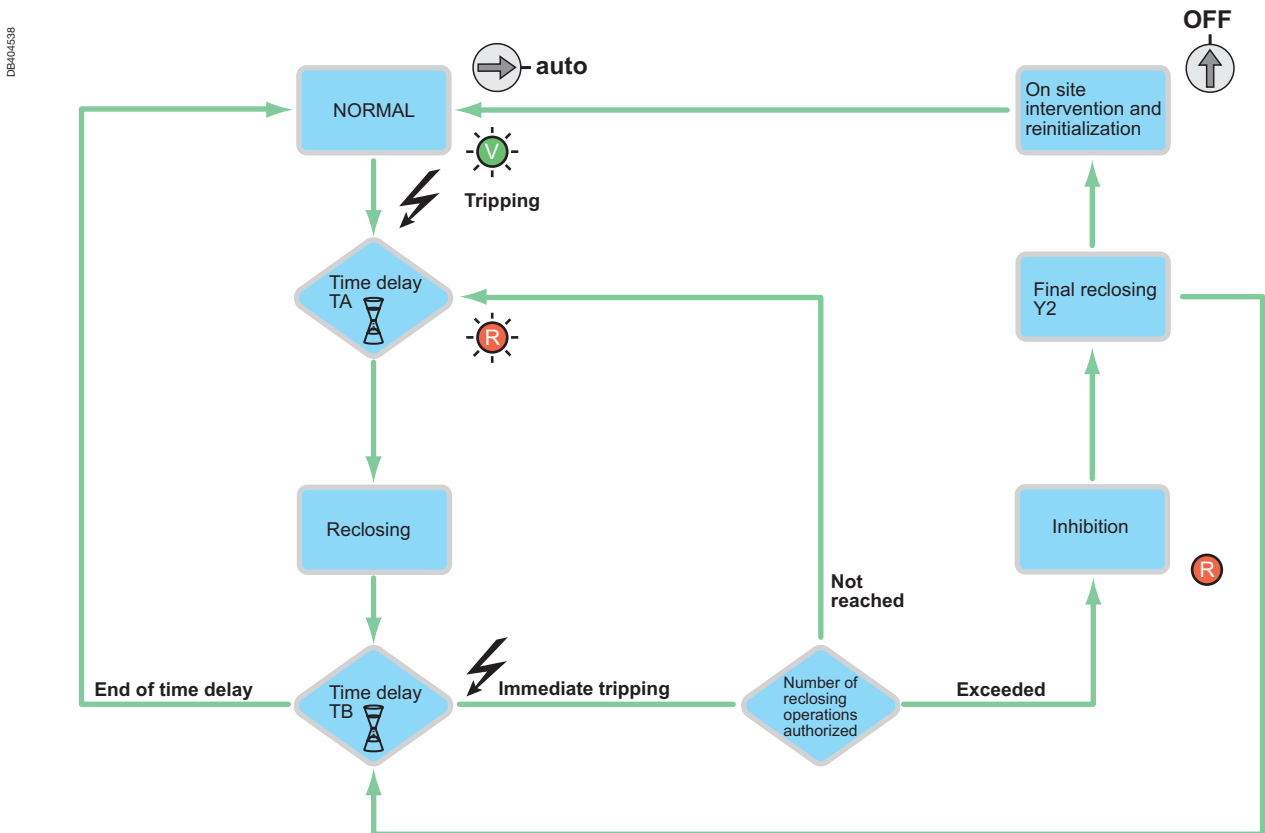
ARA iC60		Number of reclosing attempts	Delay before reclosing	Check time	Final reclosing Y2
			TA	TB	
<b>Program</b>					
	DB124061	1	60 s	6 min.	Once after inhibition
	DB124062	3	60 s 3 min. 3 min.	2 min. 6 min. 6 min.	
	DB124063	5	60 s 3 min. 3 min. 3 min.	2 min. 6 min. 6 min. 6 min.	
	DB124064	5	60 s 3 min. 4 min. 5 min. 6 min.	2 min. 6 min. 8 min. 10 min. 12 min.	

ARA iID		Number of reclosing attempts	Delay before reclosing	Check time	Final reclosing Y2
			TA	TB	
Only 1 program available	15	20 s 40 s 3 min. 3 min. ...	30 min. 30 min. ...	Once per cycle	

ARA iC60 operating diagram



ARA iID operating diagram





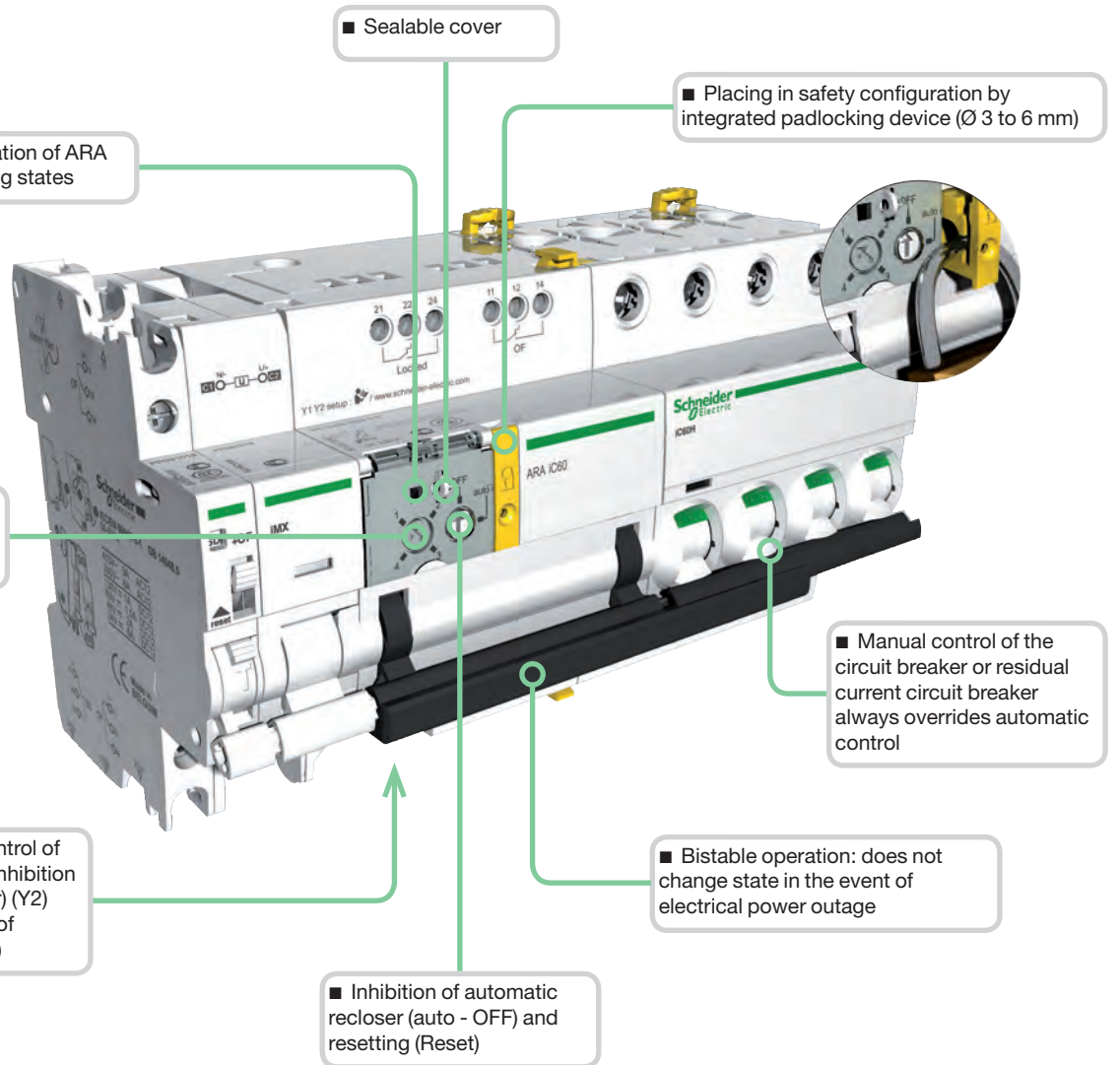
# Control

## Remote control

# ARA automatic reclosers (cont.)

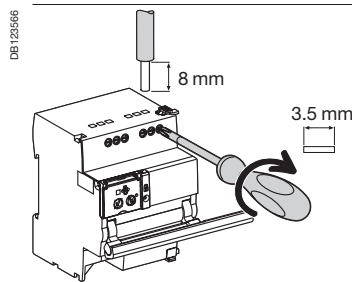
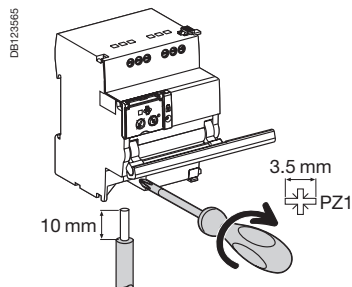
For iC60 circuit breakers  
and iID residual current circuit breakers

PB106055-104

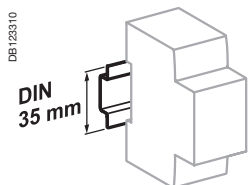


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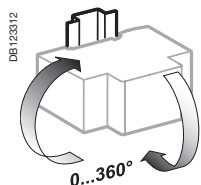
### Connection



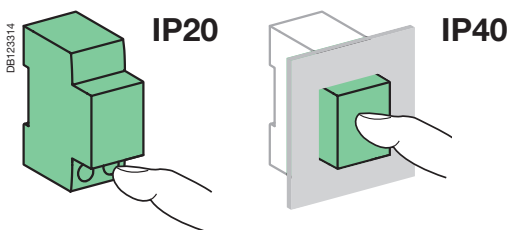
Terminal	Tightening torque	Copper cables		
		Rigid	Flexible	Flexible with ferrule
Power supply (N/P) Inputs (Y1/Y2)	1 N.m	0.5 to 10 mm <sup>2</sup> 2 x 0.5 to 2 x 2.5 mm <sup>2</sup>	0.5 to 6 mm <sup>2</sup> 2 x 0.5 to 2 x 2.5 mm <sup>2</sup>	0.5 to 4 mm <sup>2</sup> 2 x 0.5 to 2 x 2.5 mm <sup>2</sup>
Outputs (OF/Locked)	0.7 N.m	0.5 to 2.5 mm <sup>2</sup> 2 x 0.5 to 2 x 1.5 mm <sup>2</sup>	0.5 to 2.5 mm <sup>2</sup> 2 x 0.5 to 2 x 1.5 mm <sup>2</sup>	0.5 to 1.5 mm <sup>2</sup> 2 x 0.5 to 2 x 1.5 mm <sup>2</sup>



Clip on DIN rail 35 mm.



Indifferent position of installation.



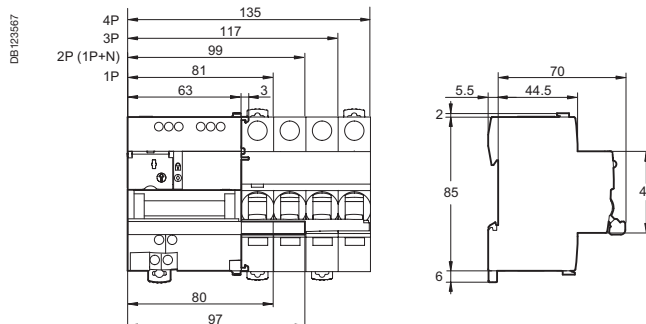
### Technical data

Control circuit		
Supply voltage (Ue) (N/P)		230 V AC, 50/60 Hz
Control voltage (Uc)	Type 1 inputs (Y1/Y2)	230 V AC (as per IEC 61131-2)
Min. duration of control order (Y2)		≥ 200 ms
Response time (Y2)		< 500 ms
Consumption		< 2 W
Endurance (O-C) (ARA combined with a circuit breaker)		
Electrical		5000 cycles
Indication / Remote control		
Potential-free changeover contact output (OF/Locked)	Min.	24 V AC/DC, 10 mA
	Max.	230 V AC, 1 A
Input (Y1/Y2)	230 V AC	5 mA
Additional characteristics		
Degree of protection (IEC 60529)	Device only	IP20
	Device in a modular enclosure	IP40 Insulation class II
Insulation voltage (Ui)		400 V
Degree of pollution (IEC 60947)		3
Rated impulse withstand voltage (Uimp)		6 kV
Operating temperature		-25°C to +60°C
Storage temperature		-40°C to +70°C
Tropicalization		Treatment 2 (relative humidity of 93 % at +40°C)

### Weight (g)

Automatic reclosers	
Type	ARA
For 1P, 1P+N, 2P circuit breakers or iID residual current circuit breaker	440
For 3P, 4P circuit breakers	470

### Dimensions (mm)



# Control

## Remote control

# RCA remote controls

## For iC60 circuit breakers

PB106253-40



PB106251-40



The RCA remote control system allows:

- Remote electrical control (opening and closing) of circuit breakers with or without Vigi add-on RCD, with or without auxiliary.
- Circuit-breaker resetting after tripping, in accordance with safety principles and the regulations in force.
- Local control by operating handle.
- Circuit placing in safety configuration by padlocking.

2 choices of operation after tripping:

- A: Enabling of remote circuit-breaker resetting;
- B: Inhibition of remote resetting.

The version with Ti24 interface allows:

- Direct interfacing of remote control with a programmable logic controller (PLC), a supervision system and any other communication device, having inputs/ outputs in 24 V DC (control, OF and SD indications).
- Fast, reliable connection of the remote control to the Acti 9 Smartlink thanks to the prefabricated cables.
- Remote indication by "OF" potential-free contact.
- Provision of 2 operating modes, "1 and 3".

The iMDU auxiliary allows RCA control in 24/48 V AC/DC.

### Catalogue numbers

RCA remote control			
Type			Width in 9 mm modules
<b>For circuit breakers 1P, 1P+N, 2P</b>	<b>Voltage</b>		
Without Ti24 interface	230 V AC, 50/60 Hz	<b>A9C70112</b>	7
With Ti24 interface	230 V AC, 50/60 Hz	<b>A9C70122</b>	7
<b>For 3P, 4P circuit breakers</b>			
Without Ti24 interface	230 V AC, 50/60 Hz	<b>A9C70114</b>	7
With Ti24 interface	230 V AC, 50/60 Hz	<b>A9C70124</b>	7
<b>Auxiliaries</b>		<b>See module CA907000 and CA907002</b>	

6

DB123513



Without Ti24 interface

DB123572



DB123573



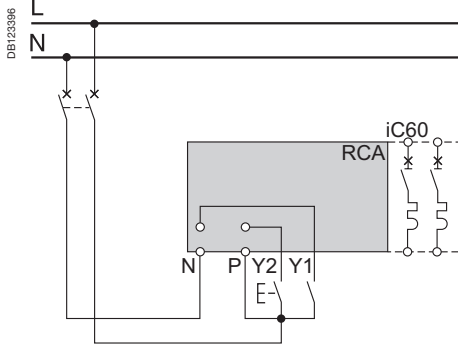
Legend	
Type	Application
<b>OFF</b>	All remote control inhibited
<b>auto</b>	
<b>A</b>	Circuit breaker remote reclosing after tripping allowed
<b>B</b>	Circuit breaker remote reclosing after tripping inhibited
<b>Green indicator lamp</b>	Remote control possible
<b>Orange indicator lamp</b>	Remote control impossible
<b>1 (Ti24)</b>	Mode 1
<b>3 (Ti24)</b>	Mode 3
<b>Y1</b>	Latched order local control
<b>Y2</b>	Impulse-type or latched order local control (depending on mode)
<b>Y3</b>	Latched order centralized control

# Control Remote control

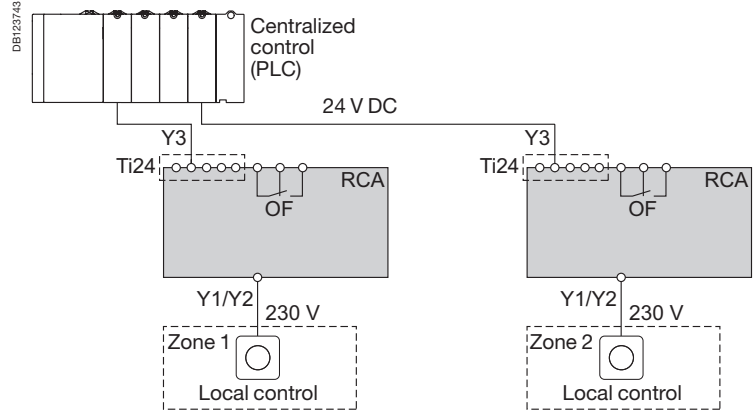
# RCA remote controls (cont.) For iC60 circuit breakers

## Standard RCA

- The orders received on terminals Y1 and Y2 are taken into account progressively in their order of arrival.



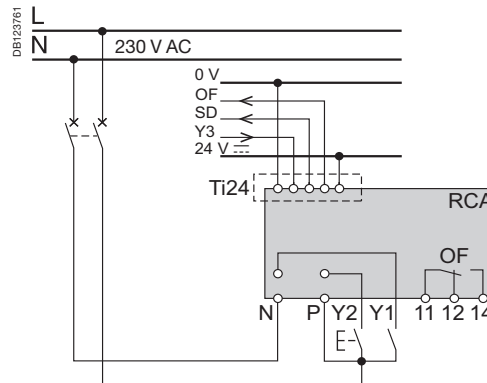
## RCA Ti24



## Mode 1: Locally or centrally controlled circuit-breaker opening/closing

- The orders come from various control points, and they are taken into account in their order of arrival
- Y1: Latched order local control
- Y2: Impulse-type local control
- Y3: Latched order centralized control

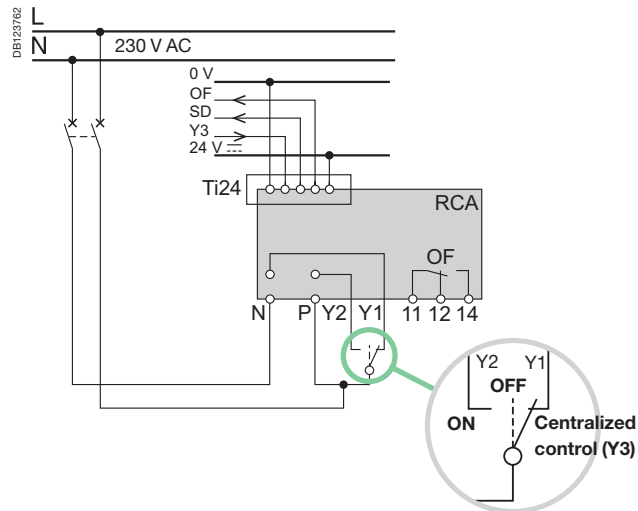
## RCA Ti24 mode 1



## Mode 3: Centrally controlled opening/closing + local override

- 3 positions allowing a choice between override and centralized control:
- Y1: Latched order local control
- Y2: Latched order local control
- Y3: Latched order centralized control

## RCA Ti24 mode 3

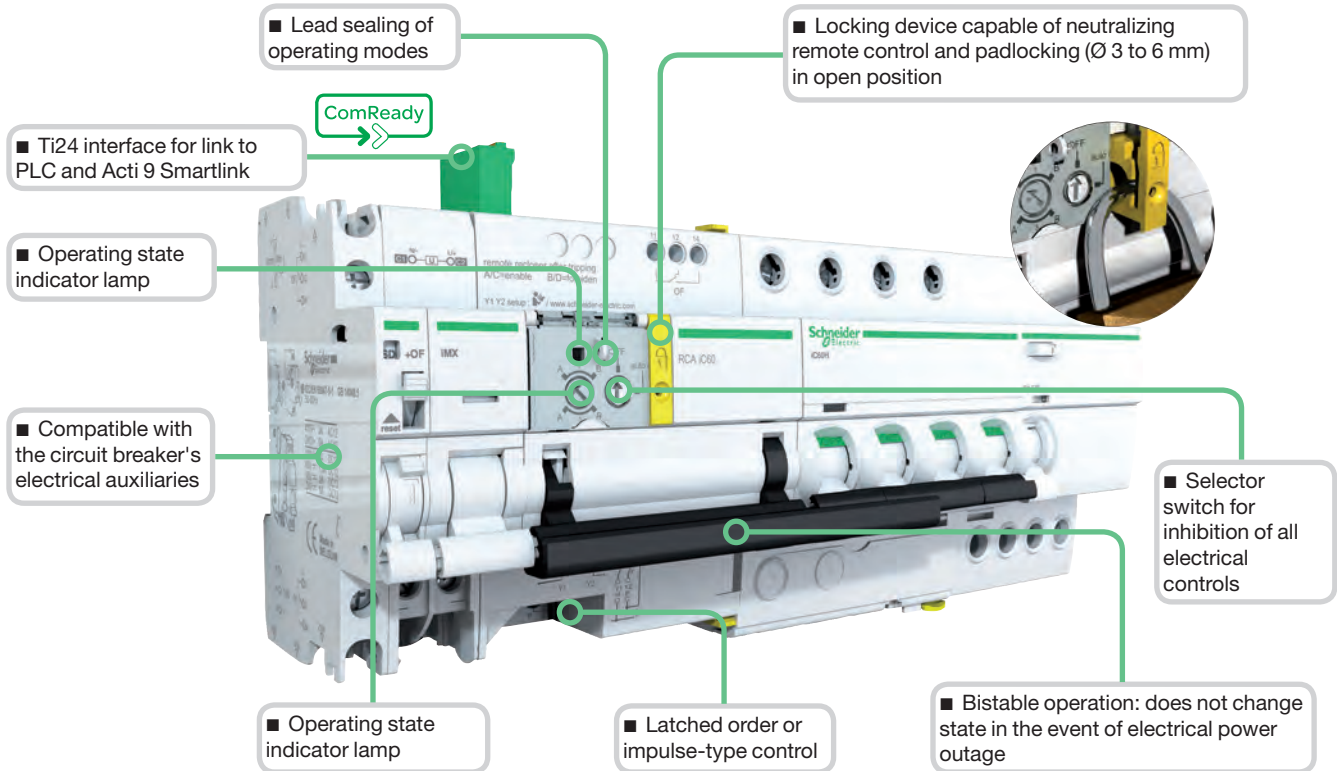


# Control Remote control

## RCA remote controls (cont.)

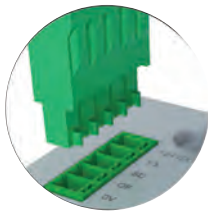
For iC60 circuit breakers

DB123576



6

DB123763



DB123579



DB123578



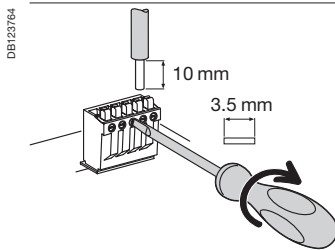
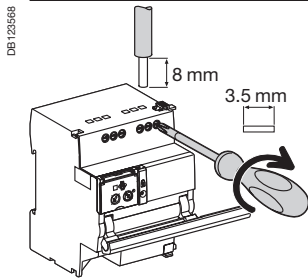
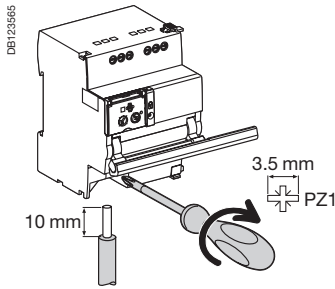
Legend	
Type	Application
+24VDC	V DC power supply
Y3	Latched order centralized control
SD	Circuit-breaker tripping information
OF	Control circuit state information (open/closed)
0 V	V DC power supply
Y1	Latched order local control
Y2	Impulse-type or latched order local control (depending on mode)
N	230 V AC power supply
P	
OF	Circuit-breaker state indication contact (open/closed)

Indication auxiliaries	Tripping auxiliaries	RCA remote control	iC60 circuit breaker	Vigi iC60 add-on RCD
<p>3</p>	<p>1</p>			
No	1 (iSD or iOF or iOF/SD+OF or iOF+SD24)			
1 iOF	1 (iSD or iOF or iOF/SD+OF)	No	<p>RCA</p>	<p>iC60</p>
				<p>Vigi iC60</p>

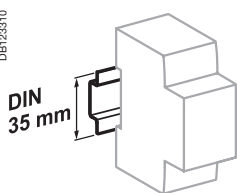
Technical Section 11

Dimensions Section 12

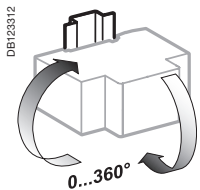
## Connection



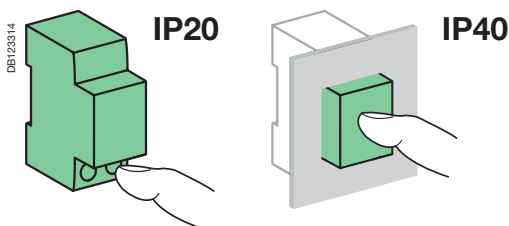
Terminal	Tightening torque	Without accessories		
		Copper cables		
		Rigid	Flexible	Flexible with ferrule
Power supply (N/P) Inputs (Y1/Y2)	1 N.m	DB122945 	DB123553 	DB123554 
Outputs (OF)	0.7 N.m	0.5 to 2.5 mm <sup>2</sup> 2 x 0.5 to 2 x 1.5 mm <sup>2</sup>	0.5 to 2.5 mm <sup>2</sup> 2 x 0.5 to 2 x 1.5 mm <sup>2</sup>	0.5 to 1.5 mm <sup>2</sup> 2 x 0.5 to 2 x 1.5 mm <sup>2</sup>
Ti24 interface	Spring-loaded terminals	0.5 to 1.5 mm <sup>2</sup>	0.5 to 1.5 mm <sup>2</sup>	-



Clip on DIN rail 35 mm.



Indifferent position of installation.



## Technical data

### Control circuit

Supply voltage (Ue) (N/P)	230 V AC, 50/60 Hz
Control voltage (Uc) Type 1 inputs (Y1/Y2)	230 V AC (as per IEC 61131-2)
Min. duration of control order (Y2)	≥ 200 ms
Response time (Y2)	< 500 ms
Consumption	≤ 1 W

Thermal self-protection with automatic Reset against overheating of the control circuit due to an abnormal number of operations

### Endurance (O-C) (RCA combined with a circuit breaker)

Electrical/Mechanical	10,000 cycles
-----------------------	---------------

### Indication / Remote control

Potential free changeover contact output (OF)	Min.	24 V AC/DC, 10 mA
	Max.	230 V AC, 1 A
Input (Y1/Y2)	230 V AC	5 mA

### Ti24 interface (as per IEC 61131)

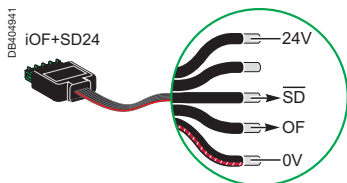
Type 1 input (Y3)	24 V DC	5.5 mA
Output (OF and SD)	24 V DC	In max.: 100 mA

### Additional characteristics

Degree of protection (IEC 60529)	Device only	IP20
	Device in a modular enclosure	IP40 Insulation class II
Insulation voltage (Ui)		400 V
Degree of pollution (IEC 60947)		3
Rated impulse withstand voltage (Uimp)		6 kV
Operating temperature		-25°C to +60°C
Storage temperature		-40°C to +70°C
Tropicalization		Treatment 2 (relative humidity of 93 % at +40°C)



A9XMSB11



## IEC/EN 61131-2

The Acti 9 Smartlink transmits data from Acti 9 devices to a PLC or a supervision system via the Modbus serial line communication network.

## Functions

### Data transmission between the Modbus network and Acti 9 devices




- Circuit breakers, residual current circuit breakers, residual current devices:
  - open/closed state
  - tripped state
  - number of opening/closing cycles
  - number of tripping actions.
- Contactors, impulse relays:
  - opening control
  - closing control
  - open/closed state
  - number of cycles
  - total period of operation of the load (device closed).
- Remote controlled circuit breaker/Reflex iC60:
  - opening control
  - closing control
  - open/closed state
  - tripped state
  - number of cycles
  - total period of operation of the load.
- Power meters:
  - number of pulses recorded
  - pulse value setting (e.g. kWh)
  - total consumption recorded
  - estimate of power consumption.

All the data are stored in memory: number of cycles, consumption, period of operation, even in the event of a power failure.

The Acti 9 Smartlink can also exchange data with any device having 24 V DC digital inputs/outputs. No configuration of the connected products is required.

When the Acti 9 Smartlink is switched on, communication automatically adjusts to the Modbus Master (PLC, control station) communication parameters.

## Catalogue numbers

Acti 9 Smartlink			
Type		Set of	
Acti 9 Smartlink		1	A9XMSB11
Supplied with	Modbus connector	1	
	24 V DC power supply connector	1	
	Locking clips for mounting on Multiclip 80	2	
Accessories			
Link USB / Modbus for Acti 9 Smartlink test		1	A9XCATM1
Prefabricated cables			
With 2 connectors 	Short: 100 mm	6	A9XCAS06
	Medium-sized: 160 mm	6	A9XCAM06
	Long: 870 mm	6	A9XCAL06
With 1 connector 	Long: 870 mm	6	A9XCAU06
Connectors 	5-pin connectors (Ti24)	12	A9XC2412
Mounting kit	DIN rail (4 feet, 4 straps, 4 adapters)	1	A9XMFA04
	Multiclip 200 A (4 adapters)	1	A9XM2B04
Spare parts	Lock for Multiclip 80 A (2 clips)	1	A9XMLA02

## The Acti 9 communication system

### Acti 9 Smart Test software

- Electrical continuity test
- Functional testing of the devices
- Report printing
- Printing of a simplified diagram
- Project archiving
- Compatible with Windows XP, Seven
- To be download on: Schneider Electric web sites:
  - schneider-electric.com or
  - schneider-electric country web site)

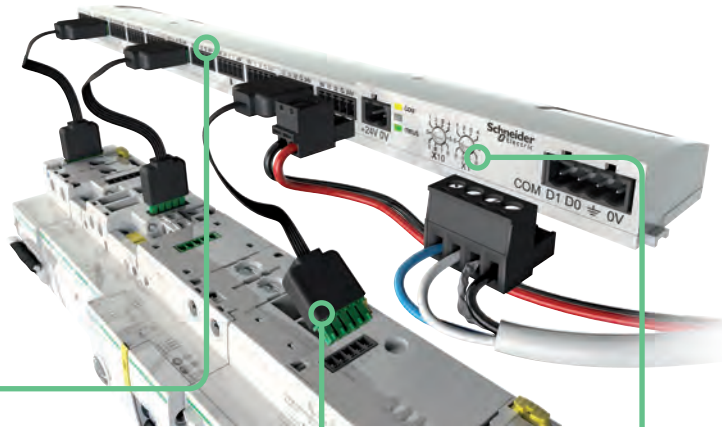


### 11 input/output channels

- Standard connectors
- In accordance with the IEC 61131-2 standard

- Communication adapts automatically to the communication parameters of the Modbus master (PLC, supervisor).
- Up to 32 slaves connected

PB107805-80

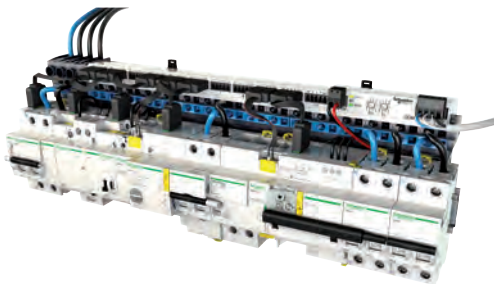


### Prefabricated cables

- Simplified cabling
- Fast and safe

### Modbus Communication

PB107804-43



## Connectable devices

### With Ti24 interface

Type	Reference	Description
iACT24	A9C15924	Low-level control and indication auxiliary for iCT contactors
iATL24	A9C15424	Low-level control and indication auxiliary for iTL impulse relays
iOF+SD24	A9A26897	Low-level indication auxiliary for iC60, iID, ARA, RCA, iSW-NA
OF+SD24	A9N26899	Low-level indication auxiliary for C60, C120, DPN, RCCB/ID, C60H-DC
RCA	See module CA904011	Remote control with Ti24 interface
Reflex iC60	See module CA904012	Reflex iC60 with Ti24 interface

### Without Ti24 interface

Power meters with pulse output, e.g. IEM2000T

Meters complying with the IEC 62053-21 standard

24 V DC indicator lamp, Harmony XVL range

All loads not exceeding 100 mA, 24 V DC

IC2000 light sensitive switches

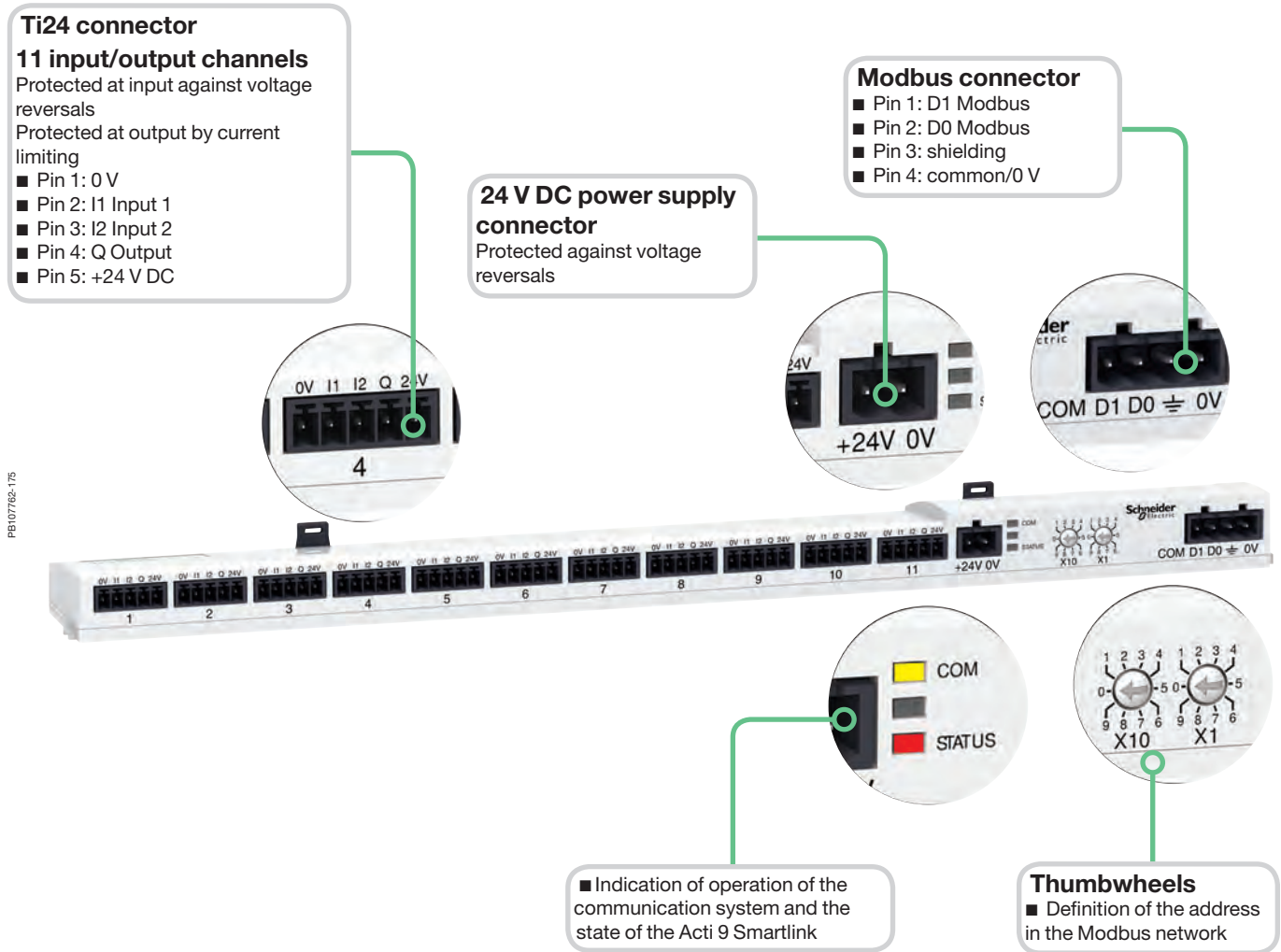
Timers, thermostats, time switches, load shedding devices

All 24 V DC auxiliary contacts, IEC 61131-2 type 1



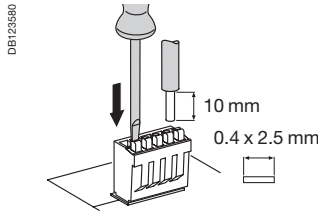



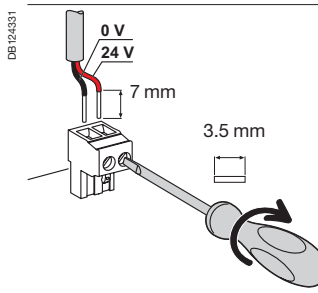
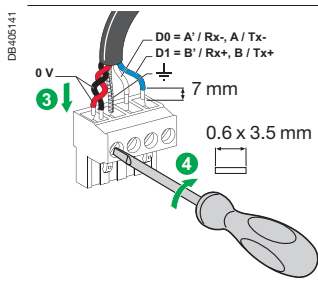
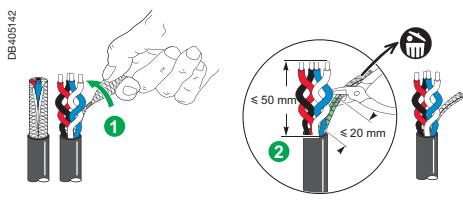
## Installation

- Mounting in switchboards:
  - width 24 modules per row;
  - minimum spacing between rails 150 mm.



PB107762-175

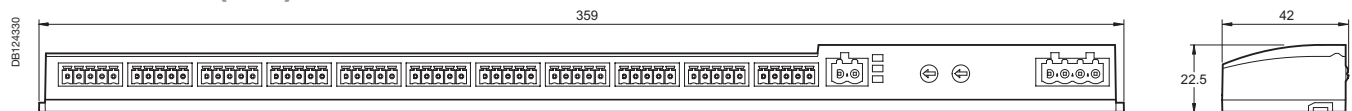
## Connection

Terminal	Terminal Tightening torque	Copper cables				
		Rigid	Flexible	Flexible with ferrule		
 <p>DB123580</p> <p>Connector ref: A9XC2412</p>	DB122845		DB123553		DB123554	
<b>Ti24 interface</b>	Spring loaded terminal	0.5 to 1.5 mm <sup>2</sup>	0.5 to 1.5 mm <sup>2</sup>	-		
 <p>DB124331</p>	0.8 N.m	0.2 to 1.5 mm <sup>2</sup>	0.2 to 1.5 mm <sup>2</sup>	0.2 to 1.5 mm <sup>2</sup>		
<b>Power supply connector</b>	0.8 N.m	0.2 to 1.5 mm <sup>2</sup>	0.2 to 1.5 mm <sup>2</sup>	0.2 to 1.5 mm <sup>2</sup>		
 <p>DB1405141</p>	0.8 N.m	0.25 mm <sup>2</sup>	0.25 mm <sup>2</sup>	0.25 mm <sup>2</sup>		
<b>Modbus connector</b>	0.8 N.m	0.25 mm <sup>2</sup>	0.25 mm <sup>2</sup>	0.25 mm <sup>2</sup>		
 <p>DB1405142</p>						

## Weight (g)

Acti 9 Smartlink	
Type	
Acti 9 Smartlink	195

## Dimensions (mm)



## Technical characteristics

Characteristics of the Modbus link		
Link		Modbus, RTU, RS485 serial connection
Transmission	Transfer rate	9600 baud ... 19200 baud, self-adaptable
	Medium	Shielded cable, double twisted pair
Structure	Type	Modbus.org
	Method	Master/Slave
Type of device		Slave
Configuration	Modbus addressing range of the Acti 9 Smartlink	99
	Maximum number of slaves for a Modbus master	
	Maximum length of the bus	1000 m
Type of bus connector		4-pin connector
Power supply		
Rated		24 V DC $\pm$ 20 %
Maximum input current		1.5 A
Maximum inrush current		3 A
Meter		
Capacity		2 <sup>32</sup> pulses per input
Input characteristics		
Type of input		Current collector <b>Type 1 IEC 61131-2</b>
Number of channels		11 2-input channels
Maximum cable length		20 m
Rated voltage		24 V DC
Voltage limits		24 V DC $\pm$ 20 %
Rated current		2.5 mA
Maximum current		5 mA
Filtering time	In state 1	1 ms
	In state 0	1 ms
Isolation		No isolation between ports
Negative sequence voltage protection		Yes
Output characteristics		
Number of output channels		11
Type of output		24 V DC 0.1 A current source
Rated voltage	Voltage	24 V DC
	Maximum current	100 mA
Filtering time	In state 1	1 ms
	In state 0	1 ms
Voltage drop (voltage in state 1)		1 V max
Maximum inrush current		500 mA
Leakage current		0.1 mA
Overvoltage protection		33 V DC
Environmental characteristics		
Temperature	Operating	-25°C ... +60°C if vertical mounting, limited to 50°C
	Storage	-40°C...+80°C
Tropicalization		Treatment 2 (relative humidity of 93% at 40°C)
Resistance to voltage dips		10 ms, class 3 as per IEC 61000-4-29
Degree of protection		IP20
Pollution degree		3
Altitude	Operating	0 ... 2000 m
Vibration resistance	As per IEC 60068.2.6	1 g / $\pm$ 3.5 mm - 5 Hz to 300 Hz - 10 cycles
Shock resistance	As per IEC 60068.2.2 7	15 g / 11 ms
Immunity to electrostatic discharge	As per IEC 61000-4-2	Air: 8 kV
		Contact: 4 kV
Immunity to radiated magnetic fields	As per IEC 61000-4-3	10 V/m - 80 MHz to 3 GHz
Immunity to fast transients	As per IEC 61000-4-4	1 kV for inputs/outputs and Modbus communication. 2 kV for 24 DC power supply - 5 kHz - 100 kHz
Immunity to conducted magnetic fields	As per IEC 61000-4-6	10 V from 150 kHz to 80 MHz
Immunity to magnetic fields at mains frequency	As per IEC 61000-4-8	30 A/m
Resistance to corrosive atmospheres	As per IEC 60721-3-3	Level 3C2 on H <sub>2</sub> S / SO <sub>2</sub> / NO <sub>2</sub> / Cl <sub>2</sub>
Fire resistance	For live parts	At 960°C 30 s / 30 s as per IEC 60 695-2-10 and IEC 60 695-2-11
	For other parts	At 650°C 30 s / 30 s as per IEC 60 695-2-10 and IEC 60 695-2-11
Salt spray test	As per IEC 60068.2.52	Severity 2
Environment		In compliance with the RoHS directive
Additional characteristics		
Mean time between failure (MTBF) = MTTF at 70°C		1,851,818 h
Duration of saving memory		10 years
Prefabricated cables characteristics		
Dielectric resistance		1 kV / 5 min
Minimum draw-out resistance		20 N

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Electrical auxiliaries .....	pages 7/10 to 7/12
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EN 61095, IEC 1095

**iCT contactors are available in two versions:**

- Contactors without manually-operated
- Contactors with manually-operated.

The breadth of the iCT contactor range satisfies most application cases.  
iCT contactors can be combined with auxiliary control, protection and indication functions.

## Contactors

### iCT 2P



manual control

### iCT 4P



- iCT contactors can be used to remote control applications in alternative networks:
  - lighting, heating, ventilation, roller blinds, sanitary hot water
  - mechanical ventilation systems, etc
  - load-shedding of non-priority circuits



### Indication iACTs

- This auxiliary allows indication or control of the "open" or "closed" position of the contactor power contacts



### Interference filtering iACTp

- This auxiliary is an interference suppressor which limits overvoltages on the control circuit



### Dual control iACTc

- Used to control a contactor in impulse-type mode or to combine latched or impulse-type control orders



### Control and indication 24 V DC iACT24

- Allows control and indication of a 230 Vac contactor from the Acti 9 Smartlink or by a PLC, by 24 V DC signals
- Also allows control by a maintained signal



### Time delay iATeT

- This auxiliary is used to time delay for iCT and iTL. According to cabling, there are 5 possible time delay types:

- 1 for iTL
- 4 for iCT

#### Function type A:

- late closing**
- Delay energizing of contactor

#### Function type B:

- time delay**
- Energize the contactor by closing a push button
- The time delay starts as soon as the control contacts are closed

#### Function type C:

- late opening**
- Energize the contactor by closing a push button
- The time delay starts when the control contacts are opened

#### Function type H:

- fixed time operation**
- Operate the contactor for a pre-determined time from the moment of energizing

## Contactors

## Contactors auxiliaries

		Choice of 50 Hz contactors										
Type		Contactor					Manually-operated contactors					
Rating	A	16	20	25	40	63	100	16	25	40	63	
<b>Auxiliaries</b>									<b>Contactors that can be equipped with auxiliaries</b>			
iACTs indication auxiliary		Yes	Yes	Yes				Yes				
iACTp protection auxiliary	By yellow clips	No	No	Yes				No	Yes			
iACTc, iATeT control auxiliary	By yellow clips	No	No	Yes				No	Yes			
iACT24 control auxiliary		Non	No	Yes (for contactors 230 V - 50 Hz)				No	Yes (for contactors 230 V - 50 Hz)			

PB06115-39

**Yellow clip**  
 ■ Clip-on system for electrical and mechanical connections between contactors  $\geq 25$  A and their auxiliaries

■ Insulated terminals IP20

■ Minimum noise

■ Large circuit labeling area






■ Mechanical contact position indicator

■ Consistent with the entire Acti 9 offer and with all types of lighting

■ Manually-operated contactors have a 4-position selector switch on their front face:  
 automatic operating mode  
 temporary "ON" override  
 permanent "ON" override: used to lock the contactor in the ON position during installation maintenance  
 shutdown



### Catalogue numbers

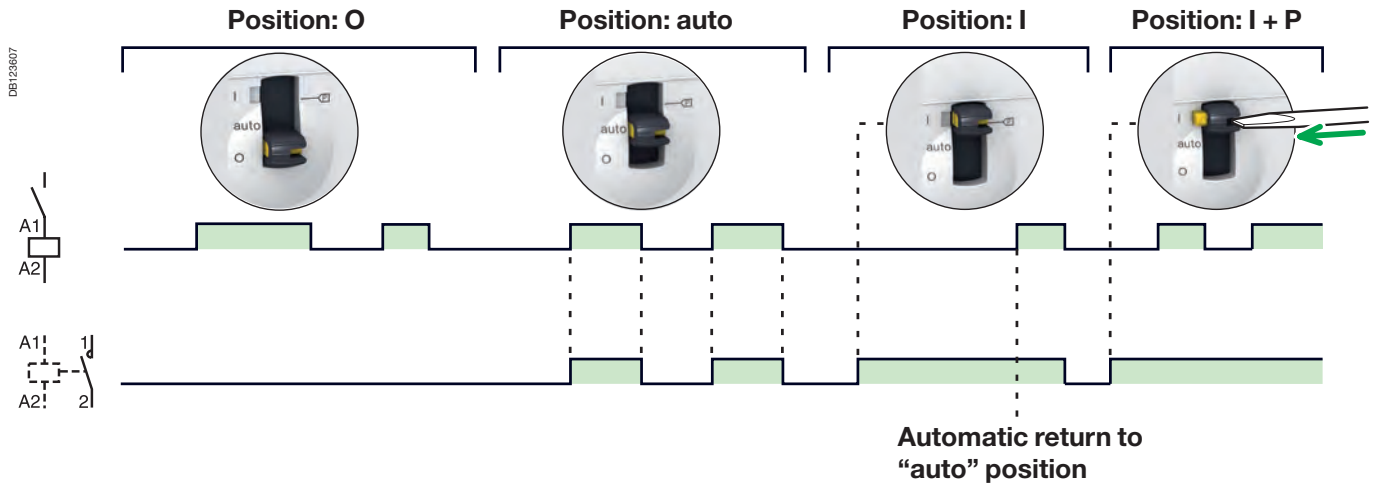
iCT contactors - 50 Hz								
Type						Width in 9 mm modules		
<b>1P</b>								
 DB103375-5	16 A	6 A	12	1NO	A9C22011	2		
			24	1NO	A9C22111	2		
			48	1NO	A9C22211	2		
			220	1NO	A9C22511	2		
			230...240	1NO	A9C22711	2		
	25 A	8.5 A	220	1NO	A9C20531	2		
			230...240	1NO	A9C20731	2		
			<b>2P</b>					
			16 A	6 A	12	2NO	A9C22012	2
					24	2NO	A9C22112	2
48	2NO	A9C22212			2			
220	2NO	A9C22512			2			
230...240	2NO	A9C22712			2			
 DB103377-11	20 A	-	12	1NO+1NC	A9C22015	2		
			24	1NO+1NC	A9C22115	2		
			220	1NO+1NC	A9C22515	2		
			230...240	1NO+1NC	A9C22715	2		
			230...240	2NO	A9C22722	2		
 DB103375-10	25 A	8.5 A	24	2NO	A9C20132	2		
			48	2NO	A9C20232	2		
			220	2NO	A9C20532	2		
			230...240	2NO	A9C20732	2		
			220	2NC	A9C20536	2		
	40 A	15 A	230...240	2NC	A9C20736	2		
			230...240	2NO	A9C20842	4		
			63 A	20 A	24	2NO	A9C20162	4
			220...240	2NO	A9C20862	4		
			100 A	-	220...240	2NO	A9C20882	6
<b>3P</b>								
 DB103376-14	16 A	6 A	220...240	3NO	A9C22813	4		
	25 A	8.5 A	220...240	3NO	A9C20833	4		
	40 A	15 A	220...240	3NO	A9C20843	6		
	63 A	20 A	220...240	3NO	A9C20863	6		
<b>4P</b>								
 DB122916	16 A	6 A	24	4NO	A9C22114	4		
			220...240	4NO	A9C22814	4		
			220...240	2NO+2NC	A9C22818	4		
20 A	-	220...240	4NO	A9C22824	4			
		25 A	8.5 A	24	4NO	A9C20134	4	
				220...240	4NO	A9C20834	4	
24	4NC			A9C20137	4			
220...240	4NC	A9C20837	4					
		220...240	4NC	A9C20837	4			
		220...240	2NO+2NC	A9C20838	4			
40 A	15 A	220...240	4NO	A9C20844	6			
		220...240	4NC	A9C20847	6			
		63 A	20 A	24	4NO	A9C20164	6	
220...240	4NO			A9C20864	6			
24	4NC			A9C20167	6			
220...240	4NC	A9C20867	6					
		220...240	4NC	A9C20867	6			
		220...240	2NO+2NC	A9C20868	6			
220...240	3NO+1NC	A9C20869	6					
		220...240	3NO+1NC	A9C20869	6			
		100 A	-	220...240	4NO	A9C20884	12	

### Catalogue numbers

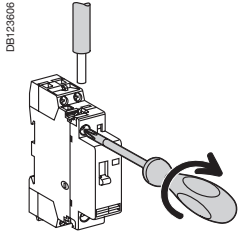
iCT manual control contactor 50 Hz						Width in 9 mm modules			
Type	Rating (In)		Control voltage (V AC) (50/60 Hz)	Contact					
2P	AC7a	AC7b							
	16 A	6 A	220	2NO	A9C23512	2			
			230...240	2NO	A9C23712	2			
			220	1NO+1NC	A9C23515	2			
			230...240	1NO+1NC	A9C23715	2			
			25 A	8.5 A	24	2NO	A9C21132	2	
			220	2NO	A9C21532	2			
	40 A	15 A	24	2NO	A9C21142	2			
			220...240	2NO	A9C21842	4			
			63 A	20 A	24	2NO	A9C21162	4	
			220...240	2NO	A9C21862	4			
			<b>3P</b>						
				25 A	8.5 A	220...240	3NO	A9C21833	4
40 A	15 A	220...240				3NO	A9C21843	6	
<b>4P</b>									
	25 A	8.5 A	24	4NO	A9C21134	4			
			220...240	4NO	A9C21834	4			
			40 A	15 A	24	4NO	A9C21144	6	
			220...240	4NO	A9C21844	6			
			63 A	20 A	24	4NO	A9C21164	6	
			220...240	4NO	A9C21864	6			



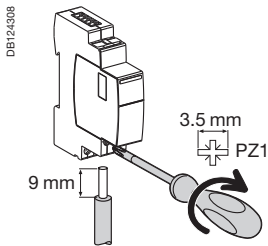
Operation (Manual control contactor)



Connection

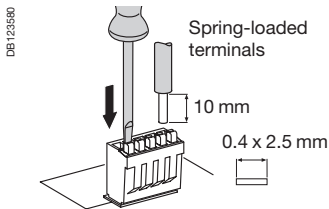


Type	Rating	Length tripping	Circuit	Tightening torque	Copper cables	
					Rigid	Flexible or ferrule
iCT	PZ1: 4 mm 16 and 25 A	9 mm	Control Power	0.8 N.m	DB122945 	DB122946 
	PZ2: 6 mm 40 A - 63 A 100 A	14 mm	3.5 N.m	6 to 25 mm <sup>2</sup> 6 to 35 mm <sup>2</sup>	1 to 4 mm <sup>2</sup> 6 to 16 mm <sup>2</sup> 6 to 35 mm <sup>2</sup>	
iACTs, iACTp, iACTc, iATeT	PZ1: 4 mm	-	-	0.8 N.m	1.5 to 2.5 mm: 2 x 1.5 mm <sup>2</sup>	1.5 to 2.5 mm: 2 x 2.5 mm <sup>2</sup>



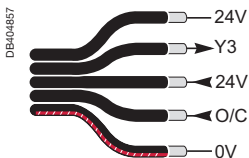
Type	Terminals	Tightening torque	Copper cables		
			Rigid	Flexible	Flexible or ferrule
iACT24	Power supply (N/P) Input (Y1/Y2)	1 N.m	DB122945 	DB123553 	DB123554 
			0.5 to 10 mm <sup>2</sup> 2 x 0.5 to 2 x 2.5 mm <sup>2</sup>	0.5 to 6 mm <sup>2</sup> 2 x 0.5 to 2 x 2.5 mm <sup>2</sup>	0.5 to 4 mm <sup>2</sup> 2 x 0.5 to 2 x 2.5 mm <sup>2</sup>

Ti24 connector connection

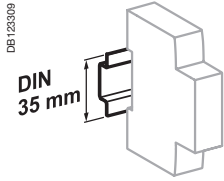


Type	Catalogue numbers	Copper cables	
		Rigid	Flexible
Ti24 Interface	A9XC2412	DB122945 	DB123553 
		1 x 0.5 to 1.5 mm <sup>2</sup>	1 x 0.5 to 1.5 mm <sup>2</sup>

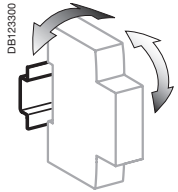
Ti24 prefabricated cables connection



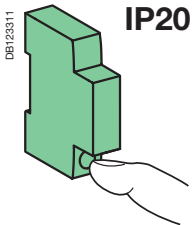
Type	Catalogue numbers	Length
<b>Connection for Acti 9 Smartlink</b>		
6 short prefabricated	A9XCAS06	100 mm
6 medium-sized prefabricated	A9XCAM06	160 mm
6 long prefabricated	A9XCAL06	870 mm
<b>Connection for PLC type terminals</b>		
6 long prefabricated on a single side	A9XCAU06	870 mm



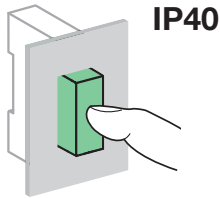
Clip on DIN rail 35 mm.



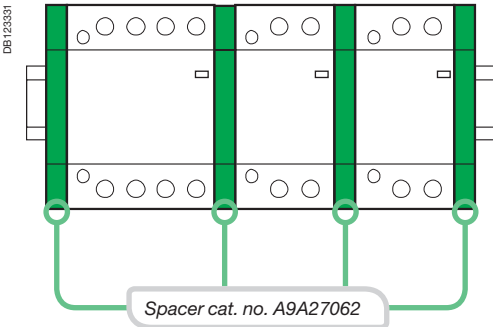
± 30° vertical.



IP20



IP40



### Technical data

Power circuit		
Voltage rating (Ue)	1P, 2P	250 V AC
	3P, 4P	400 V AC
Frequency	50 Hz	
Type of load	See technical section	
Endurance (O-C)		
Electrical	100,000 cycles	
Maximum number of switching operation a day	100	
Additional characteristics		
Insulation voltage (Ui)	500 V AC	
Pollution degree	2	
Rated impulse withstand voltage (Uimp)	2.5 kV (4 kV for 12/24/48 V AC)	
Degree of protection (IEC 60529)	Device only	IP20
	Device in modular enclosure	IP40
Operating temperature	-5°C to +60°C <sup>(1)</sup>	
Storage temperature	-40°C to +70°C	
Tropicalization (IEC 60068-1)	Treatment 2 (relative humidity 95 % at 55°C)	
ELSV compliance (Extra Low Safety Voltage) for 12/24/48 V AC versions		
The product control conforms to the SELV (safety extra low voltage) requirements		

*(1) In the case of contactor mounting in a enclosure for which the interior temperature is in range between 50°C and 60°C, it is necessary to use a spacer, cat. no. A9A27062, between each contactor*

### Mounting accessories

7	Sealable screw shields for top and bottom	3P, 4P 25 A	<b>A9A15921</b>
		2P 40/63 A	<b>A9A15922</b>
		3P, 4P 40/63 A	<b>A9A15923</b>
8	9 mm spacer		<b>A9A27062</b>
9	Yellow clips		<b>A9C15415</b>
10	Clip-on terminal markers	see module	<b>CA907001</b>

### Auxiliaries

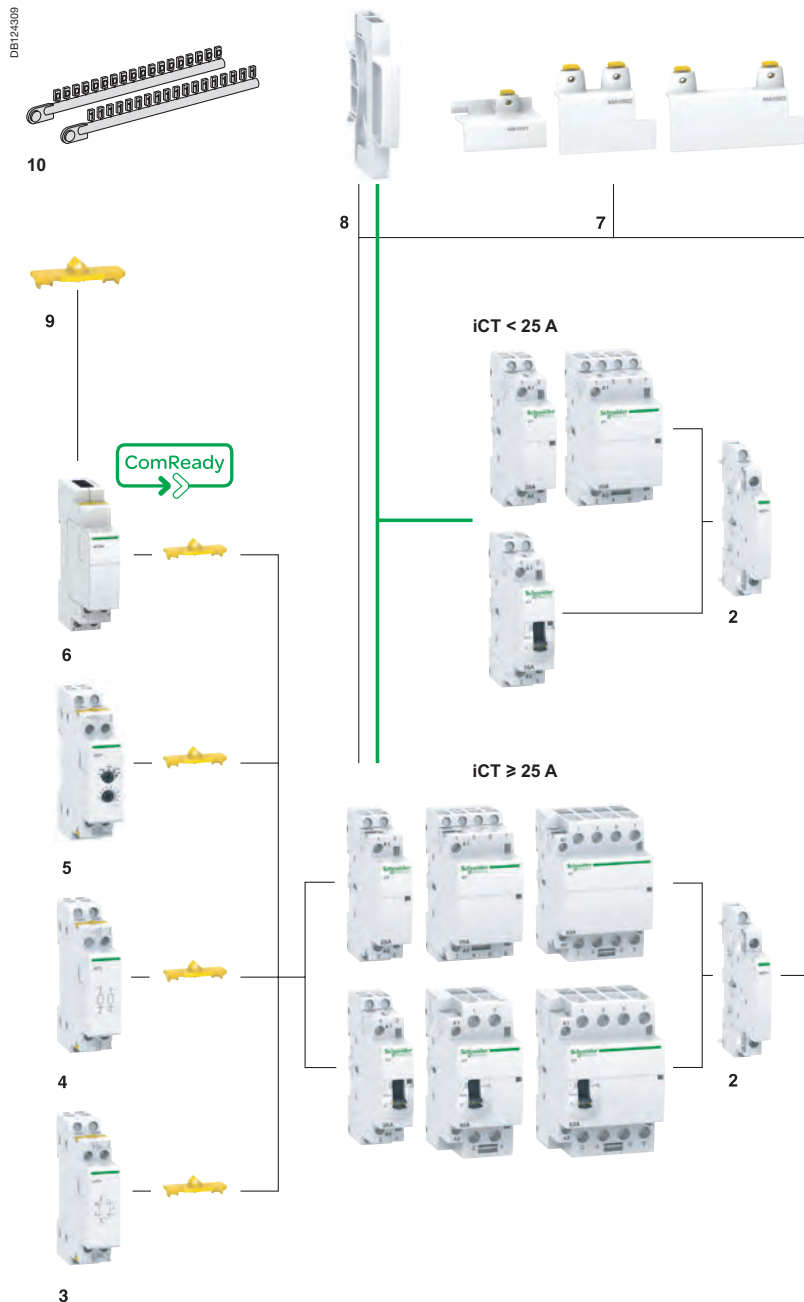
Indication			
2	iACTs	1NO + 1NC	<b>A9C15914</b>
		1CO	<b>A9C15915</b>
		2NO	<b>A9C15916</b>




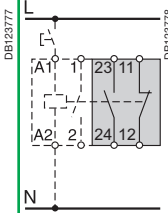
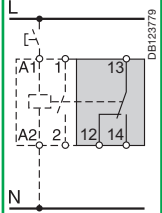
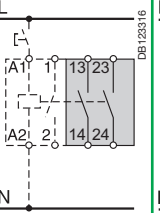
Double control inputs			
3	iACTc	230 V AC	<b>A9C18308</b>
		24 V AC	<b>A9C18309</b>

Coil suppression blocs			
4	iACTp	12...48 V AC	<b>A9C15919</b>
		48...127 V AC	<b>A9C15918</b>
		220...240 V AC	<b>A9C15920</b>

Time delay			
5	iATEt	24...240 V AC	<b>A9C15419</b>

Control and indication			
6	iACT24	230 V AC	<b>A9C15924</b>



	Indication			Protection			Control	
Auxiliaries	iACTs			iACTp			iACTc	
Type	Indication			Interference filtering			Impulse/latched control	
	With Open/Close auxiliary contact			2 protection circuits				
								
Function	<ul style="list-style-type: none"> <li>This auxiliary allows indication of the "open" or "closed" position of the contactor power contacts</li> </ul>			<ul style="list-style-type: none"> <li>This auxiliary is an interference suppressor which limits overvoltages on the control circuit</li> </ul>			<ul style="list-style-type: none"> <li>This auxiliary, combined with contactors, enables them to be controlled by 2 order types:                             <ul style="list-style-type: none"> <li>impulse order for local control (input T)</li> <li>latched order for centralised control (input X)</li> <li>the last order received takes priority</li> </ul> </li> </ul>	
Wiring diagrams								
Mounting	<ul style="list-style-type: none"> <li>Mounted to the right of iCT</li> </ul>			<ul style="list-style-type: none"> <li>Mounted to the left of iCT by yellow clips<sup>(1)</sup></li> <li>By wires</li> </ul>			<ul style="list-style-type: none"> <li>Mounted to the left of iCT by yellow clips<sup>(1)</sup></li> </ul>	
Use	-			<ul style="list-style-type: none"> <li>The iACTp has 2 separate and identical circuits, allowing it to be combined with 2 different ones on the iCT the other by wires</li> </ul>			<ul style="list-style-type: none"> <li>Mains power outages:                             <ul style="list-style-type: none"> <li>&lt; 70 ms: keeps its initial status</li> <li>&gt; 80 ms: reset</li> <li>put back into operation by manual operation on input X or T.</li> <li>Minimum impulse duration: 250 ms</li> </ul> </li> </ul>	
Catalogue numbers	A9C15914	A9C15915	A9C15916	A9C15918	A9C15919	A9C15920	A9C18308	A9C18309
Technical specifications								
Control voltage (U <sub>e</sub> )	V AC	24...240		48...127	12...48	220...240	230...240	24...48
	V DC	24...130		-			-	
Control voltage frequency	Hz	50/60		50/60			50/60	
Width in 9 mm modules		1		2			2	
Auxiliary contact (breaking capacity)		<ul style="list-style-type: none"> <li>Minimum: 10 mA at 24 V DC/AC - cos φ = 1</li> <li>Maximum:                             <ul style="list-style-type: none"> <li>5 A at 240 V AC - cos φ = 1</li> <li>1 A at 130 V DC</li> </ul> </li> </ul>		-			-	
Number of contacts		1NO + 1NC	1CO	2NO		-		
Operating temperature	°C	-5°C to +50°C						
Storage temperature	°C	-40°C to +70°C						
Consumption		-			-			OFF load: 3 VA Inrush <sup>(2)</sup> : 2 VA Holding <sup>(2)</sup> : 0.2 VA

(1) Electrical and mechanical link.

(2) Maximum consumption of all contactors controlled.

Control (cont.)

iATEt

Time delay

PB106125-34



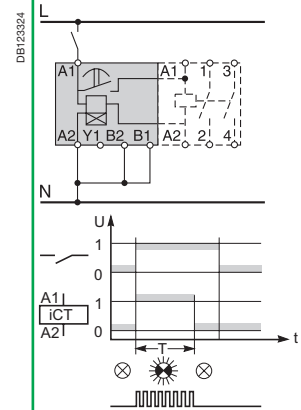
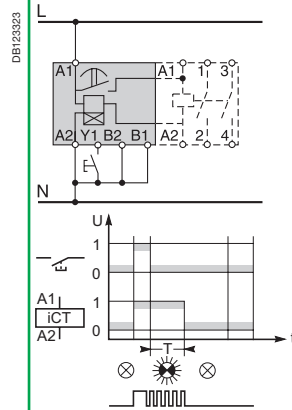
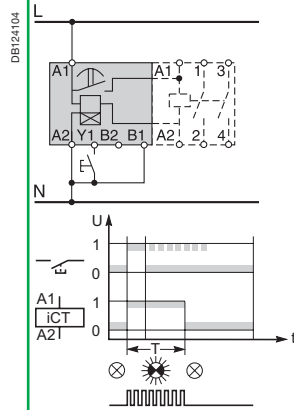
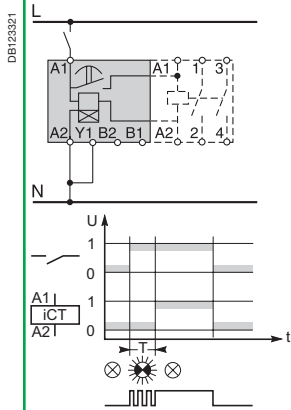
■ This auxiliary is used to time delay for iCT and iTL. According to cabling, there are 5 possible time delay types:  
 1 for iTL  
 4 for iCT.

**Function type A: late closing**  
 ■ Delay energizing of contactor.

**Function type B: time delay**  
 ■ Energize the contactor by closing a push button.  
 ■ The time delay starts as soon as the control contacts are closed.

**Function type C: late opening**  
 ■ Energize the contactor by closing a push button.  
 ■ The time delay starts when the control contacts are opened.

**Function type H: fixed time operation**  
 ■ Operate the contactor for a pre-determined time from the moment of energizing.



■ Mounted to the left of iCT by yellow clips<sup>(1)</sup>

A9C15419

24...240

24...110

50/60

2

-

-

-20°C to +50°C

-40°C to +80°C

Off-load: 5 VA

Inrush<sup>(2)</sup>: 3 A

Holding<sup>(2)</sup>: 0.2 A

Control and indication

<b>Auxiliary</b>	<b>iACT24</b>
<b>Type</b>	<b>Control and indication 24 V DC</b> With Ti24 connector



<b>Function</b>	<ul style="list-style-type: none"> <li>■ This auxiliary allows a contactor to be interfaced with the Acti 9 Smartlink interface or a programmable logic controller (PLC) in 24 V DC (control, O/C indication)</li> <li>■ 230 V AC control</li> </ul>
-----------------	--

<b>Wiring diagrams</b>	<p>Wiring with exclusive selector 230 V AC control (Y1 = 0) / 24 V DC control (Y1 = 1)</p>	<p>Wiring for non-exclusive 230 V AC and 24 V DC controls</p>
------------------------	--	---






<b>Mounting</b>	<ul style="list-style-type: none"> <li>■ To the left of the iCT contactor using the yellow clips<sup>(1)</sup>.</li> <li>■ When an iACT24 is used, the A1/A2 terminals of the contactors should not be wired. Only the yellow clips integral with the iACT24 should be used for connection to the coil.</li> </ul>
-----------------	--

<b>Utilization</b>	<ul style="list-style-type: none"> <li>■ 230 V AC interface: <ul style="list-style-type: none"> <li>□ Y1: enabling of 24 V DC control (Y1 = 1) or inhibition of 24 V DC control (Y1 = 0).</li> <li>□ Y2: 230 V pulse control</li> </ul> </li> <li>■ "Ti24" 24 V DC interface: <ul style="list-style-type: none"> <li>□ Y3: 24 V DC control of iCT closing on rising edge and opening on falling edge</li> <li>□ reading of the contactor status (opened or closed) from the position of the integrated O/C auxiliary contact</li> <li>□ monitoring of connection of the "Ti24" terminal block by the upstream system (PLC, supervision system) via the 24 V terminal (in the centre of the Ti24 terminal block)</li> </ul> </li> </ul>
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<b>Catalogue numbers</b>	<b>A9C15924</b>
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<b>Technical specifications</b>		
Control voltage (Ue)	V AC	230, +10 %, -15 % (Y2)
	V DC	24, ± 20 % (Y3)
Control voltage frequency	Hz	50/60
Insulation voltage (Ui)	V AC	250
Rated impulse withstand voltage (Uimp)	kV	8 (OVC IV)
Pollution degree		3
Degree of protection		IP20B device only
		IP40 device in modular enclosure
Width in 9 mm modules		2
Auxiliary contact (O/C) Ti24		24 V DC protected output, min. 2 mA, max. 100 mA
Contact		1 O/C operating category AC 14
Operating temperature	°C	-25°C to +60°C
	°C	-40°C to +80°C
Storage temperature		
Consumption		<1 W
Standard		IEC/EN 60947-5-1

(1) Mechanical and electrical link.

Security					
Accessories	Sealable screw shields			Yellow clips	Spacer
	 PB104485-15	 PB104486-15	 PB104487-15	 PB106143-10	 PB104483-40
Function	<ul style="list-style-type: none"> <li>■ Designed to cover terminals to avoid contact with device screws.</li> <li>■ Allow sealing</li> </ul>			<ul style="list-style-type: none"> <li>■ Ensure the mechanical and/or electrical link between contactors and their auxiliaries.</li> </ul>	<ul style="list-style-type: none"> <li>■ Required to reduce temperature rise of modular devices installed side by side.</li> <li>■ Recommended to separate electronic devices (thermostat, programmable clock, etc.) from electromechanical devices (relays, contactors).</li> </ul>
	■ For iCT: 3P, 4P - 25 A	■ For iCT: 2P - 40/63 A	■ For iCT: 3P, 4P - 40/63 A	■ For iCT: ≥ 25 A	
Use	■ Bag of 10 upstream/10 downstream			■ Bag of 10	■ Bag of 5
Catalogue numbers	A9A15921	A9A15922	A9A15923	A9C15415	A9A27062
Technical specifications					
Width in 9 mm modules	4	4	6	-	1
Number of poles	3P, 4P	2P	3P	-	-



IEC/EN 60669-2-2  
iTLs: IEC/EN 60947-5-1

> Impulse relays



**iTL**

- The impulse relays are used to control, by means of pushbuttons, lighting circuits consisting of:
  - incandescent lamps, low-voltage halogen lamps, etc. (resistive loads)
  - fluorescent lamps, discharge lamps, etc. (inductive loads)

> Remote indication



**iTLs**

- Allows remote indication of its operating state (open/closed)



**Indication iATLs**

- Allows remote indication of the associated impulse relay

7

> Centralised control



**iTLc**

- Allows centralised control of a group of TLc impulse relays, whilst at the same time retaining local impulse-type control



**Centralised control iATLc**

- Used for centralised control, thanks to a "pilot line", of a group of impulse relays controlling separate circuit, while at the same time maintaining local individual control of each impulse relay

> Latched control



**iTLm**

- Operated by latched orders from a changeover contact (switch, time switch, thermostat). Manual control does not work



**Latched control iATLm**

- Controls the associated impulse relay by latched orders from a changeover contact

^ Impulse relays

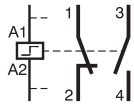
## Impulse relays are used:

- Closing of the impulse relay pole(s) is triggered by an impulse on the coil.
- Having two stable mechanical positions, the pole(s) will be opened by the next impulse. Each impulse received by the coil reverses the position of the pole(s).
- Can be controlled by an unlimited number of pushbuttons.
- Zero energy consumption.



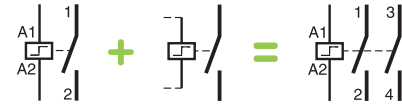
### Changeover contact iTLi

- This impulse relay has a changeover contact



### Extensions iETL

- Used to increase the number of impulse relay poles
- Can be installed on the iTL, iTLi, iTLc, iTLm and iTLs



### Centralised control + indication iATLc+s

- Used for centralised control, thanks to a "pilot line", of a group of impulse relays controlling separate circuit, while at the same time maintaining local individual control of each impulse relay
- Remote indication of the mechanical status of each relay



### Multi-level centralised control iATLc+c

- Allows centralised control of a group of iTLc or "iTL + ATLc" impulse relays



### Control and indication 24 V DC iATL24

- Allows control and indication of a 230 V AC impulse relay from the Acti 9 Smartlink or by a PLC, by 24 V DC signals
- Also allows control by a pulsed signal



### Time delay iATEt

- Combined with an impulse relay, it automatically disconnects the circuit after a preset time



### Control iATLz

- Must be used when installing several illuminated PBs in parallel to control an impulse relay (prevents operating malfunctions)



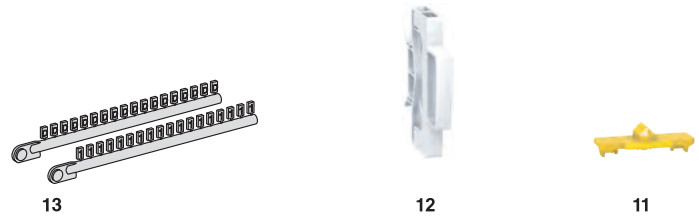
### Step by step control iATL4

- Allows step-by-step control of two circuits via a single pushbutton

## Mounting accessories

11	Yellow clips	A9C15415
12	9 mm spacer	A9A27062
13	Clip-on terminal markers	see module CA907001

DB123831



## Auxiliaries

### Centralised control

2 iATLc<sup>(1), (3)</sup> 24...240 V AC A9C15404

### Indication

3 iATLs<sup>(1)</sup> 24...240 V AC A9C15405

### Centralised control + indication

4 iATLc+s<sup>(3)</sup> 24...240 V AC A9C15409

### Multi-level centralised control

5 iATLc+c<sup>(2), (3)</sup> 24...240 V AC A9C15410

### Step by step control

6 iATL4 230 V AC A9C15412

### Control by illuminated push-buttons

7 iATLz 130...240 V AC A9C15413

### Latched control

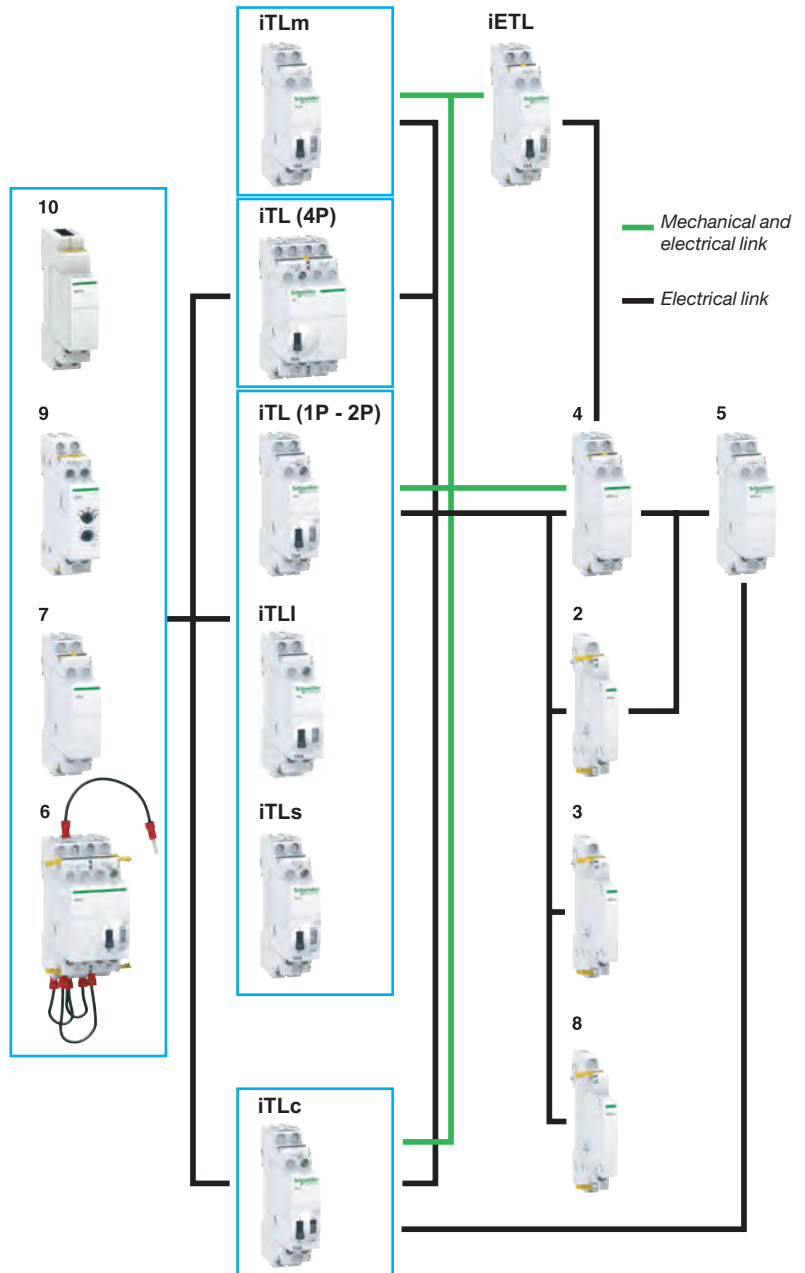
8 iATLm<sup>(1)</sup> 12...240 V AC A9C15414

### Time delay control

9 iATEt<sup>(4)</sup> 24...240 V AC A9C15419

### Control and indication

10 iATL24 230 V AC A9C15424



(1) The iATLc, iATLs and iATLm 9 mm auxiliaries are used by themselves to the right of an impulse relay.

(2) Connection by traditional cabling. The iATLc+c must be mounted to the right of an iATLc+s or an iATLc.

(3) The centralised control functions (iTLc, iATLc, iATLc+s, iATLc+c) only operate on AC voltage networks.

(4) iATEt: control voltage: 24...240 V AC, 24...110 V DC.

PE106126-41

**Yellow clip**  
 ■ A simple clip-on system for flexible auxiliaries combination and improved robustness  
 ■ For electrical and mechanical connections

■ Insulated terminals IP20

■ Large circuit labeling area

■ Built-in or optional auxiliary function: state indication, centralised control, latched control, control for illuminated pushbutton, step-by-step control, time delay

■ Consistent with the entire Acti 9 offer and with all types of lighting

■ Disconnection of remote control by selector switch (except for 4P single-piece iTL) for maintenance operation

■ Manual controls on front face: direct and priority manual control by O-I toggle  
 ■ Mechanical contact position indicator

		Choice impulse relays auxiliaries																			
Type		Standard iTL					Changeover iTLI					iTLc centralised control		iTLm control on latched order		iTLs remote indication					
Rating	A	16				32	16						16		16		16				
Control voltage	V AC	230/240	130	48	24	12	230/240	130	48	24	12	230/240	48	24	230/240	240	230/48/24				
	V DC	110	48	24	12	6	110	110	48	24	12	6	-	-	-	-	110/24/12				
<b>Auxiliaries</b>																					
<b>Extension</b>																					
iETL		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
<b>Centralised control + indication</b>																					
iATLc+s		■	■	■	■	-	■	■	■	-	-	-	-	-	-	-	■	■	■		
<b>Centralised control</b>																					
iATLc		■	■	■	■	-	■	■	■	-	-	-	-	-	-	-	■	■	■		
<b>Indication</b>																					
iATLs		■	■	■	■	-	■	■	■	■	■	■	■	■	■	■	■	■			
<b>Multi-level centralised control</b>																					
iATLc+c		■	■	■	■	-	■	■	■	-	-	-	■	■	■	-	■	■	■		
<b>Latched control</b>																					
iATLm		■	■	■	■	■	■	■	■	■	■	■	-	-	-	-	■	■	■		
<b>Control for illuminated Pushbutton</b>																					
iATLz		■	■	-	-	-	■	■	■	-	-	-	■	■	-	-	■	■	-		
<b>Step by step control</b>																					
iATL4		■	-	-	-	-	■	■	-	-	-	-	■	-	-	-	■	-	-		
<b>Time delay control</b>																					
iATEt		■	■	■	(*)	■	-	■	■	■	■	(*)	-	■	■	■	-	■	■	■	(*)
<b>Control and indication</b>																					
iATL24		■	-	-	-	-	■	■	-	-	-	-	■	-	-	-	■	-	-		

(\*) iATEt : does not operate on 12 V DC.

Catalogue numbers

iTL impulse relays								
Type	1P		2P		3P		4P	
Rating (In)	Control voltage (Uc)							
	(V AC)	(V DC)						
	(50/60 Hz)							
16 A	12	6	A9C30011	A9C30012	A9C30011 + A9C32016	A9C30012 + A9C32016		
	24	12	A9C30111	A9C30112	A9C30111 + A9C32116	A9C30114		
	48	24	A9C30211	A9C30212	A9C30211 + A9C32216	A9C30212 + A9C32216		
	130	48	A9C30311	A9C30312	A9C30311 + A9C32316	A9C30312 + A9C32316		
	230...240	110	A9C30811	A9C30812	A9C30811 + A9C32816	A9C30814		
32 A	230...240	110	A9C30831	A9C30831 + A9C32836	A9C30831 + 2 x A9C32836	A9C30831 + 3 x A9C32836		
Width in 9 mm modules			2	2	4	4		

iTLI impulse relays					
Type	2P				
Rating (In)	Control voltage (Uc)				
	(V AC)	(V DC)			
	(50/60 Hz)				
16 A	12	6	A9C30015		
	24	12	A9C30115		
	48	24	A9C30215		
	130	48	A9C30315		
	230...240	110	A9C30815		
Width in 9 mm modules			2		

7

iETL extensions for iTL and iTLI						
Type	Rating (In)			Control voltage (Uc)		Width in 9 mm modules
	(V AC)	(V DC)	(V DC)			
	(50/60 Hz)					
	32 A	230...240	110	A9C32836	2	
	16 A	12	6	A9C32016	2	
		24	12	A9C32116	2	
		48	24	A9C32216	2	
		130	48	A9C32316	2	
		230...240	110	A9C32816	2	

## Catalogue numbers (cont.)

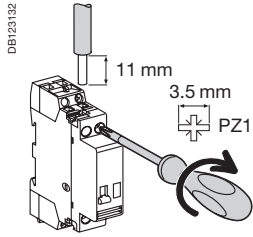
iTLc impulse relay with centralised control			1P	3P
Type				
Rating (In)	Control voltage (Uc) (V AC) (50/60 Hz)			
16 A	24		<b>A9C33111</b>	<b>A9C33111 + A9C32116</b>
	48		<b>A9C33211</b>	<b>A9C33211 + A9C32216</b>
	230...240		<b>A9C33811</b>	<b>A9C33811 + A9C32816</b>
Width in 9 mm modules			2	4







iTLm impulse relay with latched control			1P	3P
Type				
Rating (In)	Control voltage (Uc) (V AC) (50/60 Hz)			
16 A	230...240		<b>A9C34811</b>	<b>A9C34811 + A9C32816</b>
Width in 9 mm modules			2	4

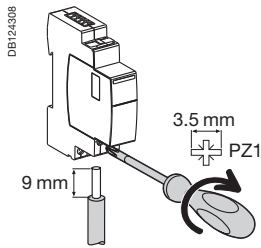
iTLs impulse relay with remote indication*			1P	3P
Type				
Rating (In)	Control voltage (Uc)			
	(V AC)	(V DC)		
	(50/60 Hz)			
16 A	24	12	<b>A9C32111</b>	<b>A9C32111 + A9C32116</b>
	48	24	<b>A9C32211</b>	<b>A9C32211 + A9C32216</b>
	230...240	110	<b>A9C32811</b>	<b>A9C32811 + A9C32816</b>
Width in 9 mm modules			2	4




(\* ) Short circuit protection device for indication contacts : 6 A gG fuse.

## Connection

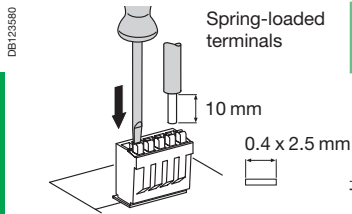




Type	Rating	Circuit	Tightening torque	Copper cables	
				Rigid or ferrule	Flexible or ferrule
iTL, iTLi, iTLc, iTLm, iTLs, iETL	16 A	Control	1 N.m		
		Power			
iTL, iETL	32 A	Control	1.2 N.m		
		Power			
iATLs, iATLc, iATLc+s, iATLc+c, iATLm, iATEt, iATL4, iATLz			1 N.m		



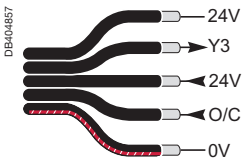
Type	Terminals	Tightening torque	Copper cables		
			Rigid	Flexible	Flexible or ferrule
iATL24	Power supply (N/P) Input (Y1/Y2)	1 N.m	 0.5 to 10 mm <sup>2</sup> 2 x 0.5 to 2 x 2.5 mm <sup>2</sup>	 0.5 to 6 mm <sup>2</sup> 2 x 0.5 to 2 x 2.5 mm <sup>2</sup>	 0.5 to 4 mm <sup>2</sup> 2 x 0.5 to 2 x 2.5 mm <sup>2</sup>

## Ti24 connector connection



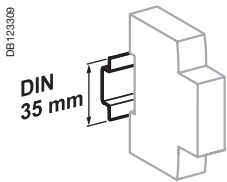
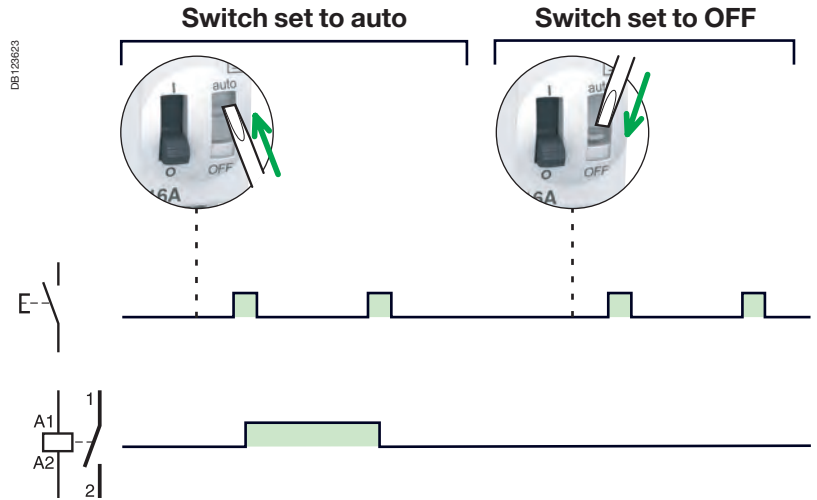
Type	Catalogue numbers	Copper cables	
		Rigid	Flexible
Ti24 interface	A9XC2412	 1 x 0.5 to 1.5 mm <sup>2</sup>	 1 x 0.5 to 1.5 mm <sup>2</sup>

## Ti24 prefabricated cables connection

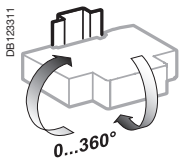


Type	Catalogue numbers	Length
<b>Connection for Acti 9 Smartlink</b>		
6 short prefabricated	A9XCAS06	100 mm
6 medium-sized prefabricated	A9XCAM06	160 mm
6 long prefabricated	A9XCAL06	870 mm
<b>Connection for PLC type terminals</b>		
6 long prefabricated on a single side	A9XCAU06	870 mm

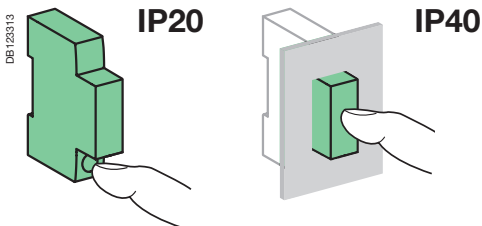
## Operation



Clip on DIN rail 35 mm.







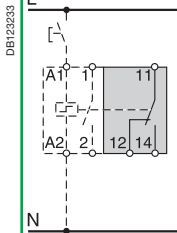
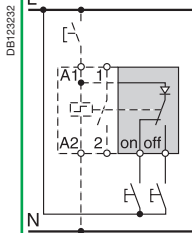
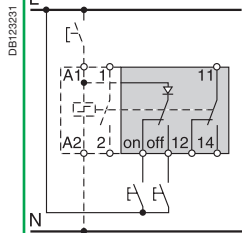
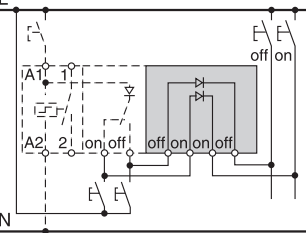
Indifferent position of installation.





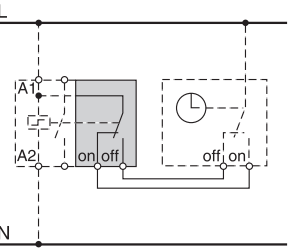
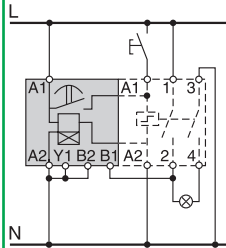
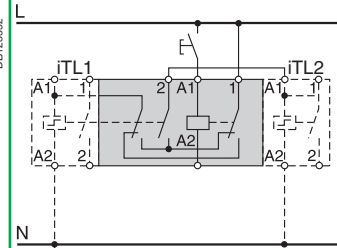
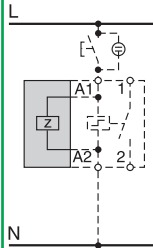


## Technical data

Control circuit		
	iTL and iTL 16 A iTLc, iTLm, iTLs, iETL 16 A	iTL 32 A, iETL 32 A
Dissipated power (during the impulse)	1, 2, 3P: 19 VA 4P: 38 VA	19 VA
Illuminated PB control	Max. current 3 mA (if > use an ATLz)	
Operating threshold	Min. 85 % of $U_n$ in conformance with IEC/EN60669-2-2	
Duration of the control order	50 ms to 1 s (200 ms recommended)	
Response time	50 ms	
Power circuit		
Voltage rating ( $U_e$ )	1P, 2P	24 ...250 V AC
	3P, 4P	24...415 V AC
Frequency	50 Hz or 60 Hz	
Maximum number of operations per minute	5	
Maximum number of switching operation a day	100	
Additional characteristics to IEC/EN 60947-3		
Insulation voltage ( $U_i$ )	440 V AC	
Pollution degree	3	
Rated impulse withstand voltage ( $U_{imp}$ )	6 kV	
Endurance (O-C)		
Electrical to IEC/EN 60947-3	200,000 cycles (AC21)	50,000 cycles (AC21)
	100,000 cycles (AC22)	20,000 cycles (AC22)
Overvoltage category	IV	
Other characteristics		
Degree of protection (IEC 60529)	Device only	IP20
	Device in modular enclosure	IP40 Insulation class II
Operating temperature	-20°C to +50°C	
Storage temperature	-40°C to +70°C	
Tropicalization (IEC 60068-1)	Treatment 2 (relative humidity 95 % at 55°C)	



Auxiliaries	Indication		Control		
Type	iATLs	iATLc	iATLc+s	iATLc+c	
	<b>Indication</b>	<b>Centralised control</b>	<b>Centralised control + indication</b>	<b>Multi-level centralised control</b>	
					
<b>Function</b>	<ul style="list-style-type: none"> <li>Allows remote indication of the associated impulse relay</li> </ul>	<ul style="list-style-type: none"> <li>Used for centralised control, thanks to a "pilot line", of a group of impulse relays controlling separate networks, while at the same time maintaining local individual control of each impulse relay</li> </ul>	<ul style="list-style-type: none"> <li>And for remote indication of the mechanical status of each relay</li> </ul>	<ul style="list-style-type: none"> <li>Used to control the centralised controls of a number of impulse relay groups, while at the same time maintaining local individual control and centralised control by level</li> </ul>	
<b>Wiring diagrams</b>					
<b>Mounting</b>	<ul style="list-style-type: none"> <li>Mounted to the right of iTL by yellow clips</li> </ul>	<ul style="list-style-type: none"> <li>Mounted to the right of iTL by yellow clips</li> </ul>	<ul style="list-style-type: none"> <li>Mounted to the right of iTL by yellow clips</li> </ul>	<ul style="list-style-type: none"> <li>Without mechanical link with impulse relays and auxiliaries</li> </ul>	
<b>Catalogue numbers</b>	<b>A9C15405</b>	<b>A9C15404</b>	<b>A9C15409</b>	<b>A9C15410</b>	
<b>Technical specifications</b>					
Control voltage (Ue)	V AC	24...240	24...240	24...240	24...240
	V DC	24...240	-	-	-
Control voltage frequency	Hz	50/60	50/60	50/60	50/60
Width in 9 mm modules		1	1	2	2
Auxiliary contact (breaking capacity)		<ul style="list-style-type: none"> <li>Minimum: 10 mA at 24 V AC/DC</li> <li>Maximum (IEC 60947-5-1):</li> <li>□ 12...240 V AC 6 A</li> <li>□ 12...24 V DC 6 A</li> <li>□ 15...240 V AC 2 A</li> <li>□ 13...24 V DC 2 A</li> </ul>	-	<ul style="list-style-type: none"> <li>Minimum: 10 mA at 24 V AC/DC</li> <li>Maximum (IEC 60947-5-1):</li> <li>□ 12...240 V AC 6 A</li> <li>□ 12...24 V DC 6 A</li> <li>□ 15...240 V AC 2 A</li> <li>□ 13...24 V DC 2 A</li> </ul>	-
Number of contacts		-	-	-	-
Operating temperature	°C	-20°C to +50°C			
Storage temperature	°C	-40°C to +70°C			

	iATLm	iATEt	iATL4	iATLz
	<b>Latched control</b>	<b>Time delay</b>	<b>Step by step control</b>	<b>Control by illuminated push-buttons</b>
				
	<ul style="list-style-type: none"> <li>Combined with an impulse relay, it operates on latched orders</li> </ul>	<ul style="list-style-type: none"> <li>Combined with an impulse relay, it automatically disconnects the circuit after a preset time</li> </ul>	<ul style="list-style-type: none"> <li>Allows the step by step sequence over 2 circuits</li> </ul>	<ul style="list-style-type: none"> <li>Used to control impulse relays by illuminated push-buttons, without operating risks</li> </ul>
				
	-	<ul style="list-style-type: none"> <li>5 time setting ranges:                             <ul style="list-style-type: none"> <li>1 to 10 s</li> <li>6 to 60 s</li> <li>2 to 10 min</li> <li>6 to 60 min</li> <li>2 to 10 h</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>The cycle is as follows:                             <ul style="list-style-type: none"> <li>1<sup>st</sup> impulse - iTL 1 closed, iTL 2 open</li> <li>2<sup>nd</sup> impulse - iTL 1 open, iTL 2 closed</li> <li>3<sup>rd</sup> impulse - iTL 1 and 2 closed</li> <li>4<sup>th</sup> impulse - iTL 1 and 2 open</li> <li>5<sup>th</sup> impulse - iTL 1 closed, iTL 2 open, etc</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Provide an iATLz when the current drawn up by the illuminated push-buttons is higher than 3 mA (this current is sufficient to keep the coils energised). Above this value, fit one extra iATLz per 3 mA.</li> <li>For example: for 7 mA, fit 2 iATLz</li> </ul>
	<ul style="list-style-type: none"> <li>Mounted to the right of iTL by yellow clips</li> </ul>	<ul style="list-style-type: none"> <li>Mounted to the left of iTL by yellow clips</li> </ul>	<ul style="list-style-type: none"> <li>Assembled between 2 impulse relays: according to the auxilisation table by yellow clips</li> </ul>	<ul style="list-style-type: none"> <li>Mounted to the left of iTL by yellow clips</li> </ul>
	<b>A9C15414</b>	<b>A9C15419</b>	<b>A9C15412</b>	<b>A9C15413</b>
	12...240	24...240	230	130...240
	6...110	24...110	-	-
	50/60	50/60	50/60	50/60
	1	2	4	2
	-	-	-	-
	-20°C to +50°C	-	-	-
	-40°C to +70°C	-	-	-

## Control and indication

<b>Auxiliaire</b>	<b>iATL24</b>
<b>Type</b>	<b>Control and indication 24 V DC</b>

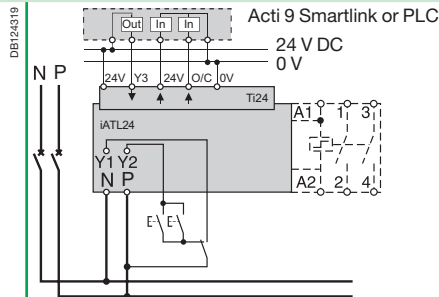
With Ti24 connector



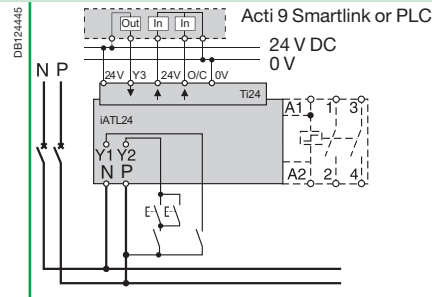
## Function

- This auxiliary allows a impulse relay to be interfaced with the Acti 9 Smartlink interface or a programmable logic controller (PLC) in 24 V DC (control, O/C indication)
- 230 V AC control

## Wiring diagrams



Wiring with exclusive selector 230 V AC and 24 V DC controls



Wiring for non-exclusive 230 V AC and 24 V DC controls

## Mounting

- To the left of the iTL impulse relay using the yellow clips<sup>(1)</sup>.
- When an iATL24 is used, the A1/A2 terminals of the impulse relay should not be wired. Only the yellow clips integral with the iATL24 should be used for connection to the coil.

## Utilization

- 230 V AC interface:
  - Y1: enabling of 24 V DC control (Y1 = 1) or inhibition of 24 V DC control (Y1 = 0).
  - Y2: 230 V pulse control
- "Ti24" 24 V DC interface:
  - Y3: 24 V DC control of iTL closing on rising edge and opening on falling edge
  - reading of the impulse relay status (opened or closed) from the position of the integrated O/C auxiliary contact
  - monitoring of connection of the "Ti24" terminal block by the upstream system (PLC, supervision system) via the 24 V terminal (in the centre of the Ti24 terminal block)

<b>Catalogue numbers</b>	<b>A9C15424</b>
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## Technical specifications

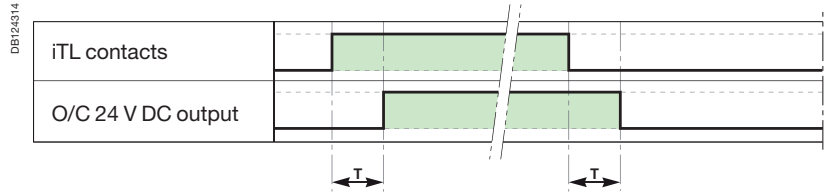
Control voltage (Ue)	V AC	230, +10 %, -15 % (Y2)
	V DC	24, ± 20 % (Y3)
Control voltage frequency	Hz	50/60
Insulation voltage (Ui)	V AC	250
Rated impulse withstand voltage (Uimp)	kV	8 (OVC IV)
Pollution degree		3
Degree of protection		IP20B device only
		IP40 device in modular enclosure
Width in 9 mm modules		2
Auxiliary contact (O/C) Ti24		24 V DC protected output, min. 2 mA, max. 100 mA
Contact		1 O/C operating category AC 14
Operating temperature	°C	-25°C to +60°C
Storage temperature	°C	-40°C to +80°C
Consumption		<1 W
Standard		IEC/EN 60947-5-1

(1) Mechanical and electrical connection.



## Operation of the iATL24

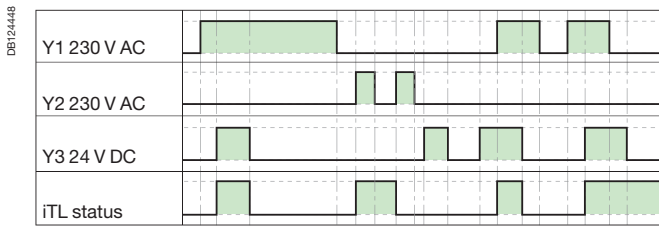
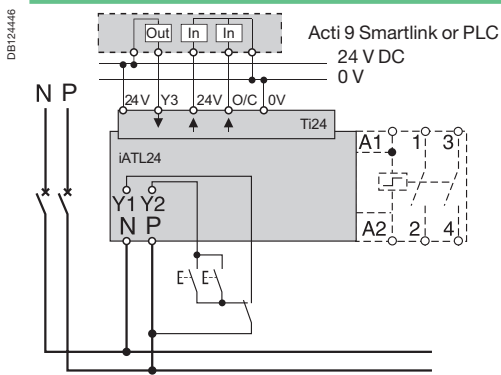
### O/C 24 V DC output



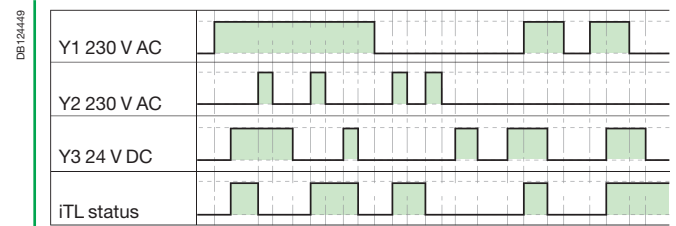
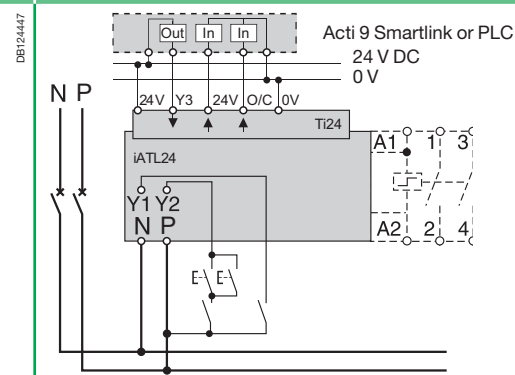
Parameter	Min	Max
T Time delay between iATL24 closing and indication	100 ms	200 ms



- Minimum duration of 230 V AC pulse (Y2): 200 ms.
- 30 iATL24 closing or opening actuations are authorized per minute: Minimum time delay between 2 actuations on the iATL24 via Y1, Y2, Y3 (closing or opening of the iTL coil): 440 ms.
- 10 closing or opening actuations spaced 440 milliseconds apart are authorized following no loading of the iATL24 during a period of 20 seconds.

### Wiring with exclusive selector 230 V AC and 24 V DC controls

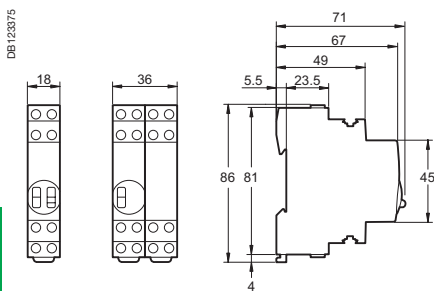


### Wiring for non-exclusive 230 V AC and 24 V DC controls



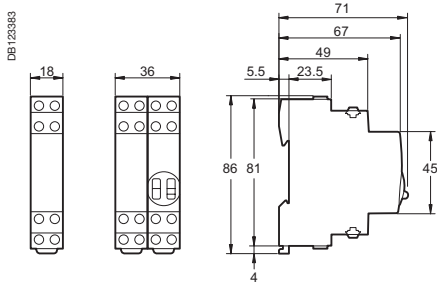
Security		
Accessories	Yellow clips	Spacer
	 <p>PB106145-10</p>	 <p>PB104463</p>
Function	<ul style="list-style-type: none"> <li>Ensure the mechanical and/or electrical link between impulse relays and their auxiliaries (set of 10).</li> </ul>	<ul style="list-style-type: none"> <li>Required to reduce temperature rise of modular devices installed side by side.</li> <li>Recommended to separate electronic devices (thermostat, programmable clock, etc.) from electromechanical devices (relays, contactors).</li> </ul>
Catalogue numbers	<b>A9C15415</b>	<b>A9A27062</b>
Technical specifications		
Width in 9 mm modules	-	1

## Dimensions (mm)

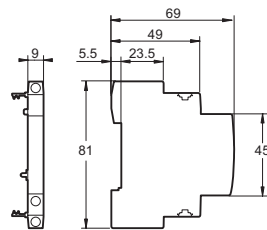


*iTL 1P*  
*iTLc*  
*iTLm*  
*iTLs*  
*iTLi*  
*iETL*

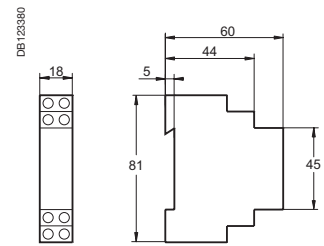
*iTL+iETL*  
*iTL 4P*



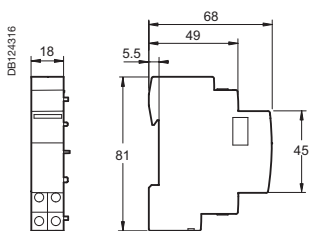
*iATLc+s*  
*iATLc+c*  
*iATLz*  
*iATL4*



*iATLc*  
*iATLs*  
*iATLm*



*iATEt*



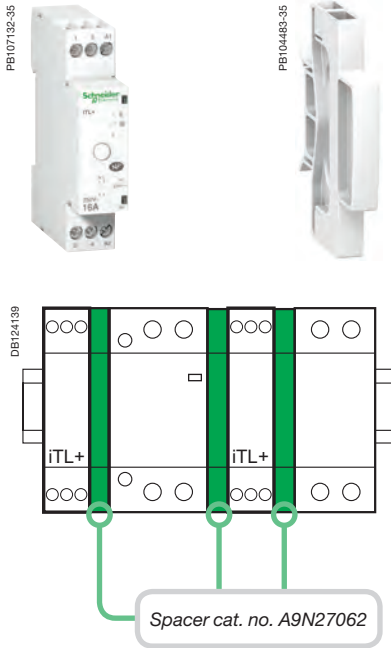
*iATL24*

EN 60669-2-2

The iTL+ high-performance impulse relay allows remote control of single-phase circuits. It is designed for demanding applications.

The iTL+ high-performance impulse relay is used for push-button control of lighting circuits consisting of:

- incandescent lamps, low-voltage halogen lamps, etc. (resistive loads)
- fluorescent tubes, discharge lamps, etc. (inductive loads).



iTL+			
Type	Rating		Width in 9 mm modules
1P+N			
	16 A	A9C15032	2+1 <sup>(1)</sup>

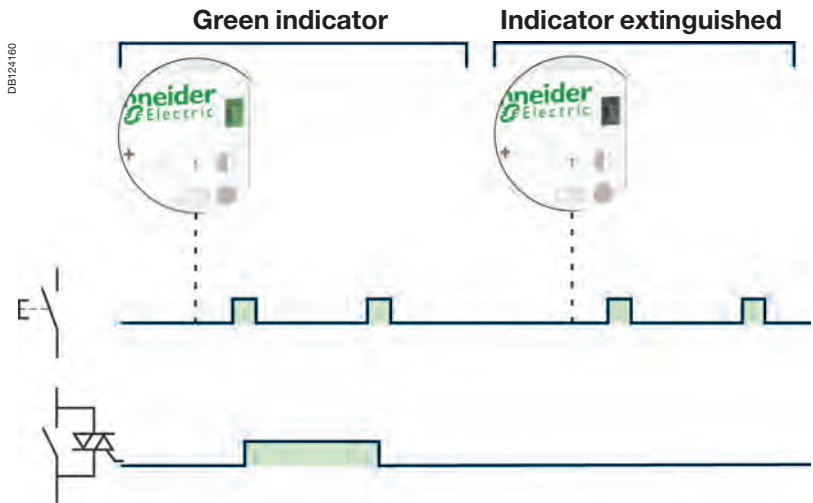
(1) Supplied with a 9 mm spacer (cat. no. A9N27062): to be used for mounting the iTL+ alongside a circuit breaker, contactor, impulse relay, etc., in order to maintain optimal operation.



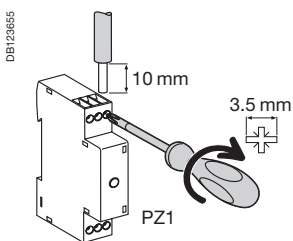
**It is compulsory:**

- to connect the neutral
- to keep the same control circuit connection "A1: phase", "A2: neutral"
- to use the same phase for connection of the power and control functions.

## Operation



## Connection



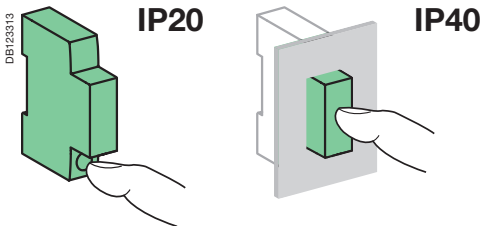
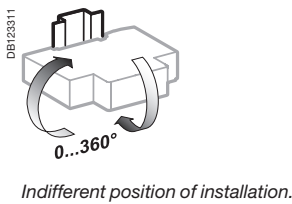
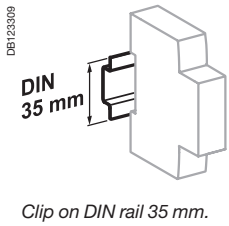
Type	Rating	Tightening torque	Copper cables	
			Rigid or flexible with ferrule	Rigid or flexible without ferrule
iTL+	16 A	1 N.m		

They combine the benefits of static switching and electromechanical technology: small size, little temperature rise.

- Silent
- Large number of switching operations
- Green indicator on the front panel:
  - fixed green: ON/OFF control by push button
  - flashing green: forced starting
  - extinguished: forced stoppage
- Orange indicator: output contact closed
- Equivalent performances with all types of lamps
- Operating mode selection push button:
  - ON/OFF control by push button
  - forced starting
  - forced stoppage

Following a mains failure, the iTL+ returns to 0 position (forced stoppage) irrespective of its initial state.

## 7



## Technical data

Control circuit		
Coil voltage (U <sub>c</sub> )		230 V AC
Frequency		50 Hz
Inrush power		11 VA
Holding power		1.1 VA
Control by luminous push button		Max. current 5 mA
Control order duration		50 ms to 1 s (recommended 200 ms)
Power circuit		
Voltage rating (U <sub>e</sub> )		230 V AC
Frequency		50 Hz
Electrical load	Minimum	20 W
	Maximum	3600 W
Max. number of switching operations per minute		6
Other characteristics		
Degree of protection (IEC 60529)	Device only	IP20
	Device in modular enclosure	IP40 Insulation class II
Endurance (O-C)	Electrical	5.000.000 cycles (AC21 - AC22)
Noise level at activation		< 30 dBA
Operating temperature		-5°C to +55°C
Storage temperature		-40°C to +60°C
Tropicalization (IEC 60068-1)		Treatment 2 (relative humidity of 95 % at 55°C)






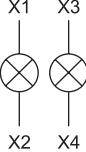
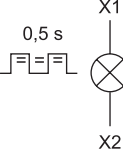
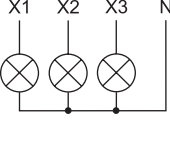
## Weight (g)

High-performance impulse relays	
Type	iTL+
1P+N	70

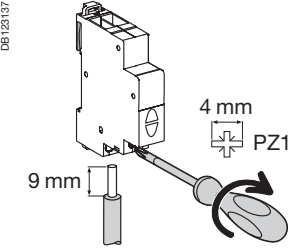


## IEC 60947-5-1

■ iIL indicator lights light up to indicate that a voltage is present.

## Catalogue numbers

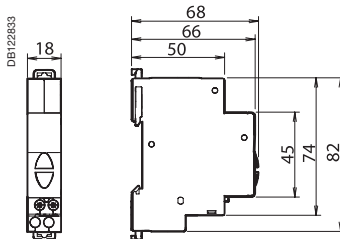
iIL indicator lights										
Type	Single					Double		Flashing light	Three-phase voltage presence indicator light	
										
Diagram	 X1- X2+					 X1 X3 X2 X4		 0,5 s X1 X2	 X1 X2 X3 N	
Colour	Red	Green	White	Blue	Yellow	Green/red	White/white	Red	Red/red/red	
<b>Cat. no.</b>										
12...48 V AC/DC	<b>A9E18330</b>	<b>A9E18331</b>	<b>A9E18332</b>	<b>A9E18333</b>	<b>A9E18334</b>	<b>A9E18335</b>	-	-	-	
110...230 V AC	<b>A9E18320</b>	<b>A9E18321</b>	<b>A9E18322</b>	<b>A9E18323</b>	<b>A9E18324</b>	<b>A9E18325</b>	<b>A9E18328</b>	<b>A9E18326</b>	-	
230...400 V AC (3 phases)	-	-	-	-	-	-	-	-	<b>A9E18327</b>	
Width in 9 mm modules	2					2		2	2	

## Connection

	<b>Tightening torque</b>	<b>Copper cables</b>	
	1 N.m	<b>Rigid</b>	<b>Flexible or ferrule</b>
			
		0.5 mm <sup>2</sup> min. 2 x 2.5 mm <sup>2</sup> max.	0.5 mm <sup>2</sup> min. 2 x 2.5 mm <sup>2</sup> max.

- Phase-separated wall that can be divided to allow the teeth of all types of comb busbar to pass through.
- Staggered terminals to simplify connection.

## Dimensions (mm)



## Technical data

Main characteristics	
Pollution degree	3
Power circuit	
Operating frequency	50...60 Hz
Flashing frequency	2 Hz
Additional characteristics	
Operating temperature	-35°C... +70°C
Storage temperature	-40°C... +80°C
Tropicalization	Treatment 2 (relative humidity 95 % at 55°C)
LED indicator light	Consumption per indicator light: 0.3 W Service life: 100,000 hours of constant lighting efficiency Maintenance-free indicator light (non-interchangeable LEDs)



## IEC 60669-1 and IEC 60947-5-1

■ iPB pushbuttons are used to control electric circuits by means of pulses.

### Catalogue numbers

iPB pushbuttons														
Type	Single				Double		Single + indicator light							
Diagram	1 NC 3 E- 4		1 NO 1 E- 2		1 NO + 1 NC 1 3 E- 2 4		1 NO / 1 NC 1 3 E- E- 2 4		1 NO / 1 NO 1 3 E- E- 2 4		1 NO 1 NC 1 X1 3 X1 E- 2 X2 4 X2		1 NO 1 NC 1 X1- 3 X1- E- 2 X2+ 4 X2+	
Pushbutton Colour	Grey	Red	Grey	Grey	Green/red	Grey/grey	Grey	Grey	Grey	Grey	Grey	Grey	Grey	
Indicator light	Power supply	-	-	-	-	-	110...230 V AC		12...48 V AC/DC					
	Colour	-	-	-	-	-	Green	Red	Green	Red	Green	Red	Red	
Cat. no.	A9E18030	A9E18031	A9E18032	A9E18033	A9E18034	A9E18035	A9E18036	A9E18037	A9E18038	A9E18039	A9E18039	A9E18039	A9E18039	
Width in 9 mm modules	2				2		2							

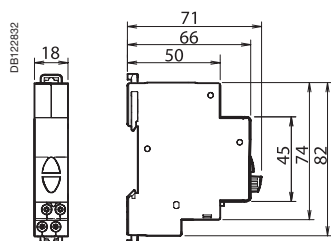
7

### Connection

	Tightening torque	Copper cables	
	1 N.m	Rigid	Flexible or ferrule
	DB122345	DB122346	
		0.5 mm <sup>2</sup> min. 2 x 2.5 mm <sup>2</sup> max.	0.5 mm <sup>2</sup> min. 2 x 2.5 mm <sup>2</sup> max.

- Phase-separated wall that can be divided to allow the teeth of all types of comb busbar to pass through.
- Staggered terminals to simplify connection.

### Dimensions (mm)



### Technical data

Main characteristics	
Pollution degree	3
Power circuit	
Voltage rating (Ue)	250 V AC
Current rating (Ie)	20 A
Additional characteristics	
Endurance (O-C)	30,000 operations AC22 (cos φ = 0.8)
Operating temperature	-35°C... +70°C
Storage temperature	-40°C... +80°C
Tropicalization	Treatment 2 (relative humidity 95 % at 55°C)
LED indicator light	Consumption: 0.3 W Service life: 100,000 hours of constant lighting efficiency Maintenance-free indicator light (non-interchangeable LEDs)



RCM

IEC/EN 60947-3  
BSEN 60947-3  
AS/NZS 60947-3

The switch-disconnectors combine the following functions:

- Control (opening and closing of circuits under load).

### iOF auxiliary

- Mounted on the left, it indicates the "open" or "closed" position of the switch and has a normally open (NO) or normally closed (NC) contact.



1P



2P


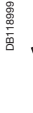
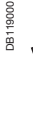



3P




4P

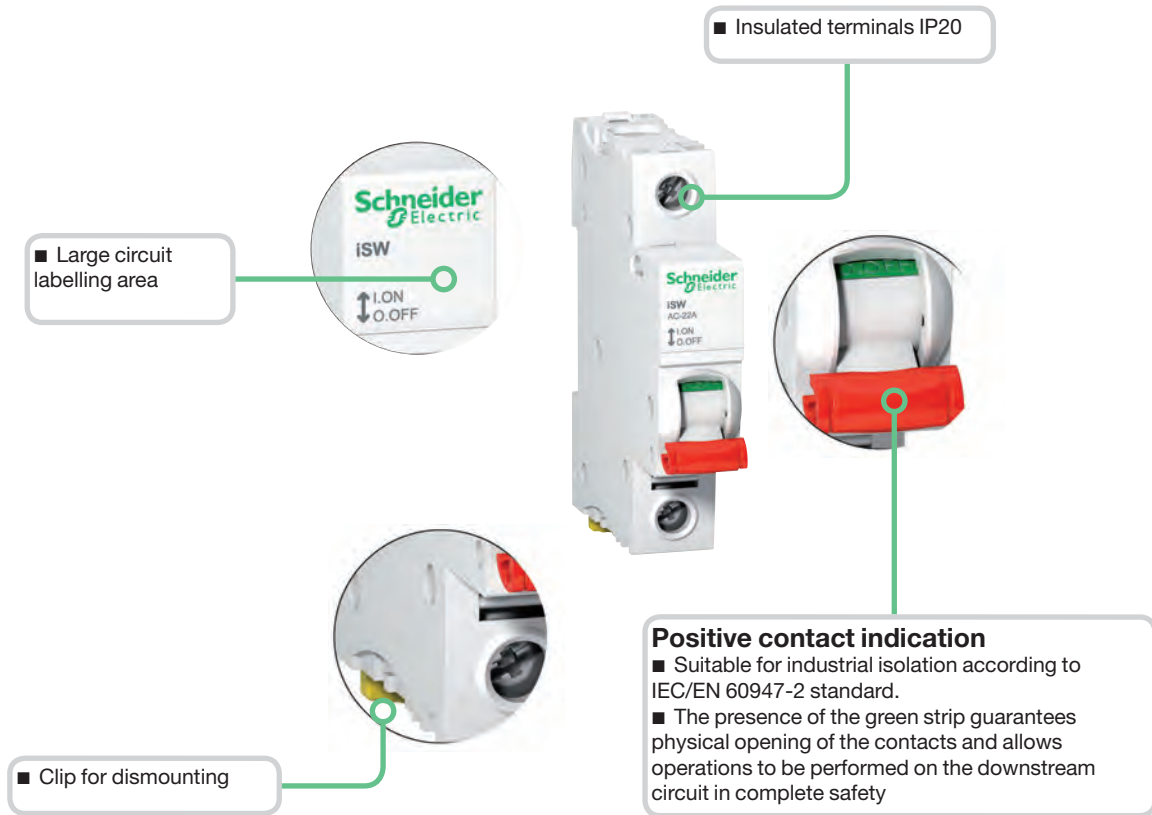
## Catalogue numbers

40 to 125 A iSW switch-disconnectors				
Type				Width in 9 mm modules
<b>1P</b>				
	Rating	Voltage (Ue)		
DB118998 	40 A	240 V AC	A9S66140	2
	63 A	240 V AC	A9S66163	
	100 A	240 V AC	A9S66191	
	125 A	240 V AC	A9S66192	
<b>2P</b>				
	Rating	Voltage (Ue)		
DB118999 	40 A	415 V AC	A9S66240	4
	63 A	415 V AC	A9S66263	
	100 A	415 V AC	A9S66291	
	125 A	415 V AC	A9S66292	
<b>3P</b>				
	Rating	Voltage (Ue)		
DB119000 	40 A	415 V AC	A9S66340	6
	63 A	415 V AC	A9S66363	
	100 A	415 V AC	A9S66391	
	125 A	415 V AC	A9S66392	
<b>4P</b>				
	Rating	Voltage (Ue)		
DB119001 	40 A	415 V AC	A9S66440	8
	63 A	415 V AC	A9S66463	
	100 A	415 V AC	A9S66491	
	125 A	415 V AC	A9S66492	
Operating frequency		50/60 Hz		
Accessories		Module CA907000 and CA907001		



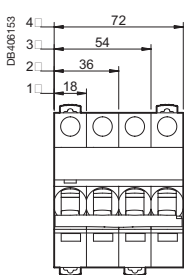
PB104474-3S

Auxiliary			
Type			Width in 9 mm modules
<b>iOF</b>			
	Voltage (Ue)		
DB118810 	240...415 V AC	A9A26924	1
	24...130 V DC		

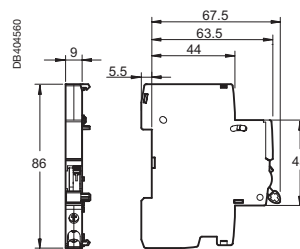
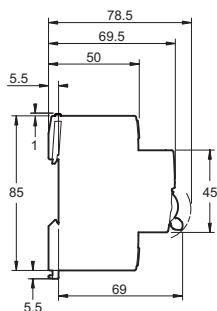


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Dimensions (mm)

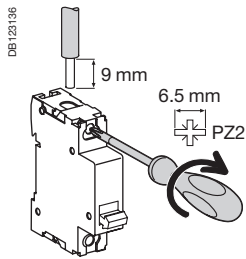




iSW

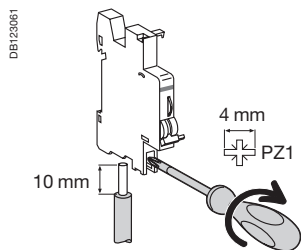






iOF

### Connection



Type	Rating	Tightening torque	Copper cables	
			Rigid	Flexible or with ferrule
iSW	<b>40 to 125 A</b>	3.5 N.m	 ≤ 50 mm <sup>2</sup>	 ≤ 35 mm <sup>2</sup>



Type	Tightening torque	Copper cables		Multi-cables terminal	
		Rigid	Flexible	Rigid cables	Cables with ferrule
iOF	1 N.m	 1 to 4 mm <sup>2</sup>	 0.5 to 2.5 mm <sup>2</sup>	 2 x 2.5 mm <sup>2</sup>	 2 x 1.5 mm <sup>2</sup>

### Technical data

#### Main characteristics

Insulation voltage (Ui)	1P: 250 V AC 2P, 3P, 4P: 500 V AC
Pollution degree	3

#### Power circuit

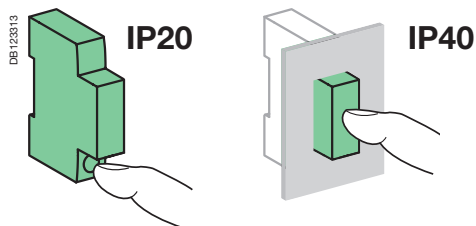
Rated impulse withstand voltage (Uimp)	6 kV
Operating category	AC - 22 A
Permissible rated short-time withstand current (Icw)	1500 A
Conditional rated short-circuit current (Inc)	10 kA according to IEC 60947-3
Rated short-circuit closing current (Icm)	5 kA

#### Additional characteristics

Degree of protection	Device only	IP20	
	Device in modular enclosure	IP40 Insulation class II	
Endurance (O-C)	Mechanical	20,000 cycles	
		Electrical	40 A - 63 A
	80 A - 100 A		10,000 cycles
	125 A		2 500 cycles
Operating temperature	-25°C to +60°C		
Storage temperature	-40°C to +85°C		
Tropicalization	Treatment 2 (relative humidity 95% at 55°C)		

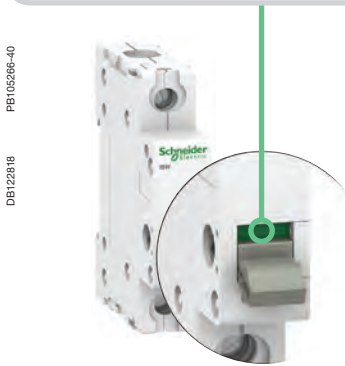
#### iOF characteristics

Rated voltage (Ue)	240...415 V AC	
	24...130 V DC	
Operating frequency	50/60 Hz	
Operating current	24 V DC	6 A
	48 V DC	2 A
	60 V DC	1.5 A
	130 V DC	1 A
	240 V AC	6 A
	415 V AC	3 A
Number of contacts	1 NO/NC	
Operating temperature	-35°C to +70°C	
Storage temperature	-40°C to +85°C	



### Position contact indication

- Suitable for industrial isolation according to IEC/EN 60947-3 standard.
- The presence of the green strip guarantees physical opening of the contacts and allows operations to be performed on the downstream circuit in complete safety.



Control switches



### iSW control switches (20, 32 A)

#### IEC/EN 60669-1, iSW switch with indicator light. IEC/EN 60669-2-4, iSW switch without indicator light.

These switches are used for:

- Control (opening and closing of circuits under load). The 1P and 2P switches are available with or without indicator light.
- Disconnection, for switches without indicator light IEC/EN 60669-2-4.

### iSW switch-disconnectors (40 to 125 A)

#### IEC 60947-3

The switch-disconnectors combine the following functions:





- Control (opening and closing of circuits under load).

### OF iSW auxiliary

- Mounted on the left, it indicates the "open" or "closed" position of the switch and has a normally open (NO) or normally closed (NC) contact.

## Catalogue numbers

### 20, 32 A iSW control switches

Type	Rating	Voltage (Ue)		Width in 9 mm modules
 1P DB118998	20 A	250 V AC	A9S60120	2
	32 A	250 V AC	A9S60132	
 2P DB118999	20 A	250 V AC	-	2
		415 V AC	A9S60220	
	32 A	250 V AC	-	
 3P DB119000	20 A	415 V AC	A9S60320	4
	32 A	415 V AC	A9S60332	
 4P DB119001	20 A	415 V AC	A9S60420	4
	32 A	415 V AC	A9S60432	
Operating frequency		50/60 Hz		
Accessories			Module CA907012	



Control switches with indicator light

Catalogue numbers (cont.)

20, 32 A iSW control switches with indicator light

Type	Rating	230 V indicator light	Width in 9 mm modules
<b>1P</b> 	20 A	<b>A9S61120</b>	2
	32 A	<b>A9S61132</b>	
<b>2P</b> 	20 A	<b>A9S61220</b>	2
	32 A	<b>A9S61232</b>	
Operating frequency		50/60 Hz	
<b>Accessories</b>		<b>Module CA907012</b>	

Spare indicator lights for 20, 32 A iSW switches

Type	Voltage (Ue)	
<b>Neon</b>		
Supplied with a red diffuser (Pack of 10)	230 V AC	<b>15111</b>
<b>Incandescent bulb (P=1.2 W)</b>		
Supplied with a red diffuser (Pack of 10)	12 V DC/AC	<b>15112</b>
	24 V DC/AC	<b>15113</b>
	48 V DC/AC	<b>15114</b>

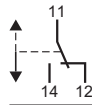


OF iSW

Catalogue numbers (cont.)

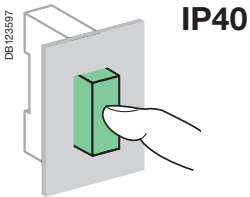
Auxiliary				
Type				Width in 9 mm modules
OF iSW	Rating	Voltage (Ue)	A9A15096	2
	3 A	415 V AC		
	6 A	250 V AC		

DB122821



Technical data

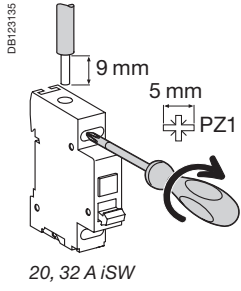
Main characteristics	20, 32 A iSW	
Insulation voltage (Ui)	Without indicator light	With indicator light
	■ 1P: 250 V AC	250 V AC
	■ 2P, 3P, 4P: 500 V AC	
Pollution degree	2	
Power circuit		
Rated impulse withstand voltage (Uimp)	4 kV	
Operating category	AC - 22 A	
Permissible rated short-time withstand current (Icw)	-	
Conditional rated short-circuit current (Inc)	3 kA to IEC/EN 60669-2-4	
Rated short-circuit closing current (Icm)	-	
Using direct current	48 V (110 V with 2 poles in series)	
Additional characteristics		
Degree of protection	IP40 on the front panel	
Endurance (O-C)	Mechanical	300,000 cycles
	Electrical	30,000 cycles
Operating temperature	-20°C to +50°C	
Storage temperature	-40°C to +70°C	
Tropicalization	Treatment 2 (relative humidity 95% at 55°C)	





IP40

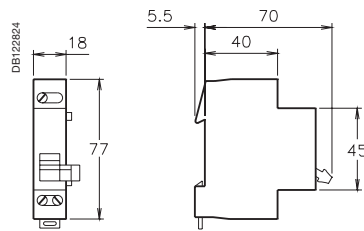
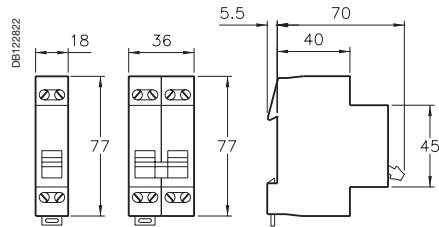
DB 123597

Connection



Type	Rating	Tightening torque	Copper cables	
			Rigid	Flexible or ferrule
			DB1228245 	DB1228246 
iSW	<b>20, 32 A</b>	1.2 N.m	10 mm <sup>2</sup>	10 mm <sup>2</sup>
OF iSW	-	1.2 N.m	10 mm <sup>2</sup>	10 mm <sup>2</sup>

Dimensions (mm)



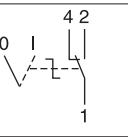
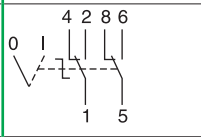
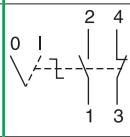
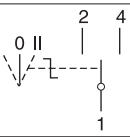
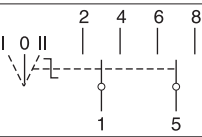




IEC 60669-1 and IEC 60947-5-1

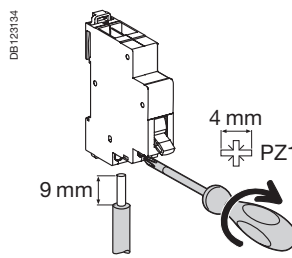
■ iSSW linear switches are used for the manual control of electric circuits.



Catalogue numbers

iSSW linear switches					
Type	2 positions			3 positions	
					
Contact	1 changeover switch	2 changeover switches	1 NO + 1NC	1 changeover switch	2 changeover switches
Diagram					
Cat. no.	A9E18070	A9E18071	A9E18072	A9E18073	A9E18074
Width in 9 mm modules	2	4	2	2	4

7

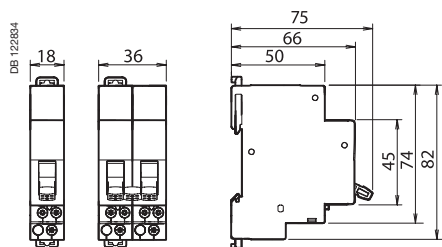
Connection



Tightening torque	Copper cables	
	Rigid	Flexible or ferrule
1 N.m	 0.5 mm <sup>2</sup> min. 2 x 2.5 mm <sup>2</sup> max.	 0.5 mm <sup>2</sup> min. 2 x 2.5 mm <sup>2</sup> max.

- Phase-separated wall that can be divided to allow the teeth of all types of comb busbar to pass through.
- Staggered terminals to simplify connection.

Dimensions (mm)



Technical data

Main characteristics	
Pollution degree	3
Power circuit	
Voltage rating (Ue)	250 V AC
Current rating (Ie)	20 A
Additional characteristics	
Endurance (O-C)	30,000 cycles AC22 (cos φ = 0.8)
Operating temperature	-20°C... +50°C
Storage temperature	-40°C... +70°C
Tropicalization	Treatment 2 (relative humidity 95 % at 55°C)



## Bell transformers: NF EN 60742, EN/IEC 61558-2-8. Safety transformers: NF EN 60742, EN/IEC 61558-2-6.

Bell transformers and safety transformers allow for a very low voltage (ELV 8 V, 12 V or 24 V) to be obtained from a low voltage network (LV 230 V).

All Schneider Electric transformers are:

- safe: primary and secondary circuits are perfectly insulated by each other
- resistant to short-circuit currents thanks to the built-in device.

### Catalogue numbers

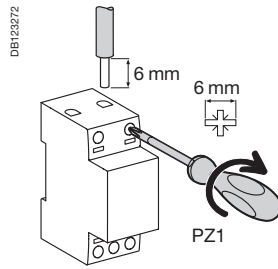
Bell transformer				
Type	Power	Secondary voltage		Width in 9 mm modules
E56759 	4 VA	8 V AC	A9A15214	4
E56760 	4 VA 8 VA 16 VA	8-12 V AC 8-12 V AC 8-12 V AC	A9A15213 A9A15216 A9A15212	4
E56761 	25 VA	12-24 V AC	A9A15215	6

Safety transformer				
Type	Power	Secondary voltage		Width in 9 mm modules
DB124153 	16 VA 25 VA	12-24 V AC 12-24 V AC	A9A15218 A9A15219	10
DB124154 	40 VA 63 VA	12-24 V AC 12-24 V AC	A9A15220 A9A15222	10
DB124155 				
Operating frequency	50/60 Hz			

Terminal shield	
Type	Width in 9 mm modules
15228	4
15229	6



## Connection



Tightening torque	Copper cables	
	Rigid	Flexible or with ferrule
0.5 N.m	DB122845 	DB122846 
	< 2.5 mm <sup>2</sup>	< 2.5 mm <sup>2</sup>

## Technical data

### Main characteristics

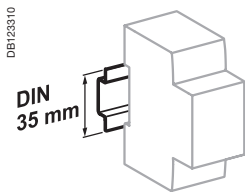
Primary voltage	230 V AC ±10 %
Secondary voltage on load	For bell transformers: 8-12-24 V AC ±15 % For safety transformers: 12-24 V AC ±5 %

Transformer catalogue numbers	Rated secondary voltage	Off load voltage
A9A15214	8 V	12 V
A9A15213	8 V	12 V
	12 V	16 V
A9A15216	8 V	13 V
	12 V	18 V
A9A15212	8 V	13 V
	12 V	18 V
A9A15215	12 V	16 V
	24 V	32 V
A9A15218	12 V	14 V
	24 V	28 V
A9A15219	12 V	14 V
	24 V	28 V
A9A15220	12 V	14 V
	24 V	28 V
A9A15222	12 V	14 V
	24 V	28 V

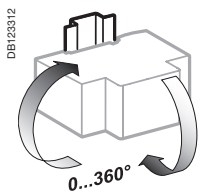
### Additional characteristics

Degree of protection Device only (IEC 60529)	IP20 with terminal shield
Operating temperature	-20°C to +55°C
Storage temperature	-25°C to +80°C

*Note: Transformers have an off load operating voltage that is higher than the rated voltage. For loads that are sensitive to overloads (electro-magnetic circuits), the transformer must be made to operate at I<sub>n</sub>. After operation of the protection device upon an overload, cut-off the power supply and let the transformer cool down before restart.*

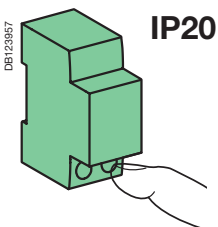


Clip on DIN rail 35 mm.



Bell transformer: indifferent position of installation.  
Safety transformer: vertical position.

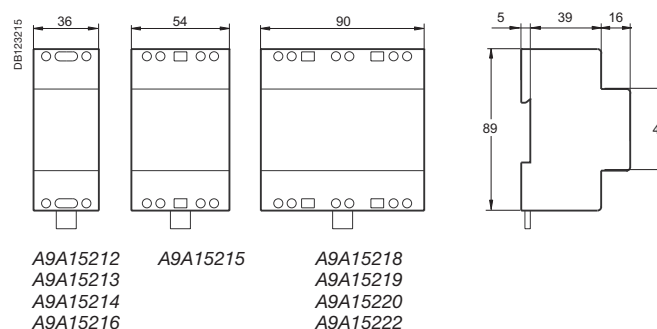
7



## Weight (g)

iTR		
Type	Cat. no.	Weight
Bell	A9A15212	384
	A9A15213	240
	A9A15214	237
	A9A15215	633
	A9A15216	275
Safety	A9A15218	1082
	A9A15219	1125
	A9A15220	1190
	A9A15222	1309

## Dimensions (mm)



A9A15212 A9A15215 A9A15218  
A9A15213 A9A15219  
A9A15214 A9A15220  
A9A15216 A9A15222



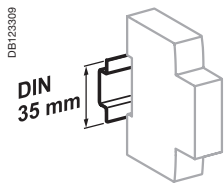
## ISO and iRO

Audible indication in housing and the tertiary sector.

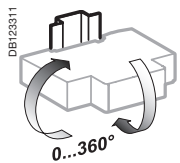
## Catalogue numbers

Bell and buzzer			
Type	Voltage (Ue)		Width in 9 mm modules
iSO bell DB123820	230 V AC	A9A15320	2
	8...12 V AC	A9A15321	2
iRO buzzer DB123821	230 V AC	A9A15322	2
	8...12 V AC	A9A15323	2
Operating frequency		50...60 Hz	

## Connection



Clip on DIN rail 35 mm.



Indifferent position of installation.

Tightening torque	Copper cables	
	Rigid	Flexible or ferrule
DB123820 1.3 N.m	DB123821 < 4 mm <sup>2</sup>	DB123822 < 4 mm <sup>2</sup>

DB123271  
3.5 mm  
PZ1  
12 mm

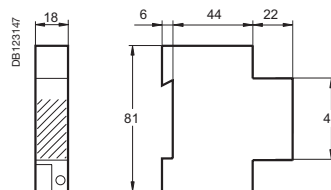
## Technical data

Main characteristics	iSO	iRO
Consumption	8...12 V AC 220...240 V AC	3.6 VA 5 VA
Additional characteristics		
Degree of protection (IEC 60529)	Device only Device in modular enclosure	IP40 IP20
Operating temperature	-10°C to +40°C	
Storage temperature	-25°C to +60°C	
Sound level (at a distance of 60 cm)	80 dBA	70 dBA

## Weight (g)

Bell and buzzer	
Type	
iSO	77
iRO	64

## Dimensions (mm)



iSO bell and iRO buzzer



## Function

### STI

The isolatable fuse-carriers provide overload and short-circuit protection and are used in the tertiary and industrial sectors.

### Fuse-links

aM, gG (gL, gL) types for STI.

### Indicator light

230 V neon indicator adaptable on STI.

## Description

### STI

- Isolation of all poles is guaranteed for the 2P, 3P, and 3P + N versions during factory assembly
- Positive contact indication
- To be equipped with aM or gG (gL - gL) type fuse-links, with or without fuse blowing indicator

Rating (A)	Size (mm)	aM fuse	gG fuse
0.5 to 20	8.5 x 31.5		■
1 to 20	10.3 x 38	■	
25 to 32	10.3 x 38		■

- Fuse-carrier: Captive, additional housing is provided for a spare fuse
- Optional indication by indicator lights (see accessories)
- Connection by tunnel terminals for rigid cables up to 10 mm<sup>2</sup> and flexible cables up to 6 mm<sup>2</sup>
- Complies with standard IEC 947.3

### Fuse-links

- aM, gG (gL - gL) types
- Fuse-link without striker pin
- Breaking capacity as in the standards

Dimensions (ø x L) (mm)	Rating (A)	Operating voltage (V AC)	Breaking capacity (kA)	
			aM	gG
8.5 x 31.5	All	380	20	20
10 x 38	<10	500	80	80
	25	660	80	80

- Complies with standards NF C 60 200 and NF C 63 210
- Véritas and Lloyds approved

## Indicator light (option)

### Technical data

230V AC neon (400V AC maximum)

Allows indication of fuse blowing (lift after blowing)

## Specific characteristics

### STI 1P + N and 3P + N

- Disconnection of the phase and neutral in the normal dimensions of the phase (2 modules of 9 mm)
- Phase opening causes compulsory opening of the neutral
- The phase opens before the neutral on isolation and closes after the neutral on circuit closing





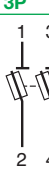




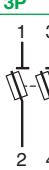



STI	Cartridges
IEC/EN 60947-3, IEC/EN 60269-2	IEC 60269-1, IEC 60269-2, NF C 60-200-2

- The STI isolatable fuse-carriers provide overload and short-circuit protection.
- They are used for industrial applications requiring a high breaking capacity.
- They perform the isolation function and must not be used as switches.
- To be equipped with aM or gG (gL - gl) type fuse cartridge without striker, with or without fuse blowing indicator.
- Isolation of all poles is guaranteed for the 2P, 3P, and 3P+N versions during factory assembly.

The general purpose fuse (**gG fuse**) provides overload and short-circuit protection. The fuse for motor application (**aM fuse**) only provides short-circuit protection. It is used for protection of loads with a high peak current (motors, transformer primaries, etc.).

## Catalogue numbers

Fuse cartridge (Type F)					STI fuse holder						
Type	Rating	Voltage rating (Ue)	Short-circuit current (Isc)		Network type						
			aM	gG	aM	gG	1P	1P+N <sup>(1)</sup>	2P	3P	3P+N <sup>(1)</sup>
 8.5 x 31.5 mm	2 A	400 V AC	20 kA	20 kA	DF2BA0200	DF2BN0200					
	4 A	400 V AC	20 kA	20 kA	DF2BA0400	DF2BN0400					
	6 A	400 V AC	20 kA	20 kA	DF2BA0600	DF2BN0600					
	8 A	400 V AC	20 kA	20 kA	DF2BA0800	DF2BN0800					
	10 A	400 V AC	20 kA	20 kA	DF2BA1000	DF2BN1000					
10.3 x 38 mm	2 A	500 V AC	120 kA	120 kA	DF2CA02	DF2CN02					
	4 A	500 V AC	120 kA	120 kA	DF2CA04	DF2CN04					
	6 A	500 V AC	120 kA	120 kA	DF2CA06	DF2CN06					
	10 A	500 V AC	120 kA	120 kA	DF2CA10	DF2CN10					
	16 A	500 V AC	120 kA	120 kA	DF2CA16	DF2CN16					
	20 A	500 V AC	120 kA	120 kA	DF2CA20	DF2CN20					
25 A	400 V AC	120 kA	120 kA	DF2CA25	DF2CN25						

(1) The neutral pole comes equipped with a locked tube.

### 230 V neon indicator light (Option)

- Indicates fuse blowing (off in normal operation and lit red after fuse blowing)
- 400 V maxi

### 1P+N, 3P+N

- Phase opening causes compulsory opening of the neutral
- The phase opens before the neutral on isolation and closes after the neutral on circuit closing
- Small dimensions
  - 1P+N in 18 mm
  - 3P+N in 54 mm

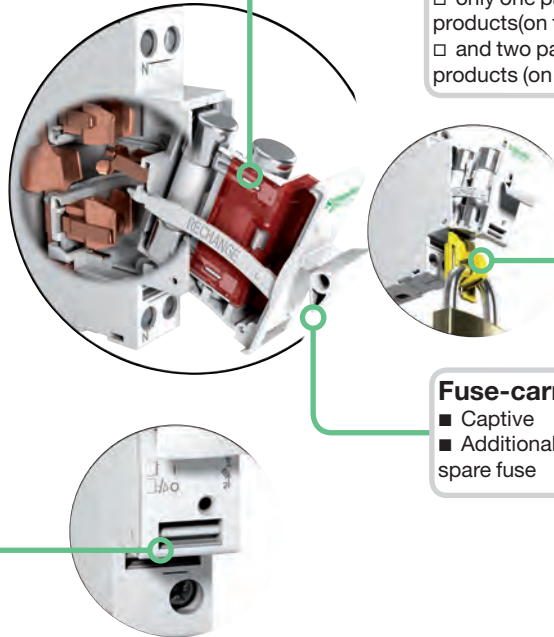
### Clip-on markers

### Padlocking device

- Locks the toggle in the "open" or "closed" position. Used with an 8 mm max. diameter padlock (not supplied):
  - only one padlock for 1P, 1P+N and 2P products (on the left pole)
  - and two padlock on the 3P and 3P+N products (on every extremity)

### Fuse-carrier

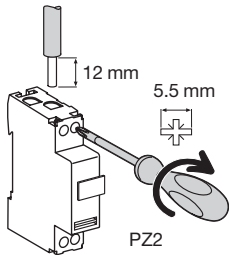
- Captive
- Additional housing is provided for a spare fuse






PB11.0050-50

DB123241

### Connection

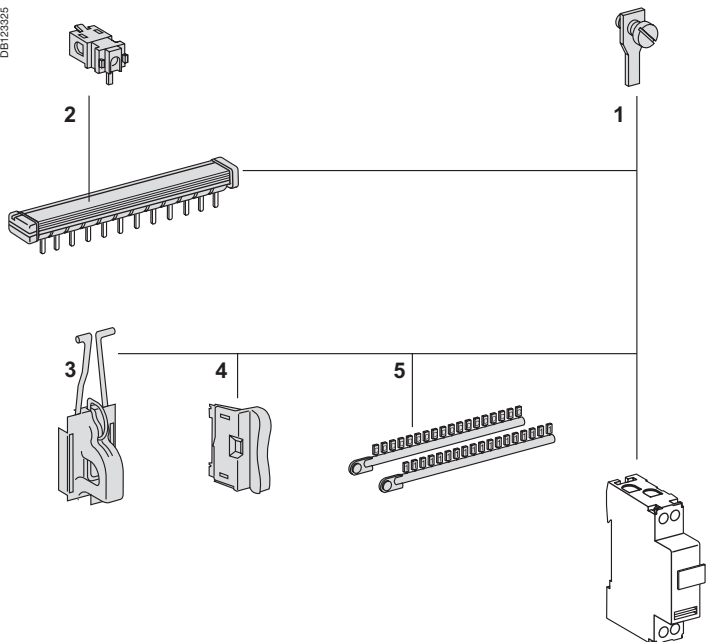


Type	Rating	Tightening torque	Without accessory		With accessories
			Copper cables		Screw-on connection for ring terminal
			Rigid	Flexible or ferrule	
STI	All	2 N.m	DB122945  0.75 to 10 mm <sup>2</sup> 2 x 0.75 mm <sup>2</sup> to 2 x 4 mm <sup>2</sup>	DB122946  0.5 to 6 mm <sup>2</sup> 2 x 0.5 mm <sup>2</sup> to 2 x 4 mm <sup>2</sup>	DB116789  Ø 5 mm

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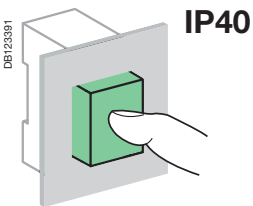
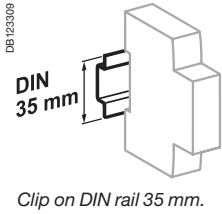
1 Screw-on connection for ring terminal 27053

DB123325



### Mounting accessories

2	Comb busbar	See module	LIN001
3	Padlocking device		15669
4	Neon indicator light	1 piece blister	15668
5	Clip-on terminal markers	See module	CA907012



## Technical data

Main characteristics	
Insulation voltage (Ui)	500 V
Breaking capacity according to IEC 60269-2 $\leq 400$ V	50 kA
Pollution degree	3
Operating frequency (Hz)	50/60

Additional characteristics	
Degree of protection Device in modular enclosure	IP40 Insulation classe II
Operating temperature	-20°C to +60°C
Storage temperature	-40°C to +80°C

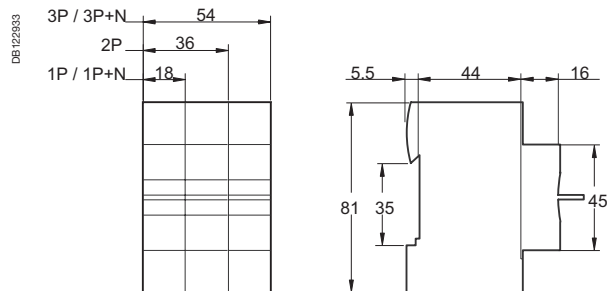
### Maximum dissipated power per pole of STI isolatable fuse-carriers

Fuse cartridge type		I <sub>th</sub>	P <sub>max</sub>
8.5 x 31 mm	aM	10 A	2.5 W
	gG	20 A	2.5 W
10.3 x 38 mm	aM	16 A	3 W
	gG	25 A	3 W

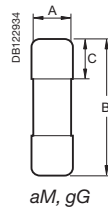
### Maximum dissipated power per fuse cartridges

Fuse cartridge type		I <sub>th</sub>	P <sub>max</sub>
8.5 x 31 mm	aM	2 to 10 A	0.9 W
	gG	2 to 10 A	2.5 W
10.3 x 38 mm	aM	2 to 25 A	1.2 W
	gG	2 to 25 A	3 W

## Dimensions (mm)



STI



aM, gG fuse cartridge			
Type	A	B	C
8.5 x 31.5 mm	8.5	31.5	10.3
10.3 x 38 mm	10.3	38	10.5



# Local control selector switches






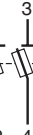





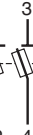

# SBI fuse holder with indicator light



## IEC EN 60947-3

- SBI fuse holders provide overload and short-circuit protection.
  - They are used for industrial applications requiring a high breaking capacity.
  - They perform the isolation function and must not be used as switches.
  - They are equipped with an indicator light indicating blowing of the fuse cartridge: to be equipped with aM or gG (gL-gI) type fuse cartridge without striker.
- The general purpose fuse (gG fuse) provides overload and short-circuit protection. The fuse for motor application (**aM fuse**) only provides short-circuit protection. It is used for protection of loads with a high peak current (motors, transformer primaries, etc.).

## Catalogue numbers

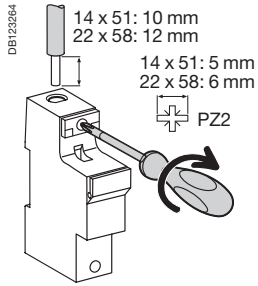
Fuse cartridge					SBI fuse holder													
Type	Rating	Voltage rating (Ue)	Short-circuit current (Isc)		Network type													
			aM	gG	aM	gG	N	1P	1P+N <sup>(1)</sup>	2P	3P	3P+N <sup>(1)</sup>						
 14 x 51 mm	10 A	690 V CA	120 kA	120 kA	DF2EA10	DF2EN10	 DB112786	 DB112787	 DB112788	 DB112789	 DB112800	 DB110801	MGN15708	MGN15707	MGN15709	MGN15710	MGN15711	MGN15712
	12 A	690 V CA	120 kA	-	DF2EA12	-							3 modules of 9 mm	3 modules of 9 mm	6 modules of 9 mm	6 modules of 9 mm	9 modules of 9 mm	12 modules of 9 mm
	16 A	690 V CA	120 kA	120 kA	DF2EA16	DF2EN16												
	20 A	690 V CA	120 kA	120 kA	DF2EA20	DF2EN20												
	25 A	690 V CA	120 kA	120 kA	DF2EA25	DF2EN25												
	32 A	500 V CA	120 kA	120 kA	DF2EA32	DF2EN32												
	40 A	500 V CA	120 kA	120 kA	DF2EA40	DF2EN40												
50 A	400 V CA	120 kA	120 kA	DF2EA50	DF2EN50													
22 x 58 mm	32 A	690 V CA	80 kA	80 kA	DF2FA32	DF2FN32	 DB112786	 DB112787	 DB112788	 DB112789	 DB112800	 DB110801	MGN15714	MGN15713	MGN15715	MGN15716	MGN15717	MGN15718
	40 A	690 V CA	80 kA	80 kA	DF2FA40	DF2FN40							4 modules of 9 mm	4 modules of 9 mm	8 modules of 9 mm	8 modules of 9 mm	12 modules of 9 mm	16 modules of 9 mm
	50 A	690 V CA	80 kA	80 kA	DF2FA50	DF2FN50												
	63 A	690 V CA	80 kA	80 kA	DF2FA63	DF2FN63												
	80 A	690 V CA	80 kA	80 kA	DF2FA80	DF2FN80												
	100 A	400 V CA	120 kA	120 kA	DF2FA100	DF2FN100												
	125 A	400 V CA	120 kA	-	DF2FA125	-												

(1) The neutral pole comes equipped with a locked tube.

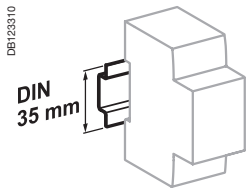
# Local control selector switches

# SBI fuse holder with indicator light (cont.)

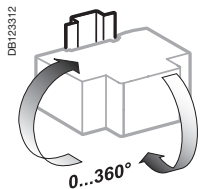
## Connection



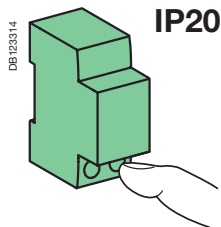
Type of fuse cartridge	Tightening torque	Copper cables		Multi-cables terminal	
		Rigid	Flexible or ferrule	Rigid cables	Flexible cables
14 x 51 mm	3.5 N.m	2.5 to 25 mm <sup>2</sup>	2.5 to 25 mm <sup>2</sup>	2.5 to 10 mm <sup>2</sup>	2.5 to 10 mm <sup>2</sup>
22 x 58 mm	3.5 N.m	2.5 to 35 mm <sup>2</sup>	2.5 to 35 mm <sup>2</sup>	2.5 to 25 mm <sup>2</sup>	2.5 to 16 mm <sup>2</sup>



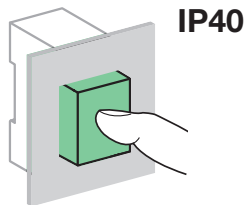
Clip on DIN rail 35 mm.



Indifferent position of installation.



IP20



IP40

## Technical data

### Main characteristics

Insulation voltage (Ui)	690 V
Utilization category	AC20B isolation by switching the drawer, must not be operated under load

### Additional characteristics

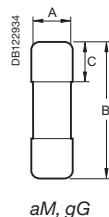
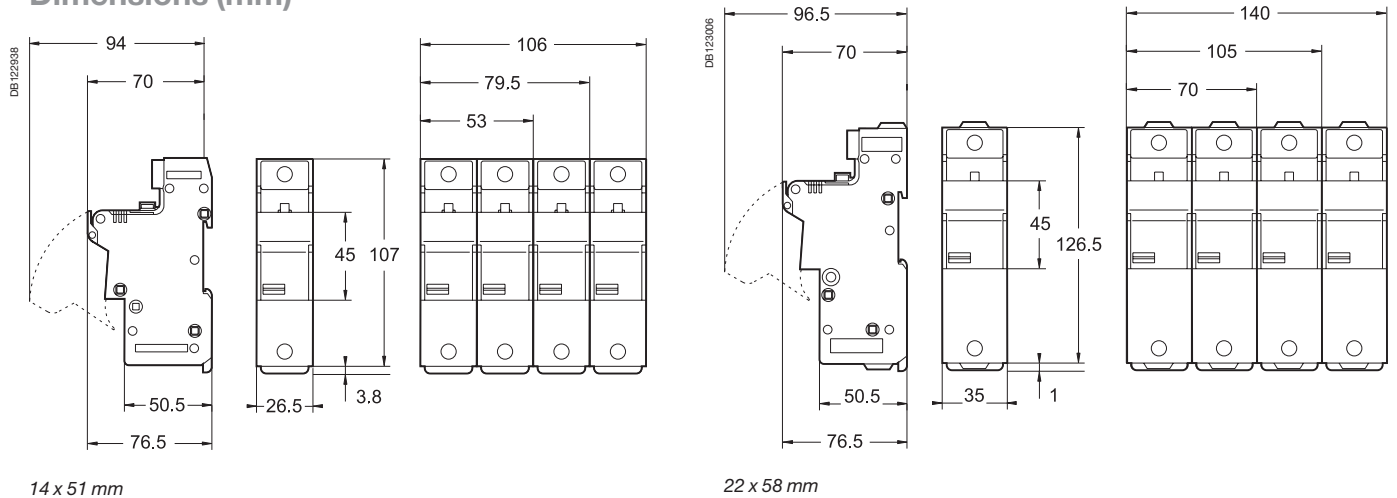
Degree of protection	Device only	IP20
	Device in modular enclosure	IP40
Operating temperature	-20°C to +60°C	
Storage temperature	-40°C to +80°C	
Cartridge blowing signalling	By indicator light ON (neon)	

Maximum permissible characteristics of the fuse cartridges:

Fuse cartridge type	lth	Pmax*
14 x 51 mm	aM	50 A / 3 W
	gG	50 A / 5 W
22 x 58 mm	aM	125 A / 9.5 W
	gG	100 A / 9.5 W




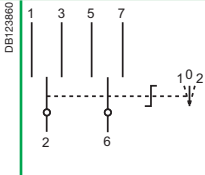
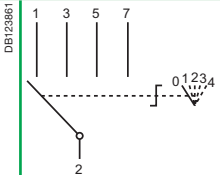
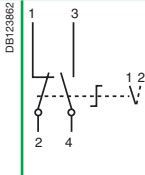
\*Pmax: maximum dissipated power per fuse cartridge.

## Dimensions (mm)




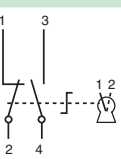
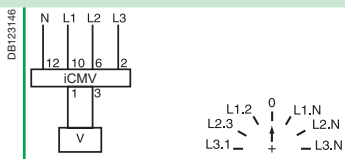
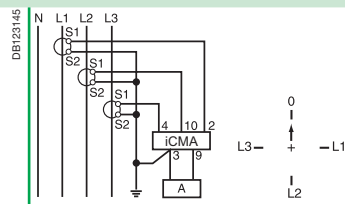


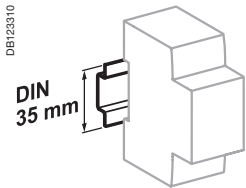
### aM, gG fuse cartridge

Type	A	B	C
14 x 51 mm	14.3	51	13.8
22 x 58 mm	22.2	58	16.2

		Control																													
Selector switches		iCMB	iCMD	iCME																											
Type		Two-pole with zero setting	4-way	2-way for electronic circuits																											
In compliance with standards		IEC 60947-3 (EN 60947-3) VDE 0660 part. 107 UL	IEC 60947-3 (EN 60947-3) VDE 0660 part. 107 UL	IEC 60947-3 (EN 60947-3) VDE 0660 part. 107 UL																											
																															
Function		<ul style="list-style-type: none"> <li>This two-pole selector switch with zero setting allows manual control of a circuit with 2-way operation with a stop position</li> </ul>	<ul style="list-style-type: none"> <li>This 4-way selector switch allows control of a circuit with operating priorities</li> </ul>	<ul style="list-style-type: none"> <li>This 2-way selector switch is used specially for the control of electronic circuits of low voltage and current level</li> </ul>																											
Wiring diagrams																															
Use		Example: electrically controlled metal screen: <ul style="list-style-type: none"> <li>position 1 = raising</li> <li>position 0 = stop</li> <li>position 2 = lowering</li> </ul>	Example: fan control: <ul style="list-style-type: none"> <li>position 0 = stop</li> <li>position 1 = override operation, slow speed</li> <li>position 2 = override operation, high speed</li> <li>position 3 = remote control</li> <li>position 4 = automatic operation</li> </ul>	<ul style="list-style-type: none"> <li>Voltage range from 30 mV to 600 V AC</li> </ul>																											
Catalogue numbers		A9E15120	A9E15121	A9E15122																											
<b>Technical specifications</b>																															
Rated voltage (Ue)	V AC	415	415	See following table																											
Maximum operating voltage	V	440	440	440																											
Rating	A	10	10	See following table																											
Operating frequency	Hz	50/60	50/60	50/60																											
Width in 9-mm modules		4	4	4																											
Breaking capacity (resistive load)		-	-	<table border="1"> <thead> <tr> <th></th> <th>V AC</th> <th>V DC</th> </tr> </thead> <tbody> <tr> <td>1 V</td> <td>5 A</td> <td>3 A</td> </tr> <tr> <td>12 V</td> <td>1.2 A</td> <td>0.7 A</td> </tr> <tr> <td>24 V</td> <td>0.7 A</td> <td>0.4 A</td> </tr> <tr> <td>48 V</td> <td>0.45 A</td> <td>0.25 A</td> </tr> <tr> <td>110 V</td> <td>0.25 A</td> <td>0.13 A</td> </tr> <tr> <td>240 V</td> <td>0.15 A</td> <td>0.08 A</td> </tr> <tr> <td>300 V</td> <td>0.13 A</td> <td>0.07 A</td> </tr> <tr> <td>440 V</td> <td>0.1 A</td> <td>0.05 A</td> </tr> </tbody> </table>		V AC	V DC	1 V	5 A	3 A	12 V	1.2 A	0.7 A	24 V	0.7 A	0.4 A	48 V	0.45 A	0.25 A	110 V	0.25 A	0.13 A	240 V	0.15 A	0.08 A	300 V	0.13 A	0.07 A	440 V	0.1 A	0.05 A
	V AC	V DC																													
1 V	5 A	3 A																													
12 V	1.2 A	0.7 A																													
24 V	0.7 A	0.4 A																													
48 V	0.45 A	0.25 A																													
110 V	0.25 A	0.13 A																													
240 V	0.15 A	0.08 A																													
300 V	0.13 A	0.07 A																													
440 V	0.1 A	0.05 A																													
Operating temperature	°C	-20...+55	-20...+55	-20...+55																											
Storage temperature	°C	-25...+80	-25...+80	-25...+80																											

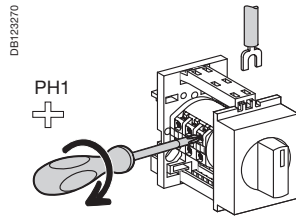
7

	iCMC	iCMV	iCMA
	<b>2-way key-actuated</b>	<b>7-position voltmeter</b>	<b>4-position ammeter</b>
	IEC 60947-3 (EN 60947-3) VDE 0660 part. 107 UL	IEC 60947-3 (EN 60947-3) VDE 0660 part. 107 UL	IEC 60947-3 (EN 60947-3) VDE 0660 part. 107 UL
			
	<ul style="list-style-type: none"> <li>2-way key-actuated selector switch with locking in one or the other position</li> </ul>	<ul style="list-style-type: none"> <li>This 7-position voltmeter selector switch makes it possible, with a single voltmeter, to measure in succession the voltages (phase-to-phase and phase-to-neutral) of a three-phase circuit</li> </ul>	<ul style="list-style-type: none"> <li>This 4-position ammeter selector switch makes it possible, with a single ammeter (using current transformers), to measure in succession the currents of a three-phase circuit</li> </ul>
			
	-	-	-
	<b>A9E15123</b>	<b>15125</b>	<b>15126</b>
	415	415	415
	440	440	440
	10	10	10
	50/60	50/60	
	4	4	4
	-	-	-
	-20...+55	-20...+55	-20...+55
	-25...+80	-25...+80	-25...+80



Clip on DIN rail 35 mm.

## Connection



Tightening torque	Copper cables Flexible or rigid with ferrule
0.35 N.m	< 1.5 mm <sup>2</sup>

- Connection by jumper terminals with captive screws.

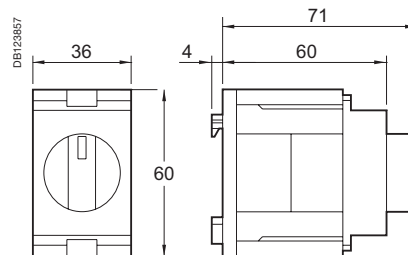
## Technical data

Additional characteristics		
Degree of protection	Device only	IP20
Endurance (O-C)	Electrical	1,000,000 switching operations
	Mechanical	2,000,000 switching operations (AC21A-3 x 440 V)

## Weight (g)

Selector switches	
Type	Weight (g)
iCMA	58
iCMB	58
iCMC	70
iCMD	58
iCME	44
iCMV	58

## Dimensions (mm)





**Application**

The device holders can be mounted on 35mm rail to facilitate mounting of pushbuttons, indicators or other devices.

**Technical data**

**Button holder**

For buttons, switches and indicators with metal or plastic flange Ø 22 of the Telemecanique XB4 / XB5 type

Depth under rail: 60mm (same as products in the multi 9 range)

Drilling diameter: Ø 22.3

Self-extinguishing insulating material

Colour: Light grey RAL 7035

**Universal holder**

For buttons, indicators, light emitting diodes (LED), potentiometers

Easy drilling To be adapted depending on use

Depth under rail 60 mm (same as products in the multi 9 range)

Self-extinguishing insulating material

Colour: Light grey RAL 7035

Type	Width in 18mm ways	Part number
22mm button holder	3	15151
Universal holder	3	15152

# Monitoring Control Remote control

## Relays

Time delay relays are used in service sector and industrial buildings for small automatic control systems: ventilation, heating, animation, roller blind servo controls, escalators, pumps, lighting, signalling, monitoring, etc.

### > Time delay relays



**iRTA**  
 ■ Delays energizing of a load



**iRTB**  
 ■ Delays de-energizing of a load upon closing of an auxiliary contact (push button)



**iRTC**  
 ■ Delays de-energizing of a load upon opening of an auxiliary contact (push button)

### ^ Time delay

iRBN and iRTBT relays can interface automatic control system inputs/outputs with low-voltage devices.

### > Interface relays



**iRBN**  
**Low level relay**  
 ■ Actuation of low-amperage electronic circuits upon receiving an LV electrical order



**iRTBT**  
**Extra low voltage relay**  
 ■ Actuation of LV circuits based on an extra low voltage order

7

### ^ Control

Control relays monitor electrical parameters and indicate when they are exceeded

### > Control relays



**iRCP**  
**Phase control**  
 ■ Monitors the order and asymmetry of phases and the presence of voltage on the 3 phases of a three-phase circuit (power supply of a motor, etc.)



**iRCI**  
**Current control**  
 ■ Monitors the current flowing in a circuit and indicates any crossing of the set threshold

### ^ Monitoring



**iRTH**

- Applies a time delay to de-energizing of a load



**iRTL**

- Applies a time delay to energizing and de-energizing of a load during different times, repeatedly (flasher)



**iRTMF**

- Allows one of the four types of time delay to be selected: A, B, C or H

iRLI and iERL relays are used to relay ON or OFF information to the auxiliary circuits and actuate low-power loads

> **Changeover relays**



**iRLI**

**Changeover**

- Relays ON or OFF information to the auxiliary circuits
- Actuates low-power loads



**iERL extension**

▲ **Relaying and control**



**IRCU**

**Voltage control**

- Monitors the potential difference of a circuit and indicates any crossing of the set threshold




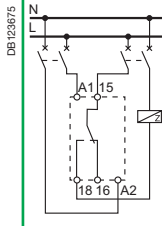
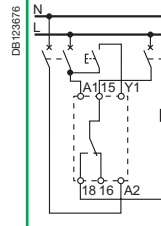
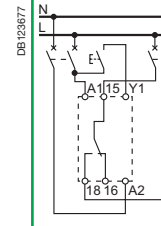
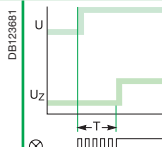
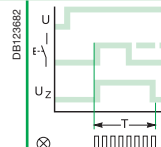
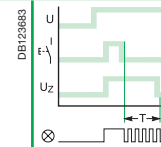





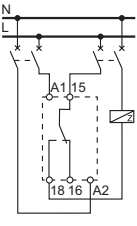
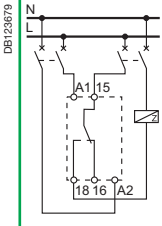
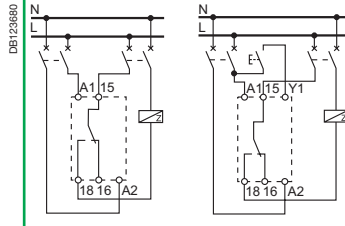
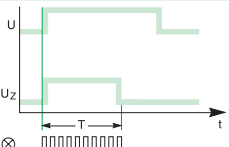
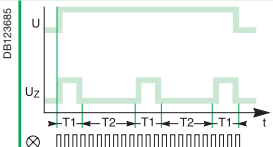
**iRCC**



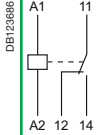
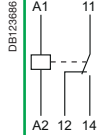
**Compressor control**

- Monitors the compressor power supply and prevents its immediate restarting upon detection of a power cut or voltage dip



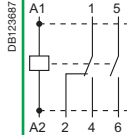
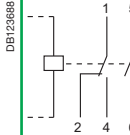


		Time delay relays		
		iRTA	iRTB	iRTC
Type				
Function		■ Delays energizing of a load	■ Delays de-energizing of a load upon closing of an auxiliary contact (push button)	■ Delays de-energizing of a load upon opening of an auxiliary contact (push button)
Wiring diagrams				
Use		 ■ The single time delay cycle starts at switching on of the iRTA relay power supply ■ The load is energized at the end of time delay T	 ■ The single time delay cycle starts at closing of an auxiliary contact (push button) ■ The load is de-energized at the end of time delay T	 ■ The single time delay cycle starts only upon release of an auxiliary contact (push button) ■ The load is de-energized at the end of time delay T
Catalogue numbers		<b>A9E16065</b>	<b>A9E16066</b>	<b>A9E16067</b>
<b>Technical specifications</b>				
Control and power supply voltage (Uc)	V AC	24...240, ±10 %	24...240, ±10 %	24...240, ±10 %
	V DC	24, ±10 %	24, ±10 %	24, ±10 %
Operating frequency	Hz	50/60	50/60	50/60
Time delay range		0.1 s to 100 h	0.1 s to 100 h	0.1 s to 100 h
Precision		±10 % of full scale	±10 % of full scale	±10 % of full scale
Minimum duration of control impulse		100 ms	100 ms	100 ms
Insensitive to brownouts		≤ 20 ms	≤ 20 ms	≤ 20 ms
Max. resetting time per voltage interruption		100 ms	100 ms	100 ms
Accuracy of repetition		±0.5 % at constant parameters	±0.5 % at constant parameters	±0.5 % at constant parameters
Changeover contact (cadmium free)	Mini	Rating 10 mA/5 V DC	Rating 10 mA/5 V DC	Rating 10 mA/5 V DC
	Maxi	Rating 8 A/250 V AC/DC	Rating 8 A/250 V AC/DC	Rating 8 A/250 V AC/DC
Endurance	Mechanical	> 5 × 10 <sup>6</sup> switching operations	> 5 × 10 <sup>6</sup> switching operations	> 5 × 10 <sup>6</sup> switching operations
	Electrical	> 10 <sup>5</sup> switching operations (utilization category AC1)	> 10 <sup>5</sup> switching operations (utilization category AC1)	> 10 <sup>5</sup> switching operations (utilization category AC1)
Display of contact status by green indicator lamp		Flashing during time delay	Flashing during time delay	Flashing during time delay
Degree of protection	Device only	IP20	IP20	IP20
Connection by tunnel terminals	Without ferrule	2 × 2.5 mm <sup>2</sup> single-strand	2 × 2.5 mm <sup>2</sup> single-strand	2 × 2.5 mm <sup>2</sup> single-strand
	With ferrule	2 × 1.5 mm <sup>2</sup> multi-strand	2 × 1.5 mm <sup>2</sup> multi-strand	2 × 1.5 mm <sup>2</sup> multi-strand
Width in 9-mm modules		2	2	2
Operating temperature	°C	-5 ... +55	-5 ... +55	-5 ... +55
Storage temperature	°C	-40 ... +70	-40 ... +70	-40 ... +70

	iRTH	iRTL	iRTMF
			
	<ul style="list-style-type: none"> <li>■ Applies a time delay to de-energizing of a load</li> </ul>	<ul style="list-style-type: none"> <li>■ Applies a time delay to energizing and de-energizing of a load during different times, repeatedly (flasher)</li> </ul>	<ul style="list-style-type: none"> <li>■ Allows one of the four types of time delay to be selected: A, B, C or H</li> </ul>
			
			
	<ul style="list-style-type: none"> <li>■ The single time delay cycle starts at switching on of the iRTH relay power supply</li> <li>■ The load is de-energized at the end of time delay T</li> </ul>	<ul style="list-style-type: none"> <li>■ The time delay cycle starts at energizing</li> <li>■ The load is energized during an adjustable time T1 and then de-energized during an adjustable time T2. This cycle is reproduced until de-energizing of the iRTL relay power supply</li> </ul>	<ul style="list-style-type: none"> <li>■ Depending on the choice, the iRTMF generates time delay cycles for the iRTA, iRTB, iRTC or iRTH relays</li> </ul>
	<b>A9E16068</b>	<b>A9E16069</b>	<b>A9E16070</b>
	24...240, ±10 %	24...240, ±10 %	12...240, ±10 %
	24, ±10 %	24, ±10 %	12...240, ±10 %
	50/60	50/60	50/60
	0.1 s to 100 h	0.1 s to 100 h	0.1 s to 100 h
	±10 % of full scale	±10 % of full scale	±10 % of full scale
	100 ms	100 ms	100 ms
	≤ 20 ms	≤ 20 ms	≤ 20 ms
	100 ms	100 ms	100 ms
	±0.5 % at constant parameters	±0.5 % at constant parameters	±0.5 % at constant parameters
	Rating 10 mA/5 V DC	Rating 10 mA/5 V DC	Rating 10 mA/5 V DC
	Rating 8 A/250 V AC/DC	Rating 8 A/250 V AC/DC	Rating 8 A/250 V AC/DC
	> 5 x 10 <sup>6</sup> switching operations	> 5 x 10 <sup>6</sup> switching operations	> 5 x 10 <sup>6</sup> switching operations
	> 10 <sup>5</sup> switching operations (utilization category AC1)	> 10 <sup>5</sup> switching operations (utilization category AC1)	> 10 <sup>5</sup> switching operations (utilization category AC1)
	Flashing during time delay	Flashing during time delay	Flashing during time delay
	IP20	IP20	IP20
	2 x 2.5 mm <sup>2</sup> single-strand	2 x 2.5 mm <sup>2</sup> single-strand	2 x 2.5 mm <sup>2</sup> single-strand
	2 x 1.5 mm <sup>2</sup> multi-strand	2 x 1.5 mm <sup>2</sup> multi-strand	2 x 1.5 mm <sup>2</sup> multi-strand
	2	2	2
	-5 ... +55	-5 ... +55	-5 ... +55
	-40 ... +70	-40 ... +70	-40 ... +70

		Interface relays	
		iRBN	iRTBT
Type		Low level	Extra low voltage
			
Standard		IEC 255 100 and IEC 529	IEC 255 100 and IEC 529
Function		■ Actuation of low-amperage electronic circuits upon receiving an LV electrical order	■ Actuation of LV circuits based on an extra low voltage order
Wiring diagrams			
Use		■ Inputs of programmable logic controllers, of measuring or supervision circuits, etc.	■ ELV orders can be issued by a programmable logic controller (24 V DC static outputs), a central fire detection unit, a regulation system, etc.
Catalogue numbers		<b>A9A15393</b>	<b>A9A15416</b>
<b>Technical specifications</b>			
Input control voltage (Uc)	V AC	230, ±10 %	12...24, -15 to +10 %
	V DC	-	12...24, ±20 %
Output contact rating	Mini	5 mA/5 V DC (DC12) 5 mA/5 V AC	10 mA/10 V DC (DC12) 10 mA/10 V AC
	Maxi	1 A/24 V DC (DC12) 5 A/250 V AC	1 A/24 V DC (DC12) 5 A/250 V AC
Operating frequency	Hz	50/60	0...60
Strengthened insulation between ELV/LV circuits		4 kV	4 kV
Consumption	At inrush	5 VA	0.22 W
	At holding	2.5 VA	0.11 W
Endurance	Electrical	100,000 switching operations	100,000 switching operations
Display of voltage presence on the control circuit		By green indicator lamp	By green indicator lamp
Degree of protection	Device only	IP20	IP20
Connection by tunnel terminals		0.5 x 6 mm <sup>2</sup>	0.5 x 6 mm <sup>2</sup>
Width in 9-mm modules		2	2
Operating temperature	°C	-5 ... +55	-5 ... +55
Storage temperature	°C	-40 ... +70	-40 ... +70



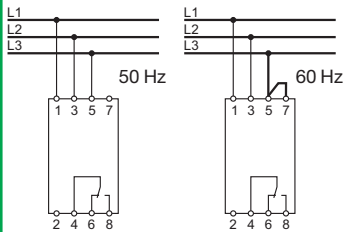
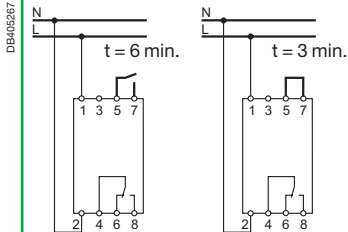




Changeover and extension relays

		iRLI				iERL			
Type		Changeover relay				Extension for RLI			
									
Standard		IEC 255 and NF C 45-250				IEC 255 and NF C 45-250			
Function		<ul style="list-style-type: none"> <li>Relaying of ON or OFF information to the auxiliary circuits and actuation of low-power loads</li> </ul>				<ul style="list-style-type: none"> <li>Extension allowing additional contacts to be added to the iRLI changeover relays</li> </ul>			
Wiring diagrams									
Use		<ul style="list-style-type: none"> <li>The iRLI relay contains 1 changeover contact (O-C) and 1 normally open contact (N/O)</li> </ul>				<ul style="list-style-type: none"> <li>The iERL extension (max. 3 iERLs for 1 iRLI) contains 1 changeover contact (O-C) and 1 normally open contact (N/O)</li> <li>Can be mounted without any tool and without additional cabling using a yellow clip which performs mechanical assembly and electrical connection between the coils</li> </ul>			
Catalogue numbers		A9E15535	A9E15536	A9E15537	A9E15538	A9E15539	A9E15540	A9E15541	A9E15542
<b>Technical specifications</b>									
Control voltage (Uc)	V AC	230...240	48	24	12	230...240	48	24	12
Voltage rating (Ue)	V AC	230				230			
Insulation voltage (Ui)	V AC	250				250			
Rating (In)	A	10, cos φ = 1				10, cos φ = 1			
Operating frequency	Hz	50/60				50/60			
Inrush and holding power		4 VA				iRLI + iERL : 8 VA			
Endurance	Electrical	100,000 cycles AC21 (cos φ = 1)				100,000 cycles AC21 (cos φ = 1)			
Operation on front face	Power	By push button				By push button			
	Coil	By selector switch (disconnection)				By selector switch (disconnection)			
Position indicator		Mechanical indicator				Mechanical indicator			
Marking		Clip-on markers on the front panel				Clip-on markers on the front panel			
Degree of protection	Device only	IP20				IP20			
Connection by tunnel terminals		0.5 x 6 mm <sup>2</sup>				0.5 x 6 mm <sup>2</sup>			
Width in 9-mm modules		2				2			
Operating temperature	°C	-5 ... +55				-5 ... +55			
Storage temperature	°C	-40 ... +70				-40 ... +70			

Control relays		
Type	iRCI Current control	iRCU Voltage control
Function	<ul style="list-style-type: none"> <li>Monitors the current (<math>I_r</math>) flowing in an AC or DC circuit and indicates any crossing of the set threshold</li> </ul>	<ul style="list-style-type: none"> <li>Monitors the voltage variation (<math>U_r</math>) of an AC or DC circuit and indicates any crossing of the set threshold</li> </ul>
Wiring diagrams		
Catalogue numbers	A9E21181	A9E21182
<b>Common technical specifications</b>		
Supply voltage ( $U_c$ )	V AC	230, -15 % to +10 %
Frequency	Hz	50/60
Parameter setting		■ On the front panel, by direct scale, using a screwdriver
Precision of display		±10 % of full scale
Output by changeover contact		8 A under 250 V AC ( $\cos \varphi = 1$ )
Indications by LED	Green	Voltage presence
	Red	Fault
Consumption	VA	3
Dissipated power	W	2
Degree of protection	Device only	IP20
Connection by tunnel terminals	Rigid cable	1.5 x 6 mm <sup>2</sup>
Width in 9-mm modules		4
Operating temperature	°C	-5 ... +55
Storage temperature	°C	-40 ... +80
<b>Particular technical specifications</b>		
	Threshold adjustable from 10 % to 100 % of $I_r$	Threshold adjustable from 10 % to 100 % of $U_r$
	Hysteresis adjustable from 5 % to 50 % of $I_r$	Hysteresis adjustable from 5 % to 50 % of $U_r$
	Monitoring of overcurrent and undercurrent (selection by selector switch)	
	Fail-safe contact	
	De-energized	
	Energized with fault	
	Energized without fault	
	Time delay on crossing threshold: 0.1 s to 10 s	
	Possibility of memorizing fault with resetting	
	Compatible with current transformers (CTs) of ratio X/5	■ Automatic recognition of AC voltage or DC voltage.
	■ Automatic recognition of alternating or direct current.	■ 2 measuring ranges selected by cabling:
	■ 2 measuring ranges selected by cabling:	□ 10 V to 50 V
	□ 0.15 A to 1.5 A	□ 50 V to 500 V
	□ 1 A to 10 A	

# Monitoring Control Remote control

# iRCP phase control, iRCI current control, iRCU voltage control and iRCC compressor control relays (cont.)

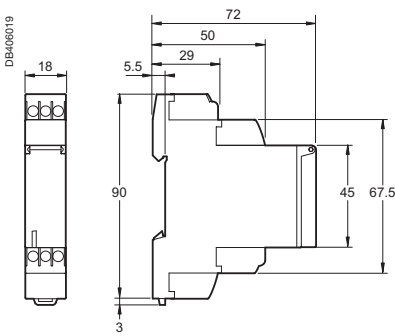
iRCP		iRCC	
Phase control		Compressor control	
PB107124-35		PB107127-35	
<ul style="list-style-type: none"> <li>Monitors phases and the presence of voltage on the 3 phases of a three-phase circuit (power supply of a motor, etc.). It indicates any phase loss or inversion</li> </ul>		<ul style="list-style-type: none"> <li>Monitors the compressor's power supply and prevents its immediate restarting upon detection of a power cut or voltage dip</li> </ul>	
DB40265		DB40267	
<b>A9E21180</b>		<b>A9E21183</b>	
400, ±15 %		230, -15 % to +10 %	
50/60			
<ul style="list-style-type: none"> <li>On the front panel, by direct scale, using a screwdriver</li> </ul>			
±10 % of full scale			
8 A under 250 V AC (cos φ = 1)			
Voltage presence			
Fault			
3			
3 (total on the 3 phases)		2	
IP20			
1.5 x 6 mm <sup>2</sup>			
4			
-5 ... +55			
-40 ... +80			
Setting of phase asymmetry threshold: 5 % to 2.5 % of 400 V		Threshold setting: ±5 % to ±15 % of 230 V	
Hysteresis: fixed, 5 % of asymmetry threshold			
Monitoring of direction of phase rotation			
Monitoring of presence of the 3 phases			
Fail-safe contact		Fail-safe contact	
De-energized		De-energized	
Energized with fault 		Energized with fault 	
Energized without fault 		Energized without fault 	
Time delay on tripping: 0.3 s		Time delay on overshoot: 3 or 6 minutes (selection by cabling)	

Technical data

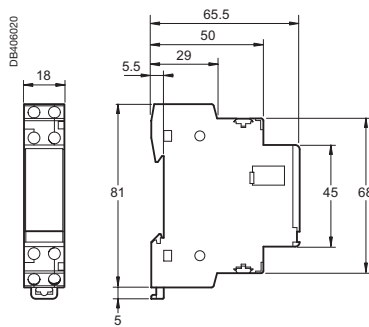
Weight (g)

Relays	
Type	
iRTA, iRTB, iRTC, iRTH, iRBN	65
iRTL	66
iRTMF	68
iRTBT	63
iRLI, iERL	112
iRCP, iRCC	210
iRCI, iRCU	215

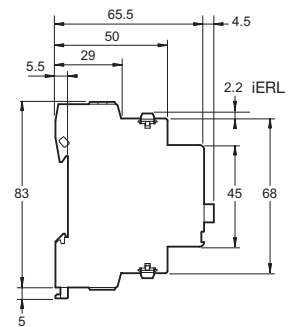
Dimensions (mm)



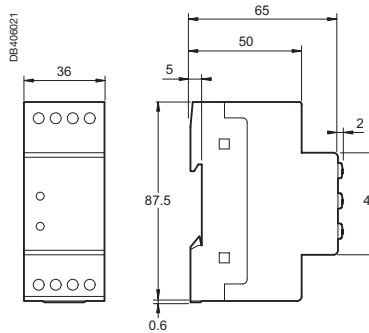
iRTA, iRTB, iRTC, iRTH, iRTL, iRTMF



iRBN, iRTBT



iRLI, iERL



iRCP, iRCI, iRCU, iRCC

> Timers

> Electromechanical timer



**MIN**  
Adjustable time delay from 1 to 7 min.

> Silent electronic timers



**MINs**  
Adjustable time delay from 0.5 to 20 min.





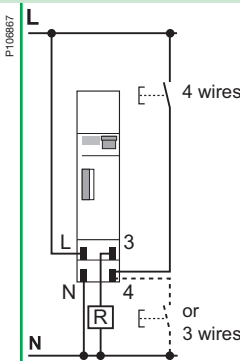
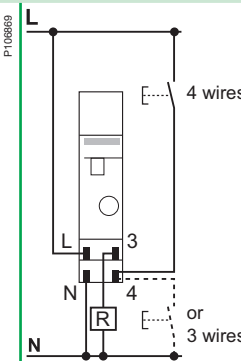
**MINp**  
Adjustable time delay from 0.5 to 20 min. with switch-off warning.




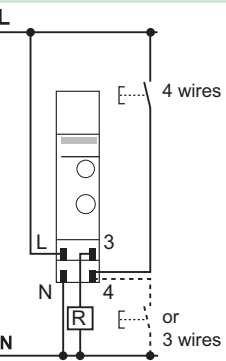
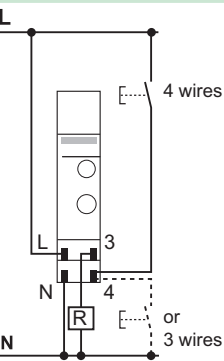


**MINT**  
Adjustable time delay from 0.5 to 20 min. with switch-off warning and impulse relay function.



## Selection table

	MIN	MINs
<b>Type</b>	<b>Electromechanical timer</b>	<b>Silent electronic timer</b>
		
<b>Function</b>	These timers allow closing and then opening of a contact in a determined time Control circuit: connected standard or luminous push-buttons Timer inoperative via self-protection if consumption above 50 mA maximum	
<b>Wiring diagrams</b>		
<b>Mounting</b>	Two operating modes triggered by switch on front face: <ul style="list-style-type: none"> <li>■ Automatic mode:               <ul style="list-style-type: none"> <li>□ operation in timing mode</li> <li>□ time delay adjustable from 1 to 7 min.</li> <li>□ setting in steps of 15 s using knob</li> <li>□ pressing a push-button renews the time delay</li> </ul> </li> <li>■ Manual override mode: constant lighting</li> </ul>	Two operating modes triggered by switch on front face: <ul style="list-style-type: none"> <li>■ Timer mode: time delay adjustable from 0.5 to 20 min.</li> <li>■ Permanent mode: constant lighting</li> </ul>
<b>Catalogue numbers</b>	<b>15363</b>	<b>CCT15232</b>
<b>Technical specifications</b>		
Voltage rating (Ue) (+10 %, -15 %)	230 V AC, 50 Hz	230 V AC, 50/60 Hz
Consumption	1 VA	< 6 VA
Output contact current   Cos φ = 1	16 A	16 A
Degree of protection	IP20B	IP20B
Operating temperature	-10°C to +50°C	-10°C to +50°C
Width (9 mm modules)	2	2
Consumption of connected luminous push-buttons	50 mA maxi	150 mA maxi
Adjustable time delay	1 to 7 min.	0.5 to 20 min.
Long time delay	-	-
Insulation class	-	Class II
1 screw connection per pole for cables up to 6 mm <sup>2</sup>	■	■
Selection of the type of connection (3 or 4 wires)	Selector switch	Automatic
Mechanical compatibility with electrical distribution comb busbar	-	■
Switch-off warning function	-	-
Impulse relay function	-	-

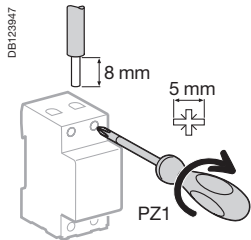
MINp		MINT		Accessory	
<b>Silent electronic timer</b>				<b>Wall mount accessory</b>	
P11643		P11644		P15359	
The MINp timer allows closing and then opening of a contact in a determined time, and it also provides warning that the lighting is about to be switched off by flickering of the lamplight (switch-off warning)		The MINT timer is the same as MINp with an "impulse relay" additional function		The MIN timers can be mounted on a wall by using 15359 reference. The protection cover is sealable.	
P106871		P106871		The 15359 accessory can be also used to mount others 18 mm DIN rail devices (for example: time switches, circuit breakers...).	
<ul style="list-style-type: none"> <li>■ Time delay adjustable from 0.5 to 20 min.</li> <li>■ Three operating modes triggered by switch on front face:                             <ul style="list-style-type: none"> <li>□ timer mode with "switch-off warning" function built into the device. The lamp blinks 40 and 30 s before the end of the time delay</li> <li>□ timer mode mode without "switch-off warning" function</li> <li>□ permanent mode : constant lighting</li> </ul> </li> <li>■ Timer mode operation:                             <ul style="list-style-type: none"> <li>□ pressing a push-button for longer than 2 s: lighting will last for 1 h. Pressing again a push-button for less than 2 s relaunch the time delay of 1 h and pressing again a push-button for more than 2 s switches off the light</li> <li>□ pressing a push-button for less than 2 s launch the pre-set time delay, pressing again a push-button for less than 2 s relaunch the pre-set time delay</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>■ Timer mode operation:                             <ul style="list-style-type: none"> <li>□ pressing a push-button for longer than 2 s: lighting will last for 1 h. Pressing again a push-button for less than 2 s relaunch                                     <ul style="list-style-type: none"> <li>□ the time delay of 1 h and pressing again a push-button for more than 2 s switches off the light</li> <li>□ pressing a push-button for less than 2 s launch the pre-set time delay, pressing again a push-button for less than 2 s, switches off the light (impulse relay mode)</li> </ul> </li> </ul> </li> </ul>			
<b>CCT15233</b>		<b>CCT15234</b>		<b>15359</b>	
230 V AC, 50/60 Hz		230 V AC, 50/60 Hz			
< 6 VA		< 6 VA			
16 A		16 A			
IP20B		IP20B			
-25°C to +50°C		-25°C to +50°C			
2		2		See § dimensions	
150 mA maxi		150 mA maxi			
0.5 to 20 min.		0.5 to 20 min.			
1 h		1 h			
Class II		Class II			
■		■			
Automatic		Automatic			
■		■			
■		■			
-		■			

## Load table

Products	MIN	MINs	MINp, MINt
<b>Type of lighting</b>	<b>Maximum power</b>		
230 V incandescent and halogen lamps	2300 W	2300 W	3600 W
Non-corrected / serial-corrected / dual mounted fluorescent tubes with conventional ballast	2300 VA	2300 VA	3600 VA <sup>(1)</sup>
Fluocompact lamps with conventional ballast	2000 VA	1500 VA	1500 VA <sup>(1)</sup>
Parallel-corrected fluorescent tubes with conventional ballast	1300 VA (70 F)	400 VA (42 µF)	1200 VA (120 µF) <sup>(1)</sup>
Fluorescent tubes with electronic ballast	300 VA	300 VA	1000 VA
Fluocompact lamps with electronic ballast	9 x 7 W, 6 x 11 W, 5 x 15 W, 5 x 20 W	9 x 7 W, 7 x 11 W, 7 x 15 W, 7 x 20 W, 7 x 23 W	34 x 7 W, 27 x 11 W, 24 x 15 W, 22 x 23 W

<sup>(1)</sup> The "switch-off warning" function is not available for these types of loads.

## Connection

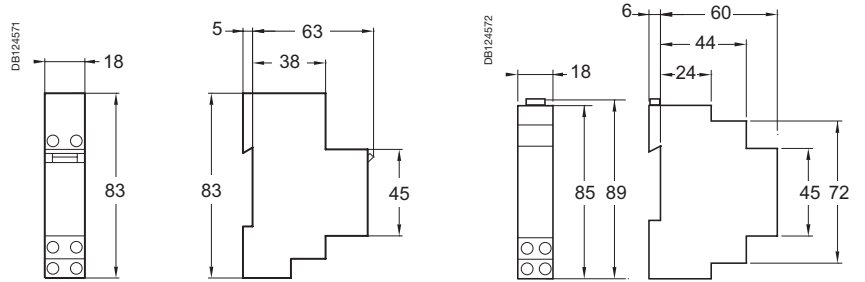


Type	Tightening torque	Copper cables	
		Rigid	Flexible or with ferrule
MIN, MINs, MINp, MINt	1.2 N.m	 <small>DBI123845</small>	 <small>DBI123846</small>
		≤ 6 mm <sup>2</sup>	≤ 6 mm <sup>2</sup>

Weight (g)

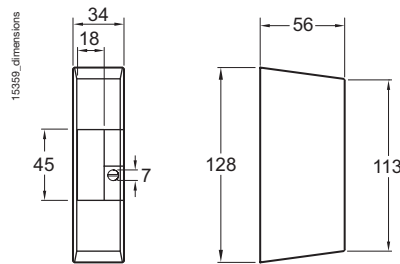
Time switches	
MIN	84
MINs	75
MINp	103
MINT	76

Dimensions (mm)

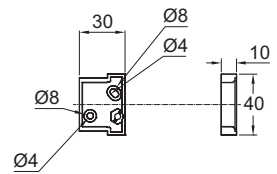


MIN

MINs, MINp, MINT



Wall mount accessory



Time switches

The 45 mm digital time switches



IHP 1c

IHP 2c

IHP+1c

IHP+2c

Automatically switch On and Off loads according to the program entered by the user with 4 keys and a display, they operate on a weekly cycle: the same program is repeated week after week.



IHP DCF 1c + ANT DCF

Synchronised on the frankfort transmitter via the ANT DCF antenna.

The 18 mm digital time switches



IHP 1c/+ 1c

Automatically switch On and Off loads according to the program entered by the user with 4 keys and a display, they operate on a weekly cycle: the same program is repeated week after week.

## > The 54 mm mechanical time switches

**IH 60mn 1c SRM**      **IH 24h 1c SRM/ARM**      **IH 24h 2c ARM**

**IH 24h + 7j 1+1c ARM**      **IH 7j 1c ARM**

Automatically switch On and Off loads according to the program entered by the user they operate on an hourly, daily or weekly cycle: the same program is repeated hour after hour (IH 60mn), day after day (IH 24h) or week after week (IH 7j).

## > The 18 mm mechanical time switches

**IH 24h 1c SRM/ARM**      **IHH 7j 1c ARM**

Automatically switch On and Off loads according to the program entered by the user they operate daily on a weekly cycle.

## > The digital yearly time switches

**ITA 1C**      **ITA 4C**

They operate on an daily, weekly or yearly program (ITA 1c: 1 channel, ITA 4c: 1, 2, 3 or 4 channels - 2 external inputs).

## Selection table

The time switches control opening and closing of one or more separate circuits according to a programming pre-set by the user:

- by memorisation of On and Off switching operations for the IHP and ITA digital time switches
- by positioning of jumpers or captive segments on a programming dial for the IH mechanical time switches.

An IHP, IH or ITA time switch is chosen according to the following criteria:

Designation	Number of channels	Cycle period (d: day)	Minimum time between 2 switching operations	Number of switching operations	Saving on mains cut off	Width (modules of 9 mm)	Override controls On / Off	Output contact changeover switch (cos φ = 1)	Time changeover (summer / winter)
<b>The 45 mm digital time switches</b>									
IHP 1c	1	24 h and/or 7 d	1 min.	56	6 years	5	On / Off	16 A	Auto
IHP + 1c	1	24 h and/or 7 d	1 s	84	6 years	5	On / Off	16 A	Auto
IHP 2c	2	24 h and/or 7 d	1 min.	56	6 years	5	On / Off	16 A	Auto
IHP + 2c	2	24 h and/or 7 d	1 s	84	6 years	5	On / Off	16 A	Auto
<b>The 18 mm digital time switches</b>									
IHP 1c 18 mm	1	24 h and/or 7 d	1 min.	56	10 years	2	On / Off	16 A	Auto
IHP + 1c 18 mm	1	24 h and/or 7 d	1 min.	84	10 years	2	On / Off	16 A	Auto
<b>The 36 or 72 mm digital yearly time switches</b>									
ITA 1c	1	24 h, 7 d, year	1 min.	300	10 years	4	On/Off	16 A	Manual / Auto
ITA 4c	4	24 h, 7 d, year	1 min.	300	10 years	8	On/Off	10 A	Manual / Auto
<b>The 54 mm mechanical time switches</b>									
IH 60mn 1c SRM	1	60 min.	37.5 s	48 On - 48 Off	none	6	On / Off	10 A	Manual
IH 24h 1c SRM	1	24 h	15 min.	48 On - 48 Off	none	6	On / Off	16 A	Manual
IH 24h 1c ARM	1	24 h	15 min.	48 On - 48 Off	200 h <sup>(1)</sup>	6	On / Off	16 A	Manual
IH 24h 2c ARM	2	24 h	30 min.	24 On - 24 Off	150 h	6	On	16 A	Manual
IH 7j 1c ARM	1	7 days	2 h	42 On - 42 Off	200 h <sup>(1)</sup>	6	On / Off	16 A	Manual
IH 24h + 7j 1+1c ARM	1+1	24 h + 7 days	45 min. + 12 h	16 On - 16 Off + 7 On - 7 Off	150 h	6	On	16 A	Manual
<b>The 18 mm mechanical time switches</b>									
IHH 7j 1c ARM	1	7 days	2 h	42 On - 42 Off	100 h	2	On / Off	16 A	Manual
IH 24h 1c ARM	1	24 h	15 min.	48 On - 48 Off	100 h	2	On / Off	16 A	Manual
IH 24h 1c SRM	1	24 h	15 min.	48 On - 48 Off	none	2	On / Off	16 A	Manual

<sup>(1)</sup> 10 h for 100 V CA supply voltage.

Back-lit display, random function and pulse programming	"Absence for holidays" function	Screwless connection	Mechanical compatibility with electrical distribution comb busbars	Input for external control	Instruction manual holder on front face	Memory key supplied with the product	Cat. no.
	■	■	■		■		CCT15720 <sup>(2)</sup>
■	■	■	■	1 input	■	■	CCT15721 <sup>(2)</sup> , CCT15851 <sup>(4)</sup>
	■	■	■		■		CCT15722 <sup>(2)</sup> , CCT15852 <sup>(4)</sup>
■	■	■	■	2 inputs	■	■	CCT15723 <sup>(2)</sup> , CCT15853 <sup>(4)</sup>
	■	■				<sup>(6)</sup>	CCT15854 <sup>(5)</sup>
■ + Cycle programming	■	■		1 input		■	CCT15837 <sup>(5)</sup>
Back-lit display, pulse and cycle programming	■ <sup>(3)</sup>					<sup>(7)</sup>	CCT15910
Back-lit display, pulse and cycle programming	■ <sup>(3)</sup>			2 inputs		<sup>(7)</sup>	CCT15940
		■					CCT15338
		■					CCT16364
		■					CCT15365
							15337
		■					CCT15367
							15366
							15331
							15336
							15335

<sup>(2)</sup> French, English, Italian, Spanish, German, Portuguese languages.

<sup>(3)</sup> Function included and can be realized through special program entry.

<sup>(4)</sup> French, English, Swedish, Dutch, Finnish, Norwegian/Danish languages.

<sup>(5)</sup> French, English, Italian, Spanish, German, Portuguese, Dutch languages.





<sup>(6)</sup> Memory key (CCT15861) is not supplied with IHP 1c 18mm (CCT15854) but this memory key and the programming kit (CCT15860) can be used and operate on IHP 1c 18mm (see "Accessories selection table").

<sup>(7)</sup> Memory key (CCT15955) is not supplied with ITA 1c/4c but this memory key and the programming kit (CCT15950) can be used and operate on ITA 1c/4c (see "Accessories selection table").



## Selection table

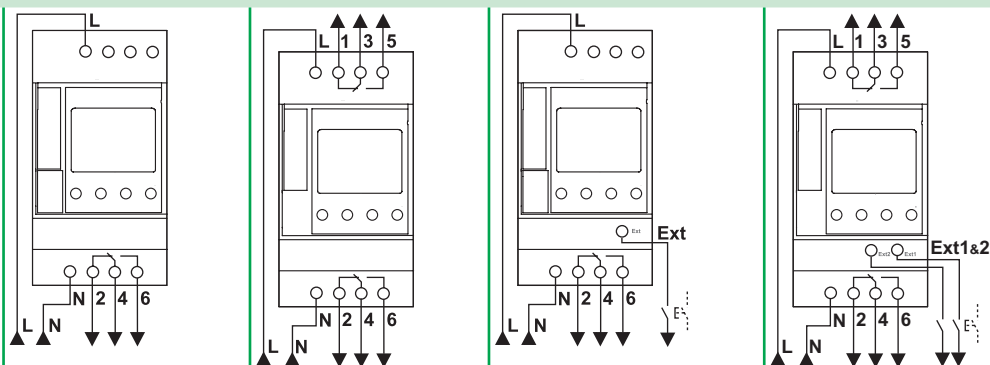
## Programmable time switches

	IHP 1c	IHP2c	IHP+1c	IHP+2c
				

## Function





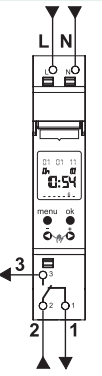
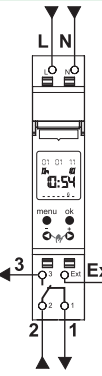
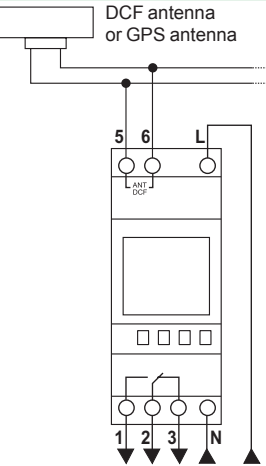
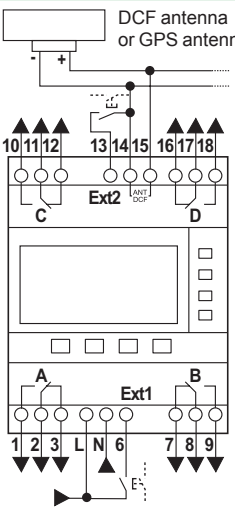
- These time switches automatically switch on and off loads according to the program entered by the user
  - They operate on weekly cycle: the same program is repeated week after week
  - They offer automatic summer/winter time change and allow to adjust it according to where you are located
  - The program can be overridden temporary or permanently by pressing 2 keys on the product
  - They also offer holidays program, by configuring the starting and ending dates of the absence.
- A memory key and a programming kit can be used to duplicate on another IHP+ or to save the program created by the contractor (see "Accessories selection table")
  - Override control with switch or push-button via external input ( 1 external input for IHP+1c and 2 externals inputs for IHP+ 2c)

## Wiring diagrams






Catalogue numbers	CCT15720	CCT15722	CCT15721	CCT15723
<b>Technical specifications</b>				
Voltage rating (Ue)	230 V AC, ±10 %, 50/60 Hz	230 V AC, ±10 %, 50/60 Hz	230 V AC, ±10 %, 50/60 Hz	230 V AC, ±10 %, 50/60 Hz
Consumption	4 VA	7 VA	4 VA	7 VA
Output contact current (250 V AC)	Cos φ = 1	16 A	16 A	16 A
	Cos φ = 0.6	10 A	10 A	10 A
Degree of protection	IP20B	IP20B	IP20B	IP20B
Operating temperature	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C
Time accuracy	± 1 s per day at 20°C	± 1 s per day at 20°C	± 1 s per day at 20°C	± 1 s per day at 20°C
Program saving and time by lithium battery	Lifetime	6 years	6 years	6 years
	Back-up time, cumulated mains cut off	6 years	6 years	6 years

## Yearly programmable time switches

IHP 1c 18 mm	IHP+1c 18 mm	ITA 1c	ITA 4c
			
<ul style="list-style-type: none"> <li>■ A memory key and a programming kit can be used to duplicate on another IHP or to save the program created by the contractor (see "Accessories selection table")</li> </ul>		<ul style="list-style-type: none"> <li>■ Weekly or yearly time programming to be distributed over 1 channel</li> <li>■ Weekly or yearly time programming to be distributed over 1, 2, 3 or 4 channels</li> <li>■ Override control with switch or push-button via external inputs</li> </ul>	
<ul style="list-style-type: none"> <li>■ A memory key and a programming kit can be used to duplicate on another IHP or to save the program created by the contractor (see "Accessories selection table")</li> </ul>		<ul style="list-style-type: none"> <li>■ A memory key and a programming kit can be used to duplicate on another ITA or to save the program created by the user (see "Accessories selection table").</li> </ul>	
			
CCT15854	CCT15837	CCT15910	CCT15940
230 V AC, +10 %, -15 %, 50/60 Hz	230 V AC, +10 %, -15 %, 50/60 Hz	230 V AC, 50/60 Hz	230 V AC, 50/60 Hz
2.3 VA	2.3 VA	1.4 - 1.9 W (depending on the switching status)	1.2 - 3.2 W (depending on the switching status)
16 A	16 A	16 A	10 A
4 A	4 A	6 A	6 A
IP20B	IP20B	IP20	IP20
-25°C to +55°C	-25°C to +55°C	-30 °C to +55 °C	-30 °C to +55 °C
± 0.5 s per day at 25°C	± 0.5 s per day at 25°C	Without antenna: ± 0.5 s per day at 20 °C With antenna: 1 s on 1 million years	Without antenna: ± 0.5 s per day at 20 °C With antenna: 1 s on 1 million years
10 years	10 years	10 years	10 years
10 years	10 years	10 years	10 years

## Selection table Mechanical time switches

	IH 60mn 1c SRM	IH 24h 1c SRM	IH 24h 1c ARM	IH 24h 2c ARM	
P116880		P116881		P116882	
P116816					

### Function

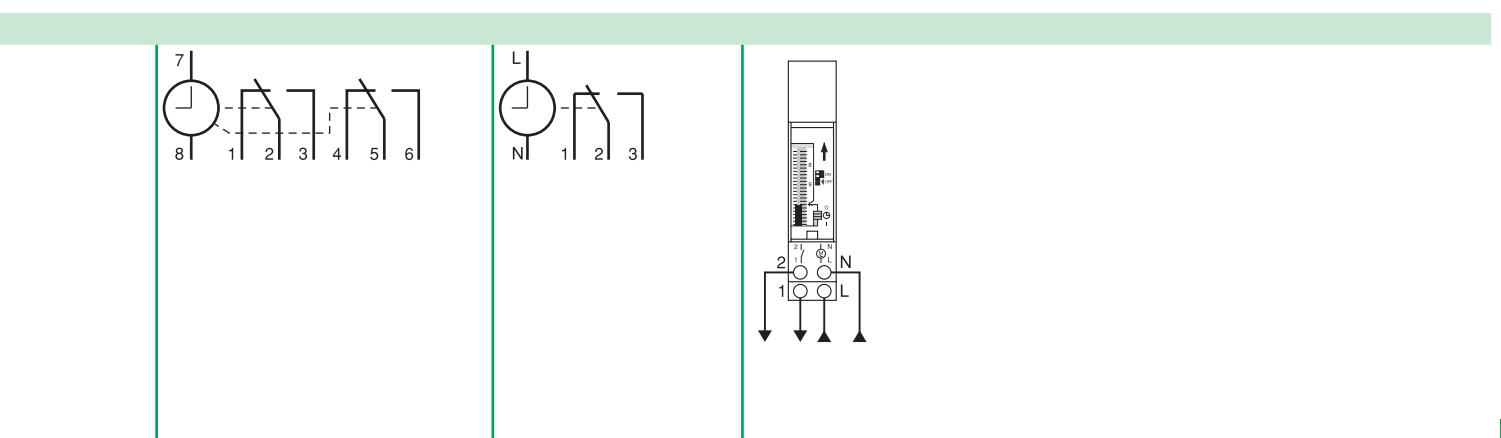
- They operate on hourly, daily or weekly cycle: the same program is repeated hour after hour (IH 60mn), day after day (IH 24h) or week after week (IH 7j, (IHH 7j))
- The program can be overridden On

### Wiring diagrams







Catalogue numbers	CCT15338	CCT16364	CCT15365	15337
<b>Technical specifications</b>				
Voltage rating (Ue)	230 V AC +10 %, -15%, 50 Hz	230 V AC +10 %, -15%, 50/60 Hz	110-230 V AC +10 %, -15%, 50/60 Hz	230 V AC +10 %, -15%, 50/60 Hz
Consumption	1 VA	2.5 VA	2.5 VA	2.5 VA
Output contact current under 250 V AC	Cos φ = 1	10 A	16 A	16 A
	Cos φ = 0.6	4 A	4 A	4 A
Degree of protection	IP20B	IP20B	IP20B	IP20B
Operating temperature	-20°C to +55°C	-20°C to +55°C	-20°C to +55°C	-20°C to +55°C
Time accuracy	±1 s per day at 20°C	±1 s per day at 20°C	±1 s per day at 20°C	±1 s per day at 20°C
Saving of program and time by lithium battery	Lifetime	–	6 years	6 years
	Back-up time, cumulated mains cut off	–	200 h with 230 V AC 100 h with 100 V AC	150 h
Programming by:	Jumpers (supplied)	–	–	4 red + 4 green + 2 white
	Captive segments	96	96	96

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	15366	CCT15367	15335	15336	15331
	230 V AC +10 %, -15%, 50 Hz	110-230 V AC +10 %, -15%, 50/60 Hz	230 V AC, ±10 %, 50/60 Hz	230 V AC, ±10 %, 50/60 Hz	230 V AC, ±10 %, 50/60 Hz
	2.5 VA	2.5 VA	2.5 VA	2.5 VA	2.5 VA
	16 A	16 A	16 A	16 A	16 A
	4 A	4 A	4 A	4 A	4 A
	IP20B	IP20B	IP20B	IP20B	IP20B
	-20°C to +55°C	-20°C to +55°C	-10°C to +50°C	-10°C to +50°C	-10°C to +50°C
	±1 s per day at 20°C	±1 s per day at 20°C	±1 s per day at 20°C	±1 s per day at 20°C	±1 s per day at 20°C
	6 years	6 years	10 years	10 years	10 years
	150 h	200 h with 230 V AC 100 h with 110 V AC	–	100 h	100 h
	6 yellow (24 h), 12 blue + 2 red (7 days)	–	–	–	–
	–	84	96	96	84




Accessories selection table	Programming kits for PC		Memory keys	
	IHP+	ITA	IHP+	ITA
				
<b>Function</b>	Consists of a programming device, a memory key, a CDROM and a 2 m USB cable For IHP+ 1c/2c, IHP 1c 18 mm, IHP+ 1c 18 mm	Consists of a programming device, a CDROM and a 1.5 m USB cable For ITA 1c and ITA 4c	Saving and duplicating programs For IHP+ 1c/2c, IHP 1c 18 mm, IHP+ 1c 18 mm	
<b>Mounting</b>	–	–	Located on front face	
<b>Catalogue numbers</b>	<b>CCT15860</b>	<b>CCT15950</b>	<b>CCT15861</b>	<b>CCT15955</b>
<b>Technical specifications</b>				
Degree of protection	–	–	–	–
Operating temperature	–	–	–	–

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### Specific technical data

IHP+ 1c, IHP+ 2c	
Manual functions	Temporary cancellation of programming for holidays, public holidays, etc. by configuration of the 2 dates - start and end of absence Simulation of presence thanks to random operation during On periods
Pulse functions	Programming of pulses adjustable from 1 to 59 s (pulse takes priority over switching)
Back-lighting of the screen	
External input (only for IHP+ 1c, IHP+ 2c)	
External inputs for external control with a standard switch or a push-button	1 input for IHP+ 1c 2 inputs for IHP+ 2c
Voltage rating (Ue)	230 V AC, +10 %, -15 %
Frequency	50/60 Hz
Input current	≤ 1.2 mA
Consumption	≤ 0.3 mW
Cable length	≤ 100 m

Antenna	Additional jumpers
<b>GPS antenna for ITA</b> 	<b>IH jumpers</b>
Antenna for ITA 1c and ITA 4c	They are used to program a larger number of sequences for: ■ IH 24h 2c ARM ( <b>15337</b> ) ■ IH 24h + 7j 1+1c ARM ( <b>15366</b> )
<ul style="list-style-type: none"> <li>■ 10 ITA maximum per antenna, maximum distance between the ITA and the antenna: 200 m</li> <li>■ Outside the electrical switchboard, outdoors, under shelter</li> </ul>	1 bag containing: ■ 5 red ■ 5 green ■ 5 white ■ 5 yellow
<b>CCT15970 <sup>(1)</sup></b>	<b>15341</b>
IP54	–
-30 °C to +55 °C	–

<sup>(1)</sup> external 12-30 VDC power supply needed

ITA 1c, ITA 4c	
Switching functions	On, Off, pulse, cycle, yearly program
Pulse length pulse function (switching time)	1 s to 59 min 59s
Pulse length timer (manual switching)	1 s to 9 h 59 min 59 s
Pulse/pause length cycle	1 s to 9 h 59 min 59 s
Minimum interval	1 min
External inputs (only for ITA 4c)	
External inputs for external control with a standard switch or a push-button	2 inputs : ■ <b>Ext1</b> input: supplied with 230 V AC, ±10%- 50/60 Hz ■ <b>Ext2</b> input Ext2: potential free
Antennas	
Power supply	External 12 - 30 VDC
Output	DCF time telegraph (no weather data)
Receiver	–
Operation indicator	Flashing LED on receiving

#### Programming principle

- For the digital time switches, this consists of memorising the days and times of the required switching operations.
- For the mechanical time switches, this is performed by positioning captive segments or jumpers on a switching dial.

#### Example

- Controlling an air conditioner in a hairdressing salon:

	Monday <sup>(1)</sup>	Tuesday	Wednesday	Thursday <sup>(2)</sup>	Etc.	
On n° 1		08 h 30	08 h 30	08 h 30		Switch on
Off n° 1		12 h 00	12 h 00			Switch off
On n° 2		13 h 30	13 h 30			Switch on
Off n° 2		20 h 00	20 h 00	20 h 00		Switch off

<sup>(1)</sup> Closed on Mondays

<sup>(2)</sup> Non-stop

#### Programming by copying or blocks

Whenever identical switching operations are found at the same times, several days in the week, this function lets you program these operations once only. In this case a single switching operation is used. If this function is used wisely, the number of possible switching operations can be greatly increased.

#### Example

	Monday	Tuesday	Wednesday	Thursday	Friday	
On n°1	10 h 00			10 h 00		Switch on
Off n°1		18 h 00	18 h 00		18 h 00	Switch off

#### Number of switching operations

Designation	Number of switching operations
IHP 1c	56
IHP + 1c	84
IHP 2c	56
IHP + 2c	84
IHP 1c 18 mm	56
IHP + 1c 18 mm	84
ITA 1c, ITA 4c	300
IH 24h 1c ARM	48 On - 48 Off
IH 24h 1c SRM	48 On - 48 Off
IH 60mn 1c SRM	48 On - 48 Off
IH 24h 1c SRM	48 On - 48 Off
IH 24h 1c ARM	48 On - 48 Off
IH 24h 2c ARM	24 On - 24 Off
IH 7j 1c ARM	42 On - 42 Off
IH 24 h + 7j 1+1c ARM	16 On - 16 Off + 7 On - 7 Off

#### Saving on mains cut off

For digital switches equipped with this function, a lithium battery is used for saving. The program, date and time are preserved. Switching operations are not performed.

Lets you control starting and stopping of a group of loads according to a cycle that is repeated every 60 minutes.

### 60 min. time programming

Example

Controlling automatic watering	
On n° 1	2 min. 30 s
Off n° 1	5 min.
On n° 2	25 min.
Off n° 2	37 min. 30 s

#### Relevant time switches

IH 60mn 1c SRM.

Lets you control starting and stopping of one or two groups of loads according to a daily cycle that is repeated, in identical manner, every day of the week.

### 24 h daily programming

Example

- Controlling a door of a block of flats:
  - from 8 am to 7.30 pm: contact on "On", free access,
  - from 7.30 pm to 8 am the next day: contact on "Off", access by confidential code every day of the week:

From Monday to Sunday	
On n° 1	8 am
Off n° 1	7.30 pm

#### Relevant time switches

- IH 24h 1c SRM/ARM.
- IH 24h 2c ARM.
- IHP 1c 18 mm.
- IHP + 1c 18 mm.
- IHP 1c, IHP + 1c.
- IHP 2c, IHP + 2c.
- ITA 1c, ITA 4c.

Lets you control starting and stopping of one to 4 groups of loads according to a weekly cycle, that can be different each day, repeated each week.

### 7 days weekly programming

Example

- Controlling an air conditionner in a hairdressing salon:

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
On n° 1			09 h 00	09 h 00	09 h 00		
Off n° 1			12 h 00	12 h 00			
On n° 2			14 h 00	14 h 00			
Off n° 2			20 h 00	20 h 00	20 h 00		
On n° 3						8 h 30	8 h 30
Off n° 3						12 h 30	12 h 30
On n° 4						14 h 30	14 h 30
Off n° 4						21 h 00	21 h 00

#### Relevant time switches

- IH 7j 1c ARM.
- IHP 1c, IHP + 1c.
- IHP 2c, IHP + 2c.
- IHP 1c 18 mm.
- IHP + 1c 18 mm.
- ITA 1c, ITA 4c.



Lets you control by pulses (adjustable from 1 to 59 s) one to four groups of loads (pulse relays, bells, etc.).

## Pulse programming

Example

- Automatic controlling of bells, lighting and distribution of food: bells sounding the resumption and finish of work (channel 1), lighting of premises (channel 2), feeding fish in the aquarium (channel 3):

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Channel 1: bell (20 s pulse order)</b>							
On	08 h 00	08 h 00	08 h 00	08 h 00	07 h 00	09 h 00	–
Duration	20 s	20 s	20 s	20 s	20 s	20 s	–
On	12 h 00	12 h 00	12 h 00	12 h 00	11 h 00	13 h 00	–
Duration	20 s	20 s	20 s	20 s	20 s	20 s	–
On	14 h 00	14 h 00	14 h 00	14 h 00	13 h 00	–	–
Duration	20 s	20 s	20 s	20 s	20 s	–	–
On	18 h 00	18 h 00	18 h 00	18 h 00	16 h 00	–	–
Duration	20 s	20 s	20 s	20 s	20 s	–	–
<b>Channel 2: lighting (latched order)</b>							
On	07 h 30	07 h 30	07 h 30	07 h 30	06 h 30	08 h 30	–
Off	18 h 30	18 h 30	18 h 30	18 h 30	17 h 00	13 h 30	–
<b>Channel 3: aquarium (15 s pulse order)</b>							
On	10 h 00	–	10 h 00	–	10 h 00	–	10 h 00
Duration	15 s	–	15 s	–	15 s	–	15 s

## Programming

- Programming of a pulse takes up 2 memory spaces.
- Combination of the two order types (pulse and latched) is possible on the same channel.

## Relevant time switches

- IHP + 1c.
- IHP + 1c 18 mm.
- IHP + 2c.
- ITA 1c, ITA 4c.

## Programming special days.

Example

- Controlling lighting and heating in a school:
  - basic programming: program lighting (channel 1) and heating (channel 2):

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Channel 1: lighting</b>							
On	07 h 00	07 h 00	07 h 00	07 h 00	07 h 00	–	–
Off	20 h 00	20 h 00	16 h 00	20 h 00	16 h 00	–	–
<b>Channel 2: heating</b>							
On	06 h 00	06 h 00	06 h 00	06 h 00	06 h 00	–	–
Off	18 h 00	18 h 00	12 h 00	18 h 00	12 h 00	–	–

- dated programming: periods of non-operation, school holidays, etc. Just memorise an Off at the start and another Off at the end of each period of absence:

		Holidays				
		Winter	Spring	Summer	Autumn	End of year
<b>Channel 1: lighting</b>						
Off	Date	20 feb.	17-apr	07-july	23 oct.	18 dec.
	Time	12 h 00	17 h 00	12 h 00	17 h 00	12 h 00
Off	Date	08-march	03-may	9 sept.	2 nov.	4 jan.
	Time	01 h 00	01 h 00	01 h 00	01 h 00	01 h 00
<b>Channel 2: heating</b>						
Off	Date	20 feb.	17-apr		23 oct.	18 dec.
	Time	12 h 00	17 h 00		17 h 00	12 h 00
Off	Date	08-march	03-may		2 nov.	4 jan.
	Time	01 h 00	01 h 00		01 h 00	01 h 00

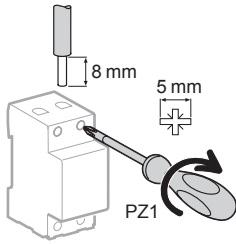
## Relevant time switches



- ITA 1c, ITA 4c.

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Lets you create special programs for dated days.

## Connection



Type	Tightening torque	Copper cables	
		Rigid	Flexible or with ferrule
<b>IHP</b> 1c, 2c, +1c, +2c	2 screwless / pole	 2 x 2.5 mm <sup>2</sup>	 2 x 2.5 mm <sup>2</sup>
<b>IHP 18 mm</b> 1c, +1c	2 screwless / pole	2 x 2.5 mm <sup>2</sup>	2 x 2.5 mm <sup>2</sup>
<b>IH</b> 60mn 1c SRM	2 screwless / pole	2 x 2.5 mm <sup>2</sup>	2 x 2.5 mm <sup>2</sup>
24h 1c SRM, ARM	2 screwless / pole	2 x 2.5 mm <sup>2</sup>	2 x 2.5 mm <sup>2</sup>
24h 2c ARM	1.2 N.m	≤ 6 mm <sup>2</sup>	≤ 6 mm <sup>2</sup>
7j 1c ARM	2 screwless / pole	2 x 2.5 mm <sup>2</sup>	2 x 2.5 mm <sup>2</sup>
24h + 7j 1+1c ARM	1.2 N.m	≤ 6 mm <sup>2</sup>	≤ 6 mm <sup>2</sup>
<b>IH 18 mm</b> 24h 1c SRM/ARM	1.2 N.m	≤ 6 mm <sup>2</sup>	≤ 6 mm <sup>2</sup>
<b>IHH 18 mm</b> 7j 1c ARM	1.2 N.m	≤ 6 mm <sup>2</sup>	≤ 6 mm <sup>2</sup>
<b>ITA 1c, ITA 4c</b>	1.2 N.m	≤ 6 mm <sup>2</sup>	≤ 6 mm <sup>2</sup>

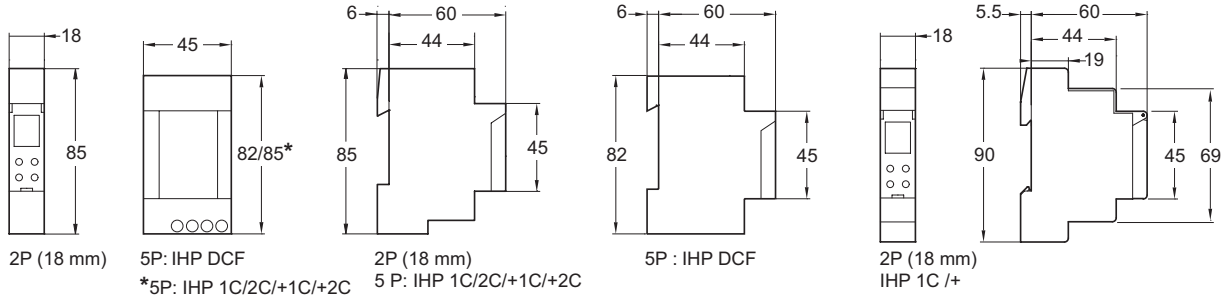
IHP 1c/2c, IHP+ 1c/2c are mechanical compatible with electrical distribution comb busbar.

## Weight (g)

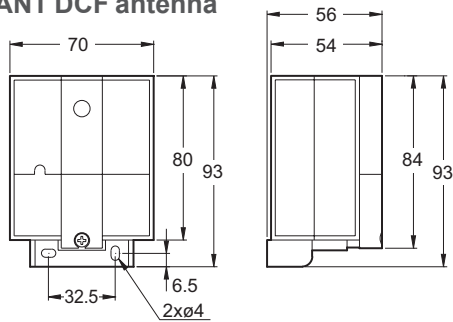
Time switches		
<b>IHP</b>	1c / 2c	170 / 205
<b>IHP+</b>	1c / 2c	190 / 211
<b>IHP 18 mm</b>	1c / +1c	90
<b>IHP DCF</b>		244
<b>IH 54 mm</b>	60mn 1c SRM	208
	24h 1c SRM/ARM	212 / 119
	24h 2c ARM	216
	7j 1c ARM	119
	24h + 7j 1+1c ARM	223
<b>IH 18 mm</b>	24h 1c SRM / ARM	97
<b>IHH 18 mm</b>	7j 1c ARM	101
<b>ITA 1c</b>		152
<b>ITA 4c</b>		303

## Dimensions (mm)

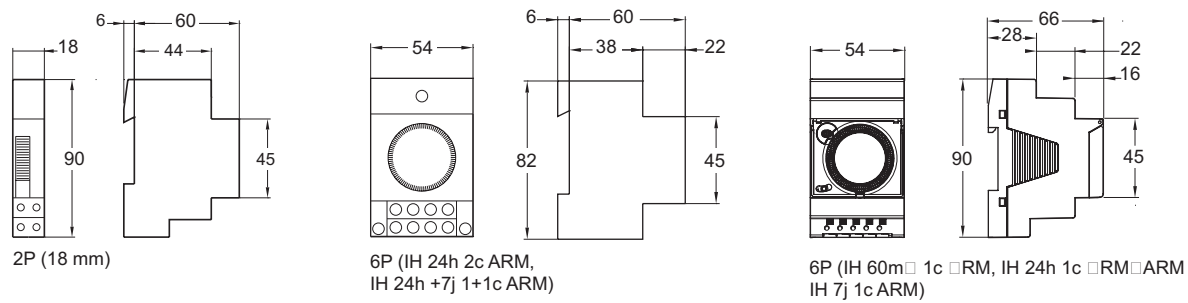
### IHP time switches



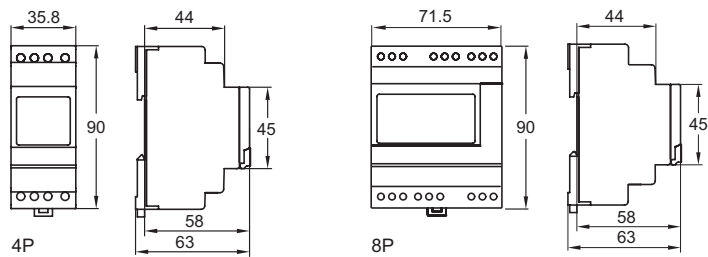
### ANT DCF antenna



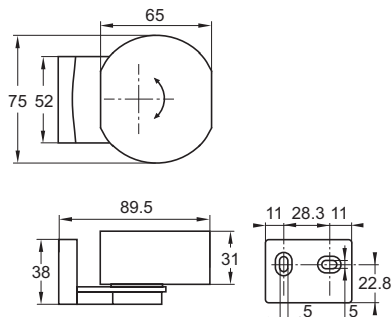
### IH, IHH time switches



### ITA yearly time switches




### DCF antenna and GPS antenna for ITA



### Twilight switches



**IC100**  
Adjustable from 2 to 100 lux.  
It comes with a wall-mounted cell.




**IC2000**  
Adjustable from 2 to 2000 lux. It comes with a standard wall-mounted or switchboard cell.



**IC2000P+**  
It has 3 customisable pre-set programs and 3 setting ranges from 2 to 2100 lux. Its 4 keys and large screen facilitate its programming.  
It comes with a wall-mounted cell.




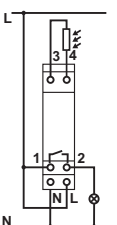
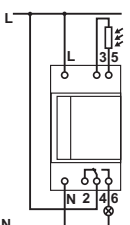
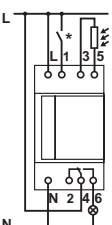


**IC Astro**  
It operates without photoelectric cell and calculates sunrise and sunset times according to its geographic position.  
It can be customised by using its programming function.



**IC 100k**  
Adjustable from 2 to 99000 lux.  
Its 4 keys and large screen facilitate its programming.  
It comes with a digital wall-mounted or a switchboard cell.







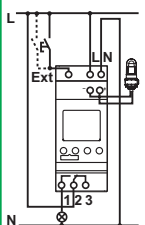
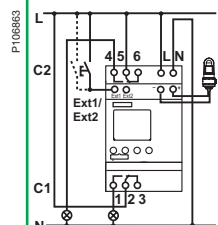
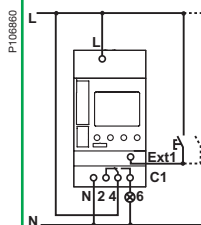
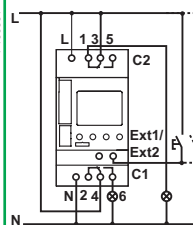
## Selection table

	IC100	IC2000	IC2000P+	
	 P111637 + P106857	 P111639 + P116859 + P106859	 P111640 + P106857	
<b>Function</b>	The IC100 controls closing of a contact when brightness decreases and drops below the selected threshold. It controls opening of a contact when brightness increases and rises above the selected threshold	The IC2000 control closing of a contact when brightness decreases and drops below the selected threshold. They control opening of a contact when brightness increases and rises above the selected threshold	The IC2000P+ controls lighting according to brightness and time. If brightness drops below the set threshold (twilight function: IC) and if the time program allows relay closing (time switch function), then the lighting circuit is activated	
<b>Wiring diagrams</b>	 P106857	 P106858	 P106859	
<b>Catalogue numbers</b>	15482	CCT15284	CCT15368	15483 <sup>(1)</sup>
<b>Technical specifications</b>				
Delivered with	Wall-mounted cell	Switchboard cell (CCT15281)	Wall-mounted cell (CCT15268)	Wall-mounted cell
Optional accessories	Wall-mounted cell (CCT15268)	Switchboard cell (CCT15281) Wall-mounted cell (CCT15268)	Wall-mounted cell (CCT15268) Switchboard cell (CCT15281)	Wall-mounted cell (CCT15268)
Adjustable brightness threshold	2 to 100 lx	2 to 2000 lx		Range 1: 2 to 50 lx Range 2: 60 to 300 lx Range 3: 350 to 2100 lx
Voltage rating (Ue) (+10 %, -15 %)	230 V AC, 50/60 Hz	230 V AC, 50/60 Hz		230 V AC, 50/60 Hz
Consumption	6 VA	6 VA		3 VA
Operating temperature	-20°C to +50°C	-25°C to +50°C		-20°C to +50°C
Width (9 mm modules)	2	5		5
Insulation class	Class II	Class II		Class II
Degree of protection	IP20B	IP20B		IP20B
Output contact rating $\cos \varphi = 1$ (under 250 VAC)	16 A	16 A		16 A
$\cos \varphi = 0.6$	10 A	10 A		10 A
Time delays (On and Off)	20 s (On) 80 s (Off)	≥ 60 s		Adjustable from 20 to 140 s (80 s by default)
Operating accuracy	-	-		< ±1 s / day at 20 °C.
Monitoring indicator light, not time delayed, lit when brightness is less than the threshold	Red	Red		-
Contact switching indicator light	Green	Green		-
LCD liquid crystal display	-	-		Back-lit
Program saving by lithium battery	-	-		■
Operating reserve	-	-		5-6 years
Location for instruction manual on front face	-	■		■
Cabling test function with a push-button on front face	-	■		-
Number of channels	1	1		1
Control by brightness detection	■	■		■
Coupling with weekly programming	-	-		42 switching times Minimum switching: 1 min Switching accuracy: 1 s
Control by calculation of sunrise/sunset times	-	-		-

**Languages: (1)** English, french, spanish, portuguese, hungarian, polish, romanian, czech, slovak, bulgarian, greek, slovene, serbian, croatian.







# Twilight switches

# IC100, 1C2000, IC2000P+, IC100k, abd IC Astro (cont.)

IC 100k IC 100k+ 1C		IC 100k+ 2C		IC100kp+ 1C		IC100kp+ 2C		IC Astro IC Astro 1C		IC Astro 2C	
											
The IC 100k+ 1C/2C control closing of a contact when brightness decreases and drops below the selected threshold. It controls opening of a contact when brightness increases and rises above the selected threshold				The IC100kp+ 1C/2C control lighting according to brightness and time. If brightness drops below the set threshold (twilight function: IC) and if the time program allows relay closing (time switch function), then the lighting circuit is activated				The IC Astro astronomic programmable twilight switch is used to start and stop an electric load (e.g. lighting) according to sunrise and sunset times, without a brightness detector. Sunrise and sunset times are calculated automatically by the IC Astro according to the geographic parameters configured by the user			
											
<b>CCT15251</b> <sup>(1)</sup>		<b>CCT15253</b> <sup>(1)</sup>		<b>CCT15491</b> <sup>(2)</sup>		<b>CCT15493</b> <sup>(2)</sup>		<b>CCT15224</b> <sup>(2)</sup>		<b>CCT15244</b> <sup>(2)</sup>	
Digital wall-mounted cell ( <b>CCT15260</b> )				Digital wall-mounted cell ( <b>CCT15260</b> ) Memory key (alone) ( <b>CCT15861</b> )				– Memory key (alone) ( <b>CCT15861</b> )			
Digital wall-mounted cell ( <b>CCT15260</b> ) Digital switchboard cell ( <b>CCT15261</b> ) Programming kit for PC ( <b>CCT15860</b> )				Digital wall-mounted cell ( <b>CCT15260</b> ) Digital switchboard cell ( <b>CCT15261</b> ) Programming kit for PC ( <b>CCT15860</b> ) Memory key (alone) ( <b>CCT15861</b> )				Programming kit for PC ( <b>CCT15860</b> ) Memory key (alone) ( <b>CCT15861</b> )			
1 to 99000 lx				1 to 99000 lx				According to sunrise/sunset times			
230 V AC, 50/60 Hz		100-240 V AC, 50/60 Hz		230 V AC, 50/60 Hz		100-240 V AC, 50/60 Hz		230 V AC, 50/60 Hz			
3 VA				3 VA				3 VA		6 VA	
-30°C to +50°C				-30°C to +50°C				-25°C to +45°C			
4		6		4		6		5			
Class II				Class II				Class II			
IP20C				IP20C				IP20B			
16 A				16 A				16 A			
10 A				10 A				10 A			
Adjustable from 0 to 59.59 min.								Difference in sunset and/or sunrise times adjustable separately by ±120 min.			
–				–				–			
–				–				–			
–				–				–			
Back-lit				Back-lit				Back-lit			
■				■				■			
10 years				10 years				6 years			
–				–				■			
–				–				–			
1		2		1		2		1		2	
■				■				–			
–				84 switching times Operating accuracy: < ±1 s / day at 20°C Minimum switching: 1 min Switching accuracy: 1 s				84 switching times (not including sunrise/sunset) Minimum time between 2 switching operations: 1 min. Switching accuracy: 1 s Time accuracy: ±1 s /day			
–				–				■			

(2) English, french, italian, german, swedish,dutch, finnish, danish, russian, ukrainian, latvian, lituanien, estonian, turkish.

## Accessories selection table

	Wall-mounted cell	Switchboard cell	Programming kit for PC	Memory key	Digital wall-mounted cell	Digital switchboard cell	
							
<b>Function</b>	Wall-mounted photoelectric cell	Switchboard photoelectric cell	Consists of a programming device, a memory key, a CDROM and a 2 m USB cable	Saving and duplicating programs	Digital wall-mounted photoelectric cell	Digital wall-mounted photoelectric cell	
<b>Mounting</b>	<ul style="list-style-type: none"> <li>Delivered with its fixing device for IC100 and IC200P+</li> <li>Replaced by CCT15268 for spare part use</li> <li>Cell connection: by double insulation 2-conductor cable, not to be laid next to mains cables or water ducts, maximum length: 25 m</li> </ul>	<ul style="list-style-type: none"> <li>Delivered with 1 m cable and its fixing device</li> </ul>	<ul style="list-style-type: none"> <li>Delivered with its fixing device</li> <li>Cell connection: by double insulation 2-conductor cable, not to be laid next to mains cables or water ducts, maximum length: 100 m</li> </ul>	–	–	<ul style="list-style-type: none"> <li>Delivered with its fixing device.</li> <li>Cell connection:                             <ul style="list-style-type: none"> <li>by double insulation 2-conductor cable:                                     <ul style="list-style-type: none"> <li>- 0.5 - 2.5 mm<sup>2</sup> for <b>CCT15260</b></li> <li>- 0.25 - 1.5 mm<sup>2</sup> for <b>CCT15261</b></li> </ul> </li> <li>Not to be laid next to mains cables or water ducts, maximum length:                                     <ul style="list-style-type: none"> <li>- 100 m (2 x 1.5 mm<sup>2</sup>)</li> <li>- 50 m (2 x 0.75 mm<sup>2</sup>)</li> </ul> </li> </ul> </li> </ul>	
<b>Catalogue no.</b>	–	<b>CCT15268</b>	<b>15281</b>	<b>CCT15860</b>	<b>CCT15861</b>	<b>CCT15260</b>	<b>CCT15261</b>

## Technical specifications

	IP54	IP65	IP54	–	–	IP55	IP66
Degree of protection	IK05	–	IK05	–	–	–	–
Operating temperature	-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
Horizontally orientable	–	–	90°	–	–	90°	90°

## Load table

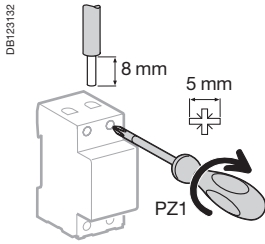
Type of lighting (230 V AC)	Max. power (for higher power, relay with a contactor)				
	IC100	IC2000	IC2000P+	IC Astro	IC 100k
Incandescent and halogen lamps	2300 W	2300 W	2300 W	2300 W	2600 W
Non-corrected / serial-corrected / dual mounted fluorescent tubes with conventional ballast	2300 VA	2300 VA	26 x 36 W, 20 x 58 W, 10 x 100 W	26 x 36 W, 20 x 58 W, 10 x 100 W	26 x 36 W, 20 x 58 W, 10 x 100 W
Parallel corrected fluorescent tubes with conventional ballast	400 VA	400 VA	10 x 36 W, 6 x 58 W, 2 x 100 W	10 x 36 W, 6 x 58 W, 2 x 100 W	10 x 36 W, 6 x 58 W, 2 x 100 W
Fluorescent tubes with electronic ballast	–	–	9 x 36 W, 6 x 58 W	9 x 36 W, 6 x 58 W	650 VA max.
Dual-mounted fluorescent tubes with electronic ballast	300 VA	300 VA	5 x (2 x 36 W), 3 x (2 x 58 W)	5 x (2 x 36 W), 3 x (2 x 58 W)	–
Fluocompact lamps with electronic ballast	9 x 7 W, 7 x 11 W, 7 x 15 W, 7 x 20 W, 7 x 23 W	9 x 7 W, 7 x 11 W, 7 x 15 W, 7 x 20 W, 7 x 23 W	9 x 7 W, 7 x 11 W, 7 x 15 W, 7 x 20 W	9 x 7 W, 7 x 11 W, 7 x 15 W, 7 x 20 W	22 x 7 W, 18 x 11 W, 16 x 15 W, 16 x 20 W, 14 x 23 W
Fluocompact lamps with conventional ballast	1500 VA	1500 VA	–	–	–
Parallel-corrected mercury and sodium vapour lamps	400 VA	400 VA	250 VA	250 VA	800 VA max. (80uF)
Non-corrected/ serial-corrected mercury and sodium vapour lamps	1000 VA	1000 VA	–	–	–
Motor	–	–	–	–	2300 VA max.

## Specific technical data

IC2000P+	
<b>External input</b>	
Voltage rating (Ue)	230 V AC, +10 %, -15 %
Frequency	50/60 Hz
Input current	≤ 2.5 mA
Consumption	≤ 0.4 mW
Cable length	≤ 100 m
IC Astro	
Programming longitude	-180° (East) to +180° (West) in steps of 1°
Programming latitude	-90° (South) to +90° (North) in steps of 1°
External inputs for external control with a standard switch or a push-button	<ul style="list-style-type: none"> <li>■ 1 input "Ext1" for IC Astro 1C</li> <li>■ 2 inputs "Ext1" and "Ext2" for IC Astro 2C</li> <li>□ consumption: &lt; 0.5 mA</li> <li>□ cable length: ≤ 100 m</li> </ul>
Programming accessories	<ul style="list-style-type: none"> <li>■ Programming kit for PC consists of a programming device, a memory key, a CDROM and a 2 m USB cable</li> <li>■ Memory key for saving and duplicating programs</li> </ul>
IC 100k, IC Astro	
Programming accessories	<ul style="list-style-type: none"> <li>■ Programming kit for PC consists of a programming device, a memory key, a CDROM and a 2 m USB cable</li> <li>■ Memory key for saving and duplicating programs</li> </ul>
Memory key delivered on front face for IC100kp+ 1C, IC100kp+ 2C and IC Astro	
<b>External inputs</b>	
External inputs for external control with a standard switch or a push-button	<ul style="list-style-type: none"> <li>■ 1 input "Ext" for 1 channel versions</li> <li>■ 2 inputs "Ext1" and "Ext2" for 2 channels versions</li> </ul>
Voltage rating (Ue)	<ul style="list-style-type: none"> <li>■ 230 V AC, +10 %, -15 % for 1 channel versions</li> <li>■ 100-240 V AC +10 %, -15 % for 2 channels versions</li> </ul>
Frequency	50/60 Hz
Input current	≤ 0.5 mA
Consumption	≤ 130 mW
Cable length	≤ 100 m



## Connection



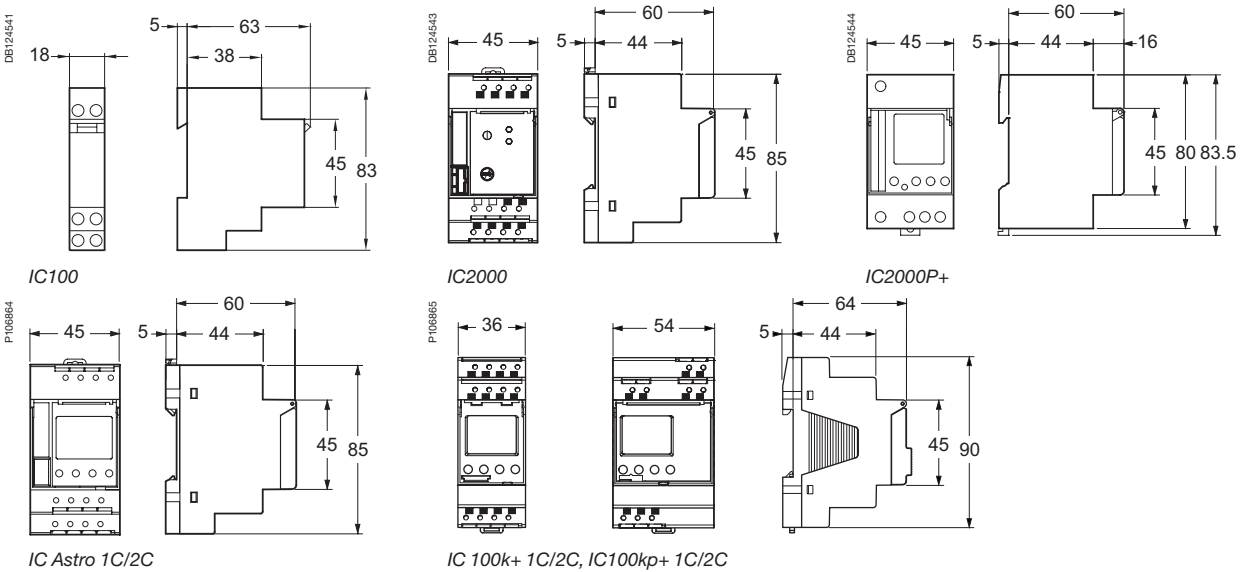
Type	Tightening torque	Copper cables	
		Rigid	Flexible or with ferrule
IC100, IC2000P+	1.2 N.m	DB122945 ≤ 6 mm <sup>2</sup>	DB123553 ≤ 6 mm <sup>2</sup>
IC2000, IC Astro, IC 100k	2 screwless / pole	2 x 2.5 mm <sup>2</sup>	2 x 2.5 mm <sup>2</sup>

IC100, IC Astro are mechanical compatible with electrical distribution comb busbar.

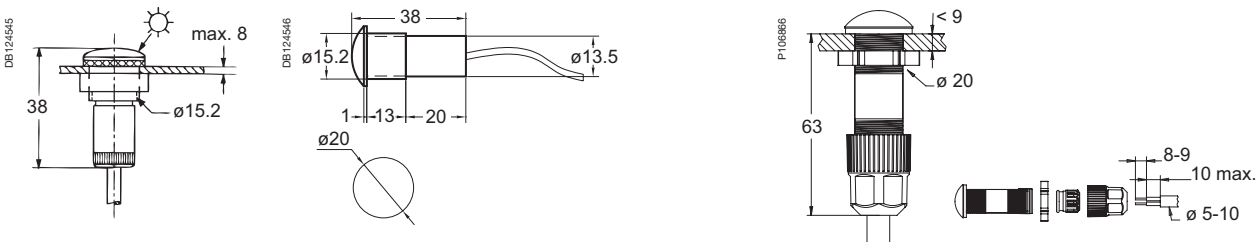
## Weight (g)

Twilight switches	
IC100	173
IC2000	280
IC2000P+	323
IC Astro	132
IC 100k+/kp+ 1C / IC 100k+/kp+ 2C	183/ 352

## Dimensions (mm)

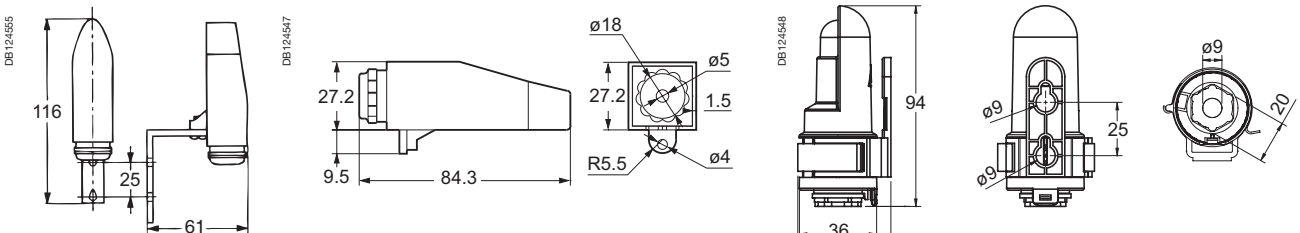


## Cells



Standard switchboard cell (15281) Fixed externally in vertical position by 2 ø 4 mm screws

Digital switchboard cell (CCT15261)



Wall-mounted cell (delivered with IC100, IC2000P+)

Standard and digital wall-mounted cell (CCT15268, CCT15260)



### Application

The meters facilitate the real time monitoring of current, voltage and frequency.

### Technical data

Supply voltage:	230Vac
Operating frequency:	50 - 60Hz
Display by red LED:	3 digits
Accuracy at full scale:	0.5% ± 1 digital
Consumption:	0.3VA
Connection:	Tunnel terminals for 2.5mm <sup>2</sup> cables
EMC electromagnetic compatibility:	IEC EN 50081-1 and IEC EN 50082-2
Safety:	IEC EN 61010-1

### Specific technical data

#### AMP 10A

Minimum value measured:	4% of rating
Measurement input consumption:	1VA

#### AMP Multirange

Ratings:	In direct reading: 5A By CT (not supplied) configurable on the front face of the ammeter: 10, 15, 20, 25, 40, 50, 60, 100, 150, 200, 250, 400, 500, 600, 800, 1000, 1500, 2000, 2500, 4000, 5000A
Minimum value measured:	4% of rating
Measurement input consumption:	0.55VA

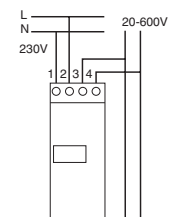
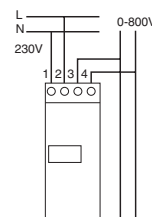
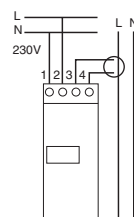
#### VLT

Direct measurement:	0 - 600Vac
Input impedance:	2 MΩ
Minimum value measured:	4% of rating

#### FRE

Minimum value measured:	20Hz
Maximum value measured:	100Hz
Full scale display:	99.9Hz

Type	Scale	Connection with CT	Width in 18mm ways	Part number
<b>Amp with direct connection</b>				
	0 - 10A	Direct	2	<b>15202</b>
<b>AMP with multirating</b>				
	0 - 5000A	As per rating	2	<b>15209</b>
<b>VLT</b>				
	0 - 600V	As per rating	2	<b>15201</b>
<b>FRE</b>				
	20 - 100Hz	As per rating	2	<b>15208</b>





Energy Meter Series iEM3100



Energy Meter Series iEM3255

The PowerLogic Energy meter Series iEM3000 offers a cost-attractive, competitive range of DIN rail-mounted energy meters ideal for sub-billing and cost allocation applications.

Combined with communication systems, like Smart Link, the iEM3000 series make it easy to integrate electrical distribution measurements into customer's facility management systems. It's the right energy meter at the right price for the right job.

Two versions are available: 63A direct measure (iEM3100) and current transformers associated meter (iEM3200). For each range five versions are available to satisfy from basic to advanced applications:

- iEM3100/iEM3200: kWh meter with partial counter
- iEM3110/iEM3210: kWh meter with partial counter and pulse output. MID certified.
- iEM3115/iEM3215: a multi-tariff meter controlled by digital input or internal clock, MID certified.
- iEM3150/iEM3250: kWh meter with partial counter and current, voltage, power measurement. Modbus communication.
- iEM3155/iEM3255: energy meter, four quadrant, multi-tariffs with partial counter and current, voltage, power measurement. Modbus communication, digital input/output and MID certified.

- Innovative design makes the meters smart and simple:
- Easy to install for panel builders
- Easy to commission for contractors and installers
- Easy to operate for end users

### Applications

#### Cost management applications

- Bill verification
- Sub-billing, including WAGES view
- Cost allocation, including WAGES view

#### Network management applications

- Basic electrical parameters like current, voltage and power
- Onboard overload alarm to avoid circuit overload and trip
- Easy integration with PLC systems by input/output interface

#### Market segments

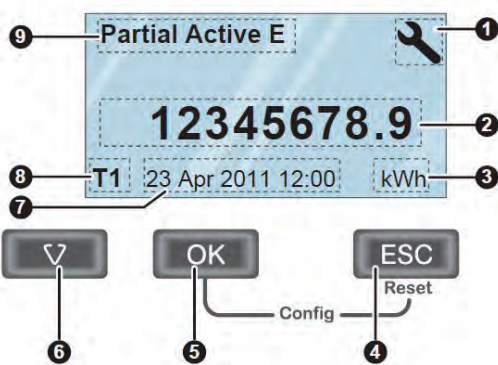
- Buildings & Industry
- Data centres and networks
- Infrastructure (airports, road tunnels, telecom)

#### Characteristics

- Self-powered meters
- Chain measurement (meters + CTs) accuracy class 1
- Compliance with IEC 61557-12, IEC 62053-21/22, IEC 62053-23, EN50470-3
- Graphical display for easy viewing
- Easy wiring (without CTs) iEM3100 series
- Double fixation on DIN rail (horizontal or vertical)
- Anti-tamper security features ensure the integrity of your data

### Part numbers

Meter model and description	Current measurement	Part no.
iEM3100 basic energy meter	Direct connected 63 A	A9MEM3100
iEM3110 energy meter with pulse output	Direct connected 63 A	A9MEM3110
iEM3115 multi-tariff energy meter	Direct connected 63 A	A9MEM3115
iEM3150 energy meter & electrical parameter plus RS485 comm port	Direct connected 63 A	A9MEM3150
iEM3155 advanced multi-tariff energy meter & electrical parameter plus RS485 comm port	Direct connected 63 A	A9MEM3155
iEM3200 basic energy meter	Transformer connected 6 A	A9MEM3200
iEM3210 energy meter with pulse output	Transformer connected 6 A	A9MEM3210
iEM3215 multi-tariff energy meter	Transformer connected 6 A	A9MEM3215
iEM3250 energy meter & electrical parameter plus RS485 comm port	Transformer connected 6 A	A9MEM3250
iEM3255 advanced multi-tariff energy meter & electrical parameter plus RS485 comm port	Transformer connected 6 A	A9MEM3255



#### Front of meter parts

- 1 Configuration mode
- 2 Values and parameters
- 3 Unit
- 4 Cancellation
- 5 Confirmation
- 6 Selection
- 7 Date and time
- 8 Tariff currently used (iEM3255)
- 9 Functions/Measurements

Function guide	iEM3100	iEM3110	iEM3115	iEM3150	iEM3155	iEM3200	iEM3210	iEM3215	iEM3250	iEM3255
Direct measurement (up to 63 A)	■	■	■	■	■					
CTs inputs (1 A, 5A)						■	■	■	■	■
VTs inputs									■	■
Active energy measurements	■	■	■	■	■	■	■	■	■	■
Four quadrant energy measurements					■					■
Electrical measurements (I, V, P, etc.)				■	■				■	■
Multi-tariff (internal clock)			4		4			4		4
Multi-tariff (external control)			4		2			4		2
Measurement display	■	■	■	■	■	■	■	■	■	■
Programmable inputs					1					1
Programmable digital outputs					1					1
Pulse output		■					■			
kW overload alarm					■					■
Modbus RS485				■	■				■	■
MID (legal metrology certification)		■	■		■		■	■		■
Width (18 mm module in DIN Rail mounting)	5	5	5	5	5	5	5	5	5	5



Direct connected up to 63 A



CTs connected (1 A / 5 A)

### Connectivity advantages

Programmable digital input	External tariff control signal (4 tariffs) Remote Reset partial counter External status, e.g. breaker status Collect WAGES pulses
Programmable digital output	kWh overload alarm (i EM3155/iEM5255) kWh pulses
Graphic LCD display	Scroll energies Current, voltage, power, frequency, power factor
Communication	Modbus RS485 with plug-in screw terminals allows connection to a daisy chain
<b>Standards</b>	
IEC standards integrated display	IEC 61557-12, IEC 61036, IEC 61010, IEC 62053-21/22 Class 1 and Class 0.5S, IEC 62053-23
MID	EN 50470-1/3

7

### Multi-tariff capability

The iEM3000 range allows arrangement of kWh consumption in four different registers. This can be controlled by:

- Digital Inputs. Signal can be provided by PLC or utilities
- Internal clock programmable by HMI
- Through communication

This function allows users to:

- Make tenant metering for dual source applications to differentiate backup source or utility source
- Understand well the consumption during working time and non working time, and between working days and weekends
- Follow up feeders consumption in line with utility tariff rates

Specification guide	iEM3100 Range				
	iEM3100	iEM3110	iEM3115	iEM3150	iEM3155
Current (max.) Direct connected	63 A				
Meter constant LED	500/kWh				
Pulse output		Up to 1000p/kWh			Up to 1000p/kWh
Multi-tariff			4 tariffs		4 tariffs
Communication				Modbus via RS485	Modbus via RS485
DI/DO		0/1	2/0		1/1
MID (EN50470-3)		■	■		■
Network	1P+N, 3P, 3P+N				
Accuracy class	Class 1 (IEC 62053-21 and IEC61557-12) Class B (EN50470-3)				
Wiring capacity	16 mm <sup>2</sup>				
Display max.	LCD 99999999.9kWh				
Voltage (L-L)	3 x 100/173 Vac to 3 x 277/480 Vac (50/60 Hz)				
IP protection	IP40 front panel and IP20 casing				
Temperature	-25°C to 55°C (K55)				
Product size	10 steps of 9mm				
Overvoltage and measurement	Category III, Degree of pollution 2				
kWh	■	■	■	■	■
kVARh					■
Active power				■	■
Reactive power					■
Currents and voltages				■	■
Overload alarm					■
Hour counter					■

Specification guide	iEM3200 Range				
	iEM3200	iEM3210	iEM3215	iEM3250	iEM3255
1 A / 5 A CTs (max current)	6 A				
Meter constant LED	5000/kWh				
Pulse output frequency		Up to 100p/kWh			Up to 100p/kWh
Multi-tariff			4 tariffs		4 tariffs
Communication				Modbus via RS485	Modbus via RS485
DI/DO		0/1	2/0		1/1
MID (EN50470-3)		■	■		■
Network	1P+N, 3P, 3P+N support CTs			1P+N, 3P, 3P+N support CTs & VTs	
Accuracy class	Class 0.5S (IEC 62053-22 and IEC61557-12) Class C (EN50470-3) <sup>(1)</sup>				
Wiring capacity	6 mm <sup>2</sup> for currents and 4 mm <sup>2</sup> for voltages				
Display max.	LCD 99999999.9kWh or 99999999.9MWh				
Voltage (L-L)	3 x 100/173 Vac to 3 x 277/480 Vac (50/60 Hz)				
IP protection	IP40 front panel and IP20 casing				
Temperature	-25°C to 55°C (K55)				
Product size	10 steps of 9mm				
Overvoltage & measurement	Category III, Degree of pollution 2				
kWh	■	■	■	■	■
kVARh					■
Active power				■	■
Reactive power					■
Currents and voltages				■	■
Overload alarm					■
Hour counter					■

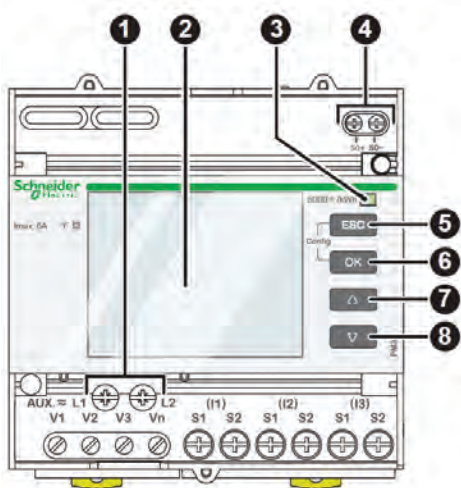
(1) For 1 A CTs Class 1 (IEC6253-21 and IEC61557-12 Class B (EN50470-3))



Power Meter Series PM3200



Power Meter Series PM3255



**Front of meter parts**

- 1 Control power
- 2 Display with white backlight
- 3 Flashing yellow meter indicator (to check accuracy)
- 4 Pulse output for remote transfer (PM3210)
- 5 ESC Cancellation
- 6 OK Confirmation
- 7 Δ Up
- 8 ∇ Down

This PowerLogic Power meter offers basic to advanced measurement capabilities. With compact size and DIN rail mounting, the PM3200 allows mains and feeders monitoring in small electrical cabinets. Combined with current transformers and voltage transformers, these meters can monitor 2-, 3- and 4-wire systems. The graphic display has intuitive navigation to easily access important parameters.

Four versions are available offering basic to advanced applications:

- PM3200
  - Electrical parameters I, In, U, V, PQS, E, PF, Hz
  - Power/current demand
  - Min/max.
- PM3210
  - Electrical parameters I, In, U, V, PQS, E, PF, Hz, THD
  - Power/current demand, peak demand
  - Min/max.
  - 5 timestamped alarms
  - kWh pulse output
- PM3250
  - Electrical parameters I, In, U, V, PQS, E, PF, Hz, THD
  - Power/current demand, peak demand
  - Min/max.
  - 5 timestamped alarms
  - LED to indicate communications
  - RS485 port for Modbus communication
- PM3255
  - Electrical parameters I, In, U, V, PQS, E, PF, Hz, THD
  - Power/current demand and peak demand
  - Min/max. and 15 timestamped alarms
  - LED to indicate communications
  - Up to 4 tariffs management
  - 2 digital inputs, 2 digital outputs
  - Memory for load profile (demand 10mn to 60mn)
  - RS485 port for Modbus communication

- Innovative design makes the meters smart and simple:
- Easy to install for panel builders
- Easy to commission for contractors and installers
- Easy to operate for end users

**Applications**

**Cost management applications**

- Bill checking
- Sub-billing, including WAGES view
- Cost allocation, including WAGES view

**Network management applications**

- Panel instrumentation
- Up to 15 onboard timestamped alarms to monitor events
- Easy integration with PLC system by input/output interface

**Market segments**

- Buildings
- Industry
- Data centres and networks

Meter model and description	Performance	Part no.
PM3200 basic power meter	Basic power meter	<b>METSEPM3200</b>
PM3210 power meter with pulse output	Power, current, THD, peak demand	<b>METSEPM3210</b>
PM3250 power meter with RS485 port	Power, current, THD, peak demand	<b>METSEPM3250</b>
PM3255 power meter plus 2 digital inputs, 2 digital outputs with RS485 port	Power, current, THD, peak demand, memory for load profile	<b>METSEPM3255</b>

Function guide	PM3200 Range			
	PM3200	PM3210	PM3250	PM3255
<b>Performance standard</b>				
IEC61557-12 PMD/Sx/K55/0.5	■	■	■	■
<b>General</b>				
Use on LV and HV systems	■	■	■	■
Number of samples per cycle	32	32	32	32
CT input 1A/5A	■	■	■	■
VT input	■	■	■	■
Multi-tariff	4	4	4	4
Multi-lingual backlit display	■	■	■	■
<b>Instantaneous rms values</b>				
Current, voltage	Per phase and average	■	■	■
Active, reactive, apparent power	Total and per phase	■	■	■
Power factor	Total and per phase	■	■	■
<b>Energy values</b>				
Active, reactive and apparent energy; import and export	■	■	■	■
<b>Demand value</b>				
Current, power (active, reactive, apparent) demand; present	■	■	■	■
Current, power (active, reactive, apparent) demand; peak		■	■	■
<b>Power quality measurements</b>				
THD Current and voltage		■	■	■
<b>Data recording</b>				
Min/max of the instantaneous values	■	■	■	■
Power demand logs				■
Energy consumption log (day, week, month)				■
Alarms with time stamping		5	5	15
Digital inputs/digital outputs		0/1		2/2
<b>Communication</b>				
RS-485 port			■	■
Modbus protocol			■	■

7



Power Meter Series PM3210

Connectivity advantages	
Programmable digital input	External tariff control signal (4 tariffs) Remote Reset partial counter External status like breaker status Collect WAGES pulses
Programmable digital output	Alarm (PM3255) kWh pulses
Graphic LCD display	Backlit graphic display allows smart navigation in relevant information and in multi languages
Communication	Modbus RS485 with screw terminals allows connection to a daisy chain

Specifications	PM3200 Range
<b>Type of measurement</b>	True rms up to the 15th harmonic on three-phase (3P,3P+N) and single-phase AC systems. 32 samples per cycle
<b>Measurement accuracy</b>	
Current with x/5A CTs	0.3% from 0.5A to 6A
Current with x/1A CTs	0.5% from 0.1A to 1.2A
Voltage	0.3% from 50V to 330V (Ph-N), from 80V to 570V (Ph-Ph)
Power factor	±0.005 from 0.5A to 6A with x/5A CTs; from 0.1A to 1.2A with x/1A CTs and from 0.5L to 0.8C
Active/Apparent Power with x/5A CTs	Class 0.5
Active/Apparent Power with x/1A CTs	Class 1
Reactive power	Class 2
Frequency	0.05% from 45 to 65Hz
Active energy with x/5A CTs	IEC62053-22 Class 0.5s
Active energy with x/1A CTs	IEC62053-21 Class 1
Reactive energy	IEC62053-23 Class 2
<b>Data update rate</b>	
Update rate	1s
<b>Input-voltage characteristics</b>	
Measured voltage	50V to 330V AC (direct / VT secondary Ph-N) 80V to 570V AC (direct / VT secondary Ph-Ph) up to 1MV AC (with external VT)
Frequency range	45Hz to 65Hz
<b>Input-current characteristics</b>	
CT primary	Adjustable from 1A to 32767A
CT secondary	1A or 5A
Measurement input range with x/5A CTs	0.05A to 6A
Measurement input range with x/1A CTs	0.02A to 1.2A
Permissible overload	10A continuous, 20A for 10s/hour
<b>Control Power</b>	
AC	100/173 to 277/480V AC (+/-20%), 3W/5VA; 45Hz to 65Hz
DC	100 to 300V DC, 3W
<b>Input</b>	
Digital inputs (PM3255)	11 to 40V DC, 24V DC nominal, <=4mA maximum burden, 3.5kVrms insulation
<b>Output</b>	
Digital output (PM3210)	Optocoupler, polarity sensitive, 5 to 30V, 15mA max, 3.5kVrms insulation
Digital outputs (PM3255)	Solid state relay, polarity insensitive, 5 to 40V, 50mA max, 50Ω max, 3.5kVrms insulation



Specifications (continued)	PM3200 Range
<b>Mechanical characteristics</b>	
Weight	0.26kg
IP degree of protection (IEC60529)	IP40 front panel, IP20 meter body
Dimension	90 x 95 x 70mm
<b>Environmental conditions</b>	
Operating temperature	-25 °C to +55 °C
Storage temperature	-40 °C to +85 °C
Humidity rating	5 to 95% RH at 50°C (non-condensing)
Pollution degree	2
Metering category	III, for distribution systems up to 277/480VAC
Dielectric withstand	As per IEC61010-1, Doubled insulated front panel display
Altitude	3000m max
<b>Electromagnetic compatibility</b>	
Electrostatic discharge	Level IV (IEC61000-4-2)
Immunity to radiated fields	Level III (IEC61000-4-3)
Immunity to fast transients	Level IV (IEC61000-4-4)
Immunity to surge	Level IV (IEC61000-4-5)
Conducted immunity	Level III (IEC61000-4-6)
Immunity to power frequency magnetic fields	0.5mT (IEC61000-4-8)
Conducted and radiated emissions	Class B (EN55022)
<b>Safety</b>	
	CE as per IEC61010-1 <sup>(1)</sup>
<b>Communication</b>	
RS485 port	Half duplex, from 9600 up to 38400 bauds, Modbus RTU (double insulation)
<b>Display characteristics</b>	
Dimensions (VA)	43mm x 34.6mm
Display resolution	128 x 96 dots
<b>Standard compliance</b>	
	IEC61557-12, EN61557-12 IEC61010-1, UL61010-1 IEC62052-11, IEC62053-21, IEC62053-22, IEC62053-23 EN50470-1, EN50470-3

(1) Protected throughout by double insulation



Power Meter Series PM3250

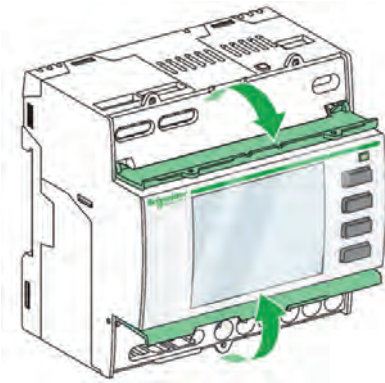
**Multi-tariff capability**

The PM3200 range allows arrangement of kWh consumption in four different registers. This can be controlled by:

- Digital Inputs. Signal can be provided by PLC or utilities
- Internal clock programmable by HMI
- Through communication

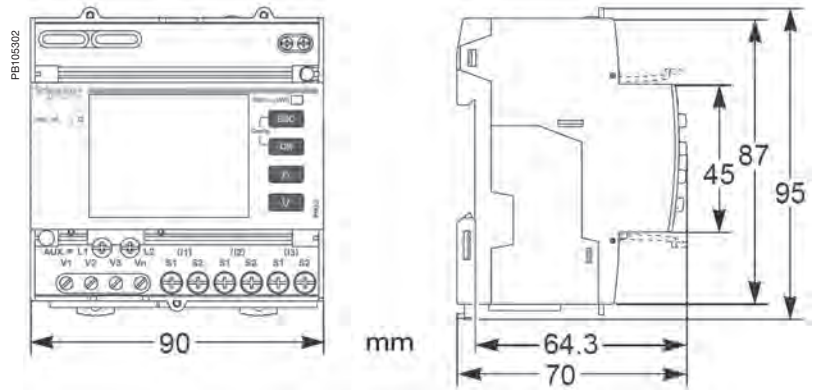
This function allows users to:

- Make tenant metering for dual source applications to differentiate backup source or utility source
- Understand well the consumption during working time and non working time, and between working days and weekends
- Follow up feeders consumption in line with utility tariff rates

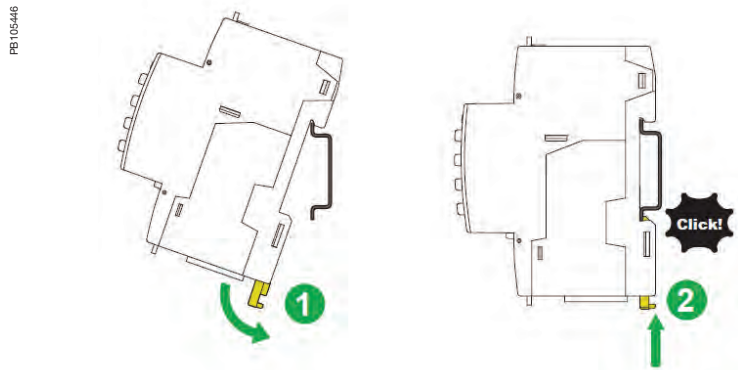


PM3200 top and lower flaps

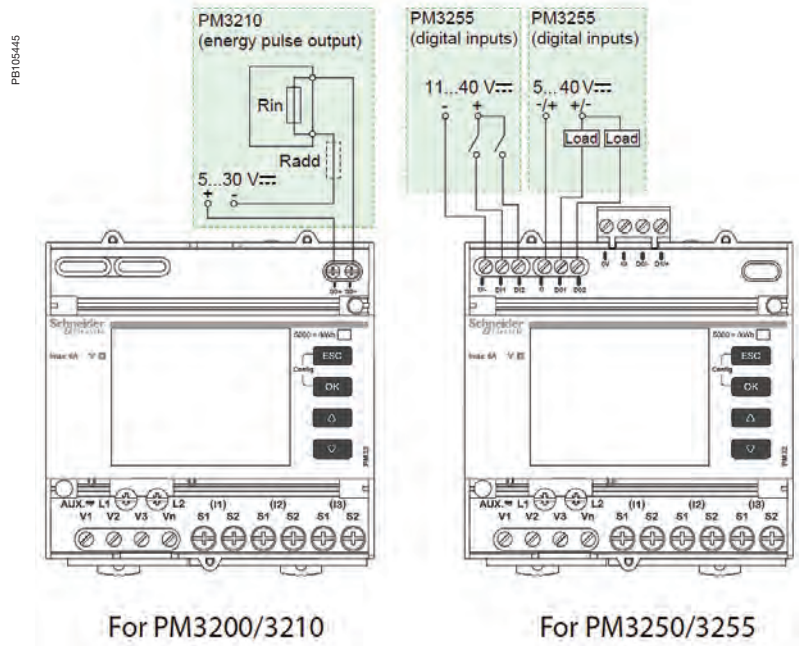
PM3200 series dimensions



PM3200 series easy installation



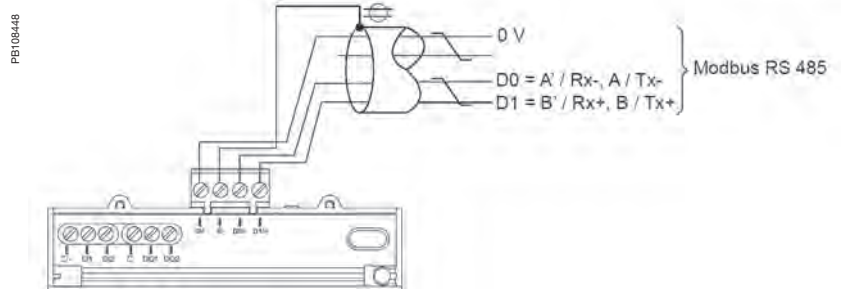
Digital Output and Digital Input sample wiring diagrams



**Note:** These are sample wiring diagrams only. For further information please see the Instruction Sheet and User Guide documents for these products.

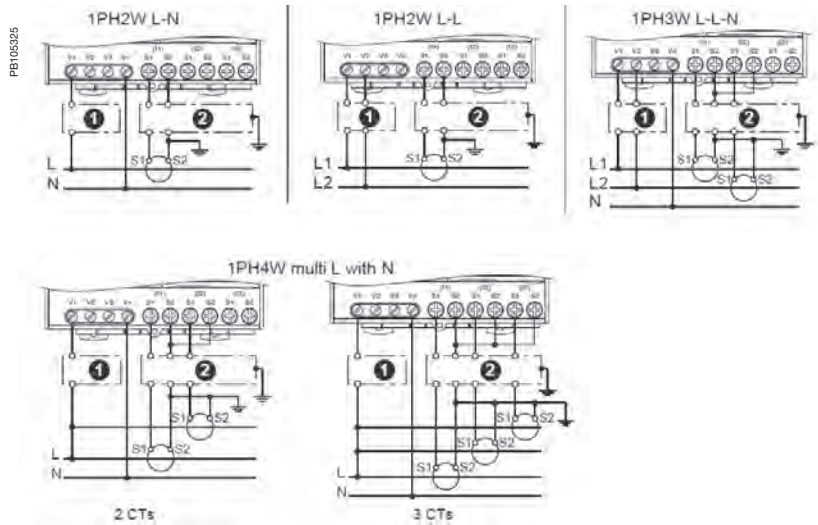
**Note:** These are sample wiring diagrams only. For further information please see the Instruction Sheet and User Guide documents for these products.

### Modbus communications wiring diagram



### PM32xx series sample wiring diagrams - 1 phase

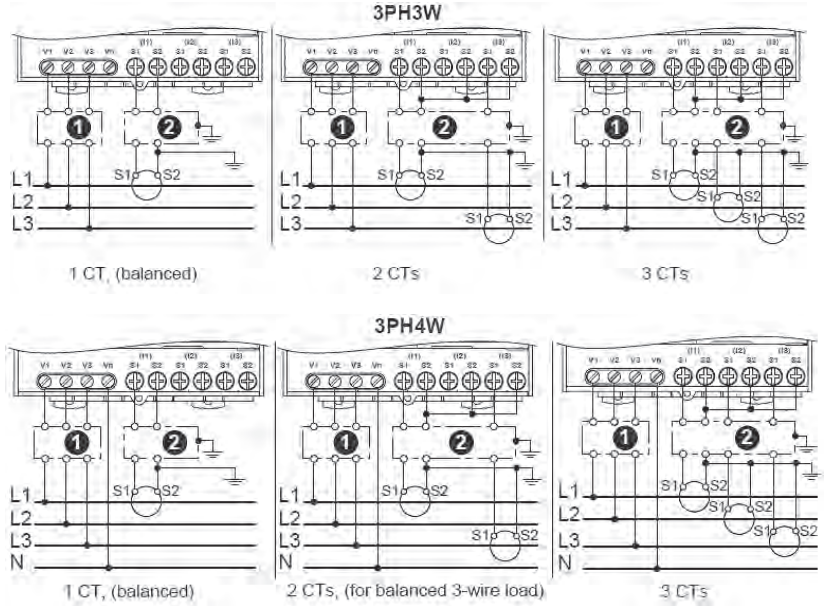
- 1 Protection (to be adapted to suit the short-circuit current at the connection point)
- 2 Shorting switch unit



**Note:** These are sample wiring diagrams only. For further information please see the Instruction Sheet and User Guide documents for these products.

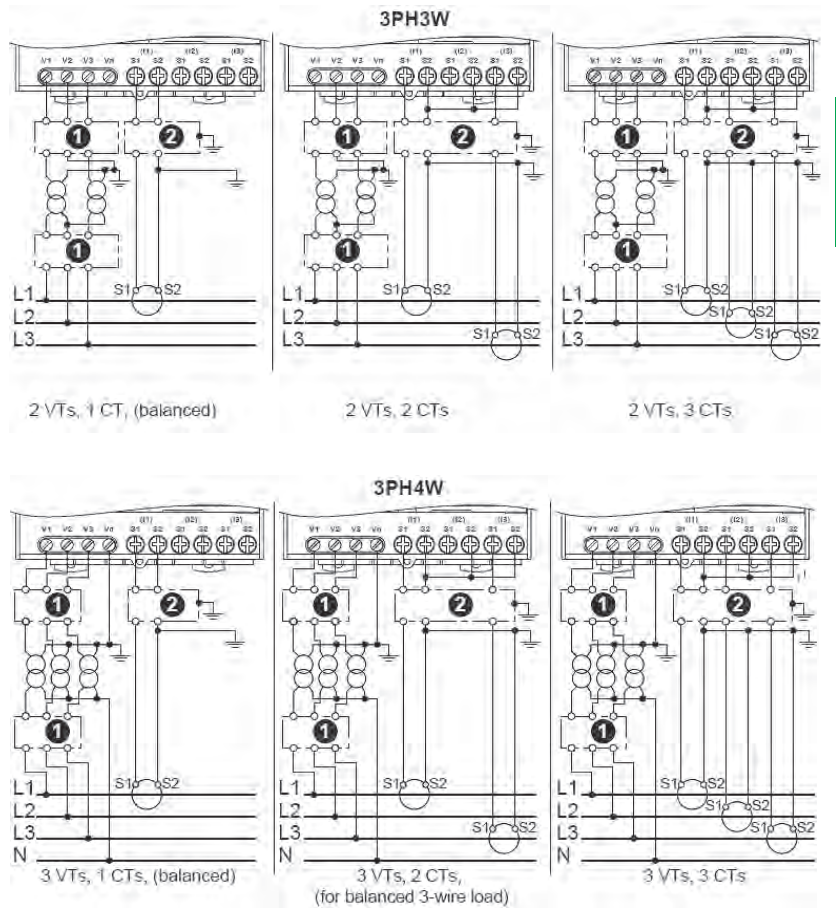
- 1 Protection (to be adapted to suit the short-circuit current at the connection point)
- 2 Shorting switch unit

### PM32xx Series sample wiring diagrams - 3 phase without VTs



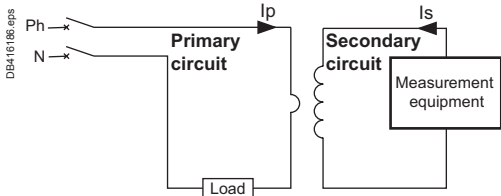
### PM32xx Series sample wiring diagrams - 3 phase with VTs

**Note:** These are sample diagrams only. For further information please see the Instruction Sheet and User Guide documents for these products.



# Current transformers

## CT, Ip/5 A ratio



Application diagram of a CT.

The  $I_p/5A$  ratio current transformer delivers at the secondary a current ( $I_s$ ) of 0 to 5 A that is proportional to the current measured at the primary ( $I_p$ ).

This allows them to be used in combination with measurement equipment:

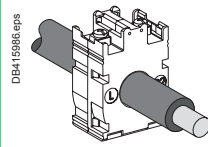
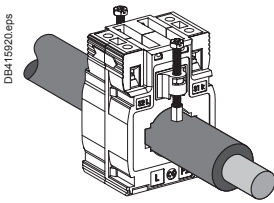
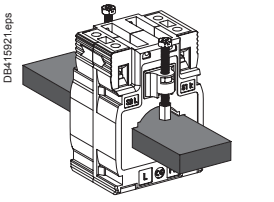
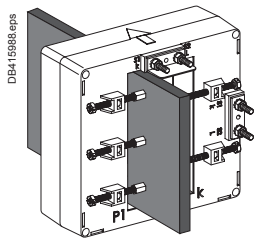
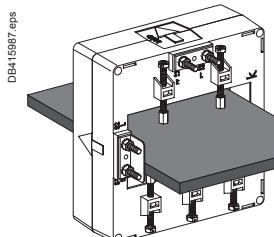
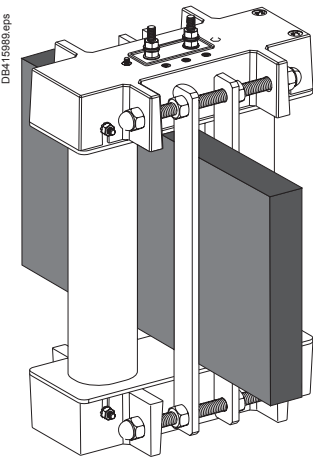

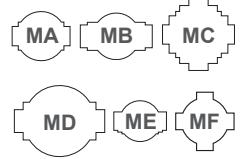

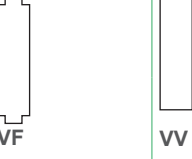
- ammeters
- kilowatt-hour meters
- measurement units
- control relays
- etc.

When the primary is energized, the measurement equipment nearly acts as a short circuit which keeps the secondary voltage very low. This voltage will increase significantly if the short circuit is removed.

### CT selection - conductor rating aspects

The choice depends on the conductor profile and the maximum intensity of the primary circuit.

#### CT with let-through primary

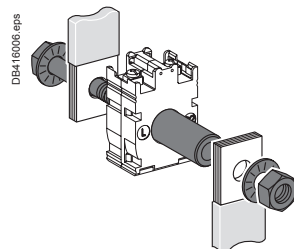
Conductor type	Cable	Mixed, bars or cables	Vertical or horizontal bars	Vertical bars
Suggested Current Transformer and mounting		 	 	
Ratings (A)	40 to 250	150 to 800	200 to 4000	500 to 600 5000 to 6000
CT internal profile	Type C	Type M	Type D <sup>(1)</sup>	Type V
				

(1) Two secondary connectors (parallel internal wiring - only one secondary winding) for easier cable access. 1 lateral + 1 on one extremity. Warning: only one must be used at a time.

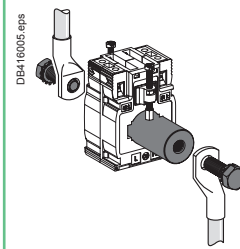
### Specific mounting: use of cylinder

A cylindrical metallic spacer ensures a proper CT positioning when the conductor or the CT cannot be positioned perpendicular. Secured by bolt + nut.

#### CT with primary connection by screw and nut (example: use of cylinder with bar or cable)



16550 (brass)



METSECT5CYL1 (aluminium)

## CT selection - Electrical aspect Ip/5 A

- We recommend that you choose the ratio immediately higher than the maximum measured current (In).

Example:

In = 1103 A; ratio chosen = 1250/5.

- For small ratings:

from 40/5 to 75/5 and for an application with digital devices, we recommend that you choose a higher rating, for example 100/5.

This is because small ratings are less accurate and the 40 A measurement, for example, will be more accurate with a 100/5 CT than with a 40/5 CT.

- Specific case of the motor starter:

to measure motor starter current, you must choose a CT with primary current  $I_p = I_d/2$  ( $I_d$  = motor starting current).

## Validation of measurement solution according accuracy class

It consists in controlling the right adaptation of the CT on the accuracy class aspect. The accuracy class is specified in the project. The total dissipated power of the measurement circuit (meter + cables) should not be superior to the specified limit of the CT. This limit is for different standard classes. If necessary, the choice of the cable section, the CT or meter should be modified to fit the requirement.

Copper cable cross-section (mm <sup>2</sup> )	Power per doubled meter at 20 °C (VA)	Schneider Electric device	Consumption of the current input (VA)
1	1	Ammeter 72 x 72 / 96 x 96	1.1
1.5	0.685	Analogue ammeter	1.1
2.5	0.41	Digital ammeter	0.3
4	0.254	PM700, PM800	0.15
6	0.169	PM3000	0.3
10	0.0975		
16	0.062		

For each temperature variation per 10 °C bracket, the power drawn up by the cables increases by 4 %.

### Application example

Project specification: **200 A**, in **Ø27 mm** cable, accuracy class 1.

Our choice is **METSECT5MA020**.

For this CT selected on the chart (next page), the max acceptable power is **7 VA** (for "Accuracy class 1" which is specified in the project).

Internal profile type	Cables (mm)	Bars (mm)	Rating Ip/5 A (A)	Cat. no.	Accuracy class		
					0.5	1	3
					Max. power (VA)		
MA	Ø27	10 x 32 15 x 25	150	METSECT5MA015	3	4	-
			200	METSECT5MA020	4	7	-
			250	METSECT5MA025	6	8	-
			300	METSECT5MA030	8	10	-
			400	METSECT5MA040	10	12	-

Control of the conformity of the measurement chain:

- PM3000 multi-meter: 0.3 VA.
- 4 meters of 2.5 mm<sup>2</sup>, doubled wires: 0.41 x 4 = 1.64 VA.

**Total:** 0.3 + 1.64 = 1.94 VA (< 7 VA)

**Conclusion:** this CT is well adapted as the accuracy class will be even better than 1.

### Presentation of catalogue numbers

MET SE CT R FF XXX


First digit = secondary rating,  
R = 5 Amps

Last 3 digits = primary rating/10  
2 letters = Form Factor






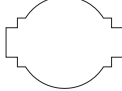
#### Examples:

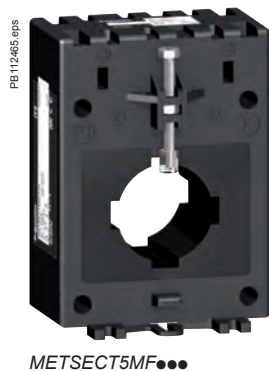
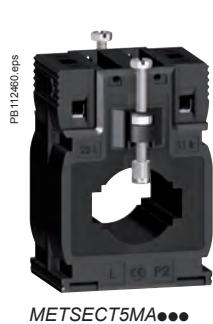
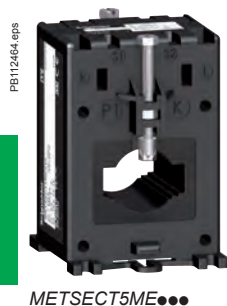
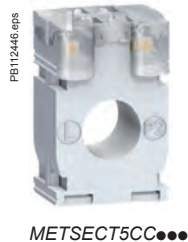
- METSECT5CC008 = 5 A secondary, Cables only, 75 A primary
- METSECT5MC080 = 5 A secondary, Mixed for cables and bars, 800 A primary.

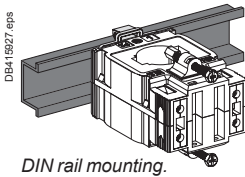
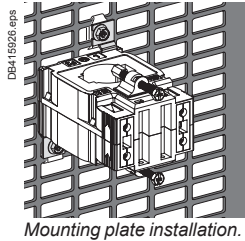
### Type C - current transformer (cable profile)

Internal profile type	Cables (mm)	Bars (mm)	Rating I <sub>p</sub> /5 A (A)	Cat. no.
	Ø21	-	40	METSECT5CC004
			50	METSECT5CC005
			60	METSECT5CC006
			75	METSECT5CC008
			100	METSECT5CC010
			125	METSECT5CC013
			150	METSECT5CC015
			200	METSECT5CC020
			250	METSECT5CC025

### Type M - current transformers (mixed: cable/bar profile)

	Ø22	10 x 30 11 x 25 12 x 20	150	METSECT5ME015
			200	METSECT5ME020
			250	METSECT5ME025
			300	METSECT5ME030
			400	METSECT5ME040
			500	METSECT5ME050
	Ø26	12 x 40 15 x 32	250	METSECT5MB025
			300	METSECT5MB030
			400	METSECT5MB040
	Ø27	10 x 32 15 x 25	150	METSECT5MA015
			200	METSECT5MA020
			250	METSECT5MA025
			300	METSECT5MA030
			400	METSECT5MA040
	Ø32	10 x 40 20 x 32 25 x 25	250	METSECT5MC025
			300	METSECT5MC030
			400	METSECT5MC040
			500	METSECT5MC050
			600	METSECT5MC060
			800	METSECT5MC080
	Ø35	10 x 40	250	METSECT5MF025
			300	METSECT5MF030
			400	METSECT5MF040
			500	METSECT5MF050
	Ø40	12 x 50 20 x 40	500	METSECT5MD050
			600	METSECT5MD060
			800	METSECT5MD080





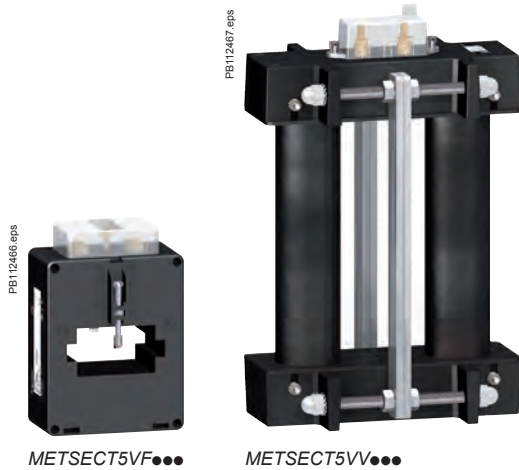
### Common characteristics

Secondary current I <sub>s</sub> (A)	5
Maximum voltage rating U <sub>e</sub> (V)	720
Frequency (Hz)	50/60
Safety factor (sf)	<ul style="list-style-type: none"> <li>■ 40 to 4000 A: sf ≤ 5</li> <li>■ 5000 to 6000 A: sf ≤ 10</li> </ul>
Degree of protection	IP20
Operating temperature	<ul style="list-style-type: none"> <li>■ tropicalised range</li> <li>■ -25 °C to +60 °C <sup>(1)</sup></li> <li>■ relative humidity &gt; 95 %</li> </ul>
Compliance with standards	<ul style="list-style-type: none"> <li>■ IEC 61869-2</li> <li>■ VDE 0414</li> </ul>
Secondary connection (as per model)	<ul style="list-style-type: none"> <li>■ by terminals for lug</li> <li>■ by tunnel terminals</li> <li>■ by screws</li> </ul>

<sup>(1)</sup> **Warning:** some products are limited to +50 °C.

Accuracy class			Dimensions W x H x D (mm)	Fastening mode	Accessories Cylinder	Sealable cover
0.5	1	3				
Max. power (VA)						
-	-	1	44 x 65 x 30	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> </ul>	 <b>16550</b> <b>METSECT5CYL1</b>	 <b>Included</b>
-	1.25	1.5				
-	1.25	2				
-	1.5	2.5				
2	2.5	3.5				
2.5	3.5	4				
3	4	5				
4	5.5	6				
5	6	7				
1.5	5.5	6.5	<b>56 x 84 x 42</b> Option, DIN rail mounting: 60.5 x 88.5 x 46.5	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> <li>■ Insulated locking screw.</li> </ul>	<b>16551</b>	<b>16552</b>
4	7	8.5				
6	9	11				
7.5	11	14				
10.5	15	18				
12	18	22				
14.5	21.5	26				
3	4	-	<b>60 x 85 x 43</b> Option: 60 x 87 x 60	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> </ul>	-	<b>METSECT5COVER</b>
4	6	-				
6	8	-				
3	4	-	<b>56 x 80 x 43</b> Option: 56 x 82 x 60	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> </ul>	<b>METSECT5CYL2</b>	<b>METSECT5COVER</b>
4	7	-				
6	8	-				
8	10	-				
10	12	-				
3	5	-	<b>70 x 95 x 45</b> Option: 70 x 97 x 60	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> </ul>	-	<b>METSECT5COVER</b>
5	8	-				
8	10	-				
10	12	-				
12	15	-				
10	12	-				
2.5	5	8	<b>77 x 107 x 46</b> Option, DIN rail mounting: 82 x 113 x 51	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> <li>■ Insulated locking screw.</li> </ul>	-	<b>16553</b>
4	8	12				
8	12	15				
10	12	15				
4	6	-	<b>70 x 95 x 45</b> Option: 70 x 97 x 60	<ul style="list-style-type: none"> <li>■ Adapter for DIN rails.</li> <li>■ Mounting plate.</li> </ul>	-	<b>METSECT5COVER</b>
6	8	-				
8	12	-				





### Type V current transformers (vertical bar profile)

Internal profile type	Cables (mm)	Bars (mm)	Rating Ip/5 A (A)	Cat. no.
<b>VF</b>				
	-	11 x 64 31 x 51	500	METSECT5VF050
			600	METSECT5VF060
<b>VV</b>				
	-	55 x 165	5000	METSECT5VV500 *
			6000	METSECT5VV600 *



### Type D - current transformers (vertical or horizontal bar - dual secondary terminals)

Internal profile type	Cables (mm)	Bars (mm)	Rating Ip/5 A (A)	Cat. no.
<b>DA</b>				
	-	32 x 65	200	METSECT5DA020
			250	METSECT5DA025
			300	METSECT5DA030
			400	METSECT5DA040
			500	METSECT5DA050
			600	METSECT5DA060
			800	METSECT5DA080
			1000	METSECT5DA100
1250	METSECT5DA125 *			
1500	METSECT5DA150 *			
<b>DB</b>				
	-	38 x 127	1000	METSECT5DB100
			1250	METSECT5DB125 *
			1500	METSECT5DB150 *
			2000	METSECT5DB200 *
			2500	METSECT5DB250 *
3000	METSECT5DB300 *			
<b>DC</b>				
	-	52 x 127	2000	METSECT5DC200 *
			2500	METSECT5DC250 *
			3000	METSECT5DC300 *
			4000	METSECT5DC400 *
<b>DD</b>				
	-	34 x 84	1000	METSECT5DD100
			1250	METSECT5DD125 *
			1500	METSECT5DD150 *
<b>DE</b>				
	-	54 x 102	1000	METSECT5DE100
			1250	METSECT5DE125 *
			1500	METSECT5DE150 *
			2000	METSECT5DE200 *
<b>DH</b>				
	-	38 x 102	1250	METSECT5DH125 *
			1500	METSECT5DH150 *
			2000	METSECT5DH200 *

\* Operating temperature: -25 °C to +50 °C.

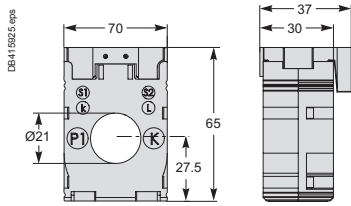
# Current transformers

## CT, Ip/5 A ratio (cont.) Catalogue numbers

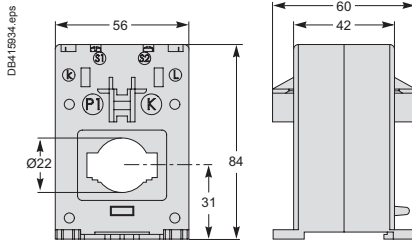
Accuracy class			Dimensions W x H x D (mm)	Fastening mode	Accessories Cylinder 	Sealable cover 
0.5	1	3				
Max. power (VA)						
2	4	-	90 x 113 x 48	<ul style="list-style-type: none"> <li>■ Mounting plate.</li> <li>■ Insulated locking screw.</li> </ul>	-	Included
4	6	-				
60	-	-	177 x 242 x 110	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
70	-	-				
-	2	5	90 x 94 x 90	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
1	4	-				
1.5	6	-				
4	8	-				
8	10	-				
8	12	-				
12	15	-				
15	20	-				
15	20	-				
20	25	-				
6	10	-	99 x 160 x 58	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
8	12	-				
10	15	-				
15	20	-				
20	25	-				
25	30	-				
25	30	-	125 x 160 x 40	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
30	50	-				
30	50	-				
30	50	-				
10	15	-	96 x 116 x 58	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
12	15	-				
15	20	-				
12	15	-	135 x 129 x 50	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
15	20	-				
20	25	-				
20	25	-				
12	15	-	98 x 129 x 40	<ul style="list-style-type: none"> <li>■ Insulated locking screw.</li> </ul>	-	Included
12	15	-				
20	25	-				

## CT current transformers

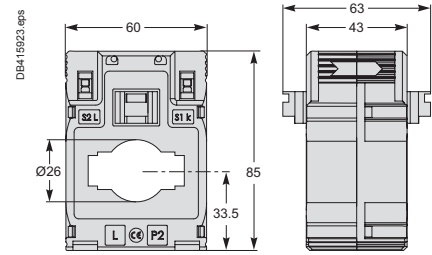
### CC internal profile type



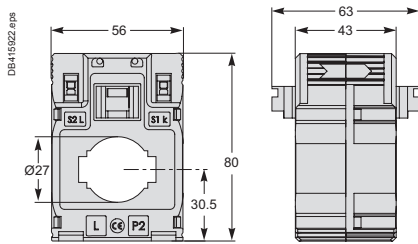
### ME internal profile type



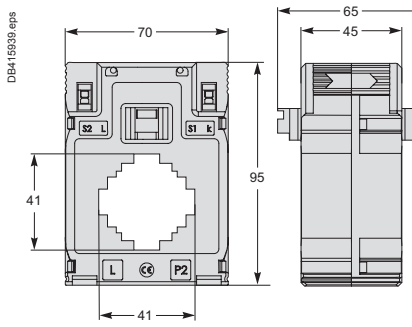
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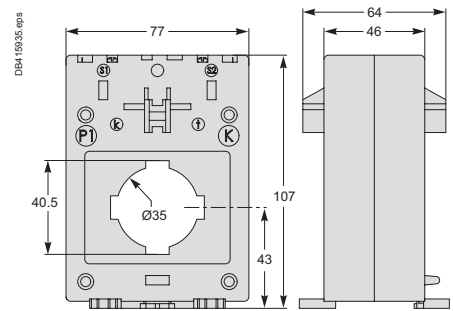
### MA internal profile type



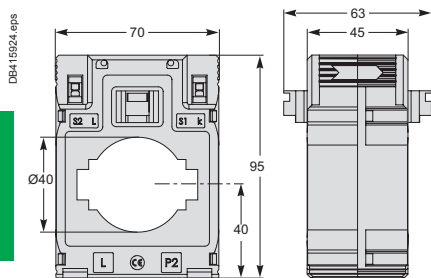
### MC internal profile type



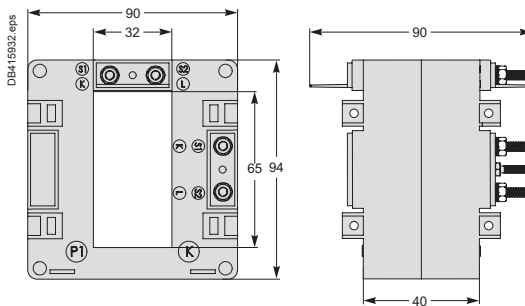
### MF internal profile type



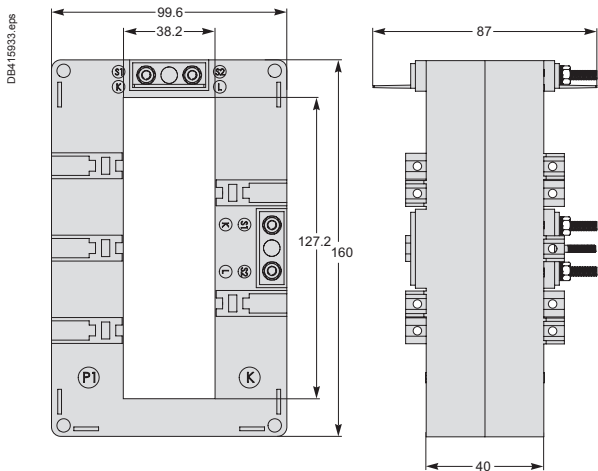
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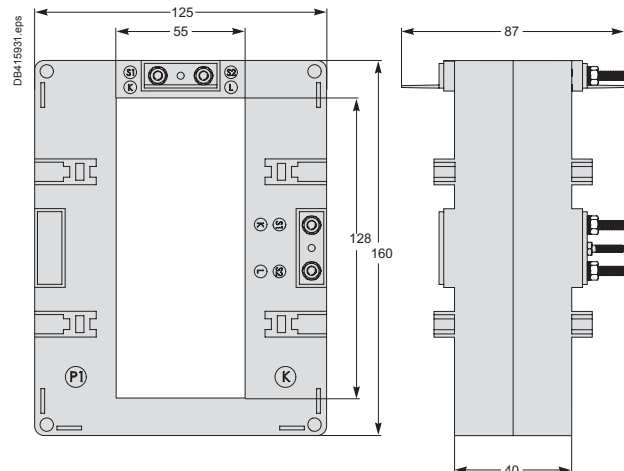
### DA internal profile type



### DB internal profile type

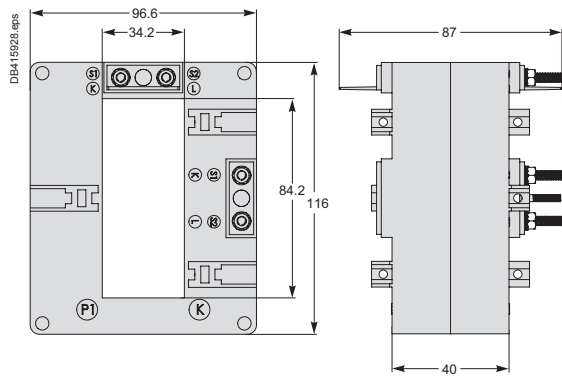


### DC internal profile type

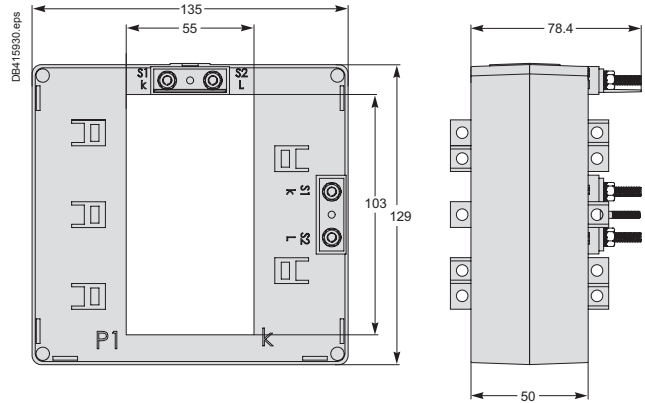


### CT current transformers

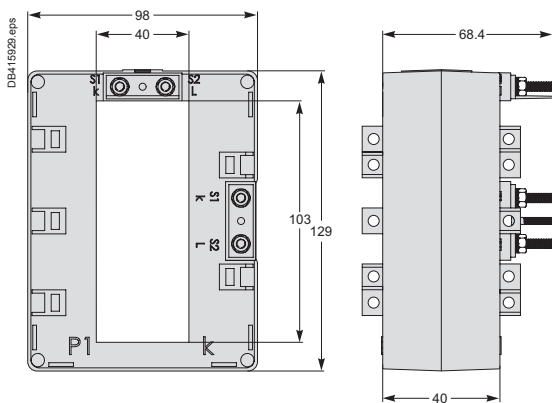
#### DD internal profile type



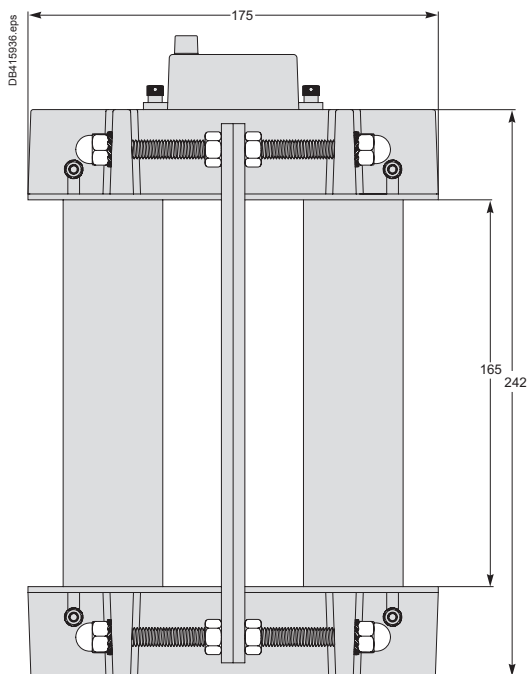
#### DE internal profile type



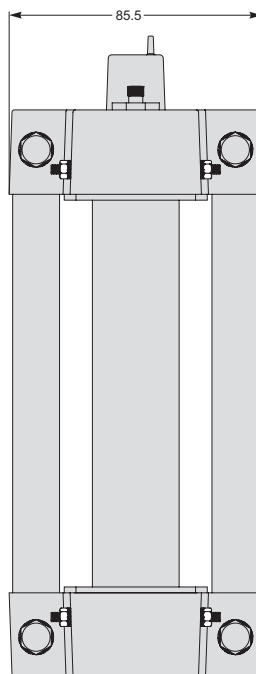
#### DH internal profile type



#### VV internal profile type

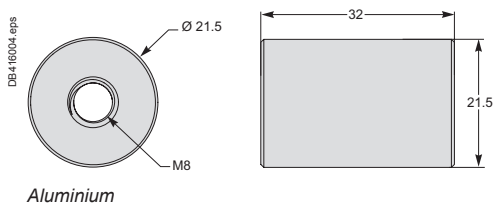


#### VF internal profile type

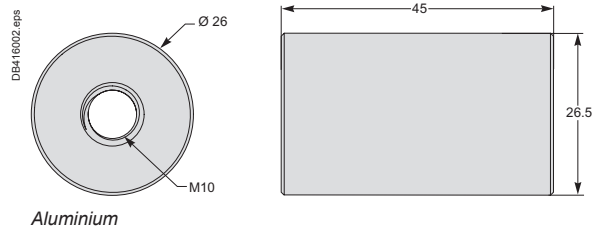


Cylinders

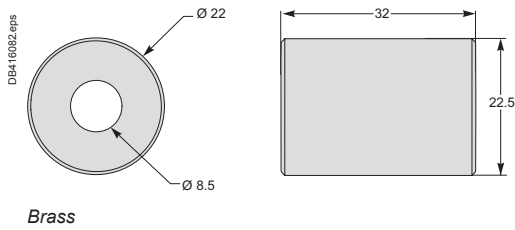
METSECT5CYL1



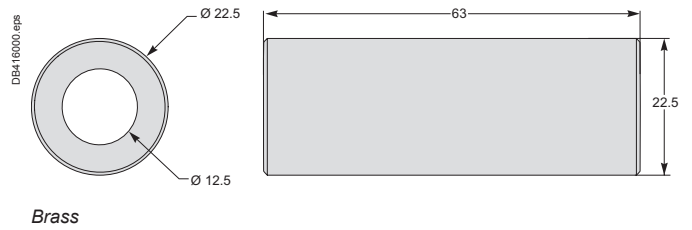
METSECT5CYL2



16550

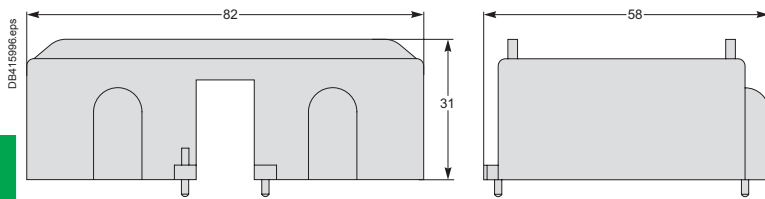


16551

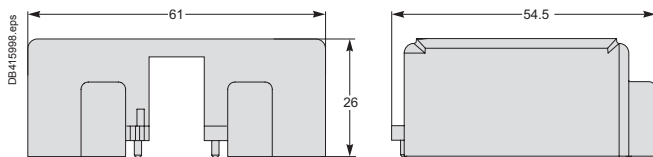


Covers

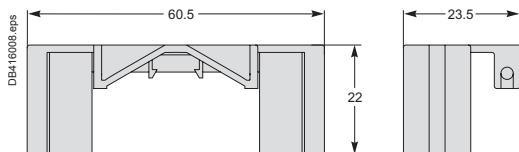
16552



16553



METSECT5COVER





### Application

The CH counters measure the total operating time of any load. The CI counters count 230Vac pulses from devices such as utility meters or people counters.

### Specific technical data

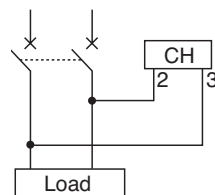
#### CH

Electromechanical display	
Maximum display:	99999.99 hours
Display accuracy:	0.01%
Without reset	
Storage temperature:	-25°C to +85°C
Connection:	Tunnel terminals for 2.5mm <sup>2</sup> cable
Consumption:	0.15VA
Operating temperature:	-10°C to +70°C
Mounting on symmetrical rail	

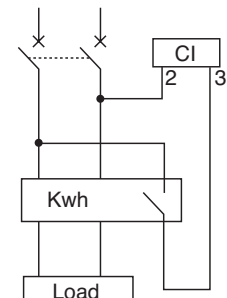
#### CI

Supply and metering voltage:	230Vac, 50/60 Hz
Consumption:	0.15VA
Maximum display:	9 999 999 impulses
Without reset	
Metering data	Minimum impulse time: 50ms
	Minimum time between 2 impulses: 50ms
Storage temperature:	-25°C to +85°C
Operating temperature:	-10°C to +70°C
Connection:	Tunnel terminals for 2.5mm <sup>2</sup> cable

Type	Control voltage	Width in 18mm ways	Part number
CH	230Vac	2	15440
CI	230Vac	2	15443



CH



CI



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<b>Auxiliary function possibilities</b> .....	<b>page 8/13</b>
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<b>Intelligent panelboard</b> .....	<b>page 8/22</b>
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The range of wall and floor mounted Powerpack 4 panelboards is designed, manufactured and tested to BS EN 60439-1. The structures are rigid sheet steel finished in a cream colour epoxy powder (RAL 9001).

All the boards contain a unique connection system which ensures that all busbar/ breaker connections are tightened to the correct torque. The system comprises a tightening bolt head which shears off when the correct torque is reached. Facilities are provided to enable the breaker to be repositioned at a later time if so required.

The breaker range comprises single pole, single pole with switched neutral, double pole, triple pole and three pole with switched neutral and four pole. Incoming device ratings up to 1600A and outgoing ratings up to 630A.

The extremely flexible board design allows 1, 2, 3 and 4 pole breakers to be positioned in any order on the busbar stack thus allowing maximum use of the available space and also allowing breakers feeding associated loads to be positioned together.

For this reason the number of outgoing ways in the selection tables is expressed in single pole ways as well as three pole ways.

Full discrimination simply by missing a frame size.

**Special breakers**

Details of the standard breakers that may be fitted into the various sizes of panelboard are given on the following pages.

The full range of Compact NSX moulded case circuit breakers includes a wide range of breakers for special applications, higher breaking capacities, additional ratings and adaptations including rotary handles and motor mechanisms for remote operation. Most of these breakers, of ratings up to 630A, can be adapted for use in the Powerpack 4 panelboards.

To order these special breakers add the words **'for use in Powerpack 4 panelboard'** to your ordering description of the breaker.

**Application**

The Powerpack 4 is the straight forward answer to all power requirements. It provides an off-the-shelf solution for most standard distribution applications.

**Range**

Powerpack 4 is available in many styles to suit various applications in wall mounted and floor standing up to 1600 amps incoming

- Style A is a wall mounted Powerboard with 250amp main bars up to 17 single pole outgoing ways. There is no dedicated incomer position giving complete flexibility in the use of the board: splitter board, 2 incomers/1 outgoing or as a conventional board
- Style C is a wall mounted Panelboard with 250 amp main bars and side mounted incomer up to 13 outgoing triple pole ways
- Style D is a wall mounted Panelboard with up to 630 amp main bars and vertically mounted incomer up to 18 triple pole outgoing ways
- Style E is a wall mounted Panelboard with 800 amp main bars and vertically mounted incomer up to 18 triple pole outgoing ways
- Style G is a floor standing Panelboard with 1600 amp main bars and the incomer mounted in its own cubicle 14 outgoing triple pole ways extendible to 28 TP ways

**Technical data**

Incoming	Up to 1600A
Outgoing	Up to 28 triple pole ways (84 single pole ways)
Main cable entry	Top or bottom
Metering	Incoming metering and Outgoing metering as an option (incoming standard on style G)
Manufactured and tested to	BSEN60439-1
Busbars rated	Up to 1600A at 415V, 50Hz
Short circuit withstand	36 or 50kA for .5 or 1s
Construction	Rigid folded sheet steel with removable gland plates and end covers
Finish	Steelwork in polyester epoxy powder, cream colour RAL9001
Degree of protection	IP3X
Form 3b type 2	As standard
Form 4 type 2 & 6	Can be achieved by use of individual disconnectable neutral links adjacent to breakers or by the use of 4 pole breakers. Tunnel terminals are to be fitted on the breaker outgoing terminals and shrouded by long terminal shields. The main neutral bar either side of the incomer should be removed and discarded together with the connecting copper bar. The incoming breaker should be a 4 pole breaker
Extension cubicles	Side/top/bottom extension cubicle is available as an extra

**NSX moulded case circuit breakers**

Powerpact 4 panelboards have a unique interconnection system which automatically gives the correct torque settings. 1, 2, 3, and 4 pole devices may be mixed to suit the installation needs without loss of space.

**Metering**

- A PowerLogic PM750MG multi-function digital meter is fitted as standard to monitor the incoming supply on style G and as an option on other styles. It is also used for all outgoing metering. Readings available voltage, current, frequency, power, energy, demand values and harmonic distortion. The meter also provides a pulse output for kWh and kVArh.
- A side extension cubicle may be fitted on styles D/E/G which has provision for metering outgoing circuits, refer to metering on page 2/18. This cubicle also acts as a cable extension box.

**Technical data for circuit breakers**

Manufactured and tested to	BS EN 60947-2
Ics	100% Icu 16 - 630A, 75% Icu 800 - 1600A
Calibration temperature	40°C
Thermal adjustment (3 and 4 pole)	16 - 250A = $0.7 - 1 \times I_n$ 400 - 630A = $0.4 - 1 \times I_n$ 800 - 1600A = $0.4 \times I_n$

**MCCB Icu & terminal size**

16 - 100A 36kA 6mm bolt  
 160 - 250A 36kA 8mm bolt  
 400 - 630A 50kA 10mm bolt  
 800 - 1600 50kA 2 x 12mm bolts

**Earth fault protection**

- May be added to any 4 pole MCCB
- Sensitivities 30, 300mA 1, 3, 10A
- Time delay 0, 60, 150, 310 milli - seconds

**800/1250/1600A breakers**

800/1250/1600A breakers are fitted with Micrologic 5.0 control units to enable full discrimination with the outgoing breakers to be obtained. Alternative control units may be fitted if required.

**250A panelboards**

The main incoming device is side mounted at the bottom right hand side. If a 4 pole incomer is used the number of outgoing ways available is reduced by one single pole way. The incoming terminal shroud can be positioned to suit a 3 or 4 pole incoming breaker.

**250A powerboard**

One 3 pole terminal shield for a 250A breaker is supplied as standard for the main incoming terminals. Two adjacent 3 or 4 pole toggle operated breakers may be mechanically interlocked using Part number LV429354.

**400/630A panelboard**

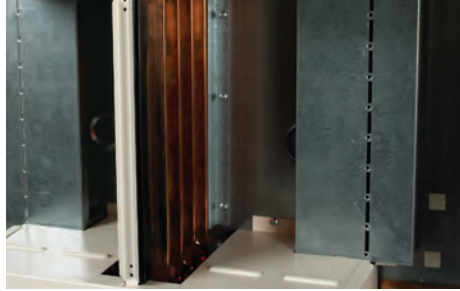
The line (supply) terminals on the incoming device must be suitably shrouded. The board is supplied with 1 or 3 pole shroud for a 400/630A breaker. For other breakers suitable terminal shields should be ordered separately:

250A 3 pole LV429323  
 250A 4 pole LV429324  
 400/630A 4 pole LV432595

These terminal shields are supplied singly.

	250A Powerboard	250A Panelboard	400/630A Panelboard	800A Panelboard	1600A panelboard
<b>Busbar short circuit withstand</b>	36kA, 1s	36kA, 1s	36kA, 1s	50kA, 1s	50kA, 1s
<b>Number of outgoing ways</b>					
13SP inc incomer	■				
17SP inc incomer	■				
15SP (5TP)		■			
18SP (6TP)			■	■	
21SP (7TP)		■			
27SP (9TP)		■			
36SP (12TP)			■	■	
39SP (13TP)		■			
42SP (14TP)					■
54SP (18TP)			■	■	
84SP (28 TP)					□
<b>Incoming device</b>					
100A MCCB	□	□			
160A MCCB	□	□			
250A MCCB	□	□	□		
400A MCCB			□		
630A MCCB			□		
800A MCCB				■	
1250A MCCB					□
1600A MCCB					□
250A fuse switch		□			
<b>Incomer - field installable</b>	■	■	■	■	■
<b>Two incomers, mechanically interlocked</b>	□				
<b>Main incoming cable entry</b>					
Top		□	□	□	□
Bottom	■	□	□	□	□
<b>Incoming metering</b>	□		□	□	■
<b>Outgoing metering</b>	□		□	□	□
<b>Top/bottom extension boxes</b>		□	□	□	
<b>Side extension boxes</b>	□		□	□	□
<b>Integrated control and distribution unit</b>			□	□	
<b>Earth leakage protection on outgoing circuits</b>			□	□	□

Standard ■ Option □



The 4 pole busbar system ready to accept the circuit breaker.



The circuit breaker is placed in the panelboard and pushed up to the busbars. 1P, 2P, 3P and 4 pole breakers may be mixed in any order on the busbars.



The circuit breaker fixing screw is fitted and tightened to retain the breaker in the board. Retaining screw M5 8.5mm long.



The connections to the busbars are tightened until the tops of the connection bolts shear off. This ensures that the correct torque has been applied to the connections.



The circuit breaker is now mechanically & electrically connected in the panel board. It is now ready for the outgoing cables. Note how the breaker cassette fully shrouds the busbars. Unused positions must be fitted with blanking plates.

To remove (17mm bi-hexagonal socket)  
RS number 572-864 (1/2")



### Main cable entry at bottom

Busbar short circuit withstand	Number of incomer outgoing ways		Part number
	Single pole	Triple pole	
<b>250A Powerboard</b>			
Style A	13	3	<b>MG25C2</b>
36kA, 1s	17	4	<b>MG25C4</b>
	13	4 meters	<b>MG25C2M</b>
	17	4 meters	<b>MG25C4M</b>



Style C 36kA, 1s	15	5	<b>MG2C5</b>
	21	7	<b>MG2C7</b>
	27	9	<b>MG2C9</b>
	39	13	<b>MG2C13</b>



<b>400/630A Panelboard</b>			
Style D 36kA, 1s	18	6	<b>MG6C6</b>
	36	12	<b>MG6C12</b>
	54	18	<b>MG6C18</b>

8



<b>800A Panelboard</b>			
Style E 50kA, 1s	18	6	<b>MG8C6</b>
	36	12	<b>MG8C12</b>
	54	18	<b>MG8C18</b>



<b>1600A Panelboard</b>			
Style G 50kA, 1s	42	14	<b>MG16C14</b>
	42	14 Extension cubicle	<b>MG16CE14</b>

Above supplied with 3SP shrouds - 1600A supplied with 6

## Powerpact 4 panelboards Bottom entry moulded case circuit breakers



### Incoming devices

Current rating	Number of poles	Style of board	Part number
----------------	-----------------	----------------	-------------

#### Circuit breaker

100	3	A,C,D	MGP1003X
160	3	A,C,D	MGP1603X
250	3	A,C,D	MGP2503X
400	3	D	MGP4003X
630	3	D	MGP6303X
800	3	E	MGP8003B5
1250	3	G	33564
1600	3	G	33568

100	4	A,C,D	MGP1004X
160	4	A,C,D	MGP1604X
250	4	A,C,D	MGP2504X
400	4	D	MGP4004X
630	4	D	MGP6304X
800	4	E	MGP8004B5
1250	4	G	33566
1600	4	G	33570

If specifying alternative breakers for the 800A panelboard, one long terminal shield and one set of phase separators must also be ordered.

#### Switch disconnecter

100	3	A,C,D	MGP1003NAX
160	3	A,C,D	MGP1603NAX
250	3	A,C,D	MGP2503NAX
400	3	D	MGP4003NAX
630	3	D	MGP6303NAX
800	3	E	MGP8003NA
1250	3	G	33489
1600	3	G	33490

100	4	A,C,D	MGP1004NAX
160	4	A,C,D	MGP1604NAX
250	4	A,C,D	MGP2504NAX
400	4	D	MGP4004NAX
630	4	D	MGP6304NAX
800	4	E	MGP8004NA
1250	4	G	33494
1600	4	G	33495

#### Fuse switch

250	3	C	MG2C250FS
-----	---	---	-----------

This incoming unit is an additional enclosure that fits above or below the standard panelboard. It is supplied with all connections and accessories to electrically and mechanically join the enclosures.

#### Direct connection

250	3	C	MGP2503LL
250	4	C	MGP2504LL
630	4	D	MGPCIN

Protection must be provided upstream by a suitably rated breaker.

#### Disconnectable neutral link

250	1	A,C,D	MGP250NL
630	1	D	MGP630NL

## Selection table

## Powerpact 4 panelboards Top entry boards



### Main cable entry at top

Busbar short circuit withstand	Number of outgoing ways		Part number
	Single pole	Triple pole	
<b>250A Panelboard</b>			
Style C	15	5	<b>MG2C5</b>
36kA, 1s	21	7	<b>MG2C7</b>
	27	9	<b>MG2C9</b>
	39	13	<b>MG2C13</b>



### 400/630A Panelboard

Style D	18	6	<b>MG6C6</b>
36kA, 1s	36	12	<b>MG6C12</b>
	54	18	<b>MG6C18</b>



### 800A Panelboard

Style E	18	6	<b>MG8C6T</b>
50kA, 1s	36	12	<b>MG8C12T</b>
	54	18	<b>MG8C18T</b>

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### 1600A Panelboard

Style G	42	14	<b>MG16C14T</b>
50kA, 1s	42	14 Extension cubicle	<b>MG16CE14T</b>

# Powerpact 4 panelboards

## Top entry moulded case circuit breakers

Incoming devices			
Current rating	Number of poles	Style of board	Part number
<b>Circuit breaker</b>			
100	3	C	MGP1003X
160	3	C	MGP1603X
250	3	C	MGP2503X
100	3	D	MGP1003TX
160	3	D	MGP1603TX
250	3	D	MGP2503TX
400	3	D	MGP4003TX
630	3	D	MGP6303TX
800	3	E	MGP8003B5
1250	3	G	33564
1600	3	G	33568

100	4	C	MGP1004X
160	4	C	MGP1604X
250	4	C	MGP2504X
100	4	D	MGP1004TX
160	4	D	MGP1604TX
250	4	D	MGP2504TX
400	4	D	MGP4004TX
630	4	D	MGP6304TX
800	4	E	MGP8004B5
1250	4	G	33566
1600	4	G	33570

If specifying alternative breakers for the 800A panelboard, one long terminal shield and one set of phase separators must also be ordered.

Switch disconnecter			
100	3	C	MGP1003NAX
160	3	C	MGP1603NAX
250	3	C	MGP2503NAX
100	3	D	
160	3	D	
250	3	D	MGP2503NATX
400	3	D	MGP4003NATX
630	3	D	MGP6303NATX
800	3	E	MGP8003NA
1250	3	G	33489
1600	3	G	33490

100	4	C	MGP1004NAX
160	4	C	MGP1604NAX
250	4	C	MGP2504NAX
100	4	D	
160	4	D	
250	4	D	MGP2504NATX
400	4	D	MGP4004NATX
630	4	D	MGP6304NATX
800	4	E	MGP8004NA
1250	4	G	33494
1600	4	G	33495

If specifying alternative breakers for the 800A panelboard, one long terminal shield is required for the incoming terminals

Direct connection			
250	3	C	MGP2503LL
250	4	C	MGP2504LL
630	4	D	MGPCIN

Protection must be provided upstream by a suitably rated breaker.

Disconnectable neutral link			
250	1	C,D	MGP250NL
630	1	D	MGP630NL





Rating	Module width (35mm)	Part Number		
<b>Single pole</b>				
Breaking capacity 25kA at 230V				
		L1	L2	L3
16	1	MGP0161L1	MGP0161L2	MGP0161L3
25	1	MGP0251L1	MGP0251L2	MGP0251L3
30	1	MGP0301L1	MGP0301L2	MGP0301L3
40	1	MGP0401L1	MGP0401L2	MGP0401L3
50		MGP0501L1	MGP0501L2	MGP0501L3
63	1	MGP0631L1	MGP0631L2	MGP0631L3
80	1	MGP0801L1	MGP0801L2	MGP0801L3
100	1	MGP1001L1	MGP1001L2	MGP1001L3
125	1	MGP1251L1	MGP1251L2	MGP1251L3
160	1	MGP1601L1	MGP1601L2	MGP1601L3



<b>Two pole phase to neutral</b>				
Breaking capacity 85kA at 230V				
		L1 - N	L2 - N	L3 - N
16	2	MGP0162L1N	MGP0162L2N	MGP0162L3N
25	2	MGP0252L1N	MGP0252L2N	MGP0252L3N
30	2	MGP0302L1N	MGP0302L2N	MGP0302L3N
40	2	MGP0402L1N	MGP0402L2N	MGP0402L3N
50		MGP0502L1N	MGP0502L2N	MGP0502L3N
63	2	MGP0632L1N	MGP0632L2N	MGP0632L3N
80	2	MGP0802L1N	MGP0802L2N	MGP0802L3N
100	2	MGP1002L1N	MGP1002L2N	MGP1002L3N
125	2	MGP1252L1N	MGP1252L2N	MGP1252L3N
160	2	MGP1602L1N	MGP1602L2N	MGP1602L3N

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<b>Two pole phase to phase</b>				
Breaking capacity 25kA at 415V				
		L1 - L2	L2 - L3	L3 - L1
16	2	MGP0162L12	MGP0162L23	MGP0162L31
25	2	MGP0252L12	MGP0252L23	MGP0252L31
30	2	MGP0302L12	MGP0302L23	MGP0302L31
40	2	MGP0402L12	MGP0402L23	MGP0402L31
50		MGP0502L12	MGP0502L23	MGP0502L31
63	2	MGP0632L12	MGP0632L23	MGP0632L31
80	2	MGP0802L12	MGP0802L23	MGP0802L31
100	2	MGP1002L12	MGP1002L23	MGP1002L31
125	2	MGP1252L12	MGP1252L23	MGP1252L31
160	2	MGP1602L12	MGP1602L23	MGP1602L31



Rating	Module width (35mm)	Part Number
<b>Three pole</b>		
<b>Breaking capacity 36kA at 415V</b>		<b>3 phase</b>
16	3	<b>MGP0163X</b>
25	3	<b>MGP0253X</b>
32	3	<b>MGP0323X</b>
40	3	<b>MGP0403X</b>
50	3	<b>MGP0503X</b>
63	3	<b>MGP0633X</b>
80	3	<b>MGP0803X</b>
100	3	<b>MGP1003X</b>
125	3	<b>MGP1253X</b>
160	3	<b>MGP1603X</b>
200	3	<b>MGP2003X</b>
250	3	<b>MGP2503X</b>
400	4 <sup>(1) (2)</sup>	<b>MGP4003X</b>
630	4 <sup>(1) (2)</sup>	<b>MGP6303X</b>



Rating	Module width (35mm)	Part Number
<b>Four pole</b>		
<b>Breaking capacity 36kA at 415V</b>		<b>3 phase + neutral</b>
16	4	<b>MGP0164X</b>
25	4	<b>MGP0254X</b>
32	4	<b>MGP0324X</b>
40	4	<b>MGP0404X</b>
50	4	<b>MGP0504X</b>
63	4	<b>MGP0634X</b>
80	4	<b>MGP0804X</b>
100	4	<b>MGP1004X</b>
125	4	<b>MGP1254X</b>
160	4	<b>MGP1604X</b>
200	4	<b>MGP2004X</b>
250	4	<b>MGP2504X</b>
400	6 <sup>(1) (2)</sup>	<b>MGP4004X</b> One <b>MGPBB25</b> also required
630	6 <sup>(1) (2)</sup>	<b>MGP6303X</b> One <b>MGPBB25</b> also required

Rating	Module width (35mm)	Part Number
<b>Disconnectable neutral links</b>		
250	1	<b>MGP250NL</b>
630	2	<b>MGP630NL</b> One <b>MGPBB25</b> also required

(1) If fitted in 630 or 800A board a shrouding kit is required.

(2) Breaking capacity 50kA at 415V.

Description	Part Number
<b>Three pole</b>	
PP4 MCCB 3P 16A 50kA	<b>MGP0163XN</b>
PP4 MCCB 3P 25A 50kA	<b>MGP0253XN</b>
PP4 MCCB 3P 32A 50kA	<b>MGP0323XN</b>
PP4 MCCB 3P 40A 50kA	<b>MGP0403XN</b>
PP4 MCCB 3P 50A 50kA	<b>MGP0503XN</b>
PP4 MCCB 3P 63A 50kA	<b>MGP0633XN</b>
PP4 MCCB 3P 80A 50kA	<b>MGP0803XN</b>
PP4 MCCB 3P 100A 50kA	<b>MGP1003XN</b>
PP4 MCCB 3P 125A 50kA	<b>MGP1253XN</b>
PP4 MCCB 3P 160A 50kA	<b>MGP1603XN</b>
PP4 MCCB 3P 200A 50kA	<b>MGP2003XN</b>
PP4 MCCB 3P 250A 50kA	<b>MGP2503XN</b>
<b>Four pole</b>	
PP4 MCCB 4P 16A 50kA	<b>MGP0164XN</b>
PP4 MCCB 4P 25A 50kA	<b>MGP0254XN</b>
PP4 MCCB 4P 32A 50kA	<b>MGP0324XN</b>
PP4 MCCB 4P 40A 50kA	<b>MGP0404XN</b>
PP4 MCCB 4P 50A 50kA	<b>MGP0504XN</b>
PP4 MCCB 4P 63A 50kA	<b>MGP0634XN</b>
PP4 MCCB 4P 80A 50kA	<b>MGP0804XN</b>
PP4 MCCB 4P 100A 50kA	<b>MGP1004XN</b>
PP4 MCCB 4P 125A 50kA	<b>MGP1254XN</b>
PP4 MCCB 4P 160A 50kA	<b>MGP1604XN</b>
PP4 MCCB 4P 200A 50kA	<b>MGP2004XN</b>
PP4 MCCB 4P 250A 50kA	<b>MGP2504XN</b>
<b>Three pole (ML2.2)</b>	
PP4 MCCB 3P 40A (ML2.2)	<b>MGP0403XE2</b>
PP4 MCCB 3P 100A (ML2.2)	<b>MGP1003XE2</b>
PP4 MCCB 3P 160A (ML2.2)	<b>MGP1603XE2</b>
PP4 MCCB 3P 250A (ML2.2)	<b>MGP2503XE2</b>
PP4 MCCB 3P 40A (ML2.2) 50kA	<b>MGP0403XE2N</b>
PP4 MCCB 3P 100A (ML2.2) 50kA	<b>MGP1003XE2N</b>
PP4 MCCB 3P 160A (ML2.2) 50kA	<b>MGP1603XE2N</b>
PP4 MCCB 3P 250A (ML2.2) 50kA	<b>MGP2503XE2N</b>
<b>Four pole (ML2.2)</b>	
PP4 MCCB 4P 40A (ML2.2)	<b>MGP0404XE2</b>
PP4 MCCB 4P 100A (ML2.2)	<b>MGP1004XE2</b>
PP4 MCCB 4P 160A (ML2.2)	<b>MGP1604XE2</b>
PP4 MCCB 4P 250A (ML2.2)	<b>MGP2504XE2</b>
PP4 MCCB 4P 40A (ML2.2) 50kA	<b>MGP0404XE2N</b>
PP4 MCCB 4P 100A (ML2.2) 50kA	<b>MGP1004XE2N</b>
PP4 MCCB 4P 160A (ML2.2) 50kA	<b>MGP1604XE2N</b>
PP4 MCCB 4P 250A (ML2.2) 50kA	<b>MGP2504XE2N</b>
<b>Three pole (ML5.3E)</b>	
PP4 MCCB 3P 400A (ML5.3E)	<b>MGP4003X5E</b>
PP4 MCCB 3P 630A (ML5.3E)	<b>MGP6303X5E</b>
<b>Four pole (ML5.3E)</b>	
PP4 MCCB 4P 400A (ML5.3E)	<b>MGP4004X5E</b>
PP4 MCCB 4P 630A (ML5.3E)	<b>MGP6304X5E</b>

**Dimensions**

Type	Height mm	Width mm	Depth mm	(1)	Weight kg
<b>Style A - 250A powerboard</b>					
3 way	650	600	268		32
4 way	650	778	268		57

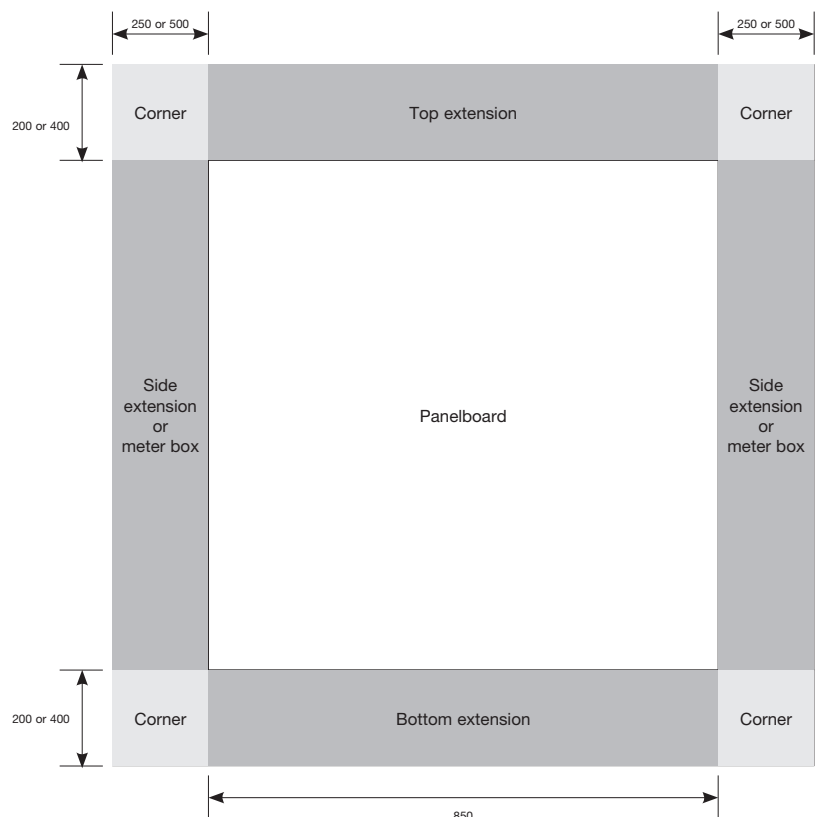
<b>Style C - 250A panelboard</b>					
5 way	680	853	260	198	40
7 way	785	853	260	198	44
9 way	890	853	260	198	50
13 way	1075	853	260	198	60

<b>Style D - 400/620A panelboard</b>					
6 way	1178	850	260	290	66
12 way	1493	850	260	290	89
18 way	1808	850	260	290	98

<b>Style E - 800A panelboard</b>					
6 way	1580	850	260	490 <sup>(3)</sup>	86
12 way	1896	850	260	490 <sup>(3)</sup>	104
18 way	2210	850	260	490 <sup>(3)</sup>	122

<b>Style G - 1600A panelboard</b>					
14 way	2106	1256	450	708 <sup>(2)</sup>	375
14 way extension	2106	850	450		200

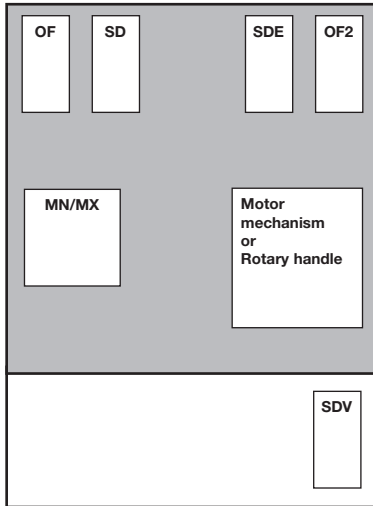
- (1) Distance from gland plate to incoming terminals  
 (2) Terminals will accept up to 3 lugs 400mm<sup>2</sup> per phase  
 (3) Main connection M12 bolt



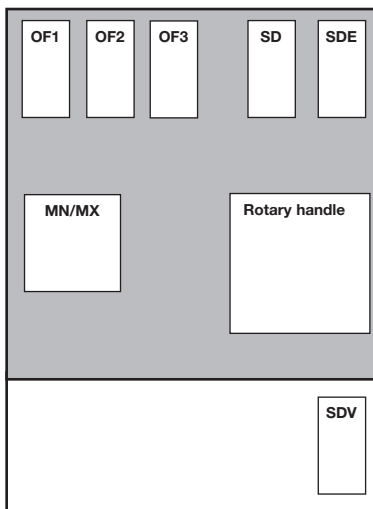
**Note:** Side extensions and corner units cannot be fitted to 250A panelboards

## Moulded case circuit breakers

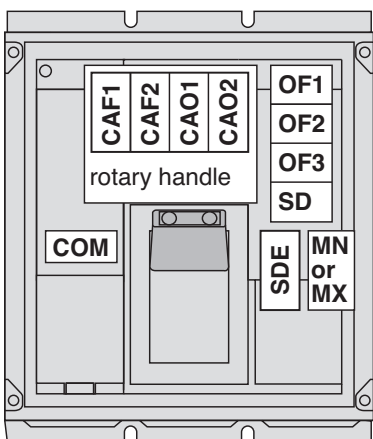
## Powerpact 4 panelboards Auxiliary function options



NSX100/160/250



NSX400/630

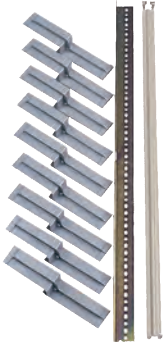


NS800/1600

- OF** Changeover auxiliary contact
- SD** Changeover alarm switch
- MX** Shunt trip
- MN** Undervoltage release
- SDE** Fault alarm
- SDV** Earth fault alarm
- CAF** Early make auxiliary contacts (with rotary handle)
- CAO** Early break auxiliary contacts (with rotary handle)
- COM** Communications function

All accessories are capable of being fitted on site. Full details may be obtained from the Compact NS moulded case circuit breaker catalogue.

Manually operated device



**Shrouding kit (400/630A and 800A panelboards only)**

Provides additional support for device and shrouding for front cover. One shrouding kit must be used per side when fitting either outgoing 400/630A MCCBs or outgoing ammeter and/or earth leakage protection. In addition to the shrouding kit an additional 25mm three stage filler piece is required when 4 pole 400A or 630A circuit breakers are fitted on the outgoing pan assembly **MGPTSF25**.

Number of outgoing ways		Part number
SP	TB	
18	6	<b>MGPCH6</b>
36	12	<b>MGPCH12</b>
54	18	<b>MGPCH18</b>

**Extension enclosure**

**250A powerboard style A side extension**

TP ways	Mounting arrangement	Part number
Side	Top/bottom	
3	W600	<b>MG25EXC</b>
4	W600	<b>MG25EXC</b>

**250A panelboard style C top or bottom extension**

5,7,9,13	H200	<b>MG6CEX</b>
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More than one extension can be added if required.

**400/630A panelboard style D and 800A panelboard style E top or bottom extension**

Top/bottom ext.	6,12,18	H200	<b>MG6CEX</b>
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**Side extensions**

Side ext. 6	W250	<b>MGPXC206</b>
Side ext. 12	W250	<b>MGPXC212</b>
Side ext. 18	W250	<b>MGPXC218</b>
Side ext. 6	W500	<b>MGPXC506</b>
Side ext. 12	W500	<b>MGPXC512</b>
Side ext. 18	W500	<b>MGPXC518</b>

For side extensions with metering facility see page 2/19.

More than one extension can be added if required. Side extensions are recommended when 400A and 630A outgoers are fitted or when outgoing circuit breakers have earth fault protection.

**Corner units style D/E**

W250	H200	<b>MGPC2025</b>
W500	H200	<b>MGPC2050</b>
W250	H400	<b>MGPC4025</b>
W500	H400	<b>MGPC4050</b>

For squaring off a panelboard when a top or bottom extension and side extension are used together and side extension are used together.

**1600A panelboard style G side extension**

14	W400	<b>MG16CEX4</b>
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More than one extension can be added if required.

Metering MG16CEM4

**Replacement items**

**Door and cover assembly**

250A powerboard	9 way	<b>MG25FCC2</b>
	13 way	<b>MG25FCC4</b>
	9 way + metering	<b>MG25FCC2M</b>
	13 way + metering	<b>MG25FCC4M</b>
400/630A panelboard	18 way	<b>MG6FCC6</b>
	36 way	<b>MG6FCC12</b>
	54 way	<b>MG6FCC18</b>
800A panelboard	18 way	<b>MG8FCC6</b>
	36 way	<b>MG8FCC12</b>
	56 way	<b>MG8FCC18</b>
	Gland plate for 400/630/800A panelboard	<b>MGPGPC8</b>
Door lock kit up to 800A	<b>MGPP4S007</b>	
2 spare door keys	<b>MGK33</b>	
Touch up paint RAL9001	Spray	<b>08962</b>
	Brush	<b>08961</b>
Adhesive drawing pocket	RAL9001	<b>08963</b>



**Residual current protection modules**

Using 4 pole residual current add-on modules (Vigi block) for incoming or outgoing ways (requires a 4 pole MCCB).

Frame rating	Earth leakage tripping current options (A)	Current rating MCCB	Vigi module Part number
Up to 160A	0.03 - 0.3 - 1 - 3 - 10*	NSX100/160	<b>LV429211</b>
200 - 250A	0.03 - 0.3 - 1 - 3 - 10*	NSX250	<b>LV431536</b>
400 - 630A	0.3 - 1 - 3 - 10 - 30*	NSX400/630	<b>LV432456</b>

\* Time delay settings (ms) 0 - 60 - 150 and 310 (30mA - instantaneous only).  
 (i) For combinations of items of RCD's, metering and remote metering please contact us for further information.



**Metering facility**

- 3 phase current transformer module with voltage measurement outputs.
- Fits directly on the terminals of the breaker.
- The voltage measurement outputs have inbuilt protection with automatic reset.
- Suitable for use with the PowerLogic range of meters.

Breaker	CT ratio	VA output	Class at VA output	Part number	
				3 pole	4 pole
NS100	125/5	1.1	1.0	LV429461	LV429462
NS160	150/5	1.1	1.0	LV430561	LV430562
NS250	250/5	1.1	0.5	LV431569	LV431570
NS400	400/5	2.0	0.5	LV432653	LV432654
NS630	600/5	2.0	0.5	LV432861	LV432862

**Current transformer module**

- 3 phase current transformer module.
- Fits directly on the terminals of the breaker.

Breaker	CT ratio	VA output	Class at VA output	Part number	
				3 pole	4 pole
NS100	125/5	1.6	3.0	LV429457	LV429458
NS160	150/5	3.0	3.0	LV430557	LV430558
NS250	250/5	5.0	3.0	LV431567	LV431568
NS400	400/5	8.0	3.0	LV432657	LV432658
NS630	600/5	8.0	3.0	LV432857	LV432858

**Motor operator module**

All 3 pole and 4 pole breakers up to 250A can be fitted with a motor operator mechanism allowing remote opening and closing of the circuit breaker.

**Operating voltages**

50Hz	a.c.	48 - 415V
	d.c.	24 - 250V

Specify requirements at time of ordering the breaker.

**Rotary handles with inbuilt padlocking facilities**

Current rating	Part number	
	Black	Red/yellow
Up to 250A	LV429337	LV429339
400/630A	LV432597	LV432599

**Toggle padlocking attachments** Locking in OFF position

Current rating	Part number	
	Removable	Fixed
250A	29370	LV429371
630A	29370	LV432631
800A	44936	LV432631





**Connection accessories**

**Bare cable connectors**

Capacity	Breaker	Part number	
		Set of 3	Set of 4
1.5 - 95mm <sup>2</sup>	160	LV429242	LV429243
10 - 185mm <sup>2</sup>	250	LV429259	LV429260
35 - 300mm <sup>2</sup>	630	LV432479	LV432480
2 x 95 - 240mm <sup>2</sup>	630	LV432481	LV432482

**Crimp cable lugs supplied with phase barriers**

120mm <sup>2</sup> copper	250	LV429252	LV429256
150mm <sup>2</sup> copper	250	LV429253	LV429257
185mm <sup>2</sup> copper	250	LV429254	LV429258
240mm <sup>2</sup> copper	630	LV432500	LV432501
300mm <sup>2</sup> copper	630	LV432502	LV432503
150mm <sup>2</sup> aluminium	250	LV429504	LV429505
185mm <sup>2</sup> aluminium	250	LV429506	LV429507
240mm <sup>2</sup> aluminium	630	LV432504	LV432505
300mm <sup>2</sup> aluminium	630	LV432506	LV432507

**Spreaders**

A	Pole pitch mm	Quantity	Part number
250	45	Set of 3	LV431563
250	45	Set of 4	LV431564
630	52.5	Set of 3	LV432490
630	52.5	Set of 4	LV432491

**Auxiliary switch for 3 or 4 pole devices only**

- For all MCCBs
- Used to indicate open, closed or tripped status
- SDE adaptor required for trip unit devices up to 250A TM or MA (to indicate trip on overcurrent). **Two** auxiliary switches will be needed to indicate open, closed **and** tripped status

	Part number
Auxiliary changeover switch	LV429450
SDE adaptor	LV429451

**Voltage releases to fit all MCCBs 16/630A for 3 or pole devices only**

Voltage (V)	Part number	
	Shunt trip (MX)	Undervoltage release (MN)
200/240	LV429387	LV429407
380/415	LV429388	LV429408

Other voltages available - refer to Compcat NS catalogue.

**Terminal shields**

Current rating (A)	Part number
Up to 160A single pole and 250A neutral link	LV429320
Up to 160A 2 pole	LV429320 x 2
Up to 250A 3 pole (single) long	LV429517
Up to 250A 4 pole (single) long	LV429518
Up to 400/630A 3 pole (single)	LV432593
Up to 400/630A 4 pole (single)	LV432594

For shielding a TP MCCB with neutral link use the 4 pole terminal shield.

**Single pole shrouding plates**

MGPBBP	MGPBB25
Single pole shrouding plates are required for each unoccupied outgoing way.	In addition a 25mm shrouding plate is always required when 4 pole 400A or 630A circuit breakers are mounted on the outgoing pan assembly.

Boards up to 800A are supplied with 3 x MGPBBP. 1600A board is supplied with 6 x MGPBBP.



# Metering facilities for incoming and outgoing circuits

# Powerpact 4 panelboards



The PowerLogic PM700 series power meter offers all the measurement capabilities required to monitor an electrical installation in a single 96 x 96 mm unit extending only 50 mm behind the mounting surface. With its large display, you can monitor all three phases and neutral at the same time. The anti-glare display features large 11 mm high characters and powerful backlighting for easy reading even in extreme lighting conditions and viewing angles.

The PowerLogic PM700 series meters are available in four versions:

- PM700, basic metering with THD and min/max readings
- PM700P, same functions as the PM700, plus two solid-state pulse outputs for energy metering
- PM710, same functions as the PM700, plus one RS 485 port for Modbus communication
- PM750, same functions as the PM710, plus two digital inputs, one digital output and alarms

## Applications

- Panel instrumentation.
- Cost allocation.
- Remote monitoring of an electrical installation.
- Harmonic monitoring (THD).
- Alarming with under/over conditions and I/O status (PM750)

## Characteristics

### Requires only 50 mm behind mounting surface

The Power Meter Series 700 can be mounted on switchboard doors to maximise free space for electrical devices.

### Large back lit display with integrated bar charts

Displays 4 measurements at a time for fast readings.

### Intuitive use

Easy navigation using context-sensitive menus.

### Power and current demand, THD and min/max reading in basic version

A high-performance solution for trouble-free monitoring of your electrical installation.

### Active energy IEC 62053-22 class 0.5S (PM750) and IEC 62053-21 class 1 (PM700, PM700P, PM710)

Suitable for cost-allocation applications.

### Performance measuring and monitoring devices

Meet IEC 61557-12 PMD/S/K55/0.5 (PM750) and IEC61557-12 PMD/S/K55/1 (PM700, PM700P, PM710) that specifies requirements for combined Performance Measuring and monitoring Devices (PMD)

### Innovative Power Meter

RS 485 communications, alarming and digital I/O in a single Power Meter (PM750).

## Power meter inputs

The NSX moulded case circuit breakers up to 630A have current transformer modules that fit directly on to the load terminals of the breaker. As well as the current transformer coils they also have self protected voltage connections off each phase. This eliminates the need to have additional overcurrent protection on these circuits. The meter is wired direct from this CT module without the need for any intermediate devices.

## Panelboard configurations

### 250A Powerboard

There are two versions of this equipment, basic or with the facility to have metering. The meter versions allow metering to be added to any 3 or 4 pole MCCB fitted in the board. All components are easily fitted; there are no extension boxes to fit or apertures to cut. The meters are positioned behind the overall lockable door preventing unauthorised access to the meters. MG25C2M has 4 apertures, MG25C4M has 5.

Note: the meters and CT modules must be ordered separately. The wiring looms to link the CT modules to the meters are included with the panelboards.

Metering options are not available for the 250A panelboard. It is recommended that a MG6Pxx board is used with a 250A incomer.

## Ordering references

### 250A powerboard with metering facility

13 SP positions	<b>MG25C2M</b>
17 SP positions	<b>MG25C4M</b>

### 250A Panelboard

#### Incoming/Outgoing metering

The metering extension box allows for metering for the incoming and outgoing devices to be metered. The kit comes complete with a fuse holder and wiring looms to provide power to the meters. The meters and CT modules are ordered separately.

### 630 & 800A Panelboards

#### Incoming metering

This is easily added to a board when it is first being installed. The kit comprises an extension box that houses the meter and, when fitted to the same end of the board as the incomer, provides additional space for the main incoming cables. All components including the meter, CTs and wiring is included in the kit. The meter is fully set up for the CT ratio and the voltage configuration.

#### Outgoing circuit metering

Metering can be fitted to some or all of the three phase outgoing circuits on 630A & 800A boards whether the boards are fitted with incoming metering or not.

The arrangement consists of side extension boxes that house the meters and also provide additional cabling space. Meters and current transformers are ordered separately to meet the needs of the installation. The necessary cable looms are included with the steelwork. The meters are mounted on hinged doors. The box also contains the auxiliary busbar that provides the 240V control supply for the meters. The left hand extensions have sufficient meter positions for half the number of outgoing ways. The right hand extensions have positions for half the number of outgoing ways plus three additional positions. These extra positions may be used for additional metering or mounting surge arresters, control fuses etc. The lower two positions have a transparent window and DIN rail. This can be removed if not required.

Note: the meters, CT modules and surge arresters must be ordered separately

### Incoming and outgoing metering for boards up to 630A

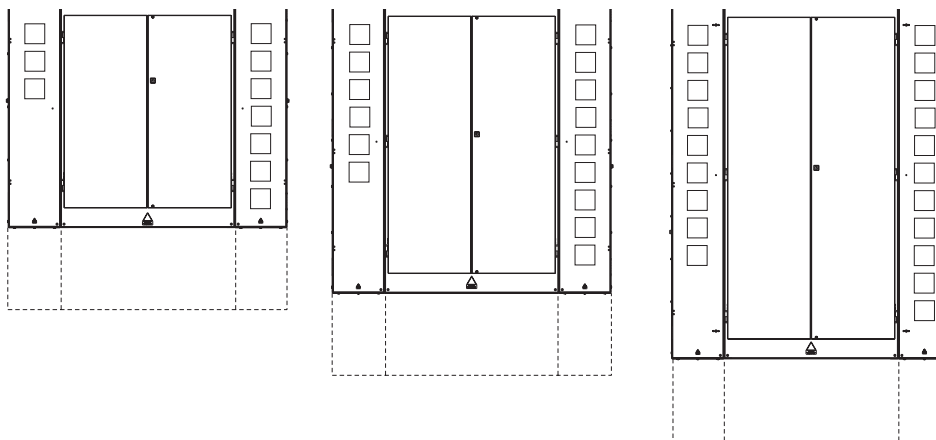
(This arrangement is not applicable for boards fitted with MGPINC direct connections).

When both incoming and outgoing metering is required there is a very cost effective solution by incorporating the incoming metering into the right hand side extension box. Components required are:

- Standard extension box MG6CEX to provide the required cable spreading space
- Current transformer module to fit on line side of incoming breaker.
- PM750MG meter.
- Two MGPC2025 corner units, optional

The meter should be cabled to the CT module according to the diagram supplied. (loom not supplied). The auxiliary supply to the meter should be taken from one phase and neutral and must be suitably fused.

Note. A warning notice should be placed in the board as the voltage connections are taken off the live side of the main breaker.



### MG2C\* 250A board

Incoming metering kit	250A	<b>MG6CEXM</b>
-----------------------	------	----------------

### MG6Cxx 630A board

Incoming metering kit	400A	<b>MG64M</b>
	630A	<b>MG66M</b>

### MG8Cxx 800A board

Incoming metering kit	800A	<b>MG88M</b>
	MG88MX - less meter	

### 630A & 800A outgoing metering side extension boxes

6 way board	Left hand side (*)	3 meter positions	<b>MGPCM6L</b>
	Right hand side (*)	7 meter positions	<b>MGPCM6R</b>
12 way board	Left hand side (*)	6 meter positions	<b>MGPCM12L</b>
	Right hand side (*)	9 meter positions	<b>MGPCM12R</b>
18 way board	Left hand side (*)	9 meter positions	<b>MGPCM18L</b>
	Right hand side (*)	11 meter positions	<b>MGPCM18R</b>

(\*) When the board is inverted for top entry main cables these side extensions fit on the other side of the board.

### Accessories

Cable loom	<b>MGPCML</b>
Meter blanks	<b>O8908</b>

### 1600A Panelboards

#### Incoming metering

A PM750MG meter is fitted as standard in the board. The meter is fully set up for use on a 415V 3ph 4 wire system and for use with the 1600/5 current transformers that are installed on the busbars.

#### Outgoing circuit metering

Metering can be fitted to some or all of the three phase outgoing circuits in these boards. The arrangement consists of a side extension cubicle that houses the meters and also provides additional cabling space. Meters and current transformers are ordered separately to meet the needs of the installation. The necessary cable looms are included with the cubicle.

The meters are mounted on the front, hinged cover of the cubicle and can be aligned with their associated breaker. The cubicle also contains the auxiliary busbar that provides the 240V control supply for the meters

### 1600A panelboard

Side extension cubicle

**MG16CEM4**

### Current transformer modules for direct fitting to NS breakers in all boards

Breaker	Poles	CT ratio	Part number
NS100X	3	125/5	<b>LV429461</b>
NS100X	4	125/5	<b>LV429462</b>
NS160X	3	150/5	<b>LV430561</b>
NS160X	4	150/5	<b>LV430562</b>
NS250X	3	250/5	<b>LV431569</b>
NS250X	4	250/5	<b>LV431570</b>
NS400X	3	400/5	<b>LV432653</b>
NS400X	4	400/5	<b>LV432654</b>
NS630X	3	600/5	<b>LV432861</b>
NS630X	4	600/5	<b>LV432862</b>

Unused 92 x 92 metering apertures can be blanked off using Part number **03908**

All these CT modules have voltage connections.



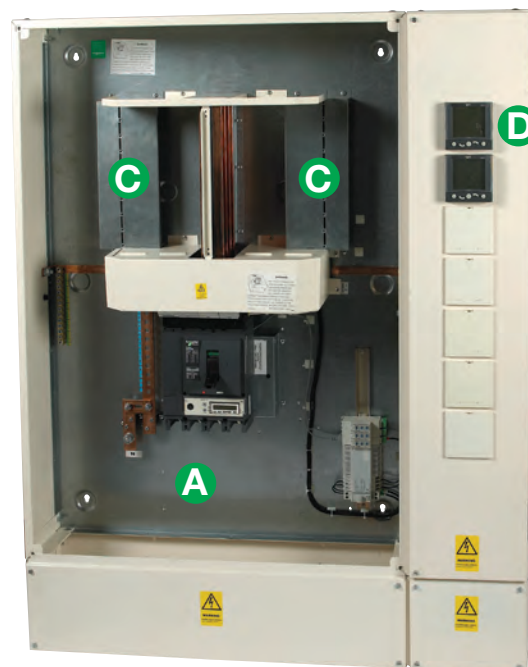
The intelligent panelboard system utilises the advanced features of the Compact NSX range with Micrologic 5 trip units for integrated protection, metering, measuring and monitoring.

With no requirement for external current transformers and an advanced plug and play communication cable system, on site adaptation is tool free, simple and quick to install.

**This system is available in 4 levels for incoming and outgoing devices.**

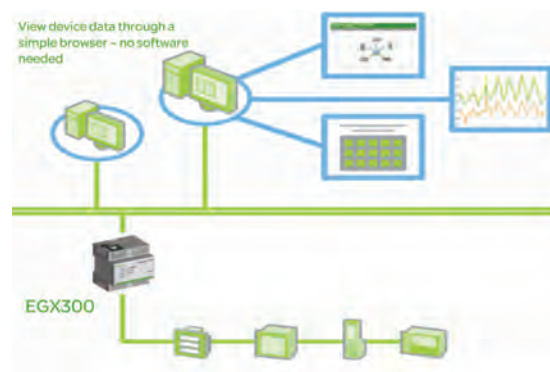
- 1 Local display on the NSX breaker only
- 2 Local display plus data available via Modbus
- 3 Local display and remote functional display on the panelboard
- 4 Local display and remote functional display on the panelboard plus data available via Modbus

All devices are 4 pole and may be configured into a form 4b type 2 or 6 to BSEN 61439-1



**Key**  
A - Main incomer  
B - Interface kit  
C - Outgoing devices area  
D - Display modules

8

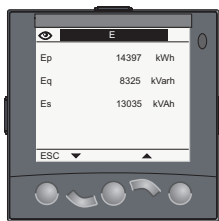
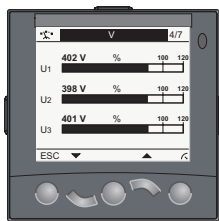
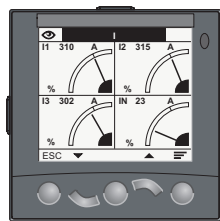
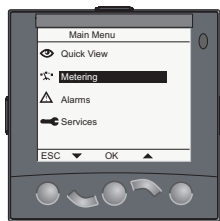


Make your panel board smarter simply by using the Powerlogic EGX300. The integrated gateway-server Powerlogic EGX300 is used to optimise energy usage, and identify opportunities to save energy. The user friendly tool uses only the web browser and network to display the energy consumption on panel boards, incorporating meters, NSX and communicating NS breakers, trend plots from the electrical system and stores historical information from multiple locations.

The din rail mounted device can be fitted in any Power pact 4 panelboard using the webserver power and interface kit **SEPINTPEGX**.

In addition to protection functions, Micrologic 5 offers all the functions of Power Meter products as well as operating assistance for the circuit breaker:

- Display of settings
- Measurement functions:
  - Energy (E)
- Alarms
- Time stamped histories and event tables
- Maintenance indicator
- Communication



Micrologic E measurement functions are made possible by Micrologic intelligence and the accuracy of the sensors. They are handled by a microprocessor that operates independent of protection functions.

## Display



### Micrologic LCD

The user can display all the protection settings and the main measurements on the LCD screen of the trip unit.

- Instantaneous rms current measurements
  - Micrologic E voltage, frequency and power measurements and energy metering
- To make the display available under all conditions and increase operating comfort, an external power supply is recommended.

It is indispensable to:

- Display faults and interrupted current measurements
  - Use all the functions of Micrologic E (e.g. metering of low power and energy values)
  - Ensure operation of the communication system
- The external power supply can be shared by several devices.

### FDM121 display unit

An FDM121 switchboard display unit can be connected to a Micrologic trip unit using a prefabricated cord to display all measurements on a screen. The result is a veritable 96 x 96 mm Power Meter.

In addition to the information displayed on the Micrologic LCD, the FDM121 screen shows demand, power quality and maximeter/minimeter values along with alarms, histories and maintenance indicators.

The FMD121 display unit requires a 24 V DC power supply. The Micrologic trip unit is supplied by the same power supply via the cord connecting it to the FDM121.

### PC screen

When the Micrologic, with or without an FDM121 switchboard display unit, is connected to a communication network, all information can be accessed via a PC.

## Measurements



### Instantaneous rms measurements

The Micrologic E continuously display the RMS value of the highest current of the three phases and neutral (Imax). The navigation buttons can be used to scroll through the main measurements.

In the event of a fault trip, the current interrupted is memorised.

Measures phase, neutral, ground fault currents plus voltage, frequency and power measurements

### Maximeters / minimeters

Every instantaneous measurement provided by Micrologic E can be associated with a maximeter/minimeter. The maximeters for the highest current of the 3 phases and neutral, the demand current and power can be reset via the trip unit keypad, the FDM121 display unit or the communication system.

### Energy metering

The Micrologic E also measures the energy consumed since the last reset of the meter. The active energy meter can be reset via the keypad and the FDM121 display unit or the communication system.

### Demand and maximum demand values

Micrologic E also calculates demand current and power values. These calculations can be made using a block or sliding interval that can be set from 5 to 60 minutes in steps of 1 minute. The window can be synchronised with a signal sent via the communication system. Whatever the calculation method, the calculated values can be recovered on a PC via Modbus communication.

Ordinary spreadsheet software can be used to provide trend curves and forecasts based on this data. They will provide a basis for load shedding and reconnection operations used to adjust consumption to the subscribed power.

### Power quality

Micrologic E calculates power quality indicators taking into account the presence of harmonics up to the 15th order, including the total harmonic distortion (THD) of current and voltage.



Micrologic 5 / 6 integrated Power Meter functions				Display		
				E	Micrologic LCD	FDM121 display
<b>Display of protection settings</b>						
Pick-ups (A) and delays	All settings can be displayed	I <sub>r</sub> , t <sub>r</sub> , I <sub>sd</sub> , t <sub>sd</sub> , I <sub>i</sub> , I <sub>g</sub> , t <sub>g</sub>	■	■		
<b>Measurements</b>						
<b>Instantaneous rms measurements</b>						
Currents (A)	Phases and neutral	I <sub>1</sub> , I <sub>2</sub> , I <sub>3</sub> , I <sub>N</sub>	■	■	■	■
	Average of phases	I <sub>avg</sub> = (I <sub>1</sub> + I <sub>2</sub> + I <sub>3</sub> ) / 3	■	-	■	■
	Highest current of the 3 phases and neutral	I <sub>max</sub> of I <sub>1</sub> , I <sub>2</sub> , I <sub>3</sub> , I <sub>N</sub>	■	■	■	■
	Ground fault (Micrologic 6)	% I <sub>g</sub> (pick-up setting)	■	■	■	■
	Current unbalance between phases	% I <sub>avg</sub>	■	-	■	■
Voltages (V)	Phase-to-phase	U <sub>12</sub> , U <sub>23</sub> , U <sub>31</sub>	■	■	■	■
	Phase-to-neutral	V <sub>1N</sub> , V <sub>2N</sub> , V <sub>3N</sub>	■	■	■	■
	Average of phase-to-phase voltages	U <sub>avg</sub> = (U <sub>12</sub> + U <sub>21</sub> + U <sub>23</sub> ) / 3	■	-	■	■
	Average of phase-to-neutral voltages	V <sub>avg</sub> = (V <sub>1N</sub> + V <sub>2N</sub> + V <sub>3N</sub> ) / 3	■	-	■	■
	Ph-Ph and Ph-N voltage unbalance	% U <sub>avg</sub> and % V <sub>avg</sub>	■	-	■	■
	Phase sequence	1-2-3, 1-3-2	■	■	■	■
Frequency (Hz)	Power system	f	■	■	■	■
Power	Active (kW)	P, total / per phase	■	■	■	■
	Reactive (kVAR)	Q, total / per phase	■	■	■	■
	Apparent (kVA)	S, total / per phase	■	■	■	■
	Power factor and cos φ (fundamental)	PF and cos φ, total and per phase	■	-	■	■
<b>Maximeters / minimeters</b>						
	Associated with instantaneous rms measurements	Reset via Micrologic or FDM121 display unit	■	-	■	■
<b>Energy metering</b>						
Energy	Active (kW), reactive (kVARh), apparent (kVAh)	Total since last reset Absolute or signed mode <sup>(1)</sup>	■	■	■	■
<b>Demand and maximum demand values</b>						
Demand current (A)	Phases and neutral	Present value on the selected window	■	-	■	■
		Maximum demand since last reset	■	-	■	■
Demand power	Active (kWh), reactive (kVAR), apparent (kVA)	Present value on the selected window	■	-	■	■
		Maximum demand since last reset	■	-	■	■
Calculation window	Sliding, fixed or com-synchronised	Adjustable from 5 to 60 minutes in 1 minute steps	■	-		(2)
<b>Power quality</b>						
Total harmonic distortion (%)	Of voltage with respect to rms value	THDU, THDV of the Ph-Ph and Ph-N voltage	■	-	■	■
	Of current with respect to rms value	THDI of the phase current	■	-	■	■

(1) Absolute mode: E absolute = E out + E in; Signed mode: E signed = E out - E in.

(2) Available via the communication system only.

## Additional technical characteristics

### Measurement accuracy

Accuracies are those of the entire measurement system, including the sensors:

- Current: Class 1 as per IEC 61557-12
- Voltage: 0.5 %
- Power and energy: Class 2 as per IEC 61557-12
- Frequency: 0.1 %

*Micrologic measurement capabilities come into full play with the FDM121 switchboard display. It connects to Compact NSX via a simple cord and displays Micrologic information. The result is a true integrated unit combining a circuit breaker and a Power Meter. Additional operating assistance functions can also be displayed.*



FDM121 display.



Surface mount accessory.



Connection with FDM121 display unit.

## FDM121 switchboard display

The FDM121 is a switchboard display unit that can be integrated in the Compact NSX100 to 630 A system. It uses the sensors and processing capacity of the Micrologic trip unit. It is easy to use and requires no special software or settings. It is immediately operational when connected to the Compact NSX by a simple cord. The FDM121 is a large display, but requires very little depth. The anti-glare graphic screen is backlit for very easy reading even under poor ambient lighting and at sharp angles.

## Display of Micrologic measurements and alarms

The FDM121 is intended to display Micrologic 5 measurements, alarms and operating information. It cannot be used to modify the protection settings. Measurements may be easily accessed via a menu.

All user-defined alarms are automatically displayed. The display mode depends on the priority level selected during alarm set-up:

- High priority: a pop-up window displays the time-stamped description of the alarm and the orange LED flashes
- Medium priority: the orange "Alarm" LED goes steady on
- Low priority: no display on the screen

All faults resulting in a trip automatically produce a high-priority alarm, without any special settings required.

In all cases, the alarm history is updated.

If power to the FDM121 fails, all information is stored in the Micrologic non-volatile memory. The data can be consulted via the communication system when power is restored.

## Status indications and remote control

When the circuit breaker is equipped with the BSCM module, the FDM121 display can also be used to view circuit breaker status conditions:

- O/F: ON/OFF
- SD: trip indication
- SDE: Fault-trip indication (overload, short-circuit, ground fault)

## Main characteristics

- 96 x 96 x 30 mm screen requiring 10 mm behind the door (or 20 mm when the 24 volt power supply connector is used)
  - White backlighting
  - Wide viewing angle: vertical  $\pm 60^\circ$ , horizontal  $\pm 30^\circ$
  - High resolution: excellent reading of graphic symbols
  - Alarm LED: flashing orange for alarm pick-up, steady orange after operator reset if alarm condition persists
  - Operating temperature range  $-10^\circ\text{C}$  to  $+55^\circ\text{C}$
  - CE / UL marking
  - 24 V DC power supply, with tolerances 24 V  $-20\%$  (19.2 V) to 24 V  $+10\%$  (26.4 V)
- When the FDM121 is connected to the communication network, the 24 V is supplied by the communication system wiring system
- Consumption 40 mA

## Mounting

The FDM121 is easily installed in a switchboard.

- Standard door cut-out 92 x 92 mm
- Attached using clips

To avoid a cut-out in the door, an accessory is available for surface mounting by drilling only two 22 mm diameter holes.

The FDM121 degree of protection is IP54 in front. IP54 is maintained after switchboard mounting by using the supplied gasket during installation.

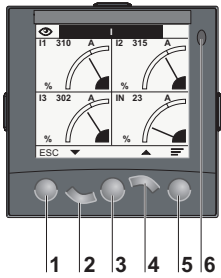
## Connection

The FDM121 is equipped with:

- A 24 V DC terminal block:
  - Plug-in type with 2 wire inputs per point for easy daisy-chaining
  - Power supply range of 24 V  $-20\%$  (19.2 V) to 24 V  $+10\%$  (26.4 V)
- Two RJ45 jacks

The Micrologic connects to the internal communication terminal block on the Compact NSX via the pre-wired NSX cord. Connection to one of the RJ45 connectors on the FDM121 automatically establishes communication between the Micrologic and the FDM121 and supplies power to the Micrologic measurement functions. When the second connector is not used, it must be fitted with a line terminator.





- 1 Escape
- 2 Down
- 3 OK
- 4 Up
- 5 Context
- 6 Alarm LED



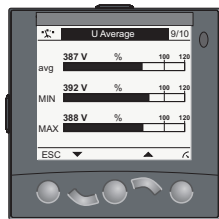
Product identification



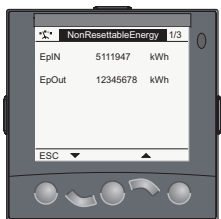
Quick view



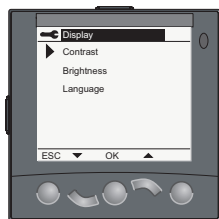
Metering: sub-menu



Metering: U average



Metering: meter



Services

## Navigation

Five buttons are used for intuitive and fast navigation.

The “Context” button may be used to select the type of display (digital, bargraph, analogue).

The user can select the display language (Chinese, English, French, German, Italian, Portuguese, Spanish, etc.) Other languages can be downloaded.

## Screens

### Main menu

When powered up, the FDM121 screen automatically displays the ON/OFF status of the device.

- Quick view
- Metering
- Alarms
- Services.

When not in use, the screen is not backlit. Backlighting can be activated by pressing one of the buttons. It goes off after 3 minutes.

### Fast access to essential information

- “Quick view” provides access to five screens that display a summary of essential operating information (I, U, f, P, E, THD, circuit breaker On / Off)

### Access to detailed information

- “Metering” can be used to display the measurement data (I, U-V, f, P, Q, S, E, THD, PF) with the corresponding min/max values
- Alarms displays active alarms and the alarm history
- Services provides access to the operation counters, energy and maximeter reset function, maintenance indicators, identification of modules connected to the internal bus and FDM121 internal settings (language, contrast, etc.)

### Selection and order form

Panelboards with the new range of Moulded Case Circuit Breakers (NSX) Installation Monitoring & Measuring functionality all integrated into the MCCB (4 Pole only), with Remote Display (FDM) and Modbus output Compact NSX enable the measured and metered data to be integrated in software management systems.

Note:- 4 pole breakers only on the incommer

Panel board Selection		
Order Code	Description	Selection
<b>400A/630A Panelboard</b>		
MG6C6	18 single pole ways ( 4 x 4 pole)	<input type="checkbox"/>
MG6C12	36 single pole ways ( 8 x 4 pole)	<input type="checkbox"/>
MG6C18	54 single pole ways ( 12 x 4 pole + 2 x 3 pole)	<input type="checkbox"/>
<b>800A Panelboard</b>		
MG8C6	18 single pole ways ( 4 x 4 pole)	<input type="checkbox"/>
MG8C12	36 single pole ways ( 8 x 4 pole)	<input type="checkbox"/>
MG8C18	54 single pole ways ( 12 x 4 pole + 2 x 3 pole)	<input type="checkbox"/>
<b>1600A Panelboard</b>		
MG16C14	42 single pole ways (9 x 4 pole + 2 x 3 pole)	<input type="checkbox"/>
<b>Incomer</b>		
Order Code		
<b>400A/630A Panelboard 4 pole</b>		
SEP400M5M	400A 4 pole MCCB compact NSX Integrated Metering & Monitoring Micrologic 5 Including Metering Cable	<input type="checkbox"/>
SEP630M5M	630A 4 pole MCCB compact NSX Integrated Metering & Monitoring Micrologic 5 Including Metering Cable	<input type="checkbox"/>
<b>800A Panelboard</b>		
MGP8004B5	800A 4 Pole incommer	<input type="checkbox"/>
<b>1600A Panelboard</b>		
33566	1250A 4 pole Incommer	<input type="checkbox"/>
33570	1600A 4 pole incommer	<input type="checkbox"/>
SEPINTP1	Power and interface kit	<input type="checkbox"/>
<b>Outgoing ways 4 pole (only) with Micrologic 5 (Integrated U,I,E,P,f*,THD* Measuring and Monitoring**)</b>		
Order Code	36kA rated circuit breakers	Out going way position
		1 2 3 4 5 6 7 8 9 10 11 12
SEP0404M5	40 A protection module Micrologic 5	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SEP1004M5	100 A protection module Micrologic 5	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SEP1604M5	160 A protection module Micrologic 5	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SEP2504M5	250 A protection module Micrologic 5	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SEP4004M5	400 A protection module Micrologic 5***	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
SEP6304M5	630 A protection module Micrologic 5***	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
* FDM display required		
** Available via Modbus		
*** 50kA rated breakers		

## Metering options (Metering extension Box Required if Fitting Display module)

Order Code	Side Extension boxes	Selection
<b>630A &amp; 800A</b>		
<b>MGPCM6LX</b>	6 Way board Left Hand Side 3 remote display positions	<input type="checkbox"/>
<b>MGPCM6RX</b>	6 Way board Right Hand Side 6 remote display positions	<input type="checkbox"/>
<b>MGPCM12LX</b>	12 Way board Left Hand Side 6 remote display positions	<input type="checkbox"/>
<b>MGPCM12RX</b>	12 Way board Right Hand Side 9 remote display positions	<input type="checkbox"/>
<b>MGPCM18LX</b>	18 Way board Left Hand Side 9 remote display positions	<input type="checkbox"/>
<b>MGPCM18RX</b>	18 Way board Right Hand Side 11 remote display positions	<input type="checkbox"/>
<b>1600A</b>		
<b>MG16CEM4X</b>	Side Extension Cubicle	<input type="checkbox"/>
<b>Display</b>		
<b>TRV00121</b>	FDM121 Metering Display module	<input type="checkbox"/>
<b>Cable accessories</b>		
<b>TRV00870</b>	5 RJ45 female/ female connector	<input type="checkbox"/>
<b>TRV00810</b>	5 RJ45/RJ45 1M interconnector	<input type="checkbox"/>
<b>TRV00820</b>	5 RJ45/RJ45 2M interconnector	<input type="checkbox"/>
<b>TRV00880</b>	10 ULP Line terminators	<input type="checkbox"/>
<b>Modbus Communication accessories</b>		
<b>TRV00210</b>	Modbus interface	<input type="checkbox"/>
<b>TRV00217</b>	Stacking Connector for TRV00210	<input type="checkbox"/>

## Standard Outgoing way MCCB (3pole) order codes

Order Code	Description
<b>MGP0163X</b>	PP4 MCCB 3P 16A
<b>MGP0253X</b>	PP4 MCCB 3P 25A
<b>MGP0323X</b>	PP4 MCCB 3P 32A
<b>MGP0403X</b>	PP4 MCCB 3P 40A
<b>MGP0633X</b>	PP4 MCCB 3P 63A
<b>MGP0803X</b>	PP4 MCCB 3P 80A
<b>MGP1003X</b>	PP4 MCCB 3P 100A
<b>MGP1253X</b>	PP4 MCCB 3P 125A
<b>MGP1603X</b>	PP4 MCCB 3P 160A
<b>MGP2003X</b>	PP4 MCCB 3P 200A
<b>MGP2503X</b>	PP4 MCCB 3P 250A
<b>MGP4003X</b>	PP4 MCCB 3P 400A
<b>MGP6303X</b>	PP4 MCCB 3P 630A

## Other options

Order Code	Description	
	On site Engineer Support 1 Day	
<b>LV434205</b>	Breaker Status information required (up to 630A)	1 required per Breaker

## Example of ordering a Panel Board with Metering

Step 1	Select the Required Panel board from Section 1	<b>MG6C</b>	x1
Step 2	Select Incommer device	<b>SEP630M5M</b>	x1
2a	Select Power & Interface Kit	<b>SEPINTP1</b>	x1
Step 3	Select appropriate outgoing device	<b>SEP1004M5</b>	x1
Step 4	Add Metering accessories		
4a	If you require the display module for each outgoing way then select a side extension box	<b>MGPCM6L</b>	x1
4b	Select required Number of Display Modules (include Incommer)	<b>TRV00121</b>	x3
4c	If data is required over Modbus protocol select the required number of Modbus interfaces (include incomer)	<b>TRV00210</b>	x3
4d	Select modbus stacking connectors (pack of 10) include incomer	<b>TRV00217</b>	x1
4e	Select Required number of RJ45 interconnectors (Pack of 5)	<b>TRV00810</b>	x1
4f	Select ULP terminator (pack of 10)	<b>TRV00880</b>	x1

Note: If no display modules are required and data is to be made available over Modbus only items 4a and 4b are not required.

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Auxiliaries and accessories .....	page 9/5
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# Wall mounted switchgear Enclosed MCCBs 63 to 630A



### Application

- For use in commercial and industrial applications, providing protection isolation and control of motors and power circuits
- MCCBs can be supplied with adjustable Vigi earth leakage module for improving disconnection times and providing personnel and fire protection
- Suitable for switching inductive loads, AC23 contact rating and high mechanical endurance
- Security of isolation, positive contact indication in accordance with BS 7671 and padlockable rotary handle or toggle padlocking options

### Offer

- ASTA certification of breaking capacity to BS EN 60947-2
- Supplied with line and load terminal shields
- Removable front cover provides all round cabling access
- Removable gland plates with optional extension boxes
- Trip indication and test button
- Shrouded disconnectable neutral with 3 pole device
- Steelwork finished in polyester epoxy powder, cream colour RAL9001

### Technical data

Enclosure ingress protection	IP42
Rated operational voltage	Ue 415V
Rated current	at 40°C
Rated ultimate short-circuit breaking capacity	Icu = 70kA 2 pole units 85kA@240V
Rated service short-circuit breaking capacity	I <sub>su</sub> = 100% I <sub>cu</sub>
Motor ratings	See Section 10
Voltage releases for remote tripping	24 to 415Vac
Auxiliary change over contacts for remote indication	ON, OFF Tripped
Connection accessories for ease of wiring	Cable clamps up to 185/240mm <sup>2</sup> optional
Rotary handle provides padlocking and ease of operation	
Earth leakage	30mA to 30A See page 3/4

C-O operations in 000's	100A	160A	250A	400A	630A	
Mechanical endurance	50	40	20	15	15	
Electrical endurance	I <sub>n</sub> /2	50	40	20	12	8
	I <sub>n</sub>	30	20	10	6	4

### Range

MCCB				
Rating	Adjustment	Two Pole	3 pole + neutral	4 pole
63A	44 - 63	MGE0632X	MGE0633X	MGE0634X
100A	70 - 100	MGE1002X	MGE1003X	MGE1004X
125A	88 - 125	MGE1252X	MGE1253X	MGE1254X
160A	112 - 160	MGE1602X	MGE1603X	MGE1604X
200A	140 - 200		MGE2003X	MGE2004X
250A	175 - 250		MGE2503X	MGE2504X
400A	160 - 400		MGE4003X	MGE4004X
630A	250 - 630		MGE6303X	MGE6304X

### MCCB + earth leakage

Rating	Adjustment	Sensitivity	4 pole
63A	44 - 63	30mA - 10A	MGE0634XE
100A	70 - 100	30mA - 10A	MGE1004XE
125A	88 - 125	30mA - 10A	MGE1254XE
160A	112 - 160	30mA - 10A	MGE1604XE
200A	140 - 200	30mA - 10A	MGE2004XE
250A	175 - 250	30mA - 10A	MGE2504XE
400A	160 - 400	300mA - 30A	MGE4004XE
630A	250 - 630	300mA - 30A	MGE6304XE

## Wall mounted switchgear Enclosed switch disconnectors 100 to 630A



### Application

- For use in commercial and industrial applications, providing isolation and control of motors and power circuits
- Devices can be supplied with adjustable Vigi earth leakage module for personnel and fire protection
- Suitable for switching inductive loads, AC23 contact rating and high mechanical endurance
- Security of isolation, positive contact indication in accordance with BS 7671 and padlockable rotary handle

### Offer

- Supplied with line and load terminal shields
- Removable front cover provides all round cabling access
- Removable gland plates and optional extension boxes
- Trip indication and test button
- Shrouded disconnectable neutral with 3 pole device
- Steelwork finished in polyester epoxy powder, cream colour RAL9001

### Technical data

Enclosure ingress protection	IP42
Rated operational voltage	Ue 415V
Rated current	at 40°C
Voltage releases for remote tripping	24 to 415Vac
Auxiliary change over contacts for remote indication	ON, OFF, Tripped
Connection accessories for ease of wiring	Cable clamps up to 185/240mm <sup>2</sup> optional
Rotary handle provides padlocking and ease of operation	
Earth leakage	30mA to 30A See page 3/4

C-O operations in 000's	100A	160A	250A	400A	630A	
Mechanical endurance	50	40	20	15	15	
Electrical endurance	In/2	50	40	20	12	8
	In	30	20	10	6	4

### Range

Switch disconnector		
Rating	3 pole + neutral	4 pole
100A	<b>MGE1003XS</b>	<b>MGE1004XS</b>
160A	<b>MGE1603XS</b>	<b>MGE1604XS</b>
250A	<b>MGE2503XS</b>	<b>MGE2504XS</b>
400A	<b>MGE4003XS</b>	<b>MGE4004XS</b>
630A	<b>MGE6303XS</b>	<b>MGE6304XS</b>

### Switch disconnector + earth leakage (RCCB)

Rating	Sensitivity	4 pole
100A	30mA - 10A	<b>MGE1004XSE</b>
160A	30mA - 10A	<b>MGE1604XSE</b>
250A	30mA - 10A	<b>MGE2504XSE</b>
400A	300mA - 30A	<b>MGE4004XSE</b>
630A	300mA - 30A	<b>MGE6304XSE</b>

# Wall mounted switchgear

## Earth leakage

### Extension boxes



#### Application

- The vigi earth leakage module option disconnects the circuit breaker when an electrical earth fault is detected
- Used to overcome high earth fault loop impedance and associated excessive disconnection times eg long cable runs
- Enhanced personal and equipment protection

#### Technical data

Adjustable sensitivity and time delay settings	For discrimination with other RCDs	
Protection against nuisance tripping due to transient overvoltages etc.	To IEC255-4 and IEC801-2 - 5	
Class A	Immunity to DC components of up to 6mA	
Remote indication of tripping	Using optional changeover contact SDV	
Rating	Sensitivity settings (A)	
	Up to 160A	0.03*, 0.3, 1, 3 and 10
	200 - 250	0.03*, 0.3, 1, 3, and 10
	400 - 630	0.3, 1, 3, 10 and 30
Time delay settings (ms)	0, 60, 150 and 310	

\* If the sensitivity is set to 30mA there is no time delay whatever the time delay setting. For ordering references see previous pages.

#### Extension boxes

- Provide extra cabling space when using oversized cables. Colour RAL9001

Size	To fit rating	Part number
100mm	63 - 250A	<b>MGEX160C</b>
200mm	63 - 250A	<b>MGEX250C</b>
120mm	400 - 630A	<b>MGEX630C</b>

#### Intelligent Safepact

- The Safepact range has now been extended to include our new Micrologic control units up to 630 amp, each unit is supplied complete and ready to install all the customer has to do is connect the supply, load and interface to the modbus system.

#### Application

- The Individual protection or isolation of loads
- Monitoring of loads with Micrologic 5 control unit
- Separate incomer to distribution equipment
- Replacement to Fuse Switches

#### Technical data

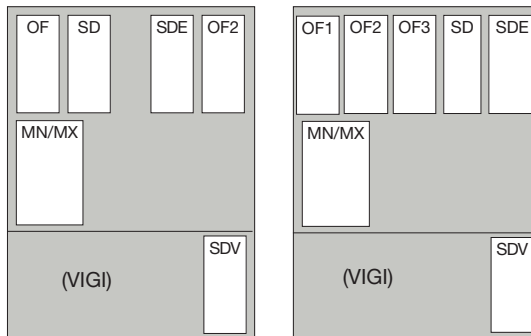
Ingress protection	IP42
Operational Voltage	415V
Ultimate breaking capacity	70kA
Rated service breaking capacity	100%
FDM module fitted and wired	
Modbus interface, power supply and protection fitted and wired	

Range Reference	Part number
Safepact 4 pole 40A mccb Micrologic 5	<b>MGE0404M5</b>
Safepact 4 pole 100A mccb Micrologic 5	<b>MGE1004M5</b>
Safepact 4 pole 160A mccb Micrologic 5	<b>MGE1604M5</b>
Safepact 4 pole 250A mccb Micrologic 5	<b>MGE2504M5</b>
Safepact 4 pole 400A mccb Micrologic 5	<b>MGE4004M5</b>
Safepact 4 pole 630A mccb Micrologic 5	<b>MGE6304M5</b>



### Application

These diagrams show the position of auxiliaries when fitted inside the MCCB or switch disconnecter.



MGE 100/160/250

MGE 400/630

### Changeover contact

Auxiliary switch used for remote indication, electrical interlocking etc. Function is dependent upon position fitted within device.

- OF indicates contact position 'ON' and 'OFF'
- SD indicates device is in trip position
- SDE indicates device has tripped due to overcurrent or earth fault (100/160/250 requires SDE adaptor **29451**)
- SDV indicates device has tripped due to earth fault

	Part number
OF/SD/SDE/SDV	<b>29450</b>
SDE adaptor for MGE 100/160/250	<b>29451</b>

### Shunt trip (MX)

- Enables remote tripping on application of voltage from coil
- Coil permanently rated

Aux. supply voltage (V)	Part number
220/240	<b>LV429387</b>
380/415	<b>LV429388</b>

### Undervoltage release (MN)

- Enables remote tripping on removal of voltage to coil
- Coil permanently rated
- Prevents reclosing of device before restoration of supply to undervoltage release

Aux. supply voltage (V)	Part number
220/240	<b>LV429407</b>
380/415	<b>LV429408</b>

### Rotary handle

- Permits the device to be padlocked in OFF position by 1-3 padlocks, 5-8mm hasp
- Maintains indication of ON/OFF and TRIPPED positions
- Maintains access to 'push to trip' button
- Ronis/Profalux keylocks available on 400/630A

	Part number
For MGE 100/160/250	<b>LV429337</b>
For MGE 400/630	<b>LV432597</b>

### Cable clamp

- For bare (uncrimped) cable connections
- See technical data for cable terminations in detail
- Other options available: refer to NS catalogue, or consult us

	Part number
For MGE 100/160 up to 95mm <sup>2</sup> (set of 4)	<b>LV429243</b>
120 to 185mm <sup>2</sup> (set of 4)	<b>LV429260</b>
For MGE 250 up to 95mm <sup>2</sup> (set of 4)	<b>LV429228</b>
120 to 185mm <sup>2</sup> (set of 4)	<b>LV429260</b>
For MGE 400/630 up to 2x240mm <sup>2</sup> (set of 4)	<b>LV432482</b>







## Application

Heavy duty sheet steel enclosures for use in commercial and industrial applications, providing isolation and control of electrical loads. Suitable for switching highly inductive loads without derating. For use in environments where a superior degree of protection is required. Four pole isolation with positive contact indication. Padlockable handle. Alternative red/yellow handle for use in industrial applications. 480V 3 ph 4 wire 50/60Hz systems.

## Technical data

Degree of protection	IP55 to BS EN 60529
Sheet steel	Epoxy/polyester powder coated, beige colour
Door interlocked rotary handle	Padlockable
Black handle as standard	With Red/yellow handle option
Removable bottom gland plate	
Switch disconnector manufactured and tested to	BS EN 60947-3
4 pole switching	With fully rated neutral
Rated operational current at AC23A	Nominal rating up to 480V
Rated operational voltage	690V 50/60Hz (500V for 63A)

For further details of the switch disconnectors refer to Interpact catalogue.

## Terminations

63A	Clamp connections accepting 1.5 - 16mm <sup>2</sup> rigid cable
100 - 630A	Flat pads for crimped lugs

Termination details are identical to those of the Compact MCCBs

## References

Rating	Black rotary handle	Red rotary handle with yellow surround
	Part number	Part number
63A	MGES063	MGES063R
100A	MGES100	MGES100R
160A	MGES160	MGES160R
250A	MGES250	MGES250R
320A	MGES320	MGES320R
400A	MGES400	MGES400R
500A	MGES500	MGES500R
630A	MGES630	MGES630R

## Accessories

Rating	63A	100-160A	250A	320-630A
Auxiliary switch	29450	29450	29450	29450
Pair long terminal shields	28957	28958	29324	32565
Set of 4 crimp cable lugs for Cu cables c/w 3 phase barriers				
	95mm <sup>2</sup>	LV428952		
	120mm <sup>2</sup>	LV429256		
	150mm <sup>2</sup>	LV429257		
	185mm <sup>2</sup>	LV429258		
	240mm <sup>2</sup>	LV432501		
	300mm <sup>2</sup>	LV432503		

# Wall mounted switchgear

## Switch disconnecter fuse

## Switch disconnecter



### Application

Heavy duty fuse products for use in commercial and industrial environments, providing isolation and traditional fuse protection for electrical loads.

### Features

- Rated for 240/415V 50/60Hz
- Ratings 20A, 32A, 63A, 100A, SP&SwN, TP&N
- Utilisation category AC20A, AC21A, AC22A, AC23B at rated current
- Degree of protection IP41
- Handle position provides positive contact indication
- Door handle prevents door being opened when switch is ON or padlocked
- Handle padlockable in ON and OFF positions
- Fuse links supplied as standard
- Bottom feed only

### Construction

- Live terminals fully shrouded
- Door interlock has integral defeat mechanism allowing door to be opened without switching OFF. This feature is not operable when the handle is padlocked
- Removable gland plates with cable knockouts
- Lift off door provides greater access for installation and cabling
- Door opens within the width of the unit allowing units to be mounted adjacent
- Neutral has disconnectable link and capacity for 3 outgoing cables
- Keyhole slots in the enclosure base allow easy installation
- Earthing kit provided as standard
- Easy access to fuse links
- Steelwork finished in polyester epoxy powder, cream colour RAL9001

### Technical data

Standard BS EN 60947-3

Rated operational voltage 415V 50/60Hz

Rating	20A	32A	63A	100A
Rated current at 40°C, A	20	32	63	100
Rated impulse voltage	6kV	6kV	6kV	6kV
Rated short time withstand I <sub>cw</sub> , A	416	416	756	1300
Rated short circuit making capacity I <sub>cm</sub>	1.35kA	1.35kA	1.35kA	3.5kA
Rated short circuit breaking capacity I <sub>cn</sub>	50kA	50kA	50kA	50kA
Utilisation category at rated current	AC-20A/ 21A/ 22A/ 23B			
Kilowatt rating	11kW	15kW	30kW	55kW
Cable size, maximum mm <sup>2</sup> (tunnel lug)	10mm <sup>2</sup>	10mm <sup>2</sup>	25mm <sup>2</sup>	50mm <sup>2</sup>

### References

Rating (A)	Switch disconnecter fuse Part number	Switch disconnecter Part number
<b>Single pole and switched neutral</b>		
20	MGFA0201C	MGFL0201C
32	MGFA0321C	MGFL0321C
63	MGFA0631C	MGFL0631C
100	MGFA1001C	MGFL1001C
<b>Three pole and neutral</b>		
20	MGFA0203C	MGFL0203C
32	MGFA0323C	MGFL0323C
63	MGFA0633C	MGFL0633C
100	MGFA1003C	MGFL1003C

### Fuse link data

Rating (A)	BS88 reference	Bussman reference
20	A1, A2	NITD20
32	A1, A2	AA032
63	A2, A3	BA063
100	A2, A3, A4	CEO100

# Wall mounted switchgear

## Fuse switch disconnecter

## Switch disconnecter



### Application

Heavy duty fuse products for use in commercial and industrial environments, providing isolation and traditional fuse protection for electrical loads.

### Features

- Rated for 240/415V 50/60Hz
- Ratings 100A, 160A, 200A, 250A, 315A, 400A, 500A, 630A TP&N
- Utilisation category AC20A, AC21A, AC22A, AC23B at rated current, AC23A for ratings up to 160A
- Handle position provides positive contact indication
- Door handle prevents door being opened when switch is ON or padlocked
- Handle padlockable in ON and OFF positions
- Device may be fed to either top or bottom terminals
- Fuse links or copper links supplied as standard

### Construction

- All terminals are fully shrouded
- Quick make and break silver plated contacts
- Door interlock has defeat mechanism allowing switch to be closed with door open
- Removable plain gland plates are fitted at top and bottom
- Cabling space may be increased by the addition of the cable boxes
- Lift off door provides greater access for installation and cabling
- Door opens within the width of the unit allowing units to be mounted adjacent
- Neutral is fitted with disconnectable link
- Earthing kit provided as standard
- Easy access to fuse links
- Removable cross rails allow cables to be laid in easily
- Direct front access to terminals without dismantling the mechanism
- Clear shrouds allow easy access for inspection and visual indication of contact position
- Steelwork finished in polyester epoxy powder, cream colour RAL9001

### Technical data

Standard	BS EN 60947-3
Rated operational voltage	415V 50/60Hz

Rating	100A	160A	200A	250A	315A	400A	500A	630A
Rated current at 40°C, A	100	160	200	250	315	400	500	630
Rated impulse voltage	8kV	8kV	8kV	8kV	8kV	8kV	8kV	8kV
Rated short time withstand I <sub>cw</sub> , A	3.4kA	3.4kA	5.23kA	5.23kA	12kA	12kA	12kA	12kA
Rated short circuit making capacity I <sub>cm</sub>	5kA	5kA	8kA	8kA	24kA	24kA	24kA	24kA
Rated short circuit breaking capacity I <sub>cn</sub>	50kA	50kA	50kA	50kA	50kA	50kA	50kA	50kA
Utilisation category at rated current	AC-23A	AC-23A	AC-23B	AC-23B	AC-23B	AC-23B	AC-23B	AC-23B
Kilowatt rating	55kW	90kW	110kW	130kW	175kW	220kW	250kW	300kW
Terminal stud	M8	M8	M10	M10	M12	M12	M12	M12
Terminal lug, maximum palm width	20mm	20mm	30mm	30mm	50mm	50mm	50mm	50mm
Maximum cable size	50mm <sup>2</sup>	50mm <sup>2</sup>	120mm <sup>2</sup>	120mm <sup>2</sup>	400mm <sup>2</sup>	400mm <sup>2</sup>	400mm <sup>2</sup>	400mm <sup>2</sup>

### References

Rating (A)	Fuse switch disconnecter Part number	Switch disconnecter Part number	Cable box Part number
<b>Three pole and neutral</b>			
100	MGFS1003C	MGFD1003C	MGFX100C
160	MGFS1603C	MGFD1603C	MGFX160C
200	MGFS2003C		MGFX250C
250	MGFS2503C	MGFD2503C	MGFX250C
315	MGFS3153C		MGFX500C
400	MGFS4003C	MGFD4003C	MGFX500C
500	MGFS5003C	MGFD5003C	MGFX500C
630	MGFS6303C	MGFD6303C	MGFX630C

### Fuse link data

Rating (A)	BS88 reference	Bussman reference	Cu links (Set of 3)
100	B1	CD100	MGFQ100
160	B2	DD160	MGFQ160
200	B2	DD200	MGFQ250
250	B3	ED250	MGFQ250
315	C1	EF315	MGFQ400
400	C1	EF400	MGFQ400
500	C2	FF500	MGFQ630
630	C2	FF630	MGFQ630

### Application

The wall mounting busbar chambers provide an easy means of mounting and interconnecting fusegear products.

### Range

Three ratings and three busbar lengths are available. Connection kits enable busbar chambers to be linked and all devices connected to the bars.

### Technical data

Manufactured to	BS EN 60439-1
Rated voltage	415V 50/60Hz
Solid copper busbars rated at	200, 400 and 630A
Neutral bar	Fully rated
Busbar chamber lengths	750, 1200 and 1800mm
Chambers dimensions	Common depth (200mm) Common height (450mm)
End plates, top plates and bottom plates	Are fully removable for connections and for access
Steelwork finished	In polyester epoxy powder, cream colour RAL9001

Rating	Length (mm)	Length (mm)	Length (mm)
	750	1200	1800
	Part number	Part number	Part number
200	MGFB20007C	MGFB20012C	MGFB20018C
400	MGFB40007C	MGFB40012C	MGFB40018C
630	MGFB63007C	MGFB63012C	MGFB63018C

### Busbar connection kits

Each kit comprises connections for three phases and neutral

Rating	Busbar interconnections to link busbar chambers*	Flexible busbar inter connections to link non Schneider Electric busbar chambers	Cable connections to connect to busbars**
	Part number	Part number	Part number
200	MGFK200		MGFC200
400	MGFK400	MGFJ400	MGFC400
630	MGFK630	MGFJ630	MGFC630

\* The busbar connection kits allow 2 or more Schneider Electric busbar chambers to be electrically and mechanically joined together providing facilities for a greater number of outgoing circuits.

\*\* The cable connection kits comprise 4 bolts, nuts and washers to connect a set of cables fitted with crimped lugs to the busbars.

### Fuse switch connection kits

Each kit comprises connections for three phases and neutral

Rating	Top mounted Part number	Bottom mounted Part number
100, 160	MGFZ160	MGFZ160
200, 250	MGFZ250	MGFZ250
315 - 630	MGFZ630T	MGFZ630

Fuse switch connection kits comprise 4 copper links with connection hardware to connect a fuse switch to the busbars.

**Note:** the kit required for fitting devices of 315A or greater differs dependent on whether it is mounted above or below the busbar chamber.



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Horizontal comb busbar for 27 mm pitch for C120, NG125 .....	page 10/5
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Enclosure accessories .....	page 10/30

IEC 60947-7-1, IEC 61439-2

### Description

Comb busbars make it easier to install Schneider Electric products.

- Can be sawn and cut in a single pass
- Supplied with two IP20 lateral end-pieces except for 57 module references
- The end-pieces are compulsory after cutting
- The phases are identified by symbols on each side of the comb busbar for installation in all positions
- Cutting marks on the insulating material
- The special comb busbars for circuit breakers with 9 mm auxiliaries have a 9 mm gap for inserting iOF and iSD

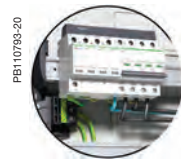
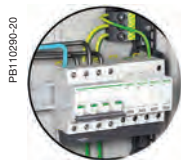
PB102379-30



Acti 9 / Multi 9		18 mm poles, cuttable									
Number of poles		1P	2P	3P	4P	Aux+1P	Aux+2P	Aux+3P	Aux+4P	3 (Aux+1P)	3 (Aux+N+1P)
Rated operational current at 40°C (Ie)		100 A									
Rated conditional short-circuit current of an assembly (Isc)		Compatible with the breaking capacity of Schneider Electric circuit breakers									
Insulation voltage (Ui)		500 V									
Rated voltage (Ue)		415 V									
Fire resistance to IEC 695-2-1		Self-extinguishing 960°C 30 s									
Colour		RAL 7016 (anthracite grey)									
<b>Use</b>											
Power supply by connector recommended											
Type		L1...	L1L2...	L1L2L3...	NL1L2L3...	AuxL1...	AuxL1L2...	AuxL1L2L3	AuxNL1... ...L2L3	AuxL1... ...AuxL2... ...AuxL3	AuxL1... ...AuxL2... ...AuxL3
Set of		1	1	1	1	1	1	1	1	1	1
<b>References</b>											
6 modules of 18 mm		A9XPH106	-	-	-	-	-	-	-	-	-
12 modules of 18 mm		A9XPH112	A9XPH212	A9XPH312	A9XPH412	-	-	-	-	-	-
18 modules of 18 mm		-	-	-	-	-	-	-	-	-	-
24 modules of 18 mm		A9XPH124	A9XPH224	A9XPH324	A9XPH424	-	-	-	-	-	-
57 modules of 18 mm		A9XPH157	A9XPH257	A9XPH357	A9XPH457	A9XAH157	A9XAH257	A9XAH357	A9XAH457	A9XAH657	A9XAH557*

\* This comb busbar is only compatible in top feeding for simple lug devices and bottom feeding on double lug devices.

### Installation



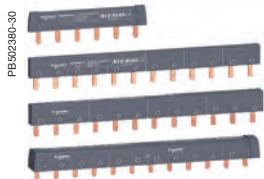
### Accessories

Number of poles	1P	2P	3P	4P	-	-	-	
	<b>End-pieces</b>				<b>Tooth covers</b>		<b>Connectors</b>	
	Lateral end-pieces providing IP20 protection				Insulate teeth that have been left free		Comb busbar power supply. Horizontal incomer on each side. For 35 mm <sup>2</sup> cable. Tightening torque 4 N.m	
Set of	10	10	10	10	20	4	4	
References	A9XPE110	A9XPE210	A9XPE310	A9XPE410	A9XPT920	A9XPCM04	A9XPCD04	

Technical  
Section 11

Dimensions  
Section 12

IEC 60947-7-1, IEC 61439-2



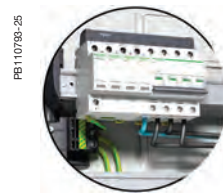
### Description

Comb busbars make it easier to install Schneider Electric products. The phases are identified by symbols on each side of the comb busbar. Dismountability of devices with Acti 9.

Acti 9 / Multi 9	18 mm poles, not cuttable				
Number of poles	1P	2P	3P	4P	3 (N+P)
Rated operational current at 40°C (Ie)	100 A				
Rated conditional short-circuit current of an assembly (Isc)	Compatible with the breaking capacity of Schneider Electric circuit breakers				
Insulation voltage (Ui)	500 V				
Rated voltage (Ue)	415 V				
Fire resistance to IEC 695-2-1	Self-extinguishing 960°C 30 s				
Colour	RAL 7016 (anthracite grey)				
<b>Use</b>					
Type	Power supply by connector recommended				
Set of	L1	L1L2	L1L2L3	NL1L2L3	NL1NL2NL3
	1	1	1	1	1
<b>References</b>					
12 modules of 18 mm	A9XPM112	A9XPM212	A9XPM312	A9XPM412	A9XPM512*

\* This comb busbar is only compatible in top feeding for simple lug devices and bottom feeding on double lug devices.

### Installation



### Accessories

	<b>Tooth covers</b>	<b>Connectors</b>	
	Insulate teeth that have been left free	<b>Double terminals</b>	<b>Monoconnect</b>
		Comb busbar power supply	
<b>Use</b>			
		Horizontal in-come on each side For 35 mm <sup>2</sup> cable Tightening torque 4 N.m	
Set of	20	4	4
<b>References</b>	<b>A9XPT920</b>	<b>A9XPCD04</b>	<b>A9XPCM04</b>
<b>Installation</b>			







### IEC 60439-1







### Description

Comb busbars ensure:

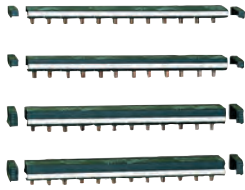
- Easy, reliable mounting of 1P+N and 3P+N, TL, CT, ID, V, BP and Cm switchgear: tooth positioning opposite the device terminals is ensured by indexing of copper parts
- C60/ID Group Feeder comb busbars contain two different parts:
  - Connection of Group Feeder switchgear: C60 (3P+N) or ID (3P+N) circuit breaker in 18 mm modules, powered by cables, through the bottom, directly by the terminals
  - Connection of Clario, Prodis and Libro switchgear in 9 mm modules

Acti 9 Ph+N		9 mm poles, cuttable					
Number of poles		1P+N			3P+N		
							
		21501			21505		
		Complete comb busbars (supplied with 4 side plates and 1 tooth cover)					
Rated operational current at 40°C (Ie)		80 A					
Rated conditional short-circuit current of an assembly (Isc)		Compatible with the breaking capacity of Schneider Electric circuit breakers					
Insulation voltage (Ui)		440 V					
Rated voltage (Ue)		230 V (P4 + N) - 400 V (3Ph + N)					
Rated impulse withstand voltage (Uimp)		6 kV					
Degree of protection		IP20					
Fire resistance to IEC 695-2-1		Self-extinguishing 960°C 30 s					
Colour		RAL 7035					
Number of 18 mm modules	Comb busbar	12	18	24	12	18	24
	Tooth cover	3	3	6	3	3	6
<b>References</b>		<b>21501</b>	<b>19512</b>	<b>21503</b>	<b>21505</b>	<b>09516</b>	<b>21507</b>
<b>Comb busbars alone</b>							
Number of 18 mm modules	Comb busbar	48			48		
<b>References</b>		<b>21089</b>			<b>21093</b>		

C60/ID Group Feeder comb busbars alone		3P+N		
				
		80 A		
		Compatible with the breaking capacity of Schneider Electric circuit breakers		
		440 V		
		230 V (P4 + N) - 400 V (3Ph + N)		
		6 kV		
		IP20		
		Self-extinguishing 960°C 30 s		
		RAL 7035		
Number of 18-mm modules		12	48	48
Power supply		Through left-hand	Through left-hand	Through right-hand
<b>References</b>		<b>10545</b>	<b>10546</b>	<b>10547</b>

Accessories				
Number of poles	1P+N	3P+N		
				
				
	<b>End-pieces</b>	<b>Tooth covers (3 x 18-mm modules)</b>	<b>Tooth covers (1 x 18-mm module)</b>	<b>Connectors (grey)</b>
Set of	40	12	10	4
<b>References</b>		<b>021094</b>	<b>021095</b>	<b>021096</b>
			<b>010405</b>	<b>021098</b>

0309204-30



### IEC 60664-1

### Description

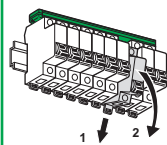
Comb busbars make it easier to install Schneider Electric products.

- Supplied with 2 side plates, IP 2
- Outgoing feeders can be marked
- Cutting markings on the copper bars and the insulating material

C120, NG125		27 mm poles, cuttable			
Number of poles		1P	2P	3P	4P
	0309204-60				
		Supplied with 2 side plates, IP2 and 4 tooth cover end-pieces Outgoing feeders can be marked Cutting markings on the copper bars and the insulating material Unused teeth can be insulated with tooth covers			
Rated operational current at 40°C	(Ie)	125 A			
Rated conditional short-circuit current of an assembly	(Isc)	Compatible with the breaking capacity of Schneider Electric circuit breakers			
Insulation voltage	(Ui)	620 V			
Rated voltage	(Ue)	500 V			
Fire resistance to IEC 695-2-1		Self-extinguishing 960°C 30 s			
Colour		RAL 7016 (anthracite grey)			
<b>Use</b>					
		Power supply by connector recommended			
Number of 27 mm modules		16	16	15	16
Set of		1			
<b>References</b>		<b>14811</b>	<b>14812</b>	<b>14813</b>	<b>14814</b>

### Installation

DB106977-LIN-20



Comb busbars allow dismountability (1-2)

### Accessories

Number of poles	1P, 2P, 3P, 4P	
	PG 194071 	0309214-15 
	<b>Tooth covers</b>	<b>Insulated connector</b>
		Compatible with all Schneider Electric comb busbars Clip onto the comb busbar's insulating material, which gives them very great stability Receive clip-on markers allowing circuit identification
<b>Use</b>		
		For 25 mm <sup>2</sup> semi-rigid cable
Set of	20	4
<b>References</b>	<b>14818</b>	<b>14885</b>
<b>Installation</b>		
	DB106977-3S 	DB106976-30 



## Distribloc 125 and 160A

### 4 pole distribution block comprising:

- A fully insulated, one piece distribution complying with the degree of protection IPXXB (protection against direct contacts)
- A modular cover designed for a 45mm cut-out blends perfectly into a row comprising modular devices

## Part numbers

Description	Part number
125A Distribloc distribution block	<b>04045</b>
160A Distribloc distribution block + connection	<b>04046</b>

## Technical data

### Electrical

Rated insulation level	Ui = 750V
Rated operational current	Ie (40°C) 125A for the 125A Distribloc 160A for the 160A Distribloc with its prefabricated connection for INS160 or NSA160
Short circuit withstand current	The reinforced breaking capacity due to cascading in circuit breaker combinations is maintained. The worst case situations have been tested
Standards	Complies with the low voltage device standard IEC 60947.7.1 and/or IEC 60439.1
Impulse withstand voltage	Uimp = 8kV

### Supply

Tunnel terminals	On 125A Distribloc 125 for 6 to 35 <sup>sq</sup> flexible cables (10 to 35 <sup>sq</sup> rigid cables)
------------------	--

The 160A Distribloc is supplied with a prefabricated flexible connection. It is designed for an INS100/160 or NSA160 switch disconnector, installed on the left or right

### Distribution (125A and 160A Distribloc)

Spring terminals	2 outgoing from 1 to 10 <sup>sq</sup> , flexible or rigid 3 outgoing from 1 to 6 <sup>sq</sup> , flexible or rigid 7 outgoing from 1 to 4 <sup>sq</sup> , flexible or rigid
Tunnel terminals	1 outgoing from 4 to 16 <sup>sq</sup> , flexible (4 to 25 <sup>sq</sup> rigid)

### Supply

An identification label
Adhesive labels for phase identification
A prefabricated flexible connection for the INS160 (160A Distribloc only)

### Installation

Clipped onto a modular rail
Width occupied is 12 modules (9mm each)
Screwed to plain or slotted backplate. Distances between centres = 100 x 75mm

## 125A connection

Set of four flexible connections, 35<sup>sq</sup>, L = 210mm. To supply a 125A Distribloc from an NG125 or an INS125.

## Part numbers

Description	Part number
4 NG-INS125 connections for Distribloc	<b>04047</b>



## Terminal blocks

For fixing to symmetrical DIN rails. 1P and 2P blocks can be fitted together to form 3P and 4P blocks.

### Technical data

Current rating 80A

Type	Part number
1P (2 x 25mm <sup>2</sup> + 4 x 16mm <sup>2</sup> )	14936
1P (2 x 35mm <sup>2</sup> + 4 x 25mm <sup>2</sup> )	14938
2P (2 x 25mm <sup>2</sup> + 4 x 16mm <sup>2</sup> )	14937
2P (2 x 35mm <sup>2</sup> + 4 x 25mm <sup>2</sup> )	14939

## Connection strips 80 - 125A (40°C)

Cross section for stranded cables.

Each strip has one M4 threaded hole for screw attachment to any support.

	Part number
<b>80A connection strip</b>	
<b>4 holes</b> (2 x 10mm <sup>2</sup> + 2 x 16mm <sup>2</sup> ) length 32mm	14962
<b>6 holes</b> (3 x 10mm <sup>2</sup> + 2 x 16mm <sup>2</sup> + 1 x 35mm <sup>2</sup> ) length 50mm	14963
<b>10 holes</b> (5 x 10mm <sup>2</sup> + 4 x 16mm <sup>2</sup> + 1 x 35mm <sup>2</sup> ) length 74mm	14964
<b>125A connection strip</b>	
<b>14 holes</b> (7 x 10mm <sup>2</sup> + 6 x 16 mm <sup>2</sup> + 1 x 35mm <sup>2</sup> ) length 98mm	14965

## Terminal block supports

Terminal block support made of self extinguishing insulating material: 960°C/5s. Beige in colour.

Each support can be individually identified using clip-on markers (optional):

- Blue for neutral
- Yellow/green for earth

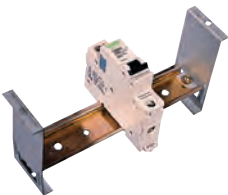
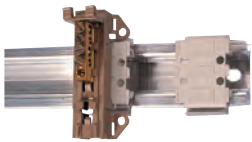
### Fixing:

#### ■ Clipped on to:

- 12 x 2 flat bar
- Multifix or symmetrical rail
- Screwed on to any support (plain or slotted plate) using 2 ears

## Cross section for stranded cables

	Part number
<b>80A terminal block</b>	
<b>4 holes</b> (2 x 10mm <sup>2</sup> + 2 x 16mm <sup>2</sup> ) length 68mm	14975
<b>6 holes</b> (3 x 10mm <sup>2</sup> + 2 x 16mm <sup>2</sup> + 1 x 35mm <sup>2</sup> ) length 68mm	14976
<b>10 holes</b> (5 x 10mm <sup>2</sup> + 4 x 16mm <sup>2</sup> + 1 x 35mm <sup>2</sup> ) length 115mm	14977
<b>125A terminal block</b>	
<b>14 holes</b> (7 x 10mm <sup>2</sup> + 6 x 16mm <sup>2</sup> + 1 x 35 mm <sup>2</sup> ) length 115mm	14979



## Terminal bar for earth/neutral connections

- For panel mounting
- Including support
- Current rating 200A

Type	Part number
<b>For panel mounting</b>	
1 x 20 holes, length 183mm (19 x 16 <sup>2</sup> + 1 x 120 <sup>2</sup> )	<b>99217</b>
1 x 25 holes, length 222mm (24 x 16 <sup>2</sup> + 1 x 120 <sup>2</sup> )	<b>99219</b>
1 x 38 holes, length 332mm (37 x 16 <sup>2</sup> + 1 x 120 <sup>2</sup> )	<b>99221</b>
1 x 49 holes, length 419mm (48 x 16 <sup>2</sup> + 1 x 120 <sup>2</sup> )	<b>99223</b>
1 x 73 holes, length 624mm (72 x 16+1 x 120 <sup>2</sup> )	<b>99225</b>

## End stop

For symmetrical DIN rail.

Type	Part number
End stop (pack of 10)	<b>14915</b>

## Universal terminal support

This unit can be installed on:

- Symmetrical DIN rail
- Slotted mounting plate
- Asymmetrical DIN rail width: 3 modules of 9mm

Type	Part number
Universal terminal support (pack of 5)	<b>4224</b>

## Flush mounting clamp

Allows the installation of all DIN standard devices on an enclosure door. The depth is adjustable by turning the bracket round. DIN rail not included.

Type	Part number
Flush mounting clamp (pack of 4)	<b>20267</b>

## Transparent hinged weatherproof covers for enclosure doors - IP55

Allows the installation of DIN standard devices up to 10 SP ways (twenty 9mm modules) on an enclosure door.

Degree of protection IP55.

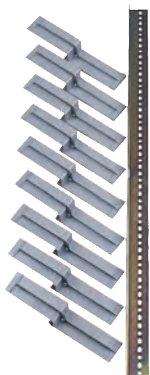
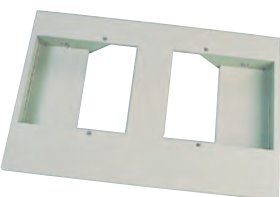
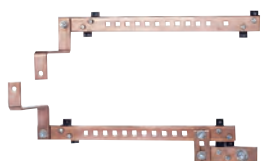
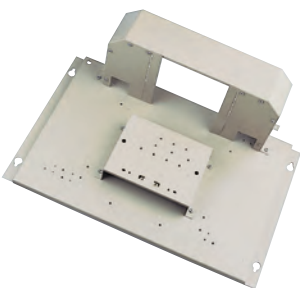
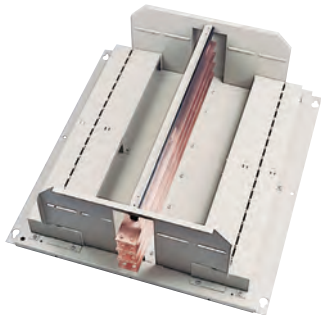
- External dimensions (mm): w 235 x h 126 x d 33

- Dimensions of the hole on the door (mm): w 186 x h 96

Supplied with a blanking plate (to cover up to ten 9mm modules) and fixing and drilling template.

Type	Part number
Transparent hinged cover (10 x 18mm ways)	<b>14210</b>
DIN rail support (and fixing)	<b>14211</b>
Transparent hinged cover (4 x 18mm ways)	<b>99246A</b>
Transparent hinged cover complete with DIN support bracket (4 x 18mm ways)	<b>99246B</b>

## Powerpact 4 pan assemblies accessories 630A or 800A busbar rating outgoing 630A or 800A busbar rating incoming



### Outgoing pan assembly 630A or 800A busbar ratings

#### Application

Pan assemblies provide easy to connect high density connection independent of device mix for mounting of moulded case circuit breakers into a low voltage power distribution switchboard. Can be fed from the side or bottom fed using incoming pan assembly. For technical data see Section 2.

SP ways	Part number	
	630A busbar	800A busbar
18	<b>MG6PAC6</b>	<b>MG8PAC6</b>
36	<b>MG6PAC12</b>	<b>MG8PAC12</b>
54	<b>MG6PAC18</b>	<b>MG8PAC18</b>
72	<b>MG6PAC24</b>	<b>MG8PAC24</b>
90	<b>MG6PAC30</b>	<b>MG8PAC30</b>

See Section 2 for outgoing and incoming devices

### Incoming pan assembly 630A or 800A busbar ratings

#### Application

Incoming section including mounting tray metal shroud and copper busbar 'T' section to allow cassetted breakers to feed pan from bottom.

Current rating (A)	Part number	
	3P	4P
630	<b>MG6PACN</b>	<b>MG6PACN</b>
800	<b>MG8PACN3</b>	<b>MG8PACN4</b>

### 18 way neutral bar kit

Mounts on either side of incoming device when using incoming pan assembly. Includes disconnectable neutral link.

Type	Part number
630A	<b>MG6PANKIT</b>
800A	<b>MG8PANKIT</b>

### Front cover (up to 18TP ways only)

Number of outgoing ways	TP	Part number	
		630A interior	800A interior
SP			
18	6	<b>MG6PAFC6</b>	<b>MG6PAFC6</b>
36	12	<b>MG6PAFC12</b>	<b>MG6PAFC12</b>
54	18	<b>MG6PAFC18</b>	<b>MG6PAFC18</b>

**Note:** If RCD, metering, remote metering or 400/630A outgoing devices are fitted then a shrouding kit must be used.

### Shrouding kit (with MG6 FC front covers only)

Provides additional support for device and shrouding for front cover. One shrouding kit must be used per side when fitting either outgoing 400/630AMP MCCBs or outgoing ammeter and/or earth leakage protection. In addition to the shrouding kit an addition a 25mm three stage filler piece is required when 4 pole 400A or 630AMP circuit breakers are fitted on the outgoing pan assembly MGPTSF25.

Number of outgoing ways	Shrouding kit	Part number
		TP
SP		
18	6	<b>MGPCH6</b>
36	12	<b>MGPCH12</b>
54	18	<b>MGPCH18</b>

## Mini Opale IP30 G9 IP30 A-Series IP30



### Mini Opale enclosures (IP30)

Mini Opale enclosures are all insulated and made of an impact resistant material which is self extinguishing to 650°C. Degree of protection: IP30

They consist of:

- An insulated back plate incorporating a DIN rail
- A cover clipped to the back plate
- Two 4 hole terminal bars built in, 13396 and 13398 only. (1 X 16mm<sup>2</sup> + 3 X 10mm<sup>2</sup>)

### Installation

- Wall mounting, 2 or 4 screws supplied.

SP 18mm ways	Size (mm) H - W - D	Part number 18mm
2	130 x 44 x 57	<b>13392</b>
4	130 x 80 x 57	<b>13394</b>
6	160 x 119 x 65	<b>13396</b>
8	160 x 155 x 65	<b>13398</b>

Suitable for most DIN standard devices



### G9 enclosures (IP30)

These enclosures are made from pressed sheet steel, epoxy powder coated. Colour: RAL 9001. Degree of protection: IP30.

They consist of:

- A back plate with DIN rail
- A cover, screwed to the back plate, having 25mm knockouts top and bottom

### Installation

- Wall mounting

SP 18mm ways	Size (mm) H - W - D	Part number 18mm
3	200 x 101 x 63	<b>99560</b>
4	250 x 122.5 x 63	<b>14599</b>
5	250 x 122.5 x 63	<b>14603</b>

Suitable for most DIN standard devices



### A series enclosures (IP 30)

These enclosures are made from folded sheet steel, epoxy powder coated. Colour: RAL 9001. Degree of protection: IP30.

They consist of:

- An enclosure having a back plate with DIN rail 25mm knockouts in top, bottom, sides and rear of enclosure built-in earth terminal bar
- A cover having a left handed hinged door with plastic latch

### Installation

- Wall mounting

SP 18mm ways	Dimensions (as)	Part number
8	SEA9AN6	<b>SEA9DE16</b>
12	SEA9AN10	<b>SEA9DE24</b>
16	SEA9AN14	<b>SEA9DE32</b>
20	SEA9AN18	<b>SEA9DE40</b>
32	SEA9AN27	<b>SEA9DE64*</b>

\* 2 row

### Accessories

Key lock	<b>SEA9BL</b>
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### Application

These enclosures are designed to accommodate DIN rail mounted products, primarily for control and metering. They may be mounted individually or attached to the side of an MGB board of equivalent height using the side joining kit MGBNSJK. For mounting above and below a standard B board use ref MGBNTJKN.

### Technical data

Ingress protection:	IP30 to BS EN 60529
Earth bar capacity:	25mm <sup>2</sup>
Mounting:	Surface
Colour:	RAL 9001 epoxy powder coated



### Supplied with DIN rail, door and slotted front cover

Part number	Capacity in 18mm SP ways	Number of rows	Dimensions in mm		
			Height	Width	Depth
SEA9BN4SXS	34	2	484	470	138
SEA9BN8SXS	34	2	538	470	138
SEA9BN12SXS	51	3	700	470	138
SEA9BN16SXS	68	4	862	470	138
SEA9BN24SXS	85	5	1024	470	138



### Supplied with DIN rail, door and plain front cover

Part number	Capacity in 18mm SP ways	Number of rows	Dimensions in mm		
			Height	Width	Depth
SEA9BN4SXP	34	2	484	470	138
SEA9BN8SXP	34	2	538	470	138
SEA9BN12SXP	51	3	700	470	138
SEA9BN16SXP	68	4	862	470	138
SEA9BN24SXP	85	5	1024	470	138

Suitable for most DIN standard devices

### Installation

- Wall mounting
- Flush mounting kit available





24 module enclosures



13 module enclosures



Customisable transparent door



Modular terminal blocks with screwless quick connections for small cables - earth and neutral terminal blocks



Neutral terminal blocks easy to split to adapt to earth leakage protection

## Function

A range of ready-to-install enclosures devised for electricians: ergonomics and flexibility of installation. The Pragma offer is particularly robust, especially the 24-module enclosures thanks to their metal structure and their reinforced front face.

## Application

This distribution enclosure is intended for top of the range residential and tertiary sectors. The 24-module enclosures can accommodate the NG125 incoming circuit breaker or switch, equipped if necessary with an earth leakage protection module.

## Technical data

13 module enclosures technoplastic<sup>(1)</sup>, metal grey and titanium white

24 module enclosures: metal and technoplastic<sup>(1)</sup>, metal grey and titanium white

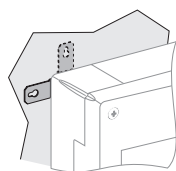
Transparent doors:	For 13 module enclosures: technoplastic <sup>(1)</sup> , crystal For 24 module enclosures: metal and glass, titanium white and crystal
Opaque doors:	For 13 module enclosures: technoplastic <sup>(1)</sup> , titanium white For 24 module enclosures: metal, titanium white
Withstand fire and abnormal heat at 650 °C as per IEC 60695-2-11/EN 60695-2-11	
Total insulation class II:	Conform to IEC 60439-3/EN 60439-3 § 7.4.3.2.2.
Advantage:	Thanks to its design, the entire Pragma range has "total insulation": no components on the enclosure, interface or door need be earthed.
Degree of protection as per IEC 60529:	Without door: IP30 With door: IP40
Degree of protection against mechanical impacts as per IEC 62262:	Without door: IK08 With door: IK09
Operating temperature:	-25 °C to +60 °C.

(1) Technoplastic material specially developed by Merlin Gerin.

## Components delivered with each enclosure and interface

Marking strips + label-guard	
Blanking plate strip	
Earth and neutral terminal blocks:	See part number table
Identification label	
Front face and back connection	
1 plain plate per row	

Enclosures												Part number
Number of modules per row	Number of rows	Capacity in modules of 18mm	Rated current In	Neutral terminal block Number of connections				Earth terminal block Number of connections				Without door
				Total	50°	25°	6°	Total	50°	25°	6°	
				<b>13 modules</b>	1	13	63 A	11	-	3	2 x 4	
	2	26	63 A	19	-	3	4 x 4	17	-	1	4 x 4	<b>PRA20213</b>
	3	39	90 A	23	-	3	5 x 4	22	-	2	5 x 4	<b>PRA20313</b>
	4	52	90 A	27	-	3	6 x 4	26	-	2	6 x 4	<b>PRA20413</b>
<b>24 modules</b>	1	24	125 A	23	1	2	5 x 4	22	1	1	5 x 4	<b>PRA20124</b>
	2	48	125 A	29	1	4	6 x 4	27	1	2	6 x 4	<b>PRA20224</b>
	3	72	160 A	29	1	4	6 x 4	27	1	2	6 x 4	<b>PRA20324</b>
	4	96	160 A	35	1	6	7 x 4	32	1	3	7 x 4	<b>PRA20424</b>



Externall wall mounting lugs

### Accessories

Mounting in interfaces	Part Number
Externall wall mounting lugs	<b>PRA90009</b>
Door lock - key 405	<b>PRA90039</b>
13 module blank	<b>PRA91020</b>

### Door for enclosures

Mounting in interfaces		Customisable transparent	Opaque
		Part Number	Part Number
13 modules	1 row	<b>PRA15113</b>	<b>PRA16113</b>
	2 rows	<b>PRA15213</b>	<b>PRA16213</b>
	3 rows	<b>PRA15313</b>	<b>PRA16313</b>
	4 rows	<b>PRA15413</b>	<b>PRA16413</b>
24 modules	1 row	<b>PRA15124</b>	<b>PRA16124</b>
	2 rows	<b>PRA15224</b>	<b>PRA16224</b>
	3 rows	<b>PRA15324</b>	<b>PRA16324</b>
	4 rows	<b>PRA15424</b>	<b>PRA16424</b>

A range of 18 mm, 1, 2 or 3-row 4, 6, 8, 12, 18, 24 or 36-module ready-to-use enclosures designed for electricians: ergonomic design and flexibility of installation.

### Function

This distribution or sub-distribution enclosure, up to 63 A, is designed for installing electrical switchboards in new or renovated installations in the housing sector.

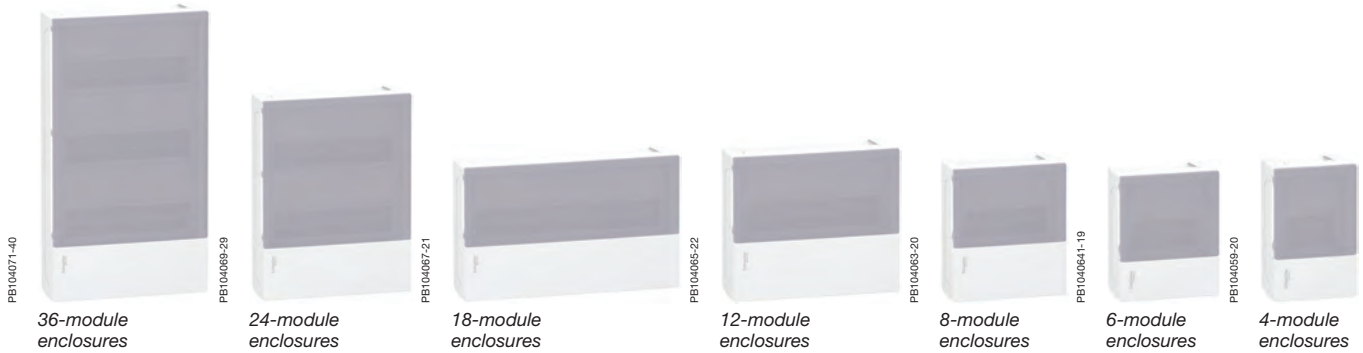
### Description

The surface mounting Mini Pragma consists of:

- a back with:
  - a centered slot to facilitate installation
  - fixing holes for vertical adjustment.
- the necessitate for entry cables:
  - two removable cable entry plates at the top and bottom
  - punch-outs
  - a large area for drilling (crown saw, punches)
- 1 to 3 DIN rails fixed asymmetrically onto the back
- a reversible front face, fitted with pre-cutout blanking plates
- a white opaque or translucent door or smoked transparent
- an earth terminal block and a neutral terminal block

Enclosure colour: White RAL 9003.

This enclosure can be equipped with a marker light, available in accessories. It allows locating the enclosure in the dark during a power failure.



### Technical data

Enclosures		
Compliance with standards	IEC 60439-3, IEC 60529, IEC 60695-2-11, EN 50102, IEC 60670-24	
Rated current (In)	4-module enclosure	50 A
	6 to 36-module enclosures	63 A
Rated insulation voltage (Ui)	< 400 V	
Insulation	Class 2 (as per IEC 60439-3)	
Degree of protection	To IEC 60529	IP 40
	Against mechanical impacts	IK 07
Materials	Self-extinguishing technoplastic <sup>(1)</sup> : resistant to fire and abnormal heat 650°C to IEC 60695-2-11	

(1) Technoplastic material specially developed by Schneider Electric.

## Catalogue numbers

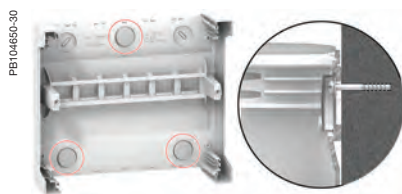
White enclosures				Cat. no.
Number of rows	Number of modules per row	Capacity in 18 mm modules	Rated current In (A)	With solid white door
1	4	4	50	<b>MIP12104</b>
	6	6	63	<b>MIP12106</b>
	8	8	63	<b>MIP12108</b>
	12	12	63	<b>MIP12112</b>
	18	18	63	<b>MIP12118</b>
2	12	24	63	<b>MIP12212</b>
3	12	36	63	<b>MIP12312</b>

## Components delivered with each enclosure

Type	
Insulating plug (pack of 4)	To be placed over the back fixing screws to obtain class 2 insulation
Identification strip for each row	To be glued onto the front panel
Two terminal block supports	
Two earth/neutral terminal blocks	Supplied with the 4 or 6-module enclosure 2 x (1 x 16 <sup>□</sup> + 2 x 10 <sup>□</sup> + 1 x 6 <sup>□</sup> )
	Supplied with the 8 or 12-module enclosure 2 x (1 x 16 <sup>□</sup> + 4 x 10 <sup>□</sup> + 3 x 6 <sup>□</sup> )
	Supplied with the 18 or 24-module enclosure 2 x (2 x 16 <sup>□</sup> + 8 x 10 <sup>□</sup> + 6 x 6 <sup>□</sup> )
	Supplied with the 36-module enclosure 2 x (2 x 16 <sup>□</sup> + 9 x 10 <sup>□</sup> + 9 x 6 <sup>□</sup> )

## Accessories

Type	Cat. no.
Removable plate (pack of 2)	4 modules <b>MIP99029</b>
	6 modules <b>MIP99030</b>
	8 modules <b>MIP99031</b>
	12 modules <b>MIP99032</b>
	18 modules <b>MIP99033</b>
Surface mounting IP41 kit	<b>MIP99034</b>
Terminal block support (pack of 2)	18 modules <b>MIP99036</b>
Terminal block	1 x 16 <sup>□</sup> + 2 x 10 <sup>□</sup> + 1 x 6 <sup>□</sup> <b>MIP99037</b>
	1 x 16 <sup>□</sup> + 4 x 10 <sup>□</sup> + 3 x 6 <sup>□</sup> <b>MIP99038</b>
	2 x 16 <sup>□</sup> + 8 x 10 <sup>□</sup> + 6 x 6 <sup>□</sup> <b>MIP99039</b>
	2 x 16 <sup>□</sup> + 9 x 10 <sup>□</sup> + 9 x 6 <sup>□</sup> <b>MIP99040</b>
Earth terminal block	3 x 16 <sup>□</sup> + 12 x 2.5 <sup>□</sup> <b>13409</b>
	4 x 16 <sup>□</sup> + 20 x 2.5 <sup>□</sup> <b>13410</b>
Ph+N insulated terminal block (pack of 2)	2 x (1 x 35 <sup>□</sup> + 5 x 16 <sup>□</sup> ) <b>13411</b>
	2 x (1 x 35 <sup>□</sup> + 7 x 16 <sup>□</sup> ) <b>13412</b>
Blanking plate	5 modules <b>13387</b>
Symbol plate	Standard <b>13735</b>
	Special <b>13736</b>
Keylock	<b>MIP99046</b>



Insulating plug



MIP99030



MIP99034



## The most comprehensive enclosure range

- Enclosure for modular switchgear
- Enclosures for modular switchgear with interface
- Enclosures for power outlets
- Universal enclosures

## For the production of electrical switchboards incorporating protection, control and distribution

- Modular protection devices
- Power outlets
- Pushbuttons and indicator lights, etc
- Non-modular switchgear (transformer, motor control, etc.)

## For tertiary, small contracting and industrial sectors

For environments requiring optimum protection of persons and electrical switchgear.

## Safety

Kaedra switchboards guarantee a high degree of protection and increased dependability thanks to:

- Their degree of protection (IP65)
- Their high impact strength (IK09) and resistance to chemical and atmospheric agents, UVs, etc
- Class 2 insulating material
- Optional locking of the door and sealing of the front face and front plates
- Conformity with IEC 670 standard for empty enclosures and with IEC 439-3 standard for equipped boards

## Ergonomics

Kaedra switchboards offer remarkable cabling space.

Both the cable inlet and internal distribution is simplified.

The transparent doors enable permanent, immediate checking of operating conditions. The interface zones offer quick access to power outlets and control devices. The functional openings allow rapid installation of all devices directly or using matching plates. The frame and all its possibilities guarantee assembly time savings.

## Attractive design

Their modern, rounded shape, result of in-depth design and ergonomic studies, make the Kaedra switchboards ideal for use even in places visible to the general public. Their innovating colours ensure enhanced integration, while at the same time guaranteeing the basic requirements of visibility and inspection of switchgear.

## Enclosures for modular switchgear

Available in 7 versions from 3 to 72 modules. They allow installation of modular switchgear up to 125 A, as well as non-modular switchgear on slotted mounting plate.

## Enclosures for modular switchgear with interface

Available in 3 versions of 12, 24 and 36 modules. The interface zone offers the possibility, thanks to the functional plates, of installing on the switchboard front face, control or protection devices, indicator lights and PK series power outlets of the domestic or industrial type.

## Interface enclosures

Available in 2 versions with 2 or 3 openings. They can be used by themselves, horizontally or vertically, or associated with other enclosures as cable trunking or interface zone (control devices, indicator lights, power outlets, etc.). Universal enclosures, Available in 5 sizes. They are designed for production of control and monitoring switchboards with non-modular type devices.

## Enclosures for power outlets

90 x 100 mm openings. Available in versions with 1 to 8 openings.

They are characterised for the new functional feature with openings allowing installation of all PK power socket outlets or the incorporation of control and indicator light functions.

103 x 225 mm opening, Available in versions with 1 to 4 openings.

They can accommodate the new PK Unika interlockable power outlets.

## Universal

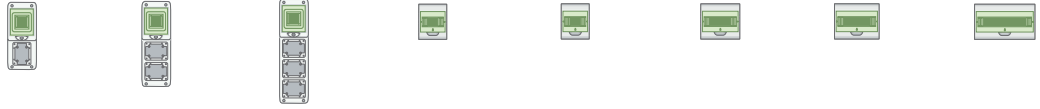
Available in 5 sizes.

They allow mounting of flush-mountable power socket outlets up to 125 A.



## Range of weatherproof mini enclosures

1 row







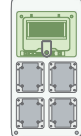
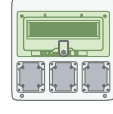
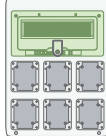
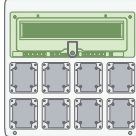


Part number	13175	13176	13177	13975	13441	13442	13443	13444
Number of modules	4	4	4	3	4	6	8	12
Width	98	98	98	80	123	159	195	267
Height	248	310	392	150	200	200	200	200

## Range of weatherproof enclosures

mm	138 5 modules	236 8 modules	340 12 modules per row	12 + 1 modules	448 18 modules per row (12 modules if interface)	18 + 1 modules
280			13981 		13982 13990 	
335				13180 13191 		
460	13178 13993  13185 13189 	13179 13186 13190 	13983 	13181 13195  13187 13192 	13984 13991 	13182 13197  13188 13193 
610	13994 		13985 	13196 	13986 13992 	13198 
842					13987 	13199 

## Enclosures offering:

- A zone for industrial or domestic power outlets, buttons or indicator lights
- A row for modular switchgear protecting power outlets

	Mini enclosures			Enclosures					See page 6/28	
Number of modules	4	4	4	5	8	12+1	12+1	18+1	0	0
										
	13175	13176	13177	13178	13179	13180	13181	13182	13993	13994

## Technical data

Self-extinguishing insulating material	
Operating temperature:	-25°C to +60°C
Colour:	Light grey RAL 7035 and transparent green wicket gate
IP65	As per IEC 60529
IK09	As per EN 50102
Class 2:	Total insulation
Flame and abnormal heat resistance:	650°C as per IEC 60695-2-1
Complies with standard	IEC 60439-3
Resistance to chemicals and atmospherics agents	

## Enclosures part numbers

Data	Total mod.	open	Pre-cutout (top and bottom) <sup>(1)</sup>						Dimensions (mm)			Accessories delivered with an enclosure part number <sup>(2)</sup>				Part No.			
			M PG	16	20	25	32	50	W	H	D	Wiring strap	Terminal block support	Terminal block number of holes	Plates Part number				
<b>Mini enclosures for power outlets (65 x 85 mm openings)</b>																			
4	1				1			98	248	98.5									13175
4	2				1			98	310	98.5					1				13176
4	3				1			98	392	98.5					1				13177

<b>Enclosures for power outlets (90 x 100 mm openings)</b>																				
5	2			1	1	1		138	460	160			1				2	1		13178
8	4			2	2	3		236	460	160	2	1		1			4	1		13179
12+1	3		6	6	2	3		340	335	160	2	1		1			3	1		13180
12+1	6		6	6	2	3		340	460	160	2	1		1			6	2		13181
18+1	8			10	4	2	1	448	460	160	2	1		1	1		8	2		13182

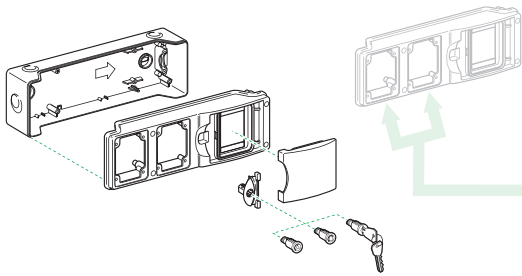
<b>Enclosures for interlocked power outlets (103 x 225 mm openings)</b>																				
5	1			1	1	1		138	460	160			1							13185
8	2			2	2	3		236	460	160	2	1		1					1	13186
12+1	3		6	6	2	3		340	460	160	2	1		1					1	13187
18+1	4			10	4	2	1	448	460	160	2	1		1					1	13188


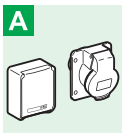
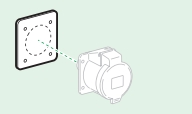

(1) Concentric pre-cutouts of the PG and ISO/metric type (EN 50262).

(2) Accessories also delivered:

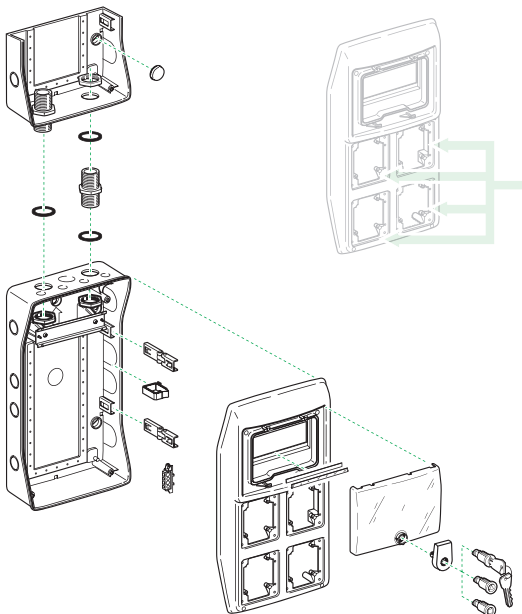
- Mini enclosures: class II plugs
- Enclosures: class II plugs, blanking plates (5 modules of 18 mm per row) and a marking kit



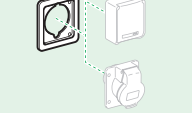
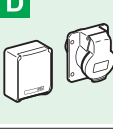
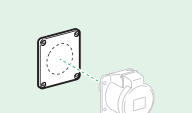

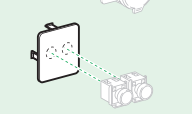
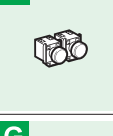


## Mini enclosures with 65 x 85 mm openings



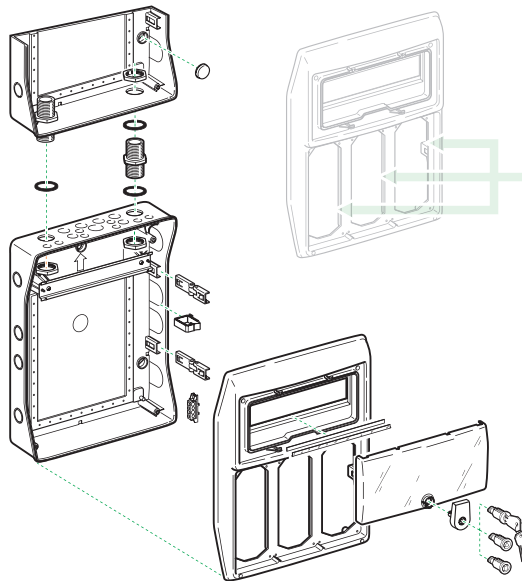
	<b>Direct mounting</b>		Domestic and LV power outlets (65 x 85 mm).
	<b>With plate</b> Part no. 13135		Power outlets (50 x 50 mm).

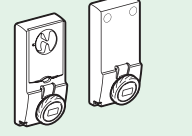

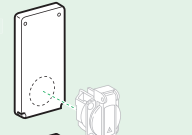
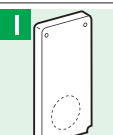
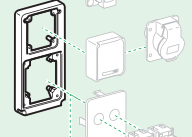
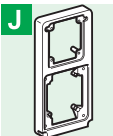
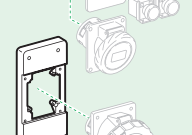
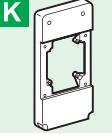
## Enclosures with 90 x 100 mm openings



	<b>Direct mounting</b>		16/32 A slanting power outlets (90 x 100 mm).
	<b>With plate</b> Part no. 13136		Domestic and LV power outlets (65 x 85 mm).
	<b>With plate</b> Part no. 13137		LV and ELV power outlets (65 x 65 mm and 75 x 75 mm).
	<b>With plate</b> Part no. 13138		Buttons, indicator lights and switches 16 and 22 mm diameter.
	<b>With plate</b> Part no. 13141		Identification label.

## Enclosures with 103 x 225 mm openings



	<b>Direct mounting</b>		Power outlet interlocked or with safety transformer.
	<b>With plate</b> Part no. 13143		Blanking and adaptation plate to be drilled for 65 x 65 mm or 75 x 75 mm power outlet.
	<b>With plate</b> Part no. 13142		Plate with 2 openings: ■ 65 x 85 mm ■ 90 x 100 mm.
	<b>With plate</b> Part no. 13144		63 A LV power outlet (100 x 107 mm).



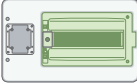
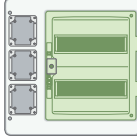
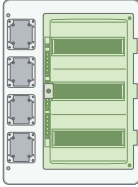
# Enclosures for modular switchgear with interface

## Kaedra



### Enclosure offering:

- An interface zone always available for user and that can accommodate buttons, indicator lights, power outlets or modular switchgear
- A zone, behind the door, to install the modular switchgear

Number of modules	12	24	36
	1	3	4
			
	<b>13990</b>	<b>13991</b>	<b>13992</b>

### Mechanical data

Self-extinguishing insulating material	
Reversible front face	Interface zone to the left or right. It is also an excellent cable duct
	Door opening in either direction
Inside depth available for installation of non-modular switchgear between the slotted mounting plate and the plain front plate: 100 mm	
In enclosures with 3 or 4 openings, the kit for INS40/63/80 A must be mounted in the central openings	

### Technical data

Self-extinguishing insulating material	
Operating temperature:	-25°C to +60°C
Colour:	Light grey RAL 7035 and transparent green door
IP65	As per IEC 60529
IK09	As per EN 50102
Class 2:	Total insulation
Flame and abnormal heat resistance:	650°C as per IEC 60695-2-1
Complies with standard	IEC 60439-3
Resistance to chemicals and atmospheric agents	

## Enclosures part numbers

Data								Accessories delivered with an enclosure part number <sup>(2)</sup>															
Row	Total mod.	Slot for plate	Pre-cutout (top and bottom) <sup>(1)</sup>					Dimensions (mm)			marking kit	wiring strap	Terminal block support	Terminal block number of holes					Plates for buttons, indicator lights 13138	65x85mm power outlet 13136	Part number		
			M PG	20 11	25 16	32 21	50 29/36	W	H	D				4	8	16	22	32					
1	12	1		10	4	2	1	448	280	160	1	1	1	1		1				1			13990
2	24	3		10	4	2	1	448	460	160	2	2	1	1		1				3		1	13991
3	36	4		10	4	2	1	448	610	160	3	3	1	1		1			1	4		1	13992

(1) Concentric pre-cutouts of the PG and ISO/metric type (EN 50262)

(2) Accessories also delivered: class II plugs and blanking plates (5 modules of 18 mm per row)

## Part numbers of the main accessories

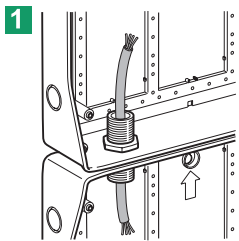
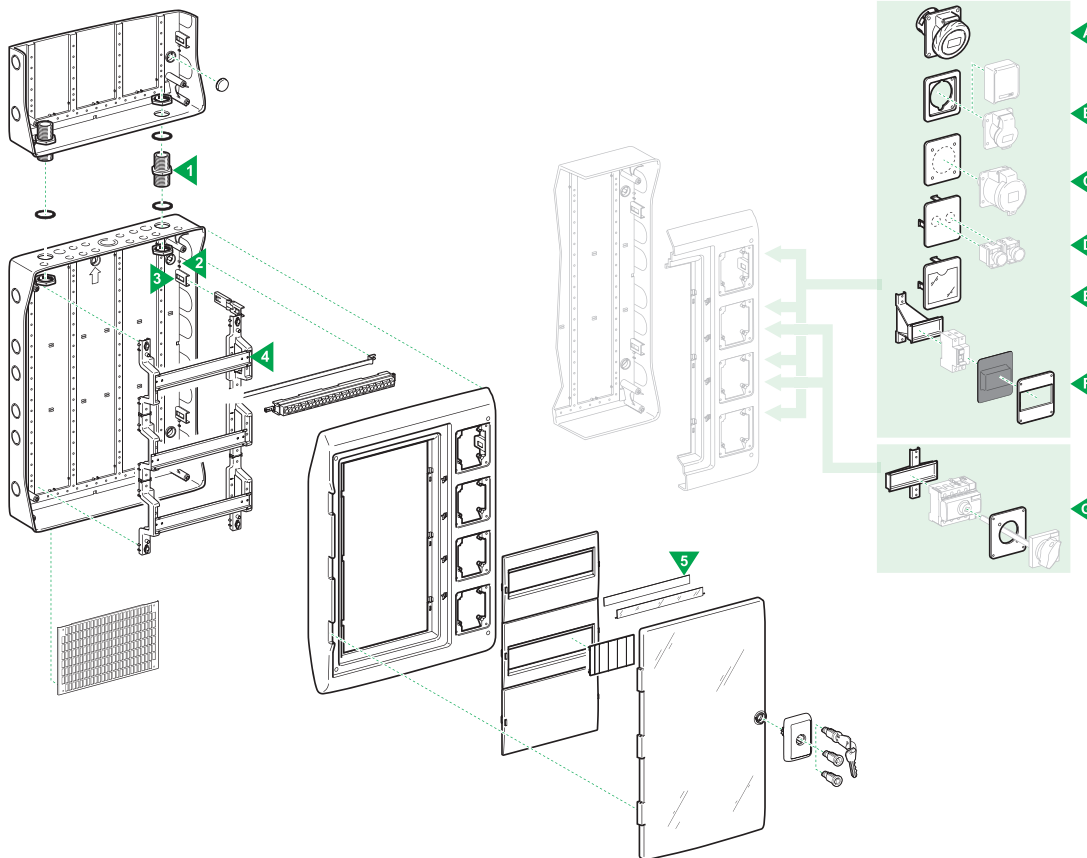
Name	Description	Part number
Association kit	2 sleeves + 4 nuts	13934
Wall mounting lugs		13935
Slotted mounting plate		13941
Plain front plate	12 modules	13944
Interface plate for	65 x 85 power outlets	13136
	65 x 65 or 75 x 75 power outlets	13137
	Pushbutton controls	13138
	Identification	13141
Interface kit	INS40/63/80 A	13139
	Modular switchgear up to 4 modules (e.g. residual current circuit breaker)	13140
Wiring strap		13946
Sealing kit		13947
Keylock		13948
Insert	Triangle	13949
	Square	13950

## Other accessories available for these enclosures:

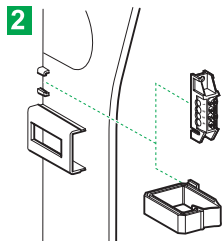
Row separator, jack-up block, junction for trunking, blanking plate, terminal block support, insulated terminal blocks, IP2 covers, cable support sleeves, cable gland, self-adhesive symbols, self-adhesive sheets.

# Enclosures for modular switchgear with interface

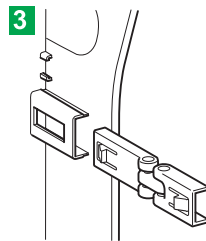
Kaedra



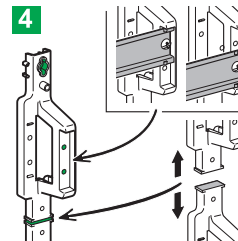
**1 Add-on possibility**  
Enclosures can be horizontally or vertically associated keeping the IP65 and allowing cable insertion.



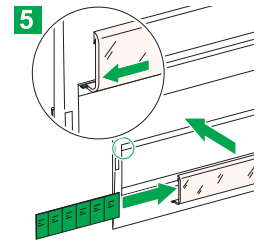
**2 Dovetails**  
Arranged on the back and on the chassis, they can accommodate:  
■ 4-hole terminal blocks  
■ Wiring straps



**3 Back/front face hinges**  
Clipped onto the right or left, they simplify cabling and working on the interface zone.



**4 Chassis**  
■ DIN symmetrical rails positionable in 2 depths and 2 heights to privilege cabling room  
■ Chassis that can be severed to install a mounting plate on the back



**5 Marking**  
Clip-on label covers ensure neat, quick and upgradeable marking.

10

## Everything for the interface

Direct mounting

With plate  
Part no 13136

With plate  
Part no 13137

With plate  
Part no. 13138

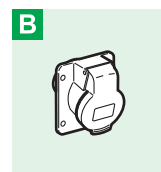
With plate  
Part no 13141

With kit  
Part no 13140

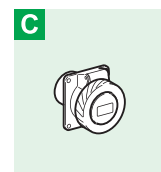
With kit  
Part no 13139



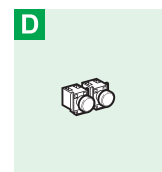
16/32 A slanting power outlets (90 x 100 mm).



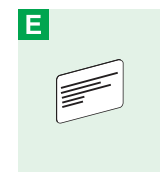
LV power outlets (65 x 85 mm).



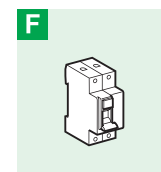
LV and ELV power outlets (65 x 65 mm and 75 x 75 mm).



Buttons, indicator lights and switches 16 and 22 mm diameter.



Identification label



Modular switchgear up to 4 modules (e.g. residual current circuit breaker).



INS40/63/80 A.

# Enclosures and mini enclosures for modular switchgear

## Kaedra

3 to 12 module mini enclosures, economic and compact.  
Add-on 12 to 72 module enclosures.



Kaedra enclosures and mini enclosures for modular switchgear.

Mini enclosures				
Nbr of modules	4	6	8	12
1 row				
	13441	13442	13443	13444
Enclosures				
Nbr of rows	1	2	3	4
12 modules				
	13981	13983	13985	
18 modules per row				
	13982	13984	13986	13987

### Enclosure part numbers

Data											Accessories with an enclosure catalogue number <sup>(2)</sup>						Part No.			
Row	Total mod.	Pré-cutout (top and bottom) <sup>(1)</sup>							Dimensions (mm)			Marking kit	Wiring strap	Terminal block support	Terminal block number of holes					
		M PG	16	20	20	25	32	50	W	H	D				4	8	16	22	32	
<b>Mini enclosures</b>																				
1	4	1	1		1			123	200	112	1		1	2						13441
	6	1	1		1			159	200	112	1		1	2						13442
	8	2	2		1			195	200	112	1		1	4						13443
	12	2	2		2	1		267	200	112	1		1	2						13444
<b>Enclosures</b>																				
1	12			6	2	3		340	280	160	1	1	1	1	1					13981
	18				10	4	2	1	448	280	160	1	1	1		1				13982
2	24			6		6	2	3	340	460	160	2	2	1	1			1		13983
	36				10	4	2	1	448	460	160	2	2	1	1				1	13984
3	36			6		6	2	3	340	610	160	3	3	1	1				1	13985
	54				10	4	2	1	448	610	160	3	3	2	1			2		13986
4	72				10	4	2	1	448	842	160	4	4	2	1				2	13987

(1) Concentric pre-cutouts of the PG and ISO/metric type (EN 50262).

(2) Accessories also delivered:

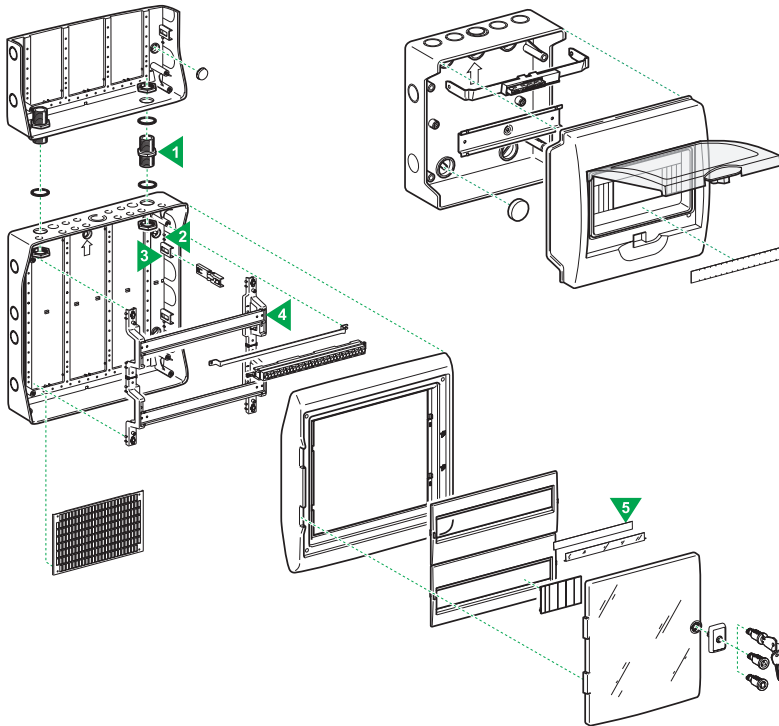
- mini enclosures: class II plugs
- enclosures: class II plugs and blanking plates (5 modules of 18 mm per row).

### Part numbers of the main accessories

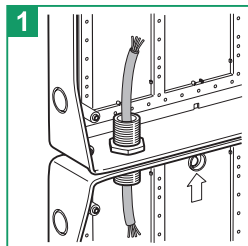
Name	Description	Mini-enclosures	Enclosures	Part No.
Association kit	2 sleeves + 4 nuts	■	■	13934
Wall mounting lugs		■	■	13935
Slotted mounting plate		■	■	13941
Pain plate	12 modules	■	■	13944
	18 modules	■	■	13945
Wiring strap de filerie		■	■	13946
Sealing kit		■	■	13947
Keylock		■	■	13948
Insert	Triangle	■	■	13949
	Square	■	■	13950

Other accessories available for these enclosures <sup>(1)</sup> :

Row separator, jack-up block, junction for trunking, blanking plate, terminal block support, insulated terminal blocks, IP2 covers, cable support sleeves, cable gland, self-adhesive symbols, self-adhesive sheets.

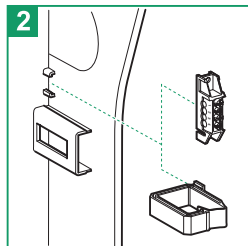


### A few tricks



#### Add-on possibility

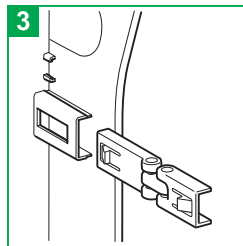
Enclosures can be horizontally or vertically associated keeping the IP65 and allowing cable insertion.



#### Dovetails

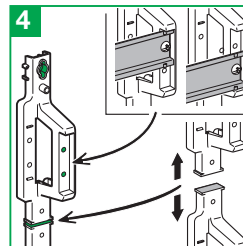
Arranged on the back and on the chassis, they can accommodate:

- 4-hole terminal blocks
- wiring straps.



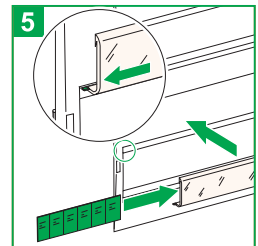
#### Back/front face hinges

Clipped onto the right or left, they simplify cabling and working on the interface zone.



#### Chassis

- DIN symmetrical rails positionable in 2 depths and 2 heights to privilege cabling room
- Chassis that can be severed to install a mounting plate on the back



#### Marking

Clip-on label covers ensure neat, quick and upgradeable marking.

### Mechanical data

#### Enclosure

- Reversible front face for opening of door to the left or right
- Inside depth available for installation of non-modular switchgear between the slotted mounting plate and the plain front plate: 100 mm
- Reversible front plate according to distance between axes of rails (125, 150, 175 mm)

#### Mini enclosure

- Clip-on terminal block support
- Back with dovetail to accommodate 4-hole terminal block and wiring strap.

### Technical data

- Self-extinguishing insulating material
- Operating temperature: -25 °C to +60 °C
- Colour: light grey RAL 7035 and transparent green door
- IP65 as per IEC 60529
- IK09 as per EN 50102
- Class 2: total insulation
- Flame and abnormal heat resistance: 650 °C as per IEC 60695-2-1
- Complies with standard IEC 60439-3
- Resistance to chemicals and atmospheric agents: see PAGE 93140.



The opaque door universal enclosure provides a zone to install non-modular switchgear. The universal enclosure for power outlets provides a row for modular switchgear and a universal zone.

### Opaque door universal enclosures

340 x 460	340 x 610	448 x 460	448 x 610	448 x 842
13195	13196	13197	13198	13199

### Universal enclosures for power outlets

138 x 460	236 x 460	340 x 335	340 x 460	448 x 460
5 modules	8 modules	12+1 modules	12+1 modules	18+1 modules
13189	13190	13191	13192	13193

### Mechanical data

#### Opaque door universal enclosure

Delivered with a slotted mounting plate mounted at the back  
 Available depth for installation of non-modular switchgear on mounting plate:  
 130 mm  
 Reversible front face to change door opening direction

### Technical data

Self-extinguishing insulating material  
 Operating temperature: -25°C to +60°C  
 Colour: Light grey RAL 7035  
 IP65 As per IEC 60529  
 IK09 As per EN 50102  
 Class 2: Total insulation  
 Flame and abnormal heat resistance: 650°C as per IEC 60695-2-1  
 Complies with standard IEC 60439-3  
 Resistance to chemicals and atmospheric agents  
**Note:** universal enclosures for power outlets can accommodate power outlets up to 125A.

### Enclosures part numbers

Dimensions (mm)			No of modules	Pre-cutout (top and bottom) <sup>(1)</sup>						Part number
W	H	D		M	16	20	25	32	50	
			PG	11	16	21	29/36			
<b>Opaque door universal enclosures</b>										
340	460	160			6	6	2	3		13195
340	610	160			6	6	2	3		13196
448	460	160				10	4	2	1	13197
448	610	160				10	4	2	1	13198
448	842	160				10	4	2	1	13199
<b>Universal enclosures for power outlets</b>										
138	460	160	5			1	1	1		13189
236	460	160	8			2	2	3		13190
340	335	160	12+1		6	6	2	3		13191
340	460	160	12+1		6	6	2	3		13192
448	460	160	18+1			10	4	2	1	13193

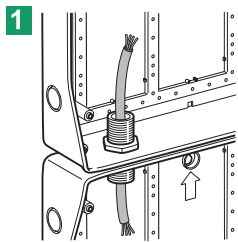
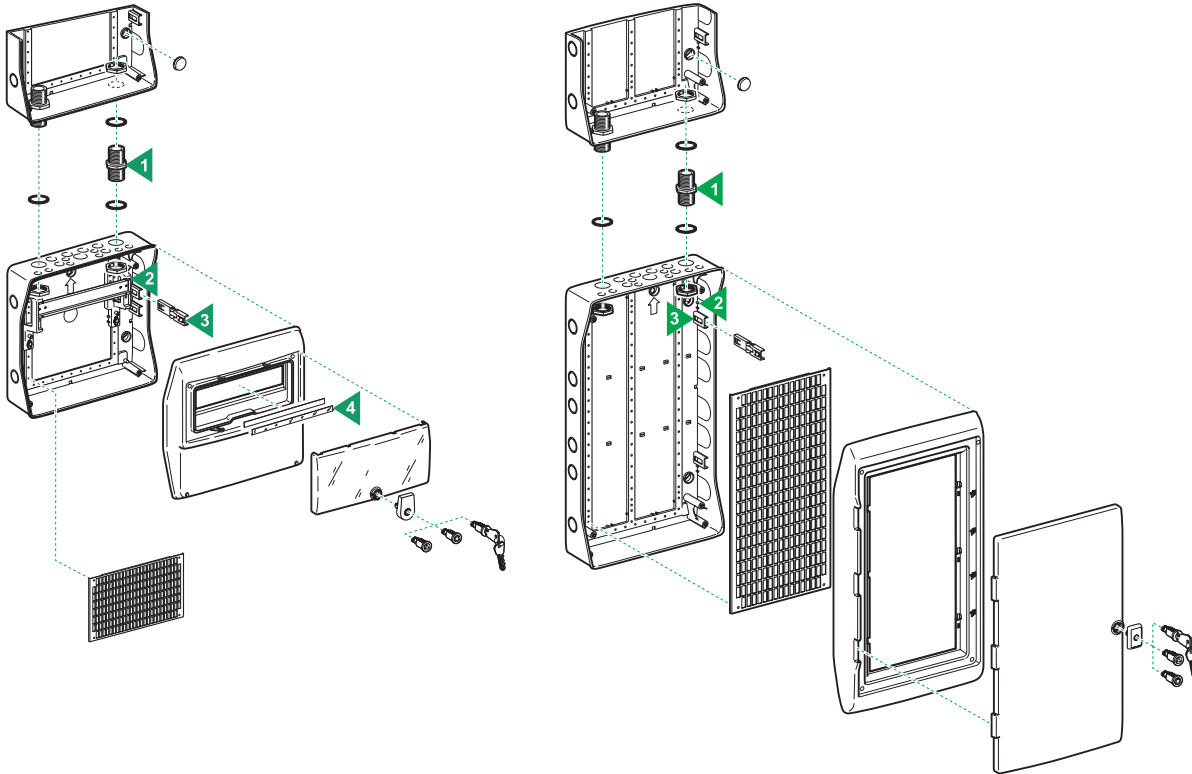
1) Concentric pre-cutouts of the PG and ISO/metric type (EN 50262).

(2) Accessories also delivered:

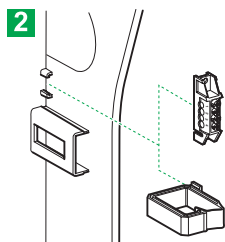
- Opaque door universal enclosures: class II plugs, mounting plate
- Universal enclosures for power outlets: class II plugs, blanking plates (5 modules of 18 mm) and marking kit

### Part numbers of the main accessories

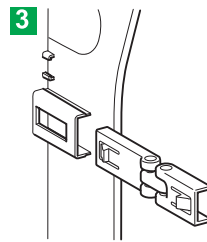
Name	Part number
Association kit	13934
Wall mounting lug	13935
Jack-up block	13938
Junction for trunking	13939
Wiring strap	13946
Slotted mounting plate 150 x 250	13941



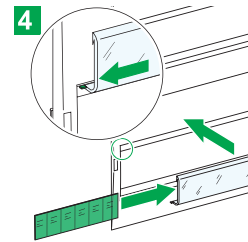
**1 Add-on possibility**  
Enclosures can be horizontally or vertically associated keeping the IP65 and allowing cable insertion.



**2 Dovetails**  
Arranged on the back and on the chassis, they can accommodate:  
■ 4-hole terminal blocks  
■ wiring straps



**3 Back/front face hinges**  
Clipped onto the right or left, they simplify cabling and working.





**4 Marking**  
Clip-on label covers ensure neat, quick and upgradeable marking.





Enclosures that can be installed alone, but also as an extension of another enclosure.

## Number of 50 x 100 mm openings

	3	4
		
	<b>13993</b>	<b>13994</b>

## Mechanical data

This enclosure can also act as a cable duct

In enclosures with 3 or 4 openings, the kit for INS40/63/80 A must be mounted in the central openings

## Technical data

Self-extinguishing insulating material

Operating temperature: -25°C to +60°C

Colour: Light grey RAL 7035

IP65 As per IEC 60529

IK09 As per EN 50102

Class 2: Total insulation

Flame and abnormal heat resistance: 650°C as per IEC 60695-2-1

Complies with standard IEC 60439-3

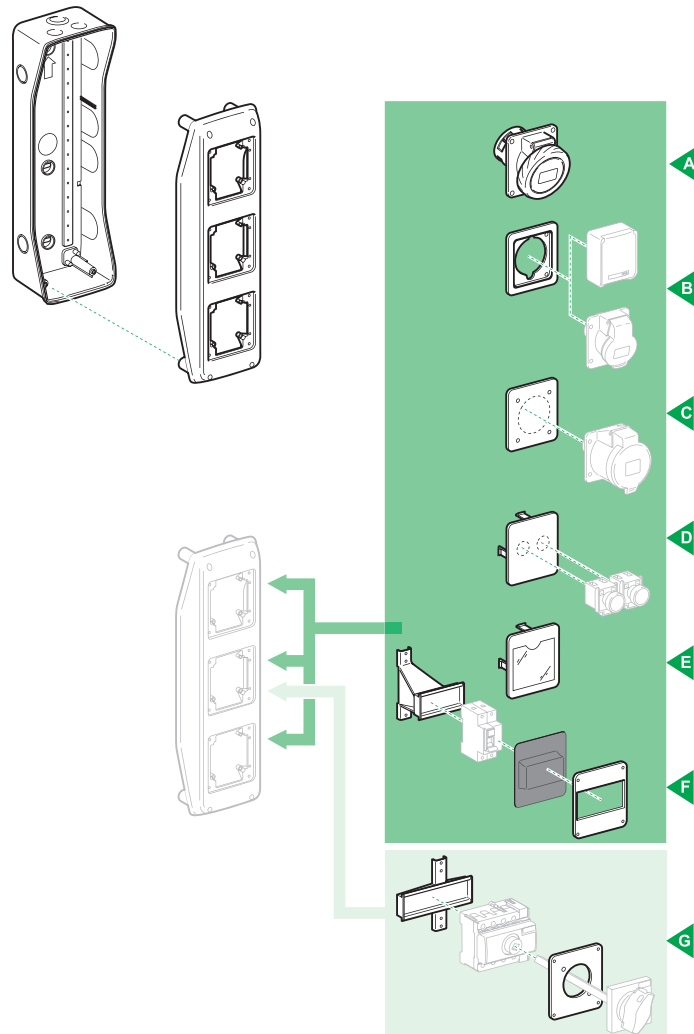
Resistance to chemicals and atmospheric agents

## Part numbers of the main accessories

Name	Description	Part number
Association kit	2 sleeves + 4 nuts	<b>13934</b>
Wall mounting lugs		<b>13935</b>
Slotted mounting plate		<b>13941</b>
Plain front plate	12 modules	<b>13944</b>
Interface plate for	65 x 85 power outlets	<b>13136</b>
	65 x 65 or 75 x 75 power outlets	<b>13137</b>
	Pushbutton controls	<b>13138</b>
	Identification	<b>13141</b>
Interface kit	INS40/63/80 A	<b>13139</b>
	Modular switchgear up to 4 modules (e.g. residual current circuit breaker)	<b>13140</b>
Wiring strap		<b>13946</b>
Sealing kit		<b>13947</b>

## Other accessories available for these enclosures:

Jack-up block, insulated terminal blocks, cable support sleeves, cable gland.



## Everything for the interface

Direct mounting

With plate  
Part no 13136

With plate  
Part no 13137

With plate  
Part no. 13138

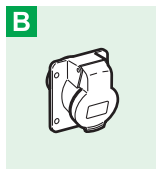
With plate  
Part no 13141

With kit  
Part no 13140

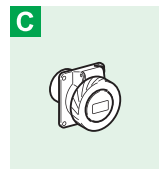
With kit  
Part no 13139



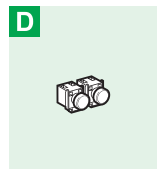
16/32 A slanting power outlets (90 x 100 mm).



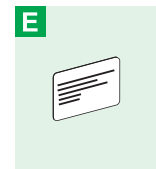
LV power outlets (65 x 85 mm).



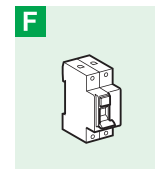
LV and ELV power outlets (65 x 65 mm and 75 x 75 mm).



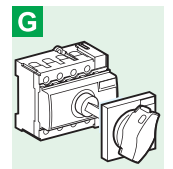
Buttons, indicator lights and switches 16 and 22 mm diameter.



Identification label.



Modular switchgear up to 4 modules (e.g. residual current circuit breaker).



INS40/63/80 A.

**Description**

**For enclosure installation**

- Association kit: used for horizontal or vertical association of two enclosures with one another while preserving IP65
- Wall mounting lugs: used to fix the enclosure to the wall without using holes in the back of the enclosure
- Row separator: used to create IP2 insulated zones. For example: separate strong and weak current zones
- Jack-up block: used to detach the enclosure from the wall in order to route cables behind the enclosure (2 lengths of 1 metre to be cut)
- Plain front plate: used to hide a zone without modular switchgear
- Blanking plate: clipped onto the front plates to conceal slots with no devices
- Junction for trunking: allows tidy incoming of cables in a trunking

**For switchgear installation**

- Functional plates for 90 x 100 mm slot:
  - Adaptation (screwed on) for 65 x 85 mm power outlets
  - Blanking or adaptation (screwed on) for 65 x 65 mm or 75 x 75 mm power outlets (slot to be punched out)
  - Blanking or adaptation (clipped on) for buttons, indicator lights and switches of diameters 16 and 22 mm (1 central slot or 2 side by side to punch out).
  - Blanking for identification (clipped on)
- Functional plates for 103 x 225 mm slot:
  - Adaptation (screwed on) with 2 openings: 65 x 85 mm and 90 x 100 mm.
  - Blanking or adaptation (screwed on) offering 1 slot for 65 x 65 mm or 75 x 75 mm power outlets (to be punched out) and a universal zone
  - Adaptation (screwed in) for 63 A 100 x 107 mm LV power outlet
- Interface kit for 90 x 100 mm slot for:
  - INS40 to 80 A (chassis + plate)
  - Modular switchgear up to 4 modules  
e.g. residual current circuit breaker (chassis + plate + membrane)
- Slotted plate (150 x 250 mm): screwed onto the back of the enclosure, used to fix non-modular devices

**For electrical connection**

- Terminal block support: flat iron (12 x 2 mm), 2 versions: screwed onto the pins or onto the chassis
- Set of insulated terminal blocks with IP42 covers:
  - 4 holes: clipped onto the terminal block supports, fixed onto walls by dovetails,
  - 8 holes: clipped onto the terminal block supports, clipped onto DIN symmetrical rail, screwed onto the back
  - 32 holes: clipped onto the terminal block supports
- Wiring strap: used to guide cables along walls for simplified cabling (set of 5)
- Cable support sleeves: used for incoming flexible cables
- Cable glands: used for cable and tube incoming, guaranteeing tightness and mechanical withstand

**For identification**

- Self-adhesive symbol: allows identification of feeders by symbols:
  - Currents: loads (power outlet, lighting, convector, etc.), places (bedroom, bathroom, etc.)
  - Special: loads (surge arrester, gate, swimming pool, etc.), places (technical room, computer room, etc.)
- Self-adhesive sheets for SISmarker printing: allows printing of customised labels using the SISmarker software



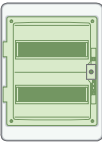
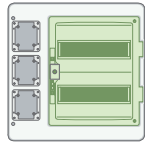

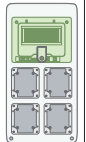
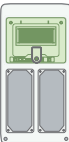

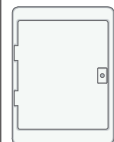
**For enclosure protection**

- Sealing kit: used to seal the front face on the back (2 screws) and the front plates on the front face (4 kits)
- Keylock: Eurolocks combination no. 850. Installed in the door
- Insert (male square or triangle, female key supplied): installed in the door

**For enclosure maintenance**

- Front plate
- Chassis 1 row: can be combined to obtain a multi row chassis

Terminal block composition			
Number of holes Total	Cross section in mm <sup>2</sup>		Width in mm
	10	16	
4	2	2	85
8	4	4	85
32	16	16	202

Name	Description	Use									Part no.
		mini enclosure	Enclosures								
											
<b>For enclosure implementation</b>											
Association kit	2 sleeves + 4 nuts + 4 joints			■	■	■	■	■	■	■	13934
Wall mounting lugs (set of 4)				■	■	■	■	■	■	■	13935
Row separator	12 modules wide			■							13936
	18 modules wide			■							13937
Jack-up block				■	■	■	■	■	■	■	13938
Junction for trunking	enclosure 340 mm wide			■			■	■	■	■	13939
	enclosure 448 mm wide			■	■	■	■	■	■	■	13929
Blanking plate (set of 10 x 5 modules)		■	■	■	■	■	■	■	■	■	13940
<b>For switchgear implementation</b>											
Plate for 85 x 65 slot for 50 x 50 power outlets		■									13135
Plate for 90 x 100 slot for 65 x 85 power outlets				■	■	■					13136
for 65 x 65 and 75 x 75 power outlets				■	■	■					13137
for ø 16 & 22mm pushbutton controls				■	■	■					13138
blanking and identification				■	■	■					13141
Kit for 90 x 100 slot for INS40/63/80 A residual current circuit-breakers				■	■						13139
				■	■						13140
Plate for 103 x 225 slot for one 85 x 65 + one 90 x 100 slot blanking (blank to be slotted) (for 65x65 or 75x75mm power outlet)							■				13142
	63A LV power outlet (100x107 mm)						■				13143
							■				13144
Front plate	plain			■	■						13944
	12 modules			■	■						13945
	18 modules			■	■						13945
Slotted plate	150 x 250 mm			■	■				■		13941
<b>For electrical connection</b>											
Terminal blocks kit	5 x 4 holes (2 blue, 3 black) 2 black covers 2 green covers	■	■	■	■	■	■	■	■	■	13445
Terminal blocks kit	1 x 8 holes (blue) 1 green cover 1 support for 8 back mounting					■	■	■			13446
Terminal blocks kit	1 x 8 holes (blue) 1 green cover 1 support for 12 back mounting					■	■	■			13448
Terminal blocks kit	1 x 32 holes (blue) 1 green cover 1 support for 18 back mounting			■	■	■	■	■	■	■	13450
Terminal block support for mini enclosure	4 modules		■								13361
	6 modules		■								13362
	8 modules		■								13363
	12 modules		■								13364
Terminal block support for mounting on chassis	12 modules			■	■		■	■	■		13599
	18 modules			■	■		■	■	■		13595
Cable support sleeves varied diameter bag		■	■	■	■	■	■	■	■	■	14190
Cable gland	PG11	■	■	■	■	■	■	■	■	■	83992
	PG13,5	■	■	■	■	■	■	■	■	■	83993
	PG16	■	■	■	■	■	■	■	■	■	83994
	PG21	■	■	■	■	■	■	■	■	■	83995
	PG29	■	■	■	■	■	■	■	■	■	83996
	PG36	■	■	■	■	■	■	■	■	■	83997
Wiring strap (set of 5)		■	■	■	■	■	■	■	■	■	13946
<b>For marking</b>											
Self-adhesive symbols	standard	■	■	■	■	■	■	■	■	■	13735
	special	■	■	■	■	■	■	■	■	■	13736
Self-adhesive sheets for SISmarker printing		■	■	■	■	■	■	■	■	■	13260
<b>For enclosure protection</b>											
Sealing kit		■	■	■	■	■	■	■	■	■	13947
Keylock		■	■	■	■	■	■	■	■	■	13948
Insert	triangle	■	■	■	■	■	■	■	■	■	13949
	square	■	■	■	■	■	■	■	■	■	13950
<b>For enclosure maintenance</b>											
Front plate	12 modules			■	■					■	10200
	18 modules			■	■					■	10209
Chassis 1 row	12 modules			■	■		■	■	■	■	10210
	18 modules			■	■		■	■	■	■	10220



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<i>Dissipated power, impedance and voltage drop</i> .....	page 11/2
<i>Tripping curves</i> .....	page 11/4
<i>Influence of ambient temperature</i> .....	page 11/11
<i>Short-circuit current limiting</i> .....	page 11/18
<i>Direct current applications</i> .....	page 11/36
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<i>Safepact 2</i> .....	page 11/52
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## Acti9 products

The following table indicates the average dissipated power per pole in W for a current equal to the rating of the device and at the operating voltage.

Rating (A)	0.5	1	1.6	2	2.5	3	4	6	6.3	10	12.5	13	16	20	25	32	40	50	63	80	100	125	
<b>Circuit breakers</b>																							
iC60	2.3	2.3		1.9		2.2	2.4	1.3		2		2	2.1	2.2	2.7	2.8	3.6	4	5.6				
iC60L-MA			0.7		0.2		0.6		0.9	1.1	1.5		1.6		0.8		2						
		2.3		1.9		2.2	2.4	2.7		1.8			2.5	3	3.1	3.5	3.6	4	5.6				
<b>RCCB</b>																							
iID 2P													0.8		0.9		2.6		2.6	3	5		
4P															0.7		1.9		1.5	2.6	4.3		
															2.7		3.6		5.6				
<b>Add-on residual current devices</b>																							
Vigi iC60 10 mA															3								
30 mA															1.4		1.1		2.3				
100 mA															1.1				2.3				
300 mA															1.3		0.9		2.3				
500 mA															1.1		0.9		2.3				
1000 mA																			2.3				
<b>Contactors</b>																							
iCT/iCT+ Power circuit													0.6	0.9	1.4		1.5		3.4		4		
<b>Impulse relays</b>																							
iTL/iTL+ Power circuit													0.6			1.5							
<b>Push-buttons</b>																							
iPB														0.6									
<b>Selector switches</b>																							
iSSW														0.8									
iCMA/iCMB/iCMC/ iCMD/iCMV									0.4														
<b>Switch-disconnectors</b>																							
iSW														0.8		1.3	1.1		1.8		3.4	4.2	
iSW-NA 2P																	0.7		1.8		3	5	
4P																	0.6		1.5		2.5	4.1	
<b>Indicator lights</b>																							
iIL	0.3																						

Note: When the enclosure's thermal balance, consider the 4P devices load is only on 3 phases

### Impedance calculation:

$$Z = P / I^2$$

Z: impedance in Ohms

P: dissipated power in Watts (table values)

I: rating in Amperes

### Voltage drop calculation:

$$U = P / I$$

U: voltage drop in Volts

P: dissipated power in Watts (table values)

I: rating in Amperes

## Multi 9 products

The following table indicates the average dissipated power per pole in W for a current equal to the rating of the device and at the operating voltage.

Rating (A)	0.5	1	1.6	2	2.5	3	4	6	6.3	10	12.5	13	16	20	25	32	40	50	63	80	100	125
<b>Circuit breakers</b>																						
iDPN		2.5		1.9		2.1	2.6	2.7		2.7		3.3	3.2	4.7	4.7	4.6	5.8					
C60/C60H-DC	2.2	2.3		2.6		2.2	2.4	2.7		1.8		2.5	2.5	3	3.1	3.5	4.3	4.8	6.1			
C120										1.3			2.1	2.3	2.5	3.2	3.1	3.2	3	3.2	2	4.1
NG125										1.7			2.4	2.7	2.7	3.8	3.8	4.2	3.8	4.8	4.3	7.9
C60L-MA			2.4		2.5		2.4		3	2	2.5		2.6		3		4.6					
NG125L-MA							3		2	2	3.1		2.5		3.2		4		5.5	6		
<b>RCCB</b>																						
ID Type A/AC															1.4		3.6		4.4	7.2	18	28
ID Type B															1.2		2.9		7.2	12	18	28
<b>Contactors</b>																						
CT/CT+ Power circuit													0.9				1.4					
<b>Impulse relays</b>																						
TL/TL+ Power circuit													0.9			1.4						
<b>Push-buttons</b>																						
PB														0.6								
<b>Selector switches</b>																						
CM															0.8							
CMA/CMB/CMC/CMD/CMV									0.4													
<b>Switch-disconnectors</b>																						
I														0.8		1.3	1.1		1.8		3.4	4.2
I-NA																	3.2		3.2			
NG125NA																			5.5	6	7	9
<b>Indicator lights</b>																						
V		0.3																				

Note: When the enclosure's thermal balance, consider the 4P devices load is only on 3 phases

### Impedance calculation:

$$Z = P / I^2$$

Z: impedance in Ohms

P: dissipated power in Watts (table values)

I: rating in Amperes

### Voltage drop calculation:

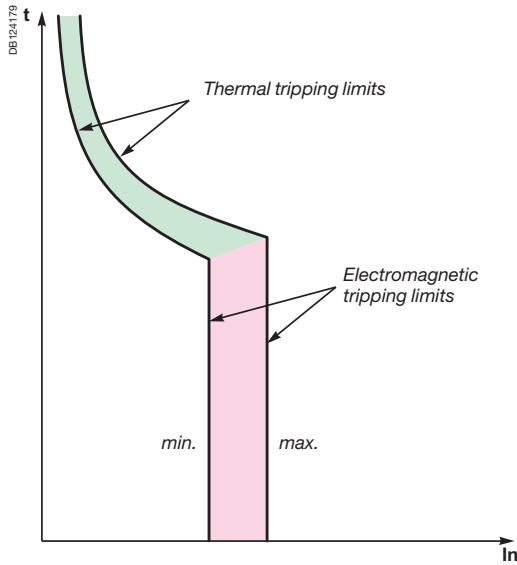
$$U = P / I$$

U: voltage drop in Volts

P: dissipated power in Watts (table values)

I: rating in Amperes





The following curves show the total fault current breaking time, depending on its amperage. For example: based on the curve on page 11/5, an iC60 circuit breaker of curve C, 20 A rating, will interrupt a current of 100 A (5 times the rated current In) in:

- 0.45 seconds at least
- 6 seconds at most.

The circuit breakers' tripping curves consist of two parts:

- tripping of overload protection (thermal tripping device): the higher the current, the shorter the tripping time
- tripping of short-circuit protection (magnetic tripping device): if the current exceeds the threshold of this protection device, the breaking time is less than 10 milliseconds.

For short-circuit currents exceeding 20 times the rated current, the time-current curves do not give a sufficiently precise representation. The breaking of high short-circuit currents is characterized by the current limiting curves, in peak current and in energy. The total breaking time can be estimated at 5 times the value of the ratio  $(I^2t)/(\hat{I})^2$ .

### Verification of the discrimination between two circuit breakers

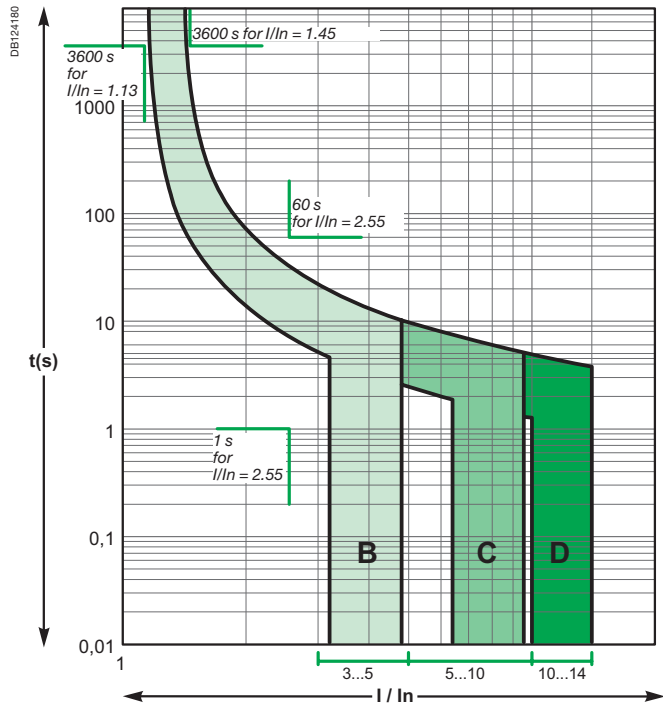
By superimposing the curve of a circuit breaker on that of the circuit breaker installed upstream, one can check whether this combination will be discriminating in cases of overload (discrimination for all current values, up to the magnetic threshold of the upstream circuit breaker). This verification is useful when one of the two circuit breakers has adjustable thresholds; for fixed-threshold devices, this information is provided directly by the discrimination tables.

To check discrimination on short circuit, the energy characteristics of the two devices must be compared.

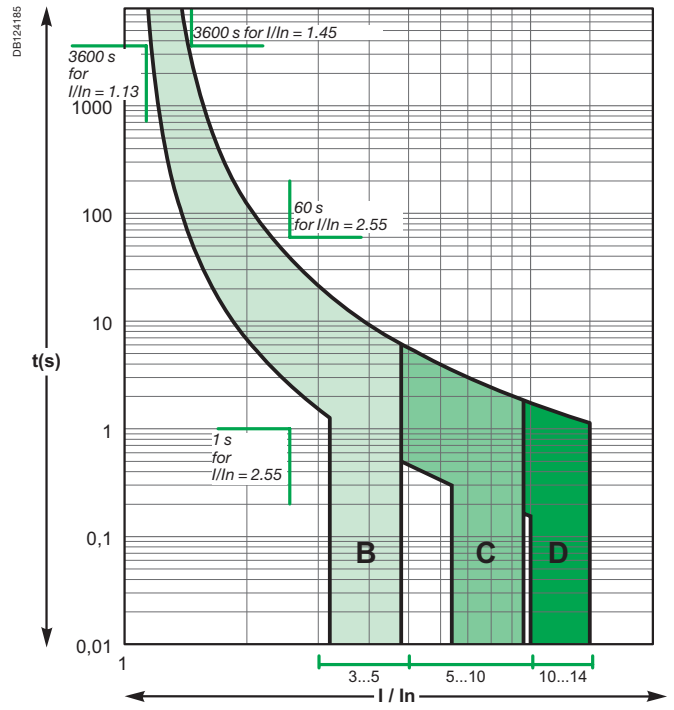
Alternative current 50/60 Hz

**iC60**  
According to IEC/EN 60898-1 (reference temperature 30°C)

Curves B, C, D rating up to 4 A

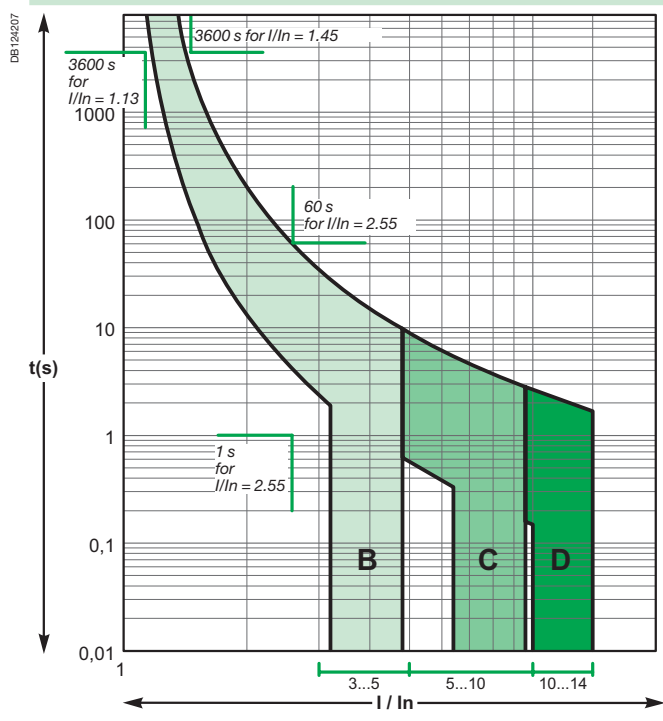


Curves B, C, D rating 6 A to 63 A



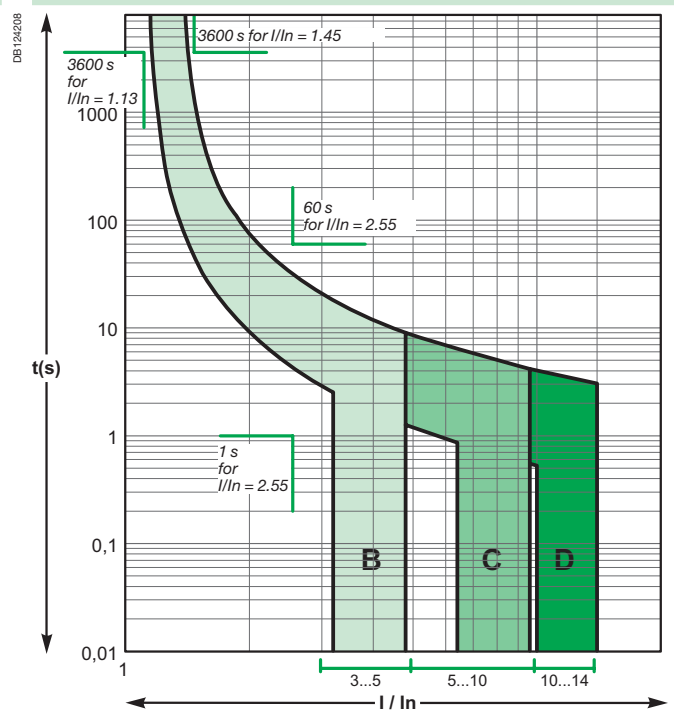
**C120N/H**  
According to IEC/EN 60898-1 (reference temperature 30°C)

Curves B, C, D



**IDPN, DPN N (circuit-breaker and residual current device)**  
According to IEC/EN 60898-1 (reference temperature 30°C)

Curves B, C, D

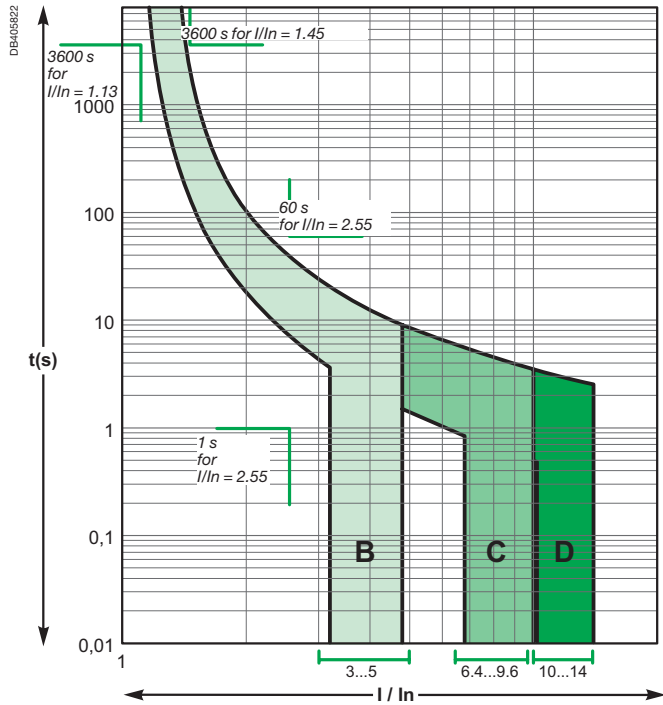


Alternative current 50/60 Hz

**C60**

According to IEC/EN 60898-1 (reference temperature 30°C)

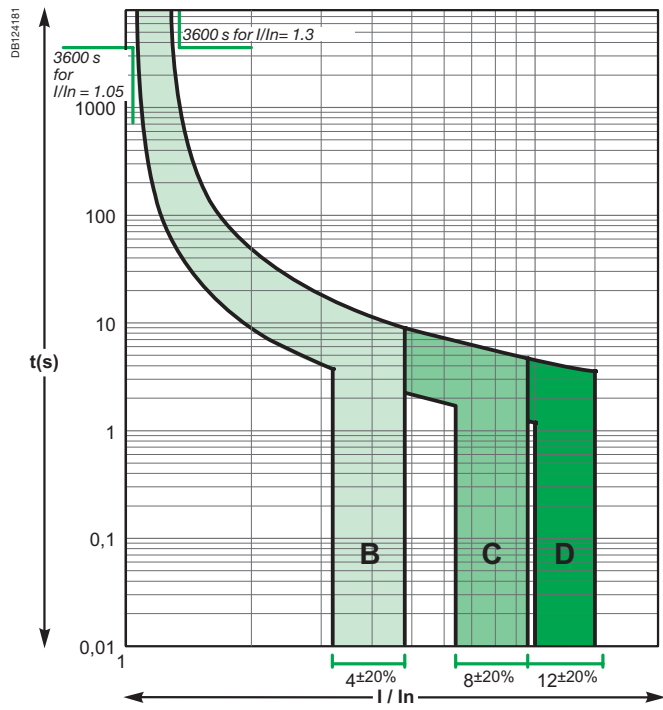
Curves B, C, D



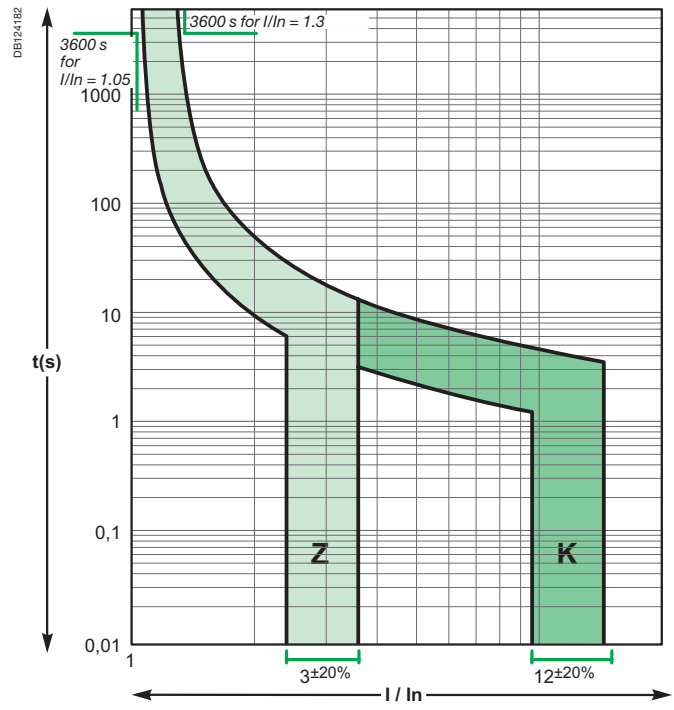
Alternative current 50/60 Hz

**iC60**  
According to IEC/EN 60947-2 (reference temperature 50°C)

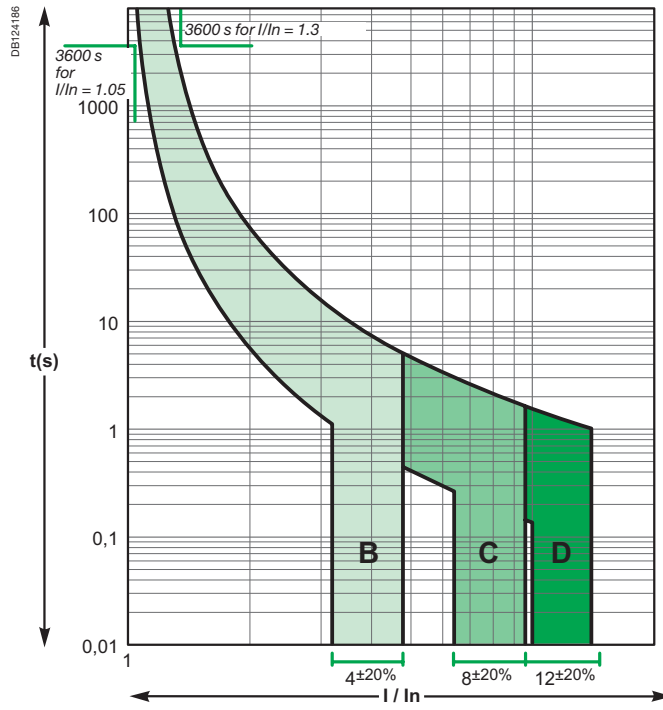
Curves B, C, D rating up to 4 A



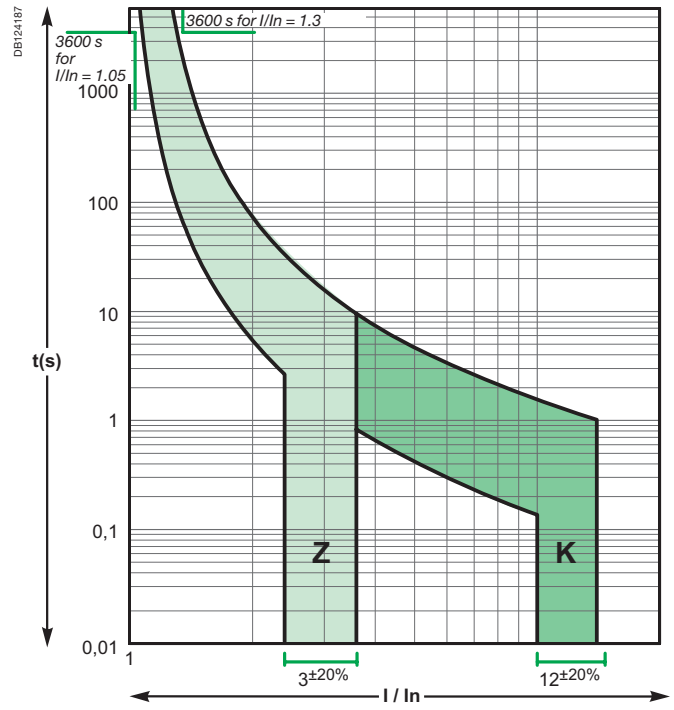
Curves Z, K rating up to 4 A



Curves B, C, D rating 6 A to 63 A

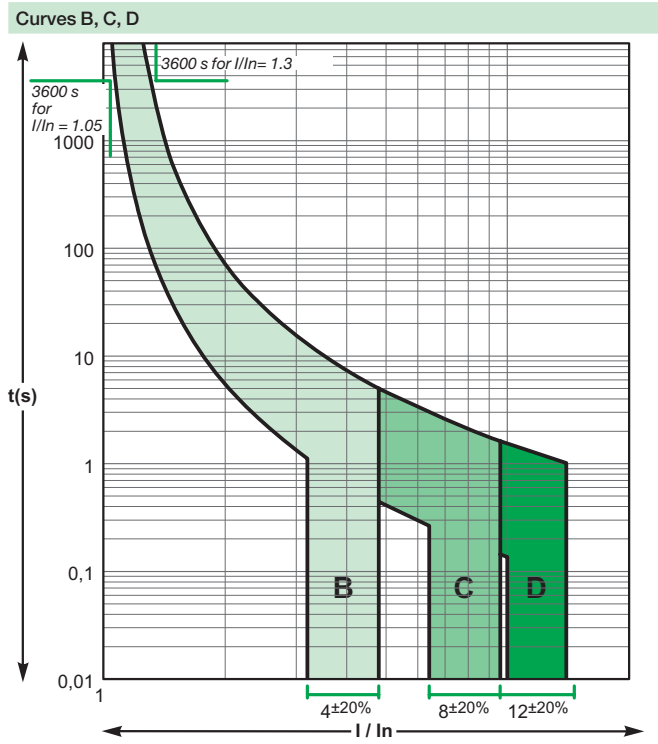


Curves Z, K rating 6 A to 63 A

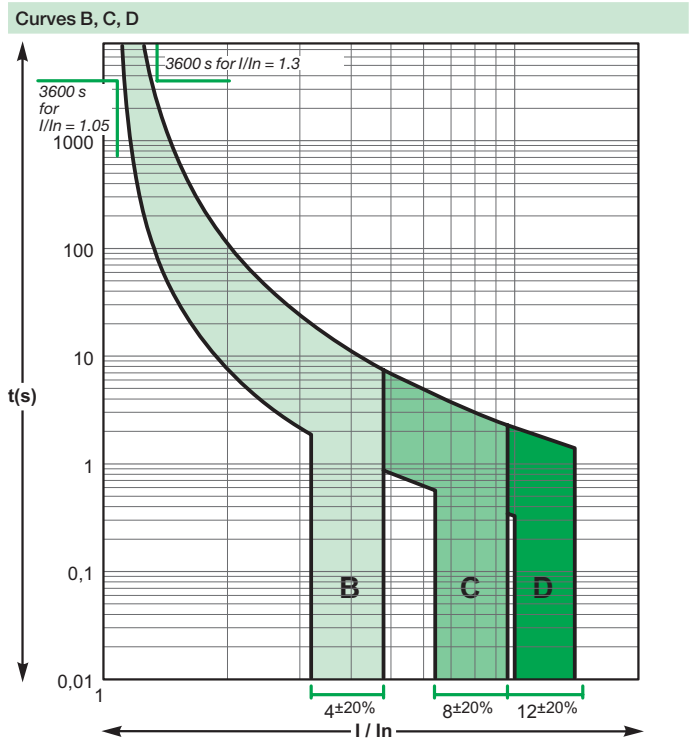


Alternative current 50/60 Hz

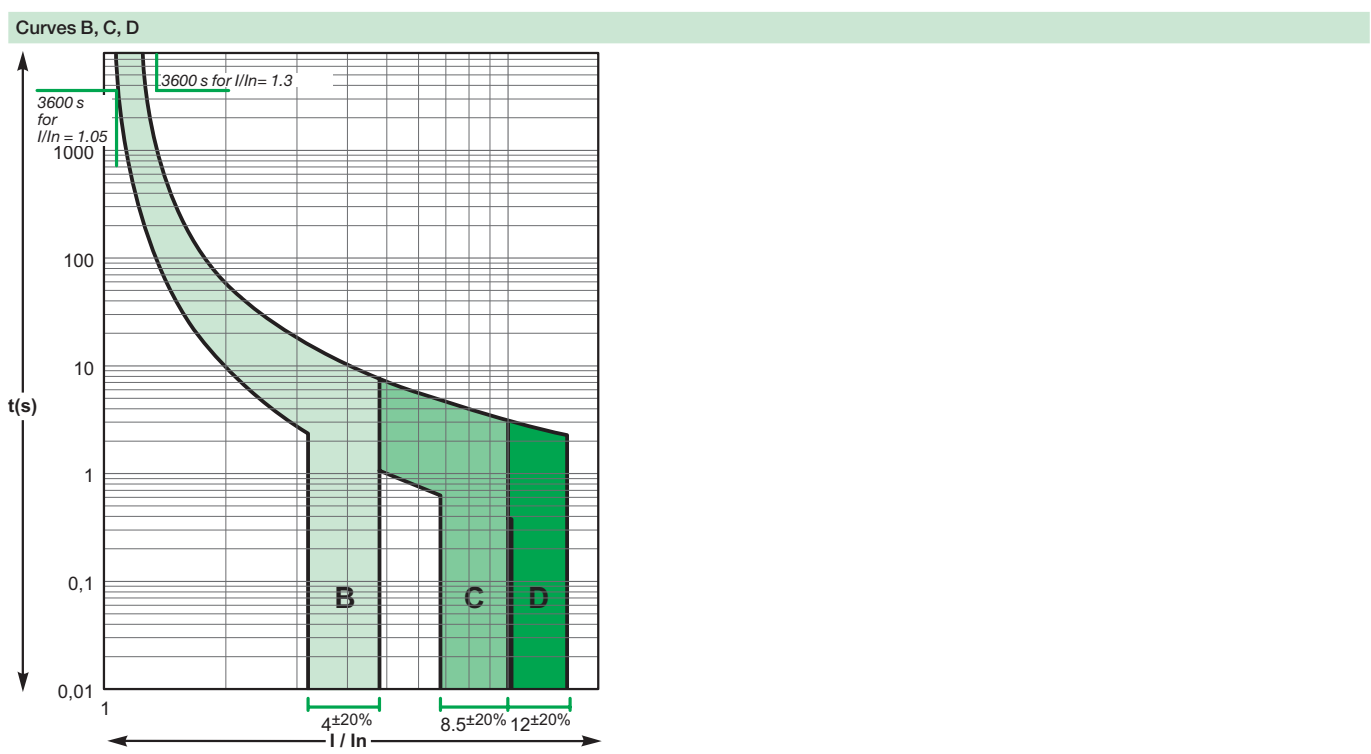
**Reflex iC60N/H**  
According to IEC/EN 60947-2 (reference temperature 50°C)



**NG125a/N/H/L**  
According to IEC/EN 60947-2 (reference temperature 40°C)



**C60**  
According to IEC/EN 60947-2 (reference temperature 50°C)

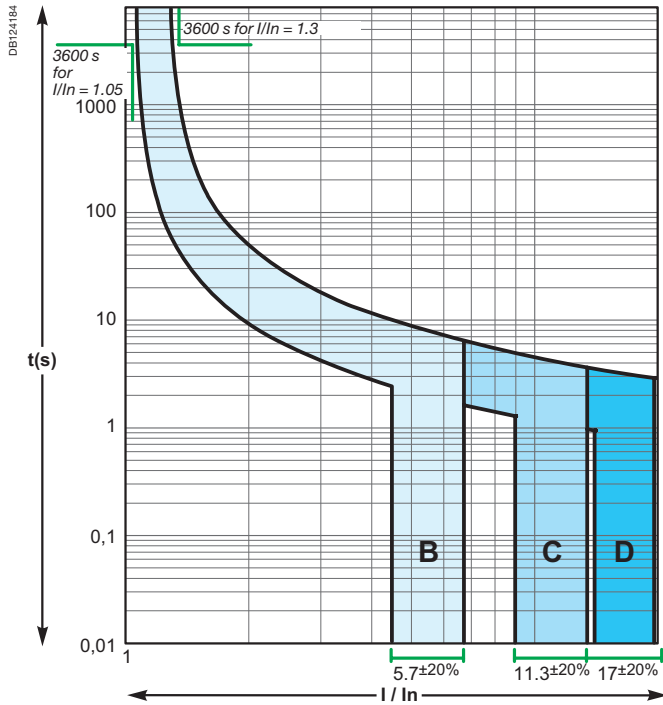


Direct current

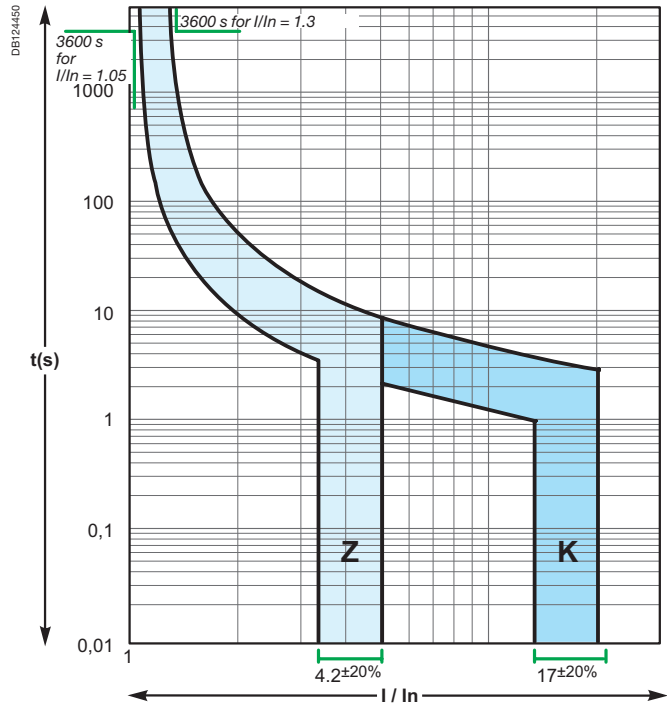
iC60N/H/L

According to IEC/EN 60947-2 (reference temperature 50°C)

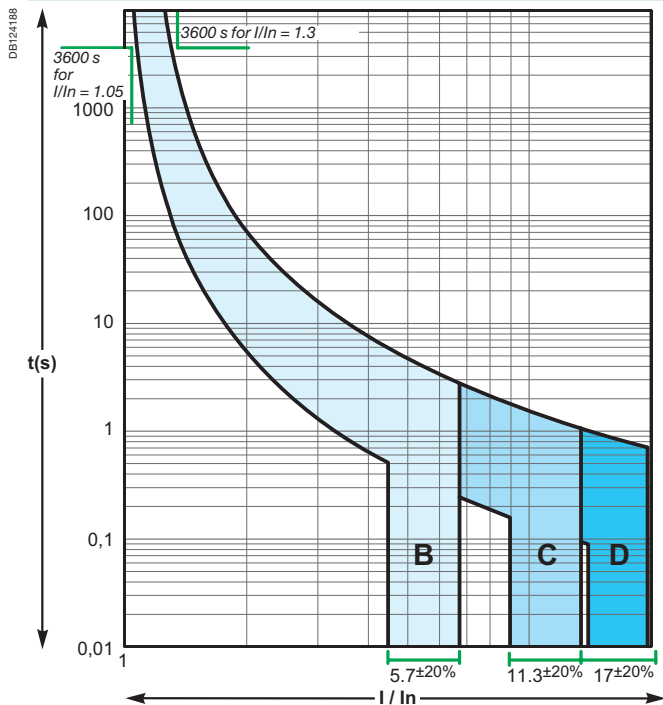
Curves B, C, D rating up to 4 A



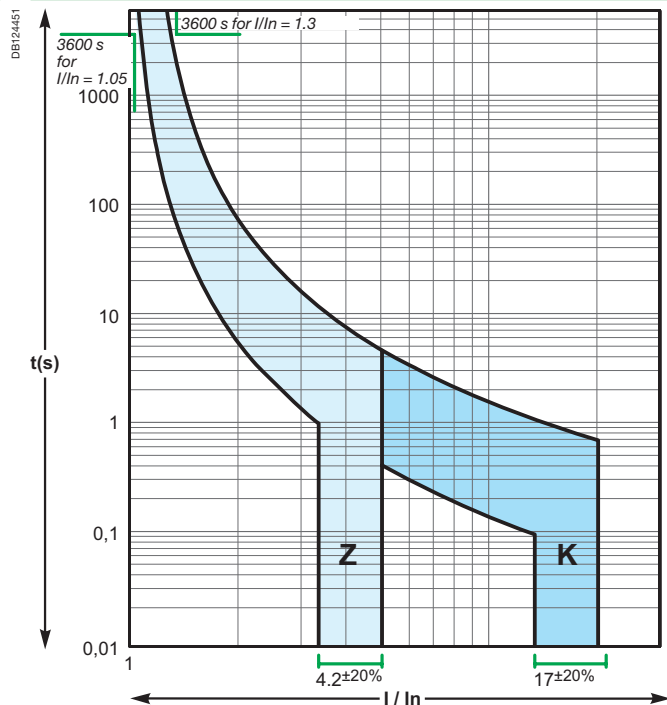
Curves Z, K rating up to 4 A



Curves B, C, D rating 6 A to 63 A



Curves Z, K rating 6 A to 63 A

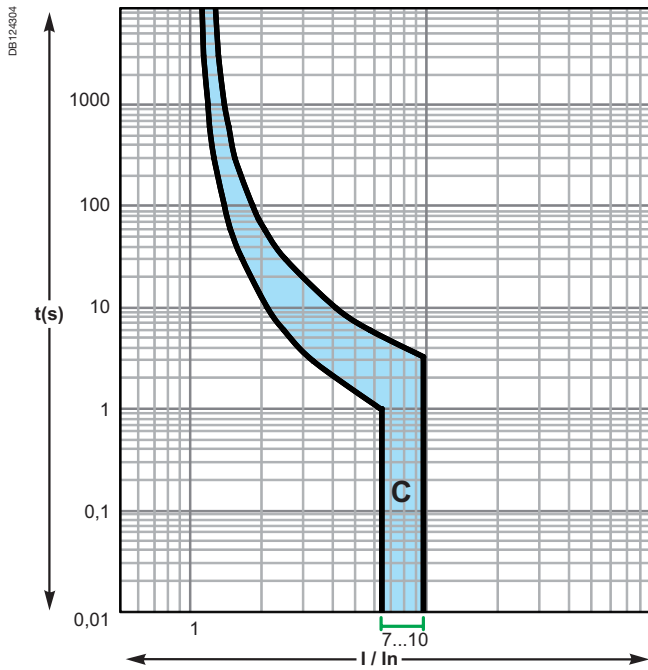


Direct current

**C60H-DC**

According to IEC/EN 60947-2 (reference temperature 25°C)

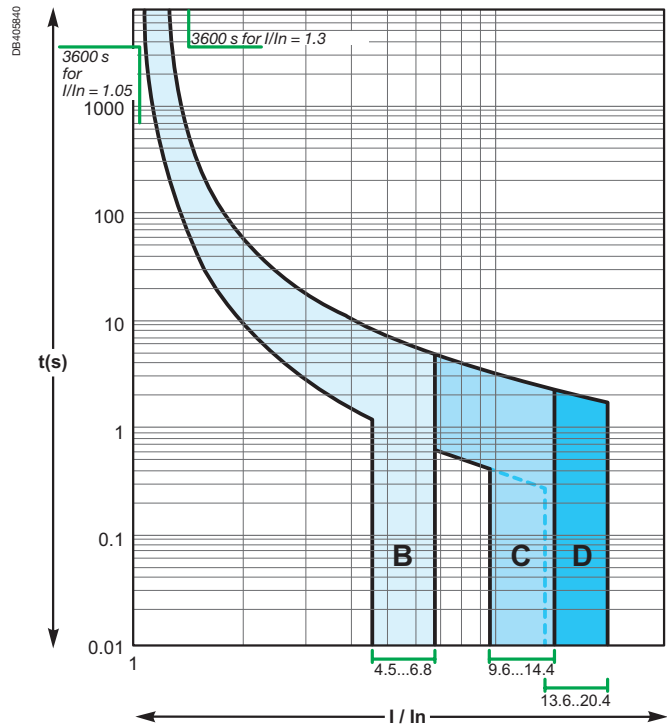
Curve C



**C60**

According to IEC/EN 60947-2 (reference temperature 50°C)

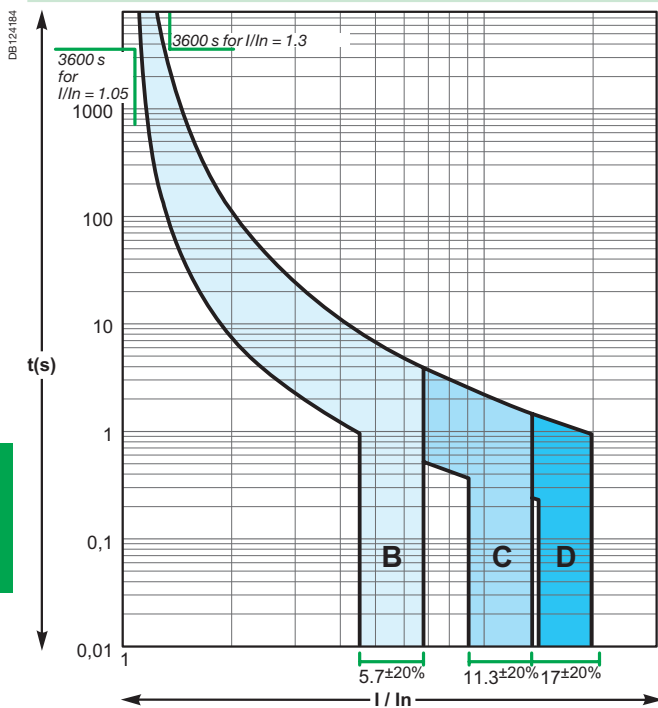
Curves B, C, D



**NG125a/N/H/L**

According to IEC/EN 60947-2 (reference temperature 40°C)

Curves B, C, D



## Influence of temperature on the operation

Devices	Characteristics influenced by temperature	Temperature	
		Min.	Max.
iDPN, C60H-DC, C60, C120, NG125, C60PV-DC circuit breakers	Tripping on overload	-30°C	+70°C
	Tripping on overload	-25°C	+60°C
iC60N circuit breakers	Tripping on overload	-35°C	+70°C
Circuit breakers	With Vigi (AC)	-5°C	+60°C
	With Vigi (A, SI)	-25°C	+60°C
Reflex iC60	Tripping on overload	-25°C	+60°C
iC60H RCBO,	Tripping on overload	-15°C	+60°C
C60NA-DC, SW60PV-DC switch-disconnectors	Maximum operating current	-25°C	+70°C
	Maximum operating current	-5°C	+60°C
iID residual current circuit breakers	AC A, SI	Maximum operating current	-5°C
			-25°C
Switches	iSW	Maximum operating current	-20°C
	iSW-NA		-35°C
Protection auxiliaries	None	-35°C	+70°C
RCA, ARA control auxiliaries	None	-25°C	+60°C
iCT contactors	Installation conditions	-5°C	+60°C
iTL impulse relays	None	-20°C	+50°C
iCT, iTL auxiliaries	None	-20°C	+50°C
Distribloc	Maximum operating current	-25°C	+60°C
Multiclip	Maximum operating current	-25°C	+60°C

Note: the temperature considered is the temperature viewed through the device.

## Circuit breakers

### High temperatures

- A rise in temperature causes lowering of the thermal threshold (tripping on overload).
  - Protection is still ensured: the tripping threshold remains lower than the current acceptable by the cable ( $I_2$ )
  - To prevent nuisance tripping, it should be checked that this threshold remains higher than the maximum operating current ( $I_B$ ) of the circuit, defined by:
    - the rated load currents,
    - the coefficients of expansion and simultaneity of use.
- If the temperature is sufficiently high for the tripping threshold to become lower than the operating current  $I_B$ , switchboard ventilation should be provided for.

### Low temperatures

- A fall in temperature increases the thermal tripping threshold of the circuit breaker.
- There is no risk of nuisance tripping: the threshold remains higher than the maximum operating current of the circuit ( $I_B$ ) demanded by the loads.
- It should be checked that the cable remains suitably protected, i.e. that its acceptable current ( $I_2$ ) is higher than the values shown in the following tables (in amperes).

When the ambient temperature could vary within a broad range, both these aspects must be taken into account:

- the difference between the maximum operating current of the circuit ( $I_B$ ) and the tripping threshold of the circuit breaker for the minimum ambient temperature,
- the difference between the strength of the cable ( $I_2$ ) and the maximum tripping threshold of the circuit breaker for the maximum ambient temperature.



## Maximum permissible current

- The maximum current allowed to flow through the device depends on the ambient temperature in which it is placed.
- The ambient temperature is the temperature inside the enclosure or switchboard in which the devices are installed.
- The reference temperature is in a halftone colour for the different devices.
  
- When several devices operating simultaneously are mounted side by side in a small enclosure, a temperature rise in the enclosure results in a reduction in the operating current. A reduction coefficient of 0.8 will then have to be assigned to the rating (already derated, if applicable, depending on the ambient temperature).

■ Example:

Depending on the ambient temperature and the method of installation, the table below shows how to determine, for an iC60, the operating currents not to be exceeded for ratings 25 A, 32 A and 40 A (reference temperature 50°C).

Operating current not to be exceeded (A)							
Installation conditions (IEC 60947-2)		iC60 alone			Several iC60 in the same enclosure (calculate with the reduction coefficient indicated below)		
Ambient temperature (°C)		35°C	50°C	65°C	35°C	50°C	65°C
Type	Nominal rating (A)	Actual rating (A)					
iC60	25	26.35	25	23.57	26.35 x 0.8 = 21	25 x 0.8 = 20	23.57 x 0.8 = 19
	32	34	32	29.9	34 x 0.8 = 27	32 x 0.8 = 25.6	29.9 x 0.8 = 24
	40	42.5	40	37.34	42.5 x 0.8 = 34	40 x 0.8 = 32	37.34 x 0.8 = 30

IEC 60898-1

C120 derating table (IEC 60898-1)

C120 Rating	Ambient temperature (°C)																				
	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60	+65	+70
10 A	12.9	12.7	12.5	12.2	12	11.8	11.5	11.3	11	10.8	10.5	10.3	10	9.7	9.4	9.1	8.8	8.5	8.2	7.9	7.5
16 A	19.4	19.1	18.8	18.6	18.3	18	17.8	17.5	17.2	16.9	16.6	16.3	16	15.7	15.4	15.1	14.7	14.4	14	13.7	13.3
20 A	24.6	24.2	23.9	23.5	23.2	22.8	22.4	22	21.6	21.2	20.8	20.4	20	19.6	19.1	18.7	18.2	17.7	17.3	16.8	16.2
25 A	30.9	30.5	30	29.5	29.1	28.6	28.1	27.6	27.1	26.6	26.1	25.5	25	24.4	23.9	23.3	22.7	22.1	21.5	20.8	20.1
32 A	38.9	38.4	37.9	37.3	36.8	36.2	35.6	35	34.5	33.9	33.3	32.6	32	31.4	30.7	30	29.3	28.6	27.9	27.2	26.4
40 A	49.8	49.1	48.3	47.6	46.8	46	45.2	44.4	43.5	42.7	41.8	40.9	40	39.1	38.1	37.1	36.1	35.1	34.1	33	31.8
50 A	62.2	61.3	60.4	59.4	58.4	57.5	56.5	55.4	54.4	53.3	52.2	51.1	50	48.8	47.7	46.4	45.2	43.9	42.6	41.2	39.8
63 A	78.6	77.5	76.3	75	73.8	72.5	71.3	69.9	68.6	67.3	65.9	64.5	63	61.5	60	58.4	56.8	55.2	53.5	51.7	49.9
80 A	98.4	97	95.6	94.2	92.7	91.2	89.7	88.1	86.6	85	83.4	81.7	80	78.3	76.5	74.7	72.8	70.9	69	67	64.9
100 A	124.5	122.6	120.7	118.8	116.9	114.9	112.9	110.9	108.8	106.6	104.5	102.3	100	97.7	95.3	92.9	90.4	87.8	85.2	82.5	79.6
125 A	157	154.6	152.2	149.7	147.1	144.6	141.9	139.2	136.5	133.7	130.9	128	125	122	118.8	115.6	112.3	108.9	105.4	101.8	98

## Tertiary/Industry (IEC 60947-2)

iDPN derating table (IEC 60947-2)

iDPN		Ambient temperature (°C)																				
Rating	Curve	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60	+65	+70
1 A	B, C, D	1.69	1.66	1.62	1.59	1.55	1.51	1.47	1.43	1.39	1.35	1.3	1.26	1.21	1.16	1.11	1.06	1	0.94	0.88	0.81	0.73
2 A	B, C, D	2.68	2.64	2.6	2.56	2.52	2.48	2.44	2.4	2.36	2.32	2.28	2.23	2.19	2.14	2.1	2.05	2	1.95	1.9	1.85	1.79
3 A	B, C, D	4.03	3.97	3.91	3.86	3.8	3.74	3.68	3.61	3.55	3.49	3.42	3.36	3.29	3.22	3.15	3.07	3	2.92	2.85	2.77	2.68
4 A	B, C, D	5.26	5.19	5.12	5.05	4.98	4.9	4.83	4.75	4.67	4.6	4.52	4.43	4.35	4.27	4.18	4.09	4	3.91	3.81	3.72	3.62
6 A	B, C, D	7.51	7.42	7.34	7.25	7.16	7.07	6.98	6.89	6.8	6.7	6.61	6.51	6.41	6.31	6.21	6.11	6	5.89	5.78	5.67	5.56
10 A	B	12.5	12.3	12.2	12.1	11.9	11.8	11.6	11.5	11.3	11.2	11	10.8	10.7	10.5	10.3	10.2	10	9.8	9.7	9.5	9.3
10 A	C, D	13	12.9	12.7	12.5	12.3	12.2	12	11.8	11.6	11.4	11.2	11	10.8	10.6	10.4	10.2	10	9.8	9.6	9.3	9.1
13 A	B	17	16.7	16.5	16.3	16.1	15.8	15.6	15.4	15.1	14.9	14.6	14.4	14.1	13.8	13.6	13.3	13	12.7	12.4	12.1	11.8
13 A	C, D	17.2	16.9	16.7	16.5	16.2	16	15.7	15.5	15.2	15	14.7	14.4	14.2	13.9	13.6	13.3	13	12.7	12.4	12.1	11.7
16 A	B, C	20.6	20.4	20.1	19.8	19.6	19.3	19	18.7	18.5	18.2	17.9	17.6	17.3	17	16.7	16.3	16	15.7	15.3	15	14.6
16 A	D	20.8	20.5	20.2	20	19.7	19.4	19.1	18.8	18.5	18.2	17.9	17.6	17.3	17	16.7	16.3	16	15.7	15.3	14.9	14.6
20 A	B	25.7	25.3	25	24.7	24.4	24	23.7	23.4	23	22.7	22.3	21.9	21.6	21.2	20.8	20.4	20	19.6	19.2	18.8	18.3
20 A	C, D	26	25.7	25.3	25	24.6	24.3	23.9	23.6	23.2	22.8	22.4	22	21.7	21.3	20.8	20.4	20	19.6	19.1	18.7	18.2
25 A	B, C, D	32	31.6	31.2	30.8	30.4	30	29.6	29.2	28.7	28.3	27.8	27.4	26.9	26.5	26	25.5	25	24.5	24	23.5	22.9
32 A	B, C, D	41.6	41.1	40.5	40	39.4	38.9	38.3	37.7	37.1	36.5	35.9	35.3	34.7	34	33.4	32.7	32	31.3	30.6	29.9	29.1
40 A	B, C, D	52.7	52	51.3	50.6	49.8	49.1	48.3	47.6	46.8	46	45.2	44.4	43.5	42.7	41.8	40.9	40	39.1	38.1	37.1	36.1

iC60, Reflex iC60 derating table (IEC 60947-2)

iC60		Ambient temperature (°C)																					
Rating		-35	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60	+65	+70
0.5 A		0.66	0.65	0.64	0.63	0.63	0.62	0.61	0.6	0.59	0.58	0.57	0.56	0.55	0.54	0.53	0.52	0.51	0.5	0.49	0.48	0.47	0.45
1 A		1.32	1.3	1.28	1.27	1.25	1.23	1.21	1.2	1.18	1.16	1.14	1.12	1.1	1.08	1.06	1.04	1.02	1	0.98	0.96	0.93	0.91
2 A		2.79	2.75	2.71	2.67	2.63	2.58	2.54	2.5	2.45	2.4	2.36	2.31	2.26	2.21	2.16	2.11	2.05	2	1.94	1.89	1.83	1.76
3 A		4.21	4.15	4.08	4.02	3.96	3.89	3.83	3.76	3.69	3.62	3.55	3.48	3.4	3.32	3.25	3.17	3.08	3	2.91	2.82	2.73	2.64
4 A		5.62	5.54	5.46	5.37	5.29	5.2	5.11	5.02	4.93	4.83	4.74	4.64	4.54	4.44	4.33	4.22	4.11	4	3.88	3.76	3.64	3.51
6 A		8.55	8.42	8.29	8.16	8.03	7.89	7.75	7.61	7.46	7.31	7.16	7.01	6.85	6.69	6.52	6.35	6.18	6	5.81	5.62	5.43	5.22
10 A		13.3	13.2	13	12.8	12.6	12.5	12.3	12.1	11.9	11.7	11.5	11.3	11.1	10.9	10.7	10.5	10.2	10	9.8	9.5	9.3	9
13 A		17.1	16.9	16.7	16.4	16.2	16	15.8	15.5	15.3	15.1	14.8	14.6	14.3	14.1	13.8	13.6	13.3	13	12.7	12.4	12.1	11.8
16 A		21.1	20.8	20.6	20.3	20	19.7	19.5	19.2	18.9	18.6	18.3	18	17.7	17.3	17	16.7	16.3	16	15.7	15.3	14.9	14.5
20 A		26	25.7	25.4	25	24.7	24.4	24.1	23.7	23.4	23	22.7	22.3	21.9	21.6	21.2	20.8	20.4	20	19.6	19.2	18.7	18.3
25 A		31.9	31.6	31.2	30.8	30.4	30.1	29.7	29.3	28.9	28.5	28.1	27.6	27.2	26.8	26.4	25.9	25.5	25	24.5	24.1	23.6	23.1
32 A		42	41.5	41	40.5	39.9	39.4	38.8	38.2	37.7	37.1	36.5	35.9	35.3	34.6	34	33.3	32.7	32	31.3	30.6	29.9	29.1
40 A		52.6	51.9	51.3	50.6	49.9	49.2	48.5	47.8	47.1	46.4	45.6	44.9	44.1	43.3	42.5	41.7	40.9	40	39.1	38.2	37.3	36.4
50 A		67.1	66.3	65.4	64.5	63.5	62.6	61.6	60.7	59.7	58.7	57.7	56.7	55.6	54.5	53.4	52.3	51.2	50	48.8	47.6	46.3	45
63 A		86.3	85.1	83.9	82.7	81.4	80.1	78.9	77.6	76.2	74.9	73.5	72.1	70.7	69.2	67.7	66.2	64.6	63	61.4	59.7	57.9	56.1

Reflex iC60

C60 derating table (IEC 60947-2)

C60		Ambient temperature (°C)																				
Rating		-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60	+65	+70
0.5 A		0.68	0.67	0.66	0.65	0.64	0.63	0.62	0.61	0.6	0.59	0.58	0.56	0.55	0.54	0.53	0.51	0.5	0.49	0.47	0.46	0.44
0.75 A		0.93	0.92	0.91	0.9	0.89	0.88	0.87	0.86	0.85	0.83	0.82	0.81	0.8	0.79	0.78	0.76	0.75	0.74	0.72	0.7	0.68
1 A		1.31	1.3	1.28	1.27	1.25	1.23	1.21	1.19	1.17	1.15	1.13	1.11	1.09	1.07	1.05	1.02	1	0.98	0.95	0.93	0.91
2 A		2.55	2.59	2.56	2.52	2.49	2.45	2.41	2.37	2.34	2.3	2.26	2.22	2.17	2.13	2.09	2.04	2	1.95	1.91	1.88	1.84
3 A		3.81	4.04	3.98	3.92	3.85	3.79	3.73	3.66	3.59	3.52	3.45	3.38	3.31	3.23	3.16	3.08	3	2.92	2.83	2.82	2.76
4 A		4.9	4.86	4.81	4.76	4.7	4.65	4.59	4.54	4.48	4.42	4.37	4.31	4.25	4.19	4.13	4.06	4	3.94	3.87	3.81	3.74
6 A		7.93	7.82	7.71	7.6	7.49	7.38	7.27	7.15	7.03	6.91	6.79	6.66	6.54	6.41	6.27	6.14	6	5.86	5.71	5.56	5.42
8 A		10.37	10.23	10.09	9.96	9.82	9.68	9.54	9.4	9.25	9.11	8.96	8.81	8.65	8.49	8.33	8.17	8	7.83	7.65	7.47	7.31
10 A		13.3	13.2	13	12.8	12.6	12.4	12.2	12	11.8	11.6	11.4	11.2	10.9	10.7	10.5	10.2	10	9.8	9.5	9.2	9
13 A		17	16.9	16.6	16.4	16.2	15.9	15.7	15.4	15.2	14.9	14.7	14.4	14.1	13.9	13.6	13.3	13	12.7	12.4	12.1	11.8
16 A		20	19.8	19.5	19.3	19.1	18.8	18.6	18.4	18.1	17.9	17.6	17.3	17.1	16.8	16.6	16.3	16	15.7	15.4	15.1	14.8
20 A		26.9	26.6	26.2	25.8	25.4	25	24.6	24.2	23.7	23.3	22.9	22.4	22	21.5	21	20.5	20	19.5	18.9	18.4	17.9
25 A		32.9	32.5	32.1	31.6	31.1	30.7	30.2	29.7	29.2	28.7	28.2	27.7	27.2	26.7	26.1	25.6	25	24.4	23.8	23.2	22.6
32 A		41.5	41.1	40.5	40	39.4	38.9	38.3	37.7	37.1	36.5	35.9	35.3	34.7	34	33.4	32.7	32	31.3	30.6	29.9	29.1
40 A		53.7	52.9	52.2	51.4	50.6	49.8	49	48.2	47.3	46.5	45.6	44.7	43.8	42.9	42	41	40	39	37.9	36.9	35.8
45 A		60.8	60.1	59.2	58.3	57.4	56.5	55.5	54.6	53.6	52.6	51.6	50.5	49.5	48.4	47.3	46.2	45	43.8	42.6	41.4	40.1
50 A		65	64.3	63.5	62.6	61.7	60.8	59.9	59	58.1	57.1	56.2	55.2	54.2	53.2	52.1	51.1	50	48.9	47.8	46.7	45.5
63 A		85.5	84.6	83.3	82	80.7	79.4	78	76.7	75.3	73.9	72.4	70.9	69.4	67.9	66.3	64.7	63	61.3	59.5	57.8	56



## Tertiary/Industry (IEC 60947-2) (cont.)

C60H-DC derating table (IEC 60947-2)

C60H-DC	Ambient temperature (°C)																				
Rating	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60	+65	+70
0.5 A	0.63	0.62	0.61	0.6	0.59	0.58	0.56	0.55	0.54	0.53	0.51	0.5	0.49	0.47	0.46	0.44	0.43	0.41	0.39	0.38	0.36
1 A	1.18	1.17	1.15	1.14	1.12	1.1	1.09	1.07	1.05	1.04	1.02	1	0.98	0.96	0.94	0.92	0.9	0.88	0.86	0.84	0.82
2 A	2.54	2.5	2.45	2.41	2.36	2.31	2.26	2.21	2.16	2.11	2.06	2	1.94	1.88	1.82	1.76	1.7	1.63	1.56	1.48	1.41
3 A	3.78	3.71	3.65	3.58	3.51	3.45	3.38	3.3	3.23	3.16	3.08	3	2.92	2.84	2.75	2.66	2.57	2.48	2.38	2.27	2.17
4 A	5.08	4.99	4.9	4.81	4.71	4.62	4.52	4.42	4.32	4.22	4.11	4	3.89	3.77	3.65	3.53	3.4	3.27	3.13	2.98	2.83
5 A	6	5.92	5.83	5.74	5.66	5.57	5.48	5.39	5.29	5.2	5.1	5	4.9	4.8	4.69	4.58	4.47	4.36	4.24	4.12	4
6 A	7.26	7.15	7.04	6.94	6.83	6.71	6.6	6.48	6.37	6.25	6.12	6	5.87	5.74	5.61	5.47	5.33	5.19	5.04	4.89	4.73
10 A	12.6	12.4	12.2	11.9	11.7	11.5	11.3	11	10.8	10.5	10.3	10	9.7	9.5	9.2	8.9	8.6	8.3	7.9	7.6	7.2
13 A	15.5	15.3	15.1	14.9	14.6	14.4	14.2	14	13.7	13.5	13.3	13	12.8	12.5	12.2	12	11.7	11.4	11.1	10.8	10.5
15 A	18.6	18.3	18	17.7	17.4	17.1	16.7	16.4	16.1	15.7	15.4	15	14.6	14.3	13.9	13.5	13	12.6	12.2	11.7	11.2
16 A	19.4	19.1	18.9	18.6	18.3	18	17.6	17.3	17	16.7	16.3	16	15.7	15.3	14.9	14.6	14.2	13.8	13.4	13	12.5
20 A	24.1	23.7	23.4	23	22.7	22.3	21.9	21.6	21.2	20.8	20.4	20	19.6	19.2	18.7	18.3	17.9	17.4	16.9	16.4	15.9
25 A	30.4	29.9	29.5	29	28.5	28.1	27.6	27.1	26.6	26.1	25.5	25	24.5	23.9	23.3	22.7	22.1	21.5	20.9	20.2	19.6
30 A	37.4	36.7	36.1	35.5	34.9	34.2	33.5	32.9	32.2	31.5	30.7	30	29.2	28.5	27.7	26.8	26	25.1	24.2	23.2	22.3
32 A	38.5	37.9	37.4	36.8	36.2	35.7	35.1	34.5	33.9	33.3	32.6	32	31.4	30.7	30	29.3	28.6	27.9	27.1	26.3	25.5
40 A	48.9	48.2	47.4	46.7	45.9	45.1	44.3	43.5	42.6	41.8	40.9	40	39.1	38.2	37.2	36.2	35.2	34.2	33.1	32	30.8
50 A	59.9	59.1	58.3	57.4	56.5	55.6	54.7	53.8	52.9	52	51	50	49	48	46.9	45.9	44.8	43.6	42.5	41.3	40.1
63 A	78.2	76.9	75.6	74.3	73	71.7	70.3	68.9	67.5	66	64.5	63	61.4	59.8	58.2	56.5	54.7	52.9	51.1	49.1	47.1

C60PV-DC derating table (IEC 60947-2)

C60PV-DC	Ambient temperature (°C)																				
Rating	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60	+65	+70
1 A	1.18	1.17	1.15	1.14	1.12	1.1	1.09	1.07	1.05	1.04	1.02	1	0.98	0.96	0.94	0.92	0.9	0.88	0.86	0.84	0.82
2 A	2.54	2.5	2.45	2.41	2.36	2.31	2.26	2.21	2.16	2.11	2.06	2	1.94	1.88	1.82	1.76	1.7	1.63	1.56	1.48	1.41
3 A	3.78	3.71	3.65	3.58	3.51	3.45	3.38	3.3	3.23	3.16	3.08	3	2.92	2.84	2.75	2.66	2.57	2.48	2.38	2.27	2.17
5 A	6	5.92	5.83	5.74	5.66	5.57	5.48	5.39	5.29	5.2	5.1	5	4.9	4.8	4.69	4.58	4.47	4.36	4.24	4.12	4
8 A	9.64	9.5	9.36	9.22	9.08	8.93	8.78	8.63	8.48	8.32	8.16	8	7.83	7.67	7.49	7.31	7.13	6.95	6.76	6.56	6.36
10 A	12.6	12.4	12.2	11.9	11.7	11.5	11.2	11	10.8	10.5	10.3	10	9.7	9.4	9.2	8.9	8.6	8.2	7.9	7.6	7.2
13 A	15.5	15.3	15.1	14.8	14.6	14.4	14.2	14	13.7	13.5	13.2	13	12.7	12.5	12.2	12	11.7	11.4	11.1	10.8	10.5
15 A	18.6	18.3	18	17.7	17.4	17.1	16.7	16.4	16.1	15.7	15.4	15	14.6	14.3	13.9	13.5	13	12.6	12.2	11.7	11.2
16 A	19.4	19.1	18.9	18.6	18.3	18	17.6	17.3	17	16.7	16.3	16	15.7	15.3	14.9	14.6	14.2	13.8	13.4	13	12.5
20 A	24.1	23.7	23.4	23	22.7	22.3	21.9	21.6	21.2	20.8	20.4	20	19.6	19.2	18.7	18.3	17.9	17.4	16.9	16.4	15.9
25 A	30.4	29.9	29.5	29	28.5	28.1	27.6	27.1	26.6	26.1	25.5	25	24.5	23.9	23.3	22.7	22.1	21.5	20.9	20.2	19.6
30 A	37.4	36.7	36.1	35.5	34.9	34.2	33.5	32.9	32.2	31.5	30.7	30	29.2	28.5	27.7	26.8	26	25.1	24.2	23.2	22.3

C120 derating table (IEC 60947-2)

C120	Ambient temperature (°C)																				
Rating	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60	+65	+70
10 A	14.5	14.3	14	13.8	13.5	13.3	13	12.7	12.5	12.2	11.9	11.6	11.3	11	10.7	10.3	10	9.7	9.3	8.9	8.5
16 A	21.2	21	20.7	20.4	20.1	19.8	19.4	19.1	18.8	18.5	18.2	17.8	17.5	17.1	16.8	16.4	16	15.6	15.2	14.8	14.4
20 A	27	26.6	26.3	25.9	25.5	25	24.6	24.2	23.8	23.3	22.9	22.4	22	21.5	21	20.5	20	19.5	18.9	18.4	17.8
25 A	33.7	33.3	32.8	32.3	31.8	31.3	30.8	30.2	29.7	29.1	28.6	28	27.5	26.9	26.3	25.6	25	24.4	23.7	23	22.3
32 A	42.7	42.1	41.5	40.9	40.3	39.7	39	38.4	37.7	37.1	36.4	35.7	35	34.3	33.5	32.8	32	31.2	30.4	29.6	28.7
40 A	54.8	54	53.2	52.4	51.5	50.7	49.8	48.9	48	47.1	46.1	45.2	44.2	43.2	42.1	41.1	40	38.9	37.7	36.6	35.3
50 A	69.1	68.1	67	65.9	64.8	63.7	62.6	61.5	60.3	59.1	57.9	56.7	55.4	54.1	52.8	51.4	50	48.6	47.1	45.5	43.9
63 A	87.1	85.8	84.5	83.1	81.8	80.4	78.9	77.5	76	74.5	73	71.4	69.8	68.2	66.5	64.8	63	61.2	59.3	57.4	55.4
80 A	103.7	102.4	101	99.7	98.3	96.9	95.5	94.1	92.6	91.1	89.6	88.1	86.5	84.9	83.3	81.7	80	78.3	76.5	74.7	72.9
100 A	137.6	135.5	133.5	131.4	129.2	127.1	124.8	122.6	120.3	118	115.6	113.1	110.6	108.1	105.5	102.8	100	97.2	94.2	91.2	88.1
125 A	174.6	171.9	169.2	166.4	163.6	160.7	157.8	154.9	151.8	148.7	145.6	142.4	139.1	135.7	132.2	128.7	125	121.2	117.3	113.3	109.1

## Tertiary/Industry (IEC 60947-2) (cont.)

### NG125 derating table (IEC 60947-2)

NG125	Ambient temperature (°C)																				
Rating	-30	-25	-20	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60	+65	+70
10 A	13.7	13.5	13.2	13	12.8	12.5	12.3	12	11.7	11.5	11.2	10.9	10.6	10.3	10	9.7	9.4	9	8.7	8.3	7.9
16 A	20.3	20.1	19.8	19.5	19.2	18.9	18.6	18.3	18	17.7	17.4	17	16.7	16.4	16	15.7	15.3	14.9	14.5	14.1	13.7
20 A	26	25.6	25.3	24.9	24.5	24	23.6	23.2	22.8	22.3	21.9	21.4	21	20.5	20	19.5	19	18.5	17.9	17.4	16.8
25 A	33.8	33.2	32.7	32.1	31.5	30.9	30.3	29.7	29.1	28.4	27.8	27.1	26.4	25.7	25	24.3	23.5	22.7	21.9	21	20.1
32 A	41.2	40.6	40	39.4	38.8	38.2	37.5	36.9	36.2	35.6	34.9	34.2	33.5	32.7	32	31.2	30.5	29.7	28.8	28	27.1
40 A	53.5	52.7	51.8	51	50.1	49.1	48.2	47.3	46.3	45.3	44.3	43.3	42.2	41.1	40	38.9	37.7	36.5	35.2	33.9	32.5
50 A	66.3	65.2	64.2	63.1	62.1	61	59.8	58.7	57.5	56.4	55.1	53.9	52.6	51.3	50	48.6	47.2	45.8	44.3	42.7	41.1
63 A	83.4	82.1	80.8	79.5	78.1	76.8	75.4	73.9	72.5	71	69.5	67.9	66.3	64.7	63	61.3	59.5	57.7	55.8	53.9	51.8
80 A	100.4	99.1	97.8	96.4	95	93.6	92.2	90.8	89.3	87.8	86.3	84.8	83.2	81.6	80	78.3	76.6	74.9	73.1	71.3	69.4
100 A	133.4	131.3	129.1	127	124.8	122.5	120.2	117.9	115.5	113.1	110.6	108	105.4	102.7	100	97.2	94.3	91.3	88.2	85	81.6
125 A	165.2	162.7	160.1	157.5	154.8	152.1	149.3	146.5	143.6	140.7	137.7	134.6	131.5	128.3	125	121.6	118.1	114.6	110.9	107	103.1

## Tertiary/Industry (IEC 60947-3)

### SW60-DC derating table (IEC 60947-3)

SW60PV-DC	Ambient temperature (°C)											
Rating	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+60	+70
50 A	63	61	60	58	56	54	52	50	48	46	41	35

## iC60H RCBO derating table (IEC 61009-1)

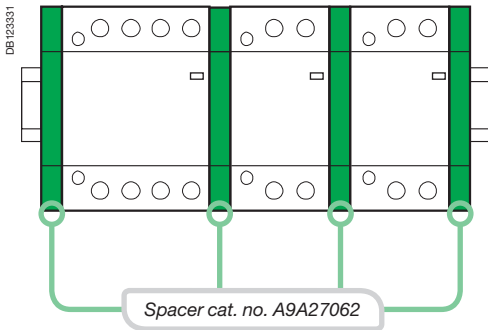
iC60H RCBO	Ambient temperature (°C)															
Rating	-15	-10	-5	0	+5	+10	+15	+20	+25	+30	+35	+40	+45	+50	+55	+60
6 A	8.3	8.15	7.99	7.83	7.67	7.50	7.33	7.16	6.98	6.79	6.6	6.41	6.21	6	5.78	5.56
10 A	12.9	12.7	12.5	12.3	12.1	11.9	11.6	11.4	11.2	11	10.7	10.5	10.3	10	9.7	9.5
16 A	20.9	20.6	20.3	19.9	19.6	19.2	18.8	18.4	18.1	17.7	17.3	16.9	16.4	16	15.6	15.1
20 A	26.3	25.9	25.4	25	24.5	24.1	23.6	23.1	22.6	22.1	21.6	21.1	20.6	20	19.4	18.8
25 A	31.5	31	30.6	30.1	29.6	29.2	28.7	28.2	27.7	27.2	26.6	26.1	25.6	25	24.4	23.8
32 A	39.2	38.7	38.2	37.7	37.2	36.6	36.1	35.5	35	34.4	33.8	33.2	32.6	32	31.4	30.7
40 A	50.2	49.5	48.8	48	47.3	46.5	45.8	45	44.2	43.4	42.6	41.7	40.9	40	39.1	38.2
45 A	55.5	54.7	54	53.2	52.5	51.7	50.9	50.1	49.3	48.5	47.6	46.8	45.9	45	41.9	41

## Switches

- In all cases, the switches are correctly protected against overloads by a circuit breaker with a lower or equal rating, operating at the same ambient temperature.

## iCT contactors

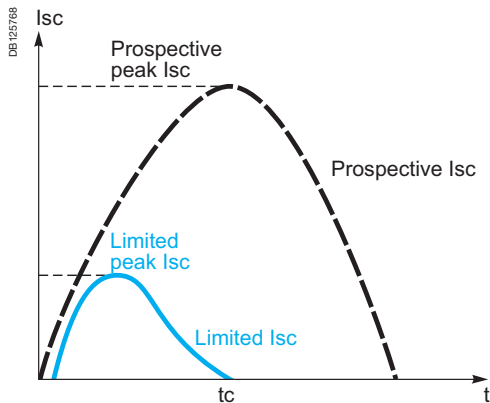
In the case of contactor mounting in an enclosure for which the interior temperature is in a range between 50°C and 60°C, it is necessary to use a spacer, cat. no. A9A27062, between each contactor.



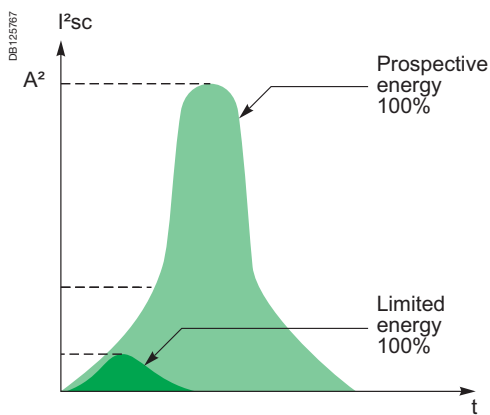
## Splitter blocks

In the event of a temperature higher than 40°C, the maximum acceptable current is limited to the values in the table below:

Type	Temperature				
	40°C	45°C	50°C	55°C	60°C
Multiclip 80 A	80	76	73	69	66
Distribloc 63 A	63	60	58	55	53



Prospective current and real limit current.



**Definition**

The limiting capacity of a circuit breaker is its ability to lessen the effects of a short circuit on an electrical installation by reducing the current amplitude and the dissipated power.

**Benefits of limiting**

**Long installation service life**

**Thermal effects**

Lower temperature rise at the conductor level, hence increased service life for cables and all components that are not self-protected (e.g. switches, contactors, etc.)

**Mechanical effects**

Lower electrodynamic repulsion forces, hence less risk of deformation or breakage of electrical contacts and busbars.

**Electromagnetic effects**

Less interference on sensitive equipment located in the vicinity of an electric circuit.

**Savings through cascading**

Cascading is a technique derived directly from current limiting: downstream of a current-limiting circuit breaker it is possible to use circuit breakers of breaking capacity lower than the prospective short-circuit current (in line with the cascading tables). The breaking capacity is heightened thanks to current limiting by the upstream device. Substantial savings can be achieved in this way on switchgear and enclosures.

**Discrimination of protection devices**

The circuit breakers' current limiting capacity improves discrimination with the protection devices located upstream: this is because the required energy passing through the upstream protection device is greatly reduced and can be not enough to cause it to trip. Discrimination can thus be natural without having to install a time-delayed protection device upstream.

**Acti 9 circuit breaker current limiting**

Profiting from Schneider Electric's experience and expertise in the field of short-circuit current breaking, the circuit breakers of the Acti 9 range have a top-level current limiting characteristic for modular devices.

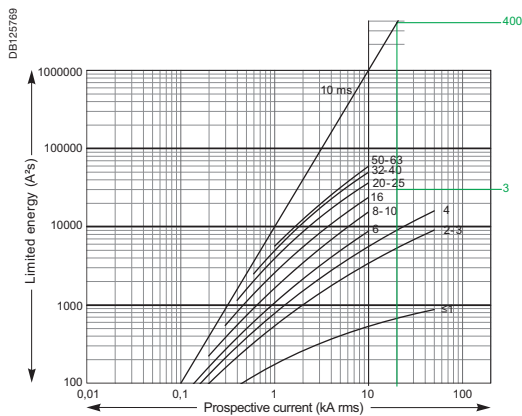
This assures them of optimal protection of the entire power distribution system.

**Representation: Current limiting curves**

The current limiting capacity of a circuit breaker is reflected by 2 curves which give, as a function of the prospective short-circuit current (current which would flow in the absence of a protection device):

- the real peak current (limited)
- the thermal stress (in A<sup>2</sup>s), this value, multiplied by the resistance of any element through which the short-circuit current passes, gives the power dissipated by this element.

The straight line "10 ms" representing the energy A<sup>2</sup>s of a prospective short-circuit current of a half-period (10 ms) indicates the energy that would be dissipated by the short-circuit current in the absence of limiting by the protection device (see example).



**Example**

What is the energy limited by an iC60N 25 A circuit breaker for a prospective short-circuit current of 10 kA rms. What is the quality of current limiting?

> as shown in the graph opposite:

- this short-circuit current (10 kA rms) is likely to dissipate up to 1,000 kA<sup>2</sup>s
- the iC60N circuit breaker reduces this thermal stress to: 35 kA<sup>2</sup>s, which is 22 times less.

**Example of use: Stresses acceptable by the cables**

The following table shows the thermal stresses acceptable by the cables depending on their insulation, their composition (Cu or Al) and their cross section. Cross-section values are expressed in mm<sup>2</sup> and stresses in A<sup>2</sup>s.

S (mm <sup>2</sup> )		1.5	2.5	4	6	10
PVC	Cu	2.97 x 10 <sup>4</sup>	8.26 x 10 <sup>4</sup>	2.12 x 10 <sup>5</sup>	4.76 x 10 <sup>5</sup>	1.32 x 10 <sup>6</sup>
	Al					5.41 x 10 <sup>5</sup>
PRC	Cu	4.10 x 10 <sup>4</sup>	1.39 x 10 <sup>5</sup>	2.92 x 10 <sup>5</sup>	6.56 x 10 <sup>5</sup>	1.82 x 10 <sup>6</sup>
	Al					7.52 x 10 <sup>5</sup>
S (mm <sup>2</sup> )		16	25	35	50	
PVC	Cu	3.4 x 10 <sup>6</sup>	8.26 x 10 <sup>6</sup>	1.62 x 10 <sup>7</sup>	3.21 x 10 <sup>7</sup>	
	Al	1.39 x 10 <sup>6</sup>	3.38 x 10 <sup>6</sup>	6.64 x 10 <sup>6</sup>	1.35 x 10 <sup>7</sup>	
PRC	Cu	4.69 x 10 <sup>6</sup>	1.39 x 10 <sup>7</sup>	2.23 x 10 <sup>7</sup>	4.56 x 10 <sup>7</sup>	
	Al	1.93 x 10 <sup>6</sup>	4.70 x 10 <sup>6</sup>	9.23 x 10 <sup>6</sup>	1.88 x 10 <sup>7</sup>	

**Example**

Is a Cu/PVC cable of cross section 10 mm<sup>2</sup> protected by a NG125L device?

The above table shows that the acceptable stress is 1.32 x 10<sup>6</sup> A<sup>2</sup>s. Any short-circuit current at the point where a NG125L device (I<sub>cu</sub> = 25 kA) is installed will be limited, with a thermal stress of less than 2.2 x 10<sup>5</sup> A<sup>2</sup>s. (Curve on page 11/26).

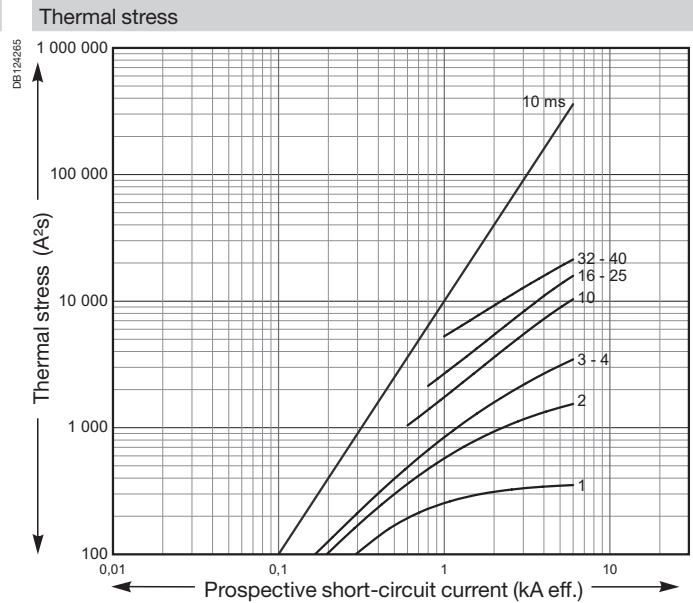
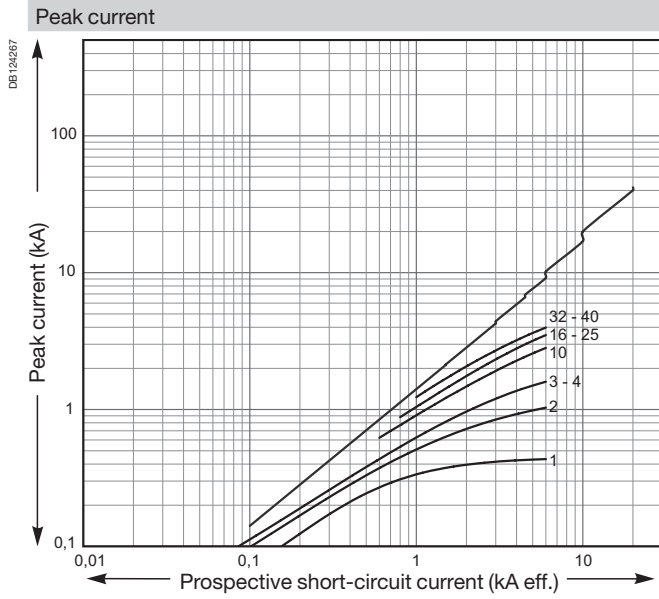
The cable is therefore always protected up to the breaking capacity of the circuit breaker.



Limitation curves for network  
 Ue: 380-415 V AC (Ph/N 220-240 V AC)

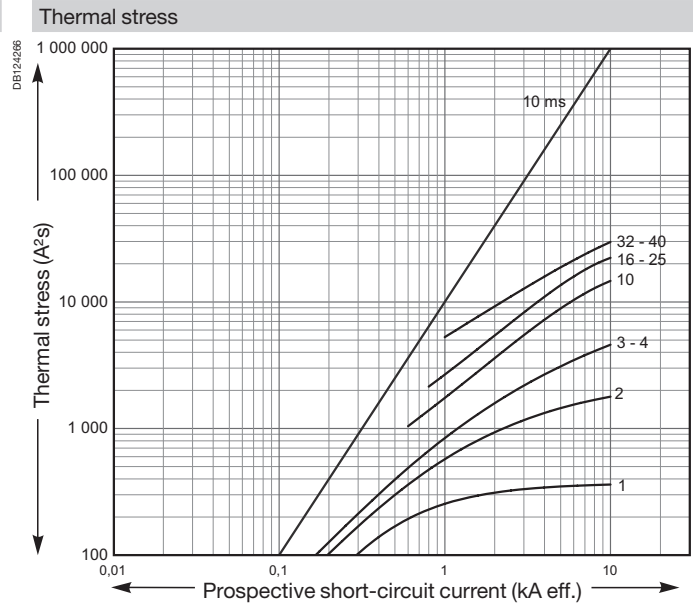
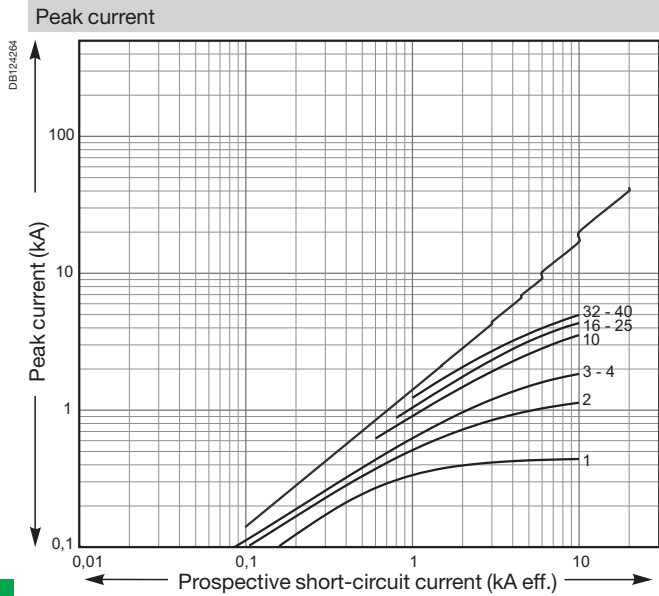
**iDPN (MCB and RCBO)**

1P+N / 3P / 3P+N



**DPN N (MCB and RCBO)**

1P+N / 3P / 3P+N

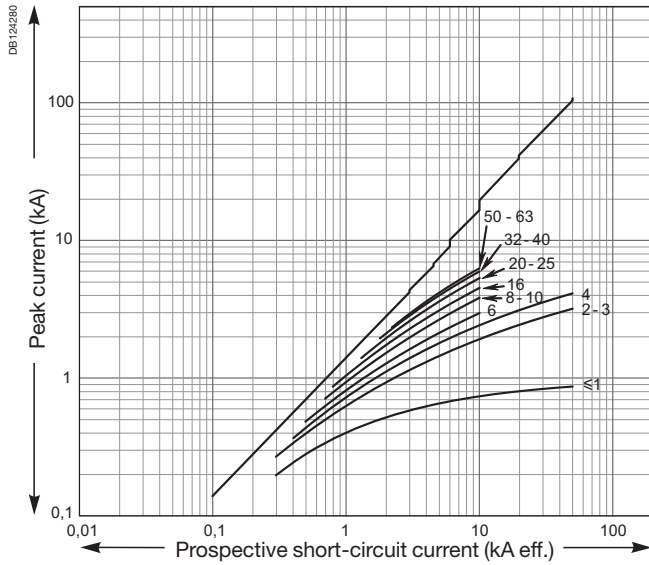


Limitation curves for network  
U<sub>e</sub>: 380-415 V AC (Ph/N 220-240 V AC)

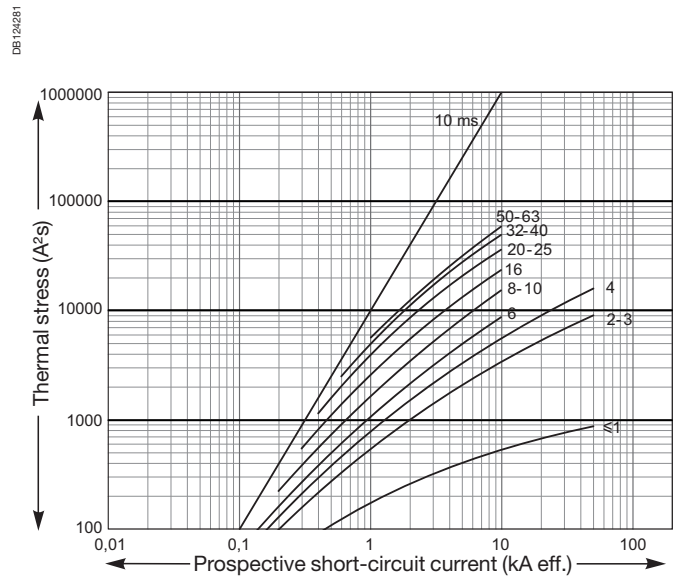
**iC60N**

1P / 1P+N / 2P / 3P / 4P

Peak current



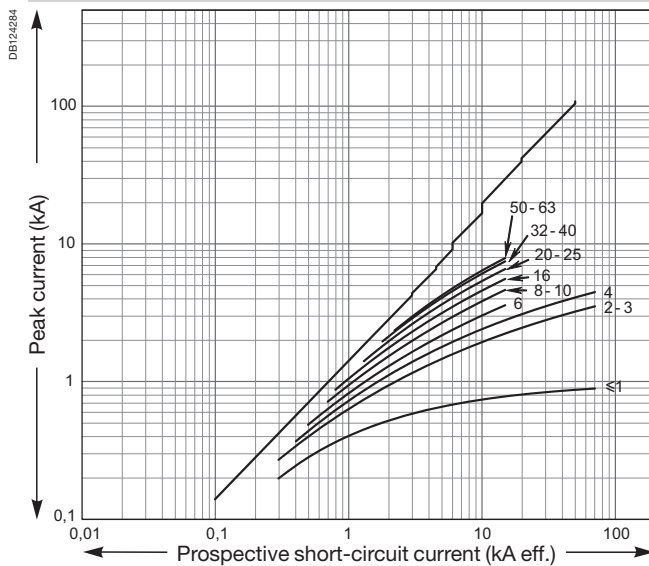
Thermal stress



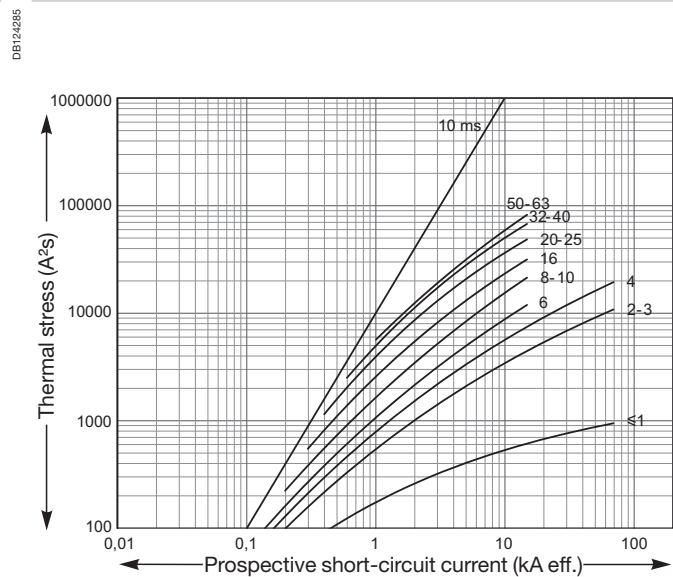
**iC60H**

1P / 1P+N / 2P / 3P / 4P

Peak current



Thermal stress

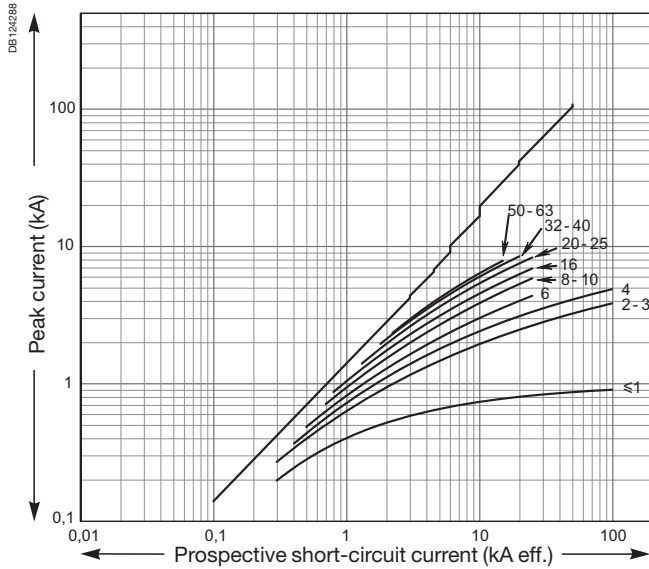


Limitation curves for network  
 U<sub>e</sub>: 380-415 V AC (Ph/N 220-240 V AC)

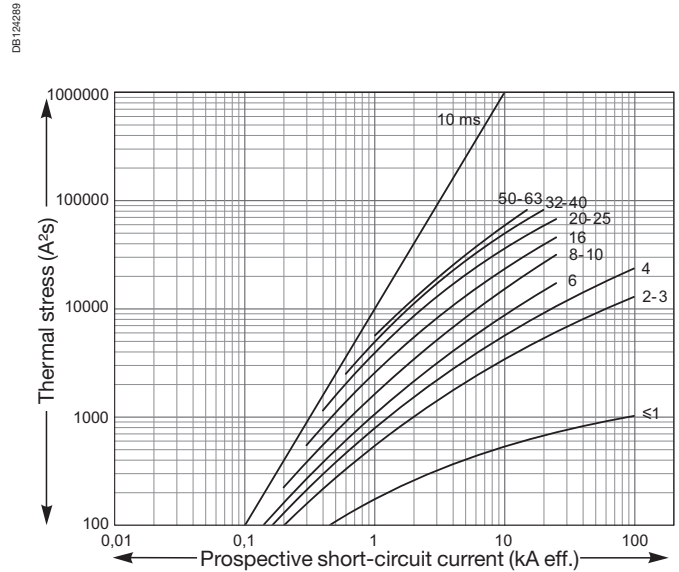
iC60L

1P / 2P / 3P / 4P

Peak current



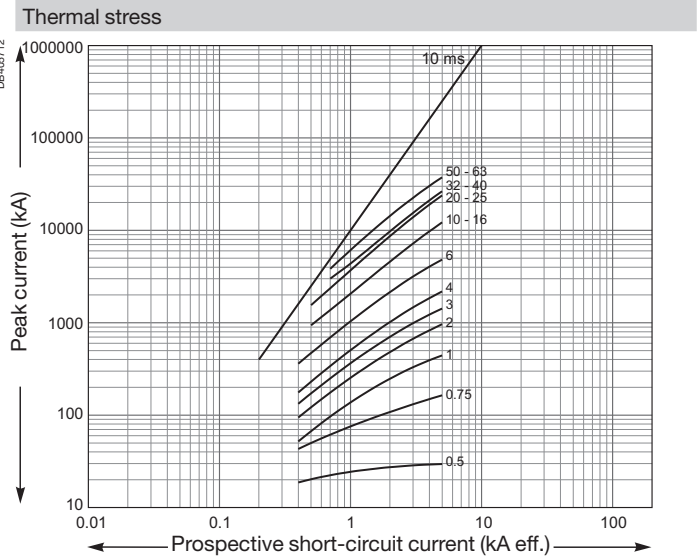
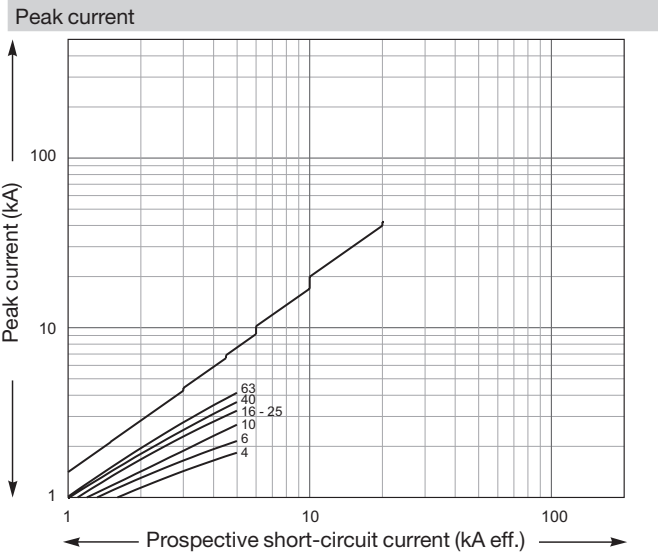
Thermal stress



Limitation curves for network  
 U<sub>e</sub>: 380-415 V AC (Ph/N 220-240 V AC)

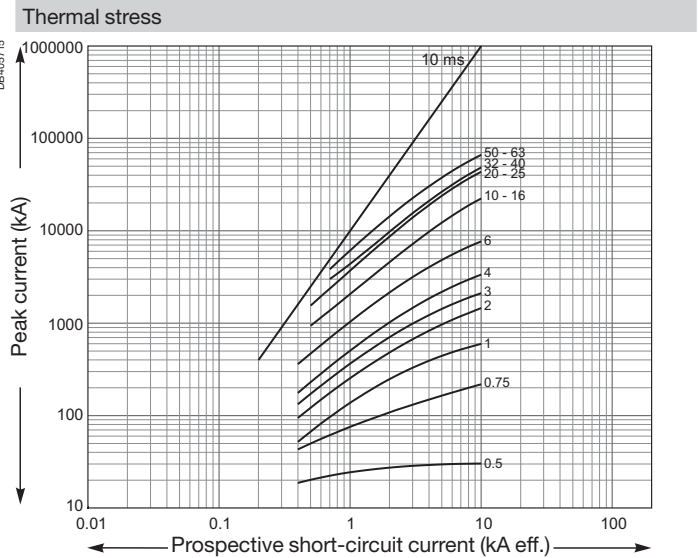
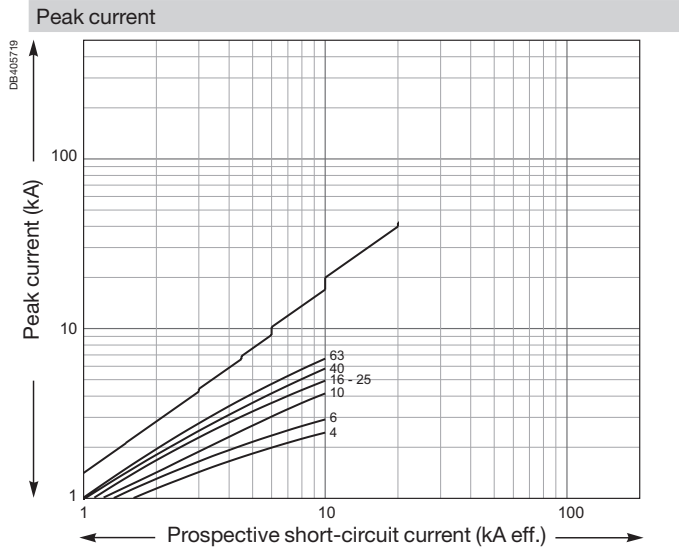
C60a

1P / 2P / 3P / 3P+N / 4P



C60N

1P / 1P+N / 2P / 3P / 3P+N / 4P

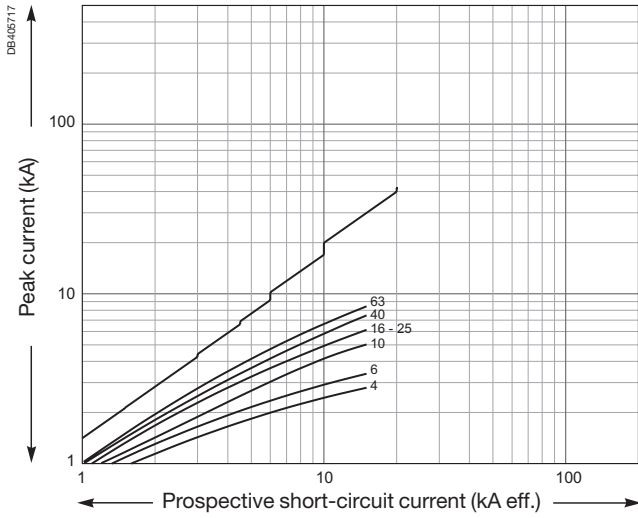


Limitation curves for network  
 U<sub>e</sub>: 380-415 V AC (Ph/N 220-240 V AC)

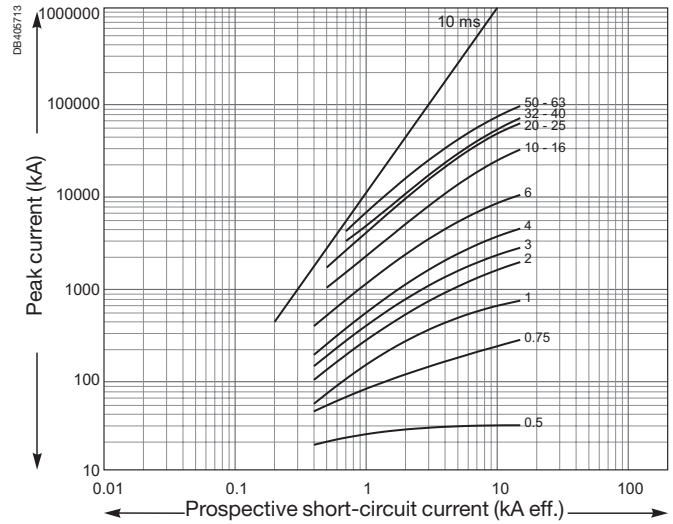
**iC60H**

1P / 1P+N / 2P / 3P / 3P+N / 4P

Peak current



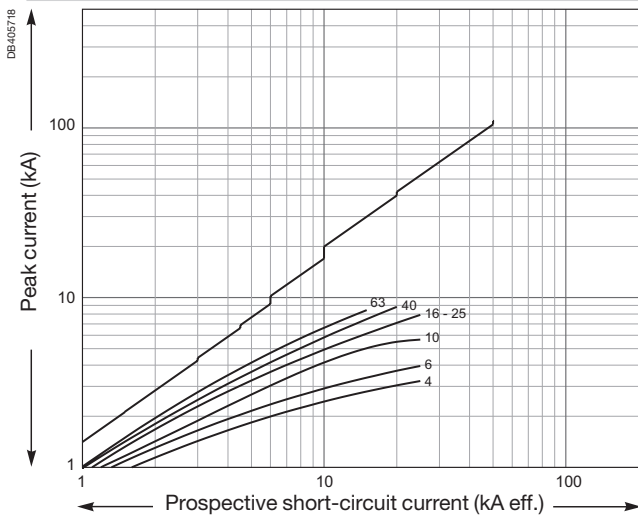
Thermal stress



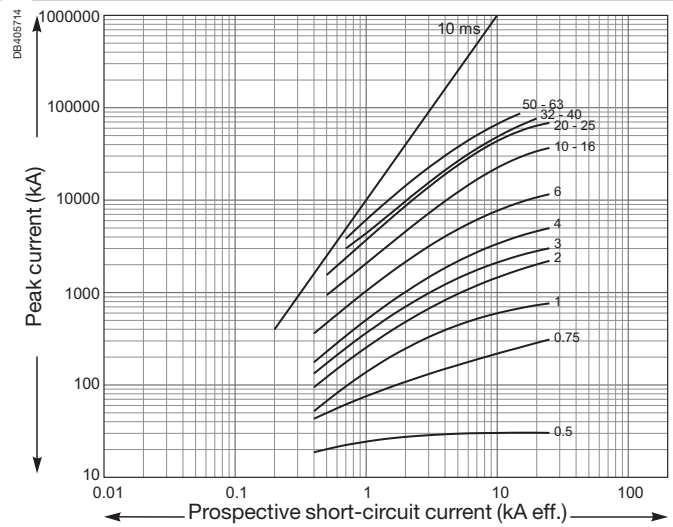
**C60L**

1P / 2P / 3P / 4P

Peak current



Thermal stress

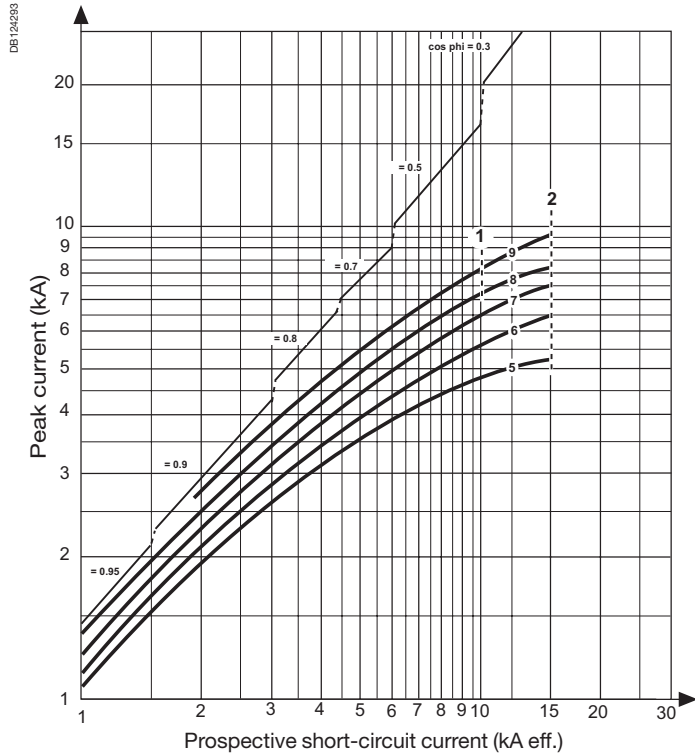


Limitation curves for network  
 Ue: 380-415 V AC (Ph/N 220-240 V AC)

C120N, H

1P / 2P / 3P / 4P

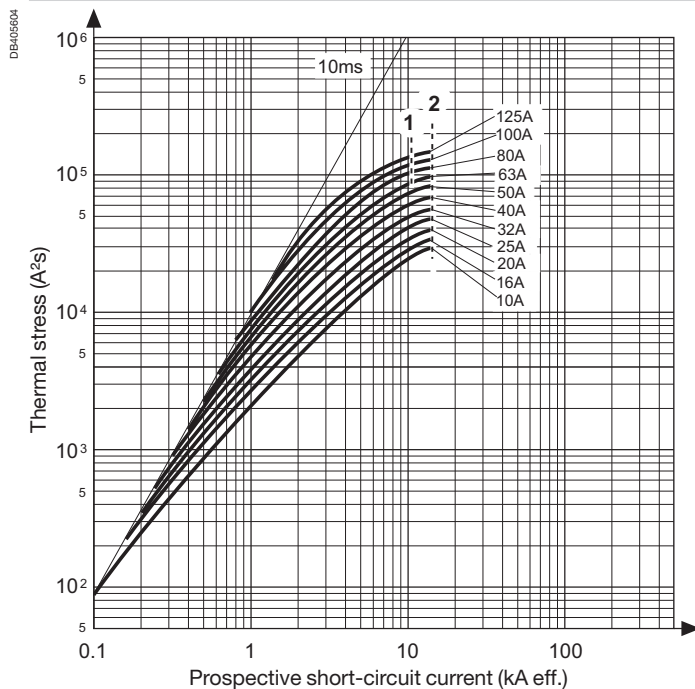
Peak current



■ Circuit breaker type in accordance with the mark:

- 1: C120N
- 2: iC120H
- 5: 10-16 A
- 6: 20-25 A
- 7: 32-40 A
- 8: 50-63 A
- 9: 80-125 A

Thermal stress



■ Circuit breaker type in accordance with the mark:

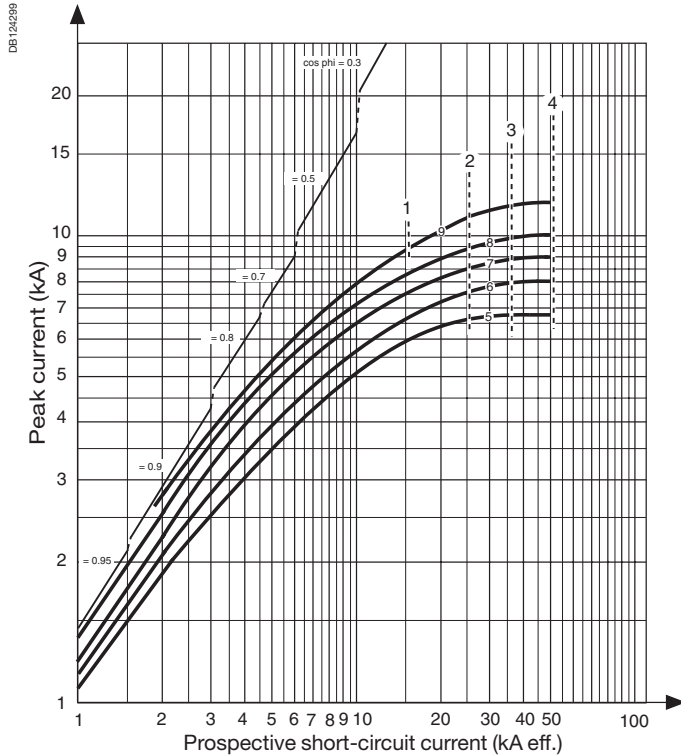
- 1: C120N
- 2: iC120H

Limitation curves for network  
 U<sub>e</sub>: 380-415 V AC (Ph/N 220-240 V AC)

NG125a, N, H, L

1P / 2P / 3P / 4P

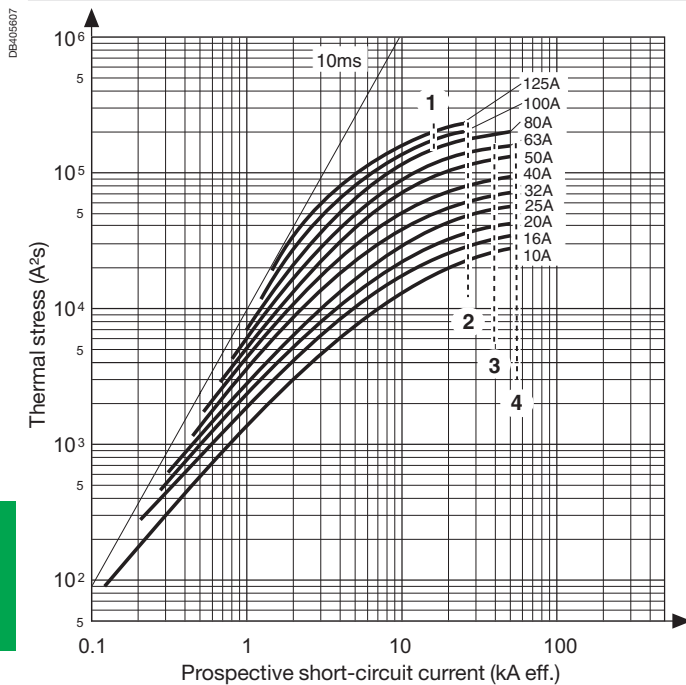
Peak current



■ Circuit breaker type in accordance with the mark:

- 1: NG125a
- 2: NG125N
- 3: NG125H
- 4: NG125L
- 5: 10 -16 A
- 6: 20-25 A
- 7: 32-40 A
- 8: 50-63 A
- 9: 80-125 A

Thermal stress



■ Circuit breaker type in accordance with the mark:

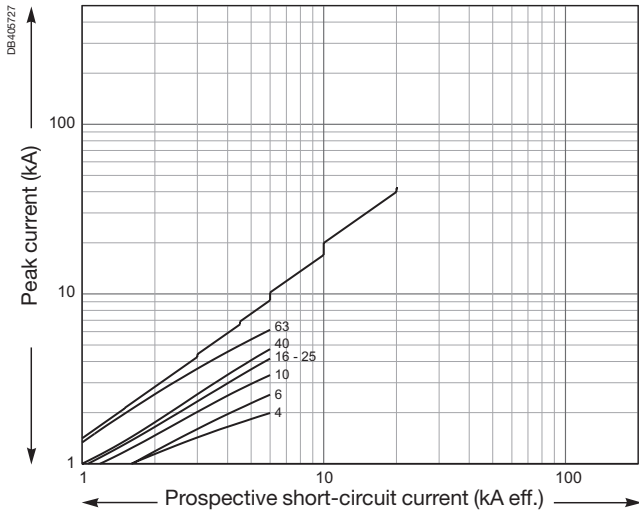
- 1: NG125a 80-100-125 A
- 2: NG125N
- 3: NG125H
- 4: NG125L

Limitation curves for network  
U<sub>e</sub>: 440 V AC

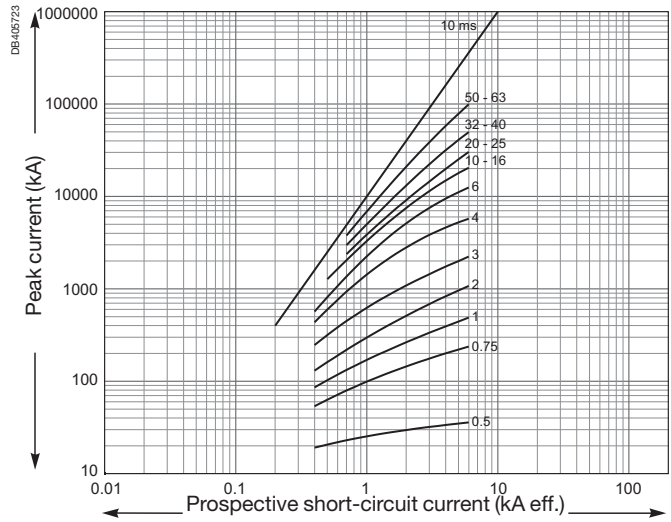
C60N

2P / 3P / 4P

Peak current



Thermal stress



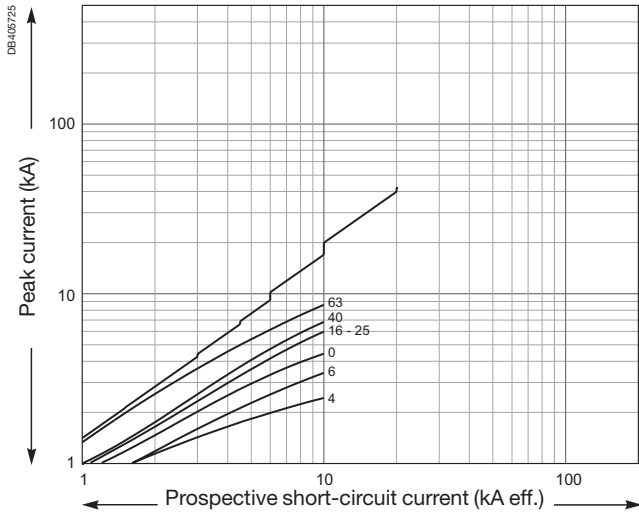


Limitation curves for network  
U<sub>e</sub>: 440 V AC

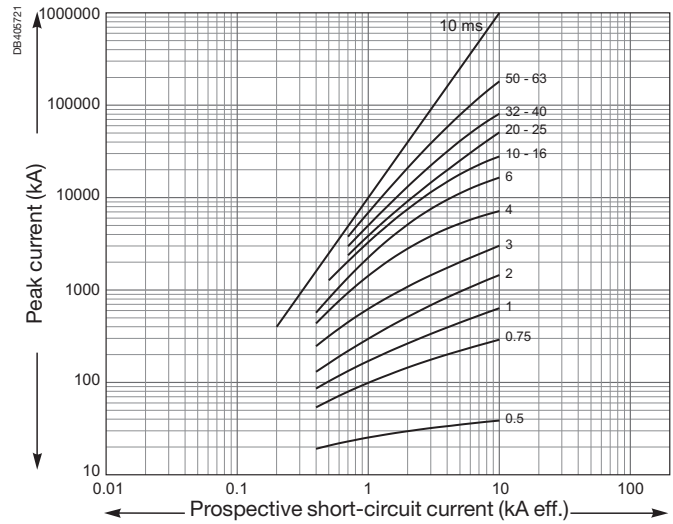
**iC60H**

2P / 3P / 4P

Peak current



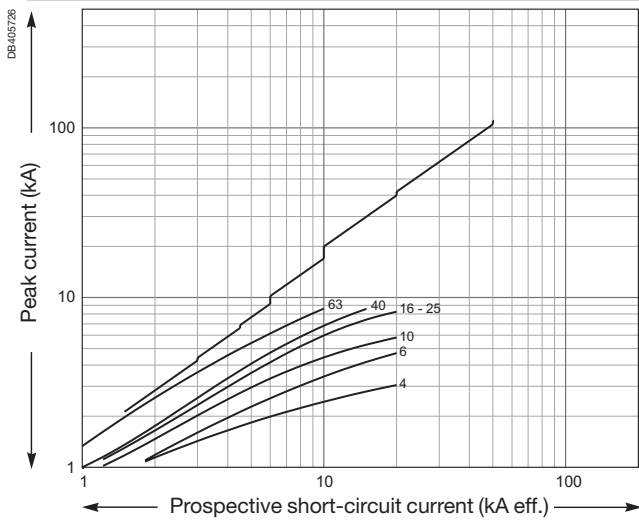
Thermal stress



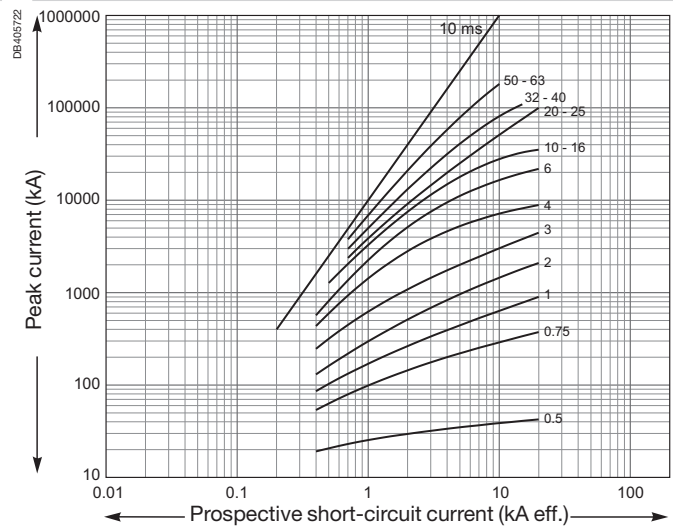
**C60L**

2P / 3P / 4P

Peak current



Thermal stress

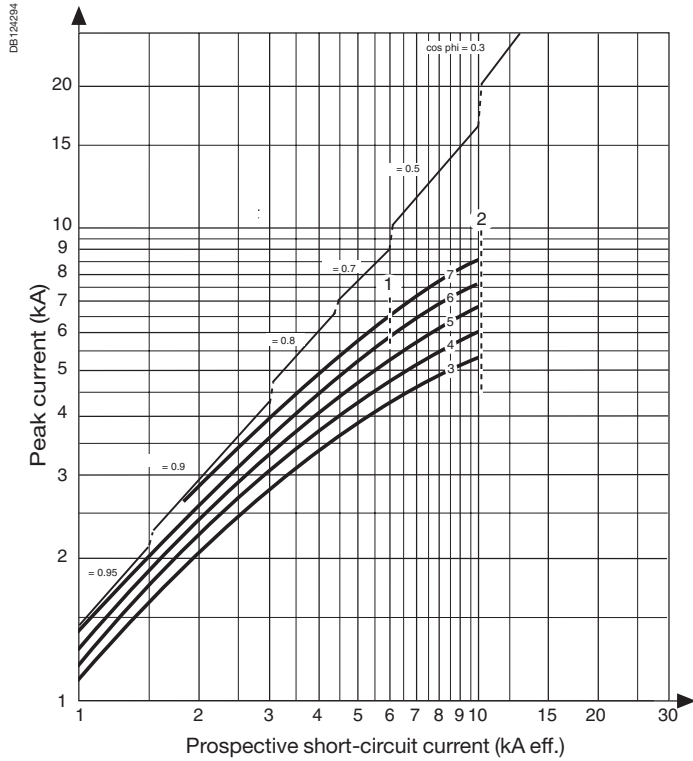


Limitation curves for network  
U<sub>e</sub>: 440 V AC

C120N, H

2P / 3P / 4P

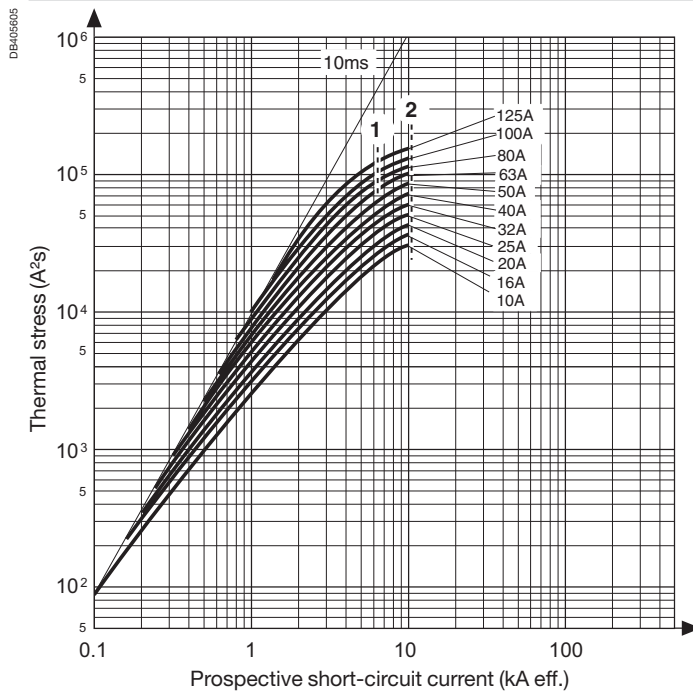
Peak current



■ Circuit breaker type in accordance with the mark:

- 1: C120N
- 2: iC120H
- 3: 0-16 A
- 4: 20-25 A
- 5: 32-40 A
- 6: 50-63 A
- 7: 80-125 A

Thermal stress



■ Circuit breaker type in accordance with the mark:

- 1: C120N
- 2: iC120H

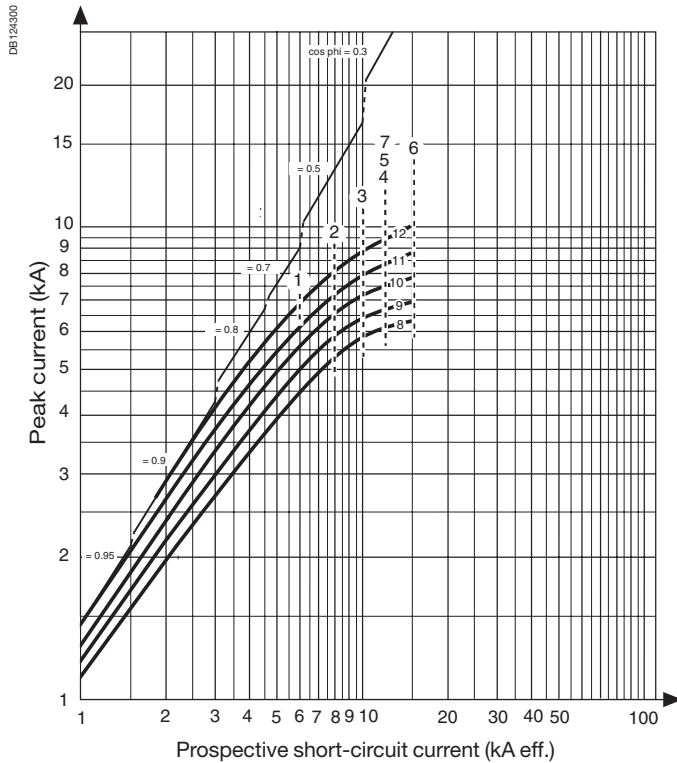
Limitation curves for network

Ue: 550 V AC

NG125a, N, H, L

2P / 3P / 4P

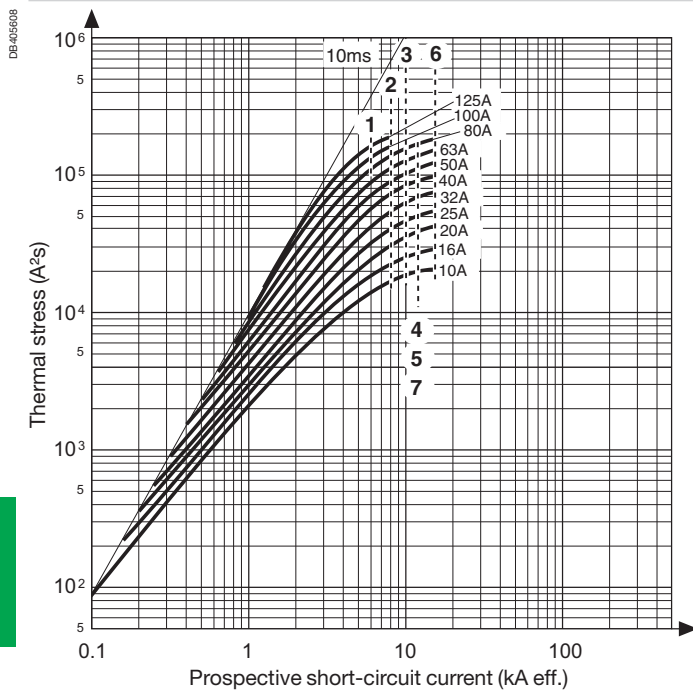
Peak current



■ Circuit breaker type in accordance with the mark:

- 1: NG125a 3, 4P
- 2: NG125N 2, 3, 4P
- 3: NG125H 3, 4P
- 4-5: NG125H 2P/NG125L 3, 4P
- 6: NG125L 2P
- 7: NG125 LMA 2, 3, 4P
- 8: 10 -16 A
- 9: 20-25 A
- 10: 32-40 A
- 11: 50-63 A
- 12: 80-125 A

Thermal stress



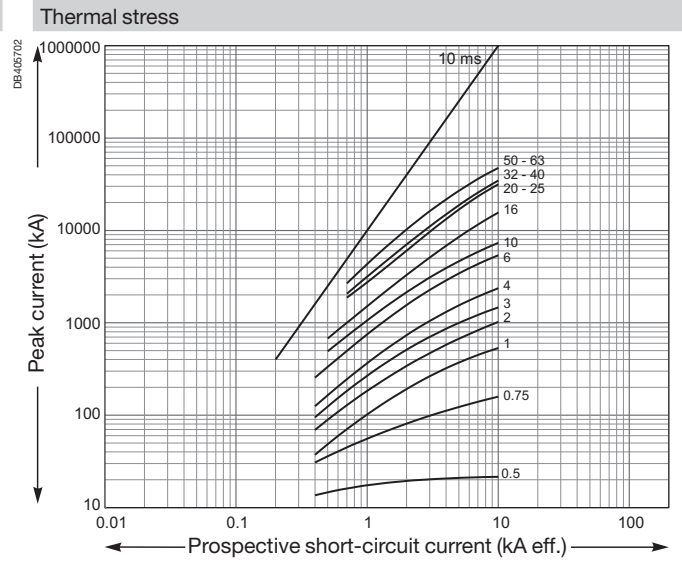
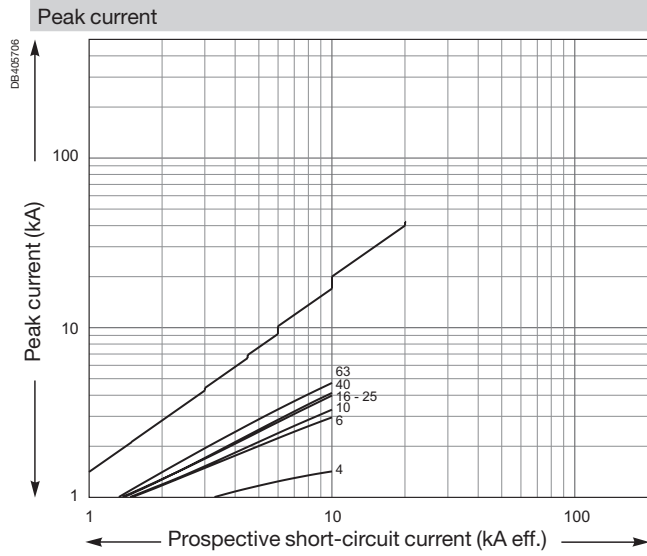
■ Circuit breaker type in accordance with the mark:

- 1: NG125a 3, 4P
- 2: NG125N 2, 3, 4P
- 3: NG125H 3, 4P
- 4-5: NG125H 2P/NG125L 3, 4P
- 6: NG125L 2P
- 7: NG125LMA 2, 3, 4P

Limitation curves for network  
 U<sub>e</sub>: 220-240 V AC (Ph/N 110-130 V AC)

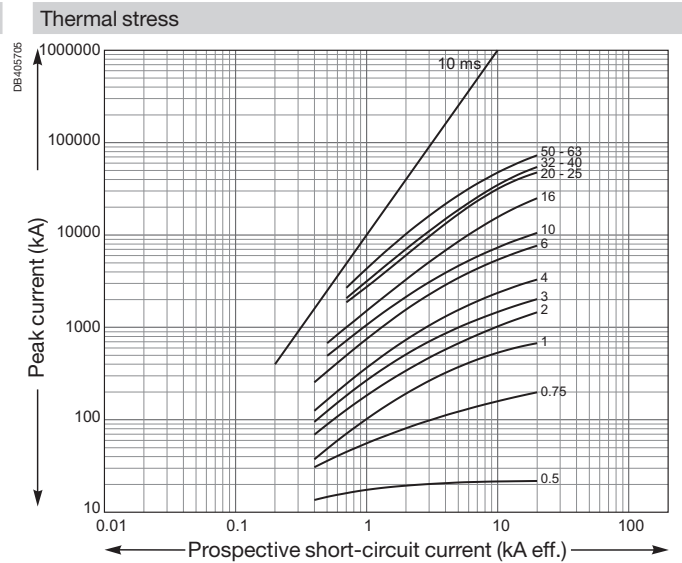
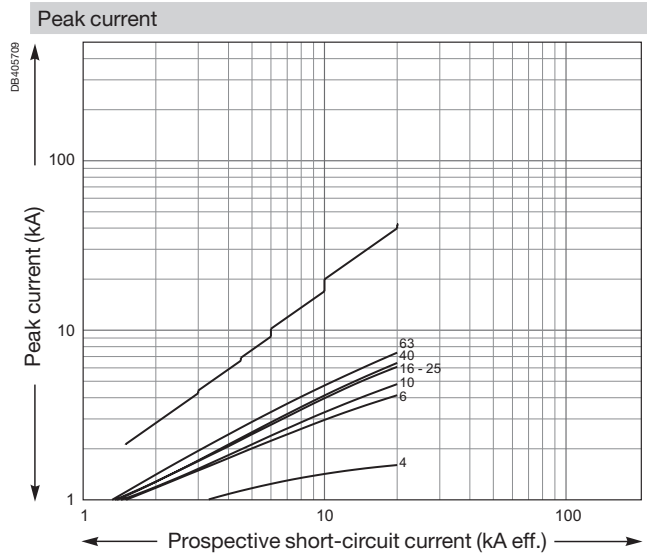
**C60a**

1P / 2P / 3P / 3P+N / 4P



**C60N**

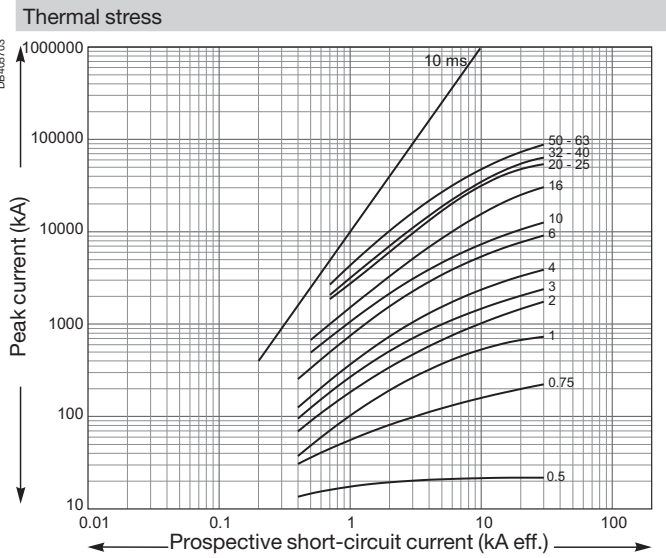
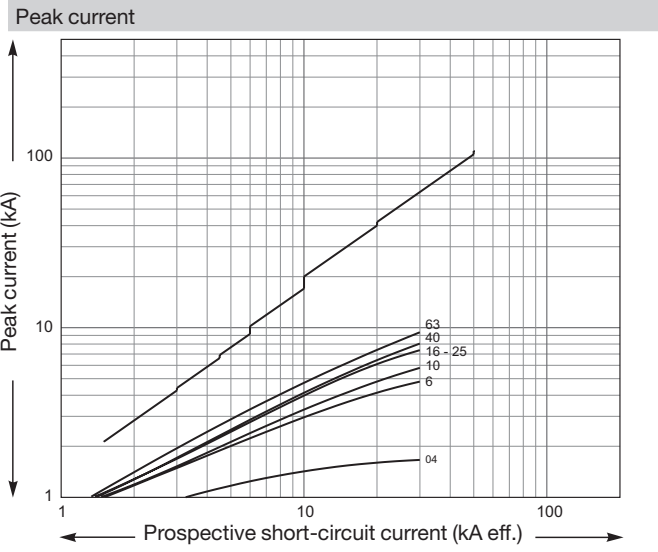
1P / 1P+N / 2P / 3P / 3P+N / 4P



Limitation curves for network  
U<sub>e</sub>: 220-240 V AC (Ph/N 110-130 V AC)

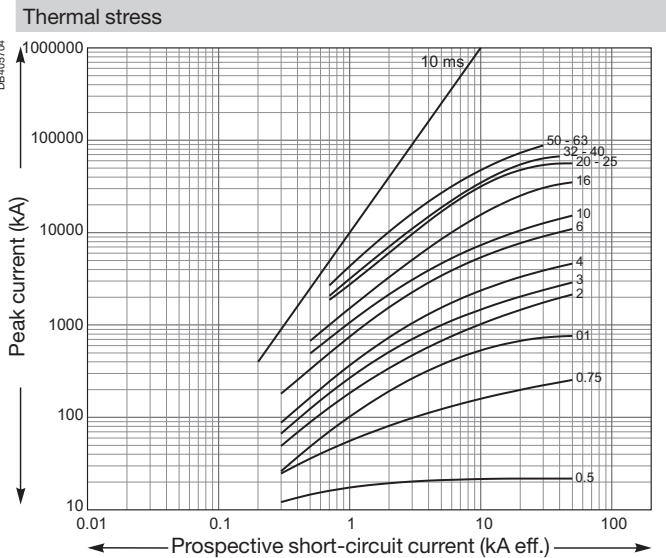
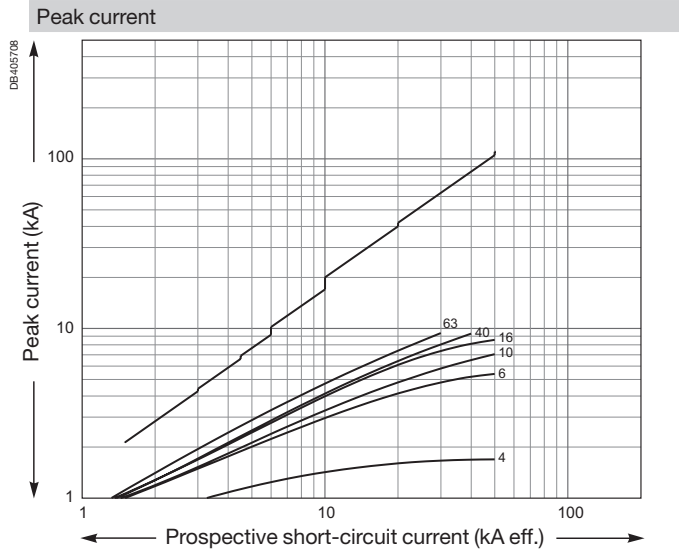
**iC60H**

1P / 1P+N / 2P / 3P / 3P+N / 4P



**C60L**

1P / 2P / 3P / 4P

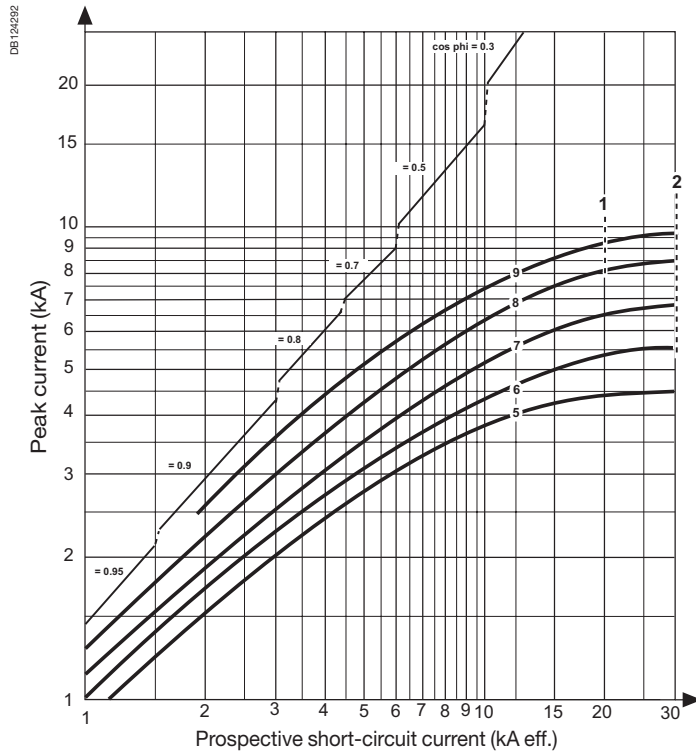


Limitation curves for network  
 U<sub>e</sub>: 220-240 V AC (Ph/N 110-130 V AC)

C120N, H

1P / 2P / 3P / 4P

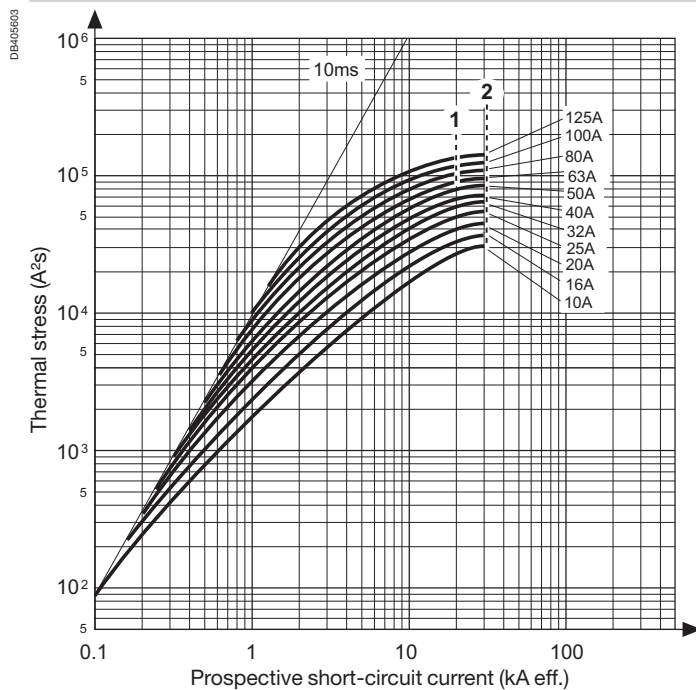
Peak current



■ Circuit breaker type in accordance with the mark:

- 1: C120N
- 2: iC120H
- 5: 10-16 A
- 6: 20-25 A
- 7: 32-40 A
- 8: 50-63 A
- 9: 80-125 A

Thermal stress



■ Circuit breaker type in accordance with the mark:

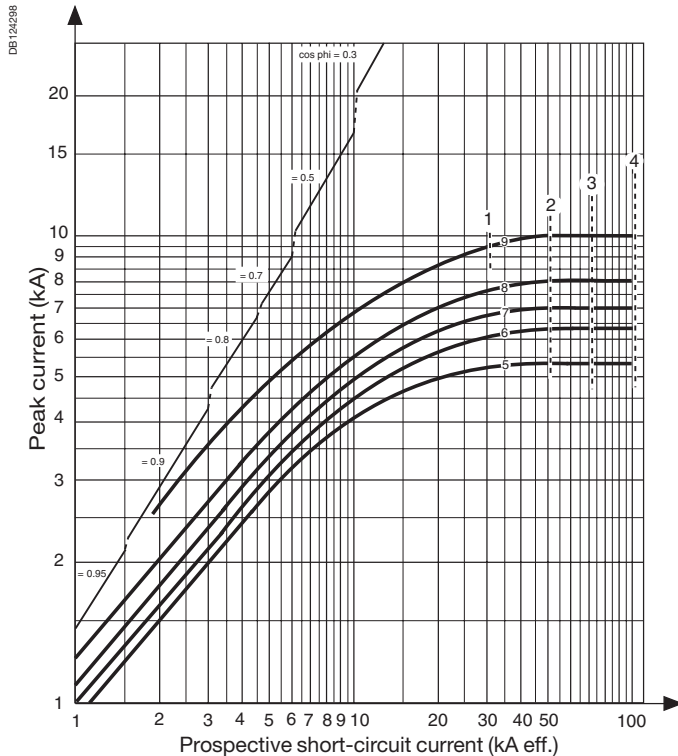
- 1: C120N
- 2: iC120H

Limitation curves for network  
 U<sub>e</sub>: 220-240 V AC (Ph/N 110-130 V AC)

NG125a, N, H, L

1P / 2P / 3P / 4P

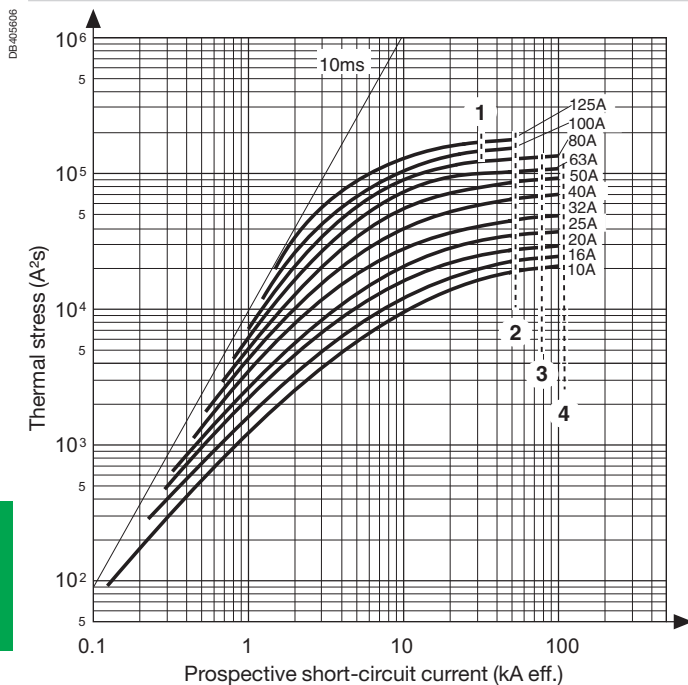
Peak current



■ Circuit breaker type in accordance with the mark:

- 1: NG125a
- 2: NG125N
- 3: NG125H
- 4: NG125L
- 5: 10-16 A
- 6: 20-25 A
- 7: 32-40 A
- 8: 50-63 A
- 9: 80-125 A

Thermal stress



■ Circuit breaker type in accordance with the mark:

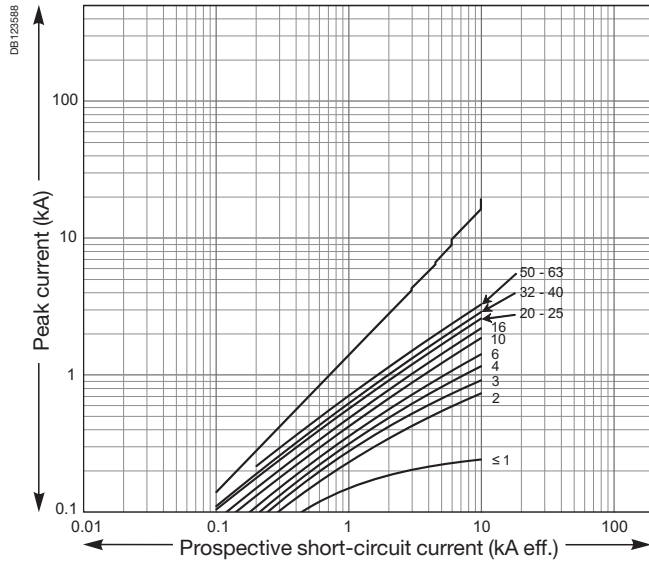
- 1: NG125a 80-100-125 A
- 2: NG125N
- 3: NG125H
- 4: NG125L

Limitation curves for direct current network

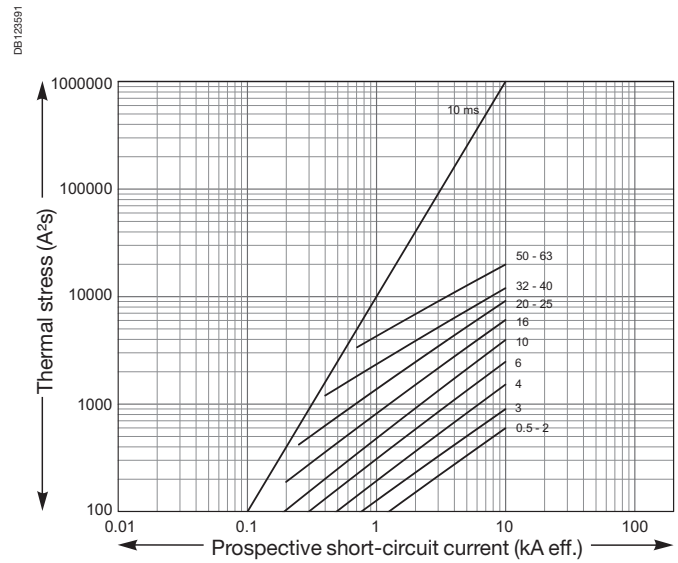
C60H-DC curve C

1P (220 V) - 2P (440 V)

Peak current



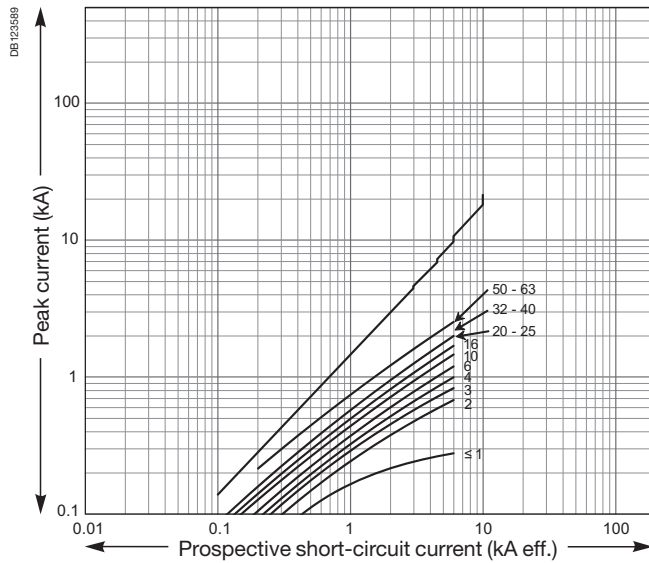
Thermal stress



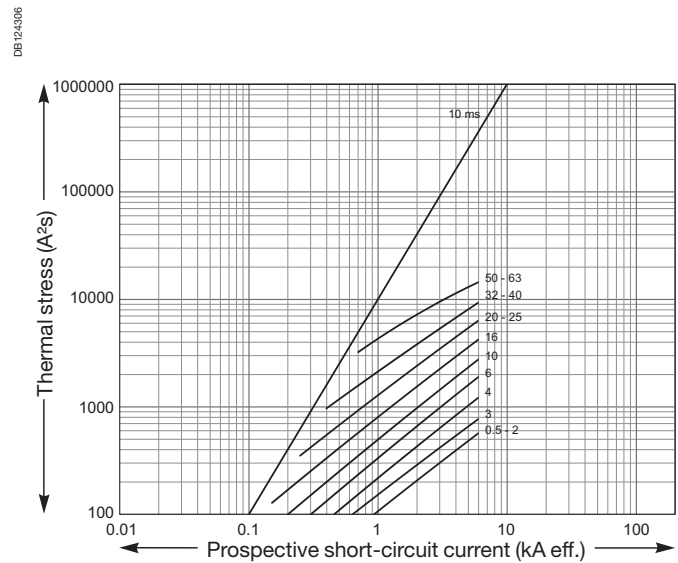
C60H-DC curve C

1P (250 V DC) - 2P (500 V DC)

Peak current



Thermal stress





# Circuit breakers for direct current applications

## 24 V - 48 V direct current applications

### Typical applications

Direct current has been used for a long time and in many fields. It offers major advantages, in particular immunity to electrical interference. Moreover, direct-current installations are now simpler, because they benefit from the development of power supplies with electronic converters and batteries.

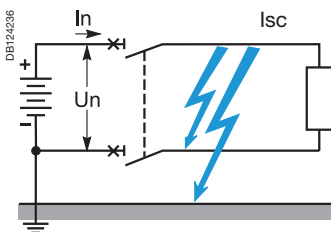
- Communication or measurement network:
  - 48 V DC switched telephone network,
  - 4-20 mA current loop.
- Electrical supply for industrial PLCs:
  - PLCs and peripheral devices (24 or 48 V DC).
- Auxiliary uninterruptible direct current power supply:
  - relays or electronic protection units for MV cubicles,
  - switchgear opening / closing trip units,
  - LV control and monitoring relays,
  - indicator lights,
  - circuit-breaker or on/off switch motor drives,
  - power contactor coils,
  - control/monitoring and supervision devices with communication that can be powered via a separate uninterruptible power supply.
- 24 to 48 V DC wind application:
  - isolated homes,
  - cottages, bungalows, mountain refuges,
  - pumps, street lighting,
  - measuring instruments, data acquisition,
  - telecommunication relays,
  - industrial applications.

### Types of direct current networks

According to the types of DC networks illustrated below, we can identify the risks to the installation and define the best means of protection.

Earthed		Isolated from earth	
I: Earthed (or grounded) polarity (in this case negative)		II: Earthed mid-point	III: Isolated polarities
1 pole (1P isolation)	2 poles (2P isolation)	2 poles	2 poles
<p>DB124075</p>	<p>DB124067</p>	<p>DB124076</p>	<p>DB124068</p>
	<p>DB124387</p>		
Worst-case faults			
Fault A and fault B (if only one polarity is protected)		Fault B	Double fault A and D or C and E

11



For further information on the types of networks and the faults that characterise them, refer to the direct current circuit breaker (LV) selection guide, 220E2100.indd.

For all these configurations, we propose a single protection solution that depends only on the requirement for the nominal current  $I_n$  and the short-circuit current  $I_{sc}$  at the installation point concerned.

The second important point in our solution is the fact that the protection is implemented by non-polarised circuit breakers that can operate efficiently, whatever the direction of the direct current.

# Circuit breakers for direct current applications (cont.)

## 24 V - 48 V direct current applications

### 24 - 48 V direct current protection solution

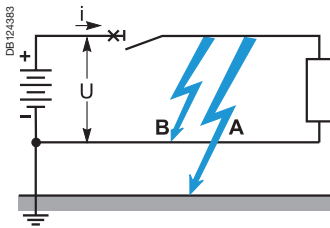
The performance levels shown in the tables below correspond to the most critical faults according to the network configuration.

- Breaking on one pole.
- Fault between polarity and earth (Fault A).

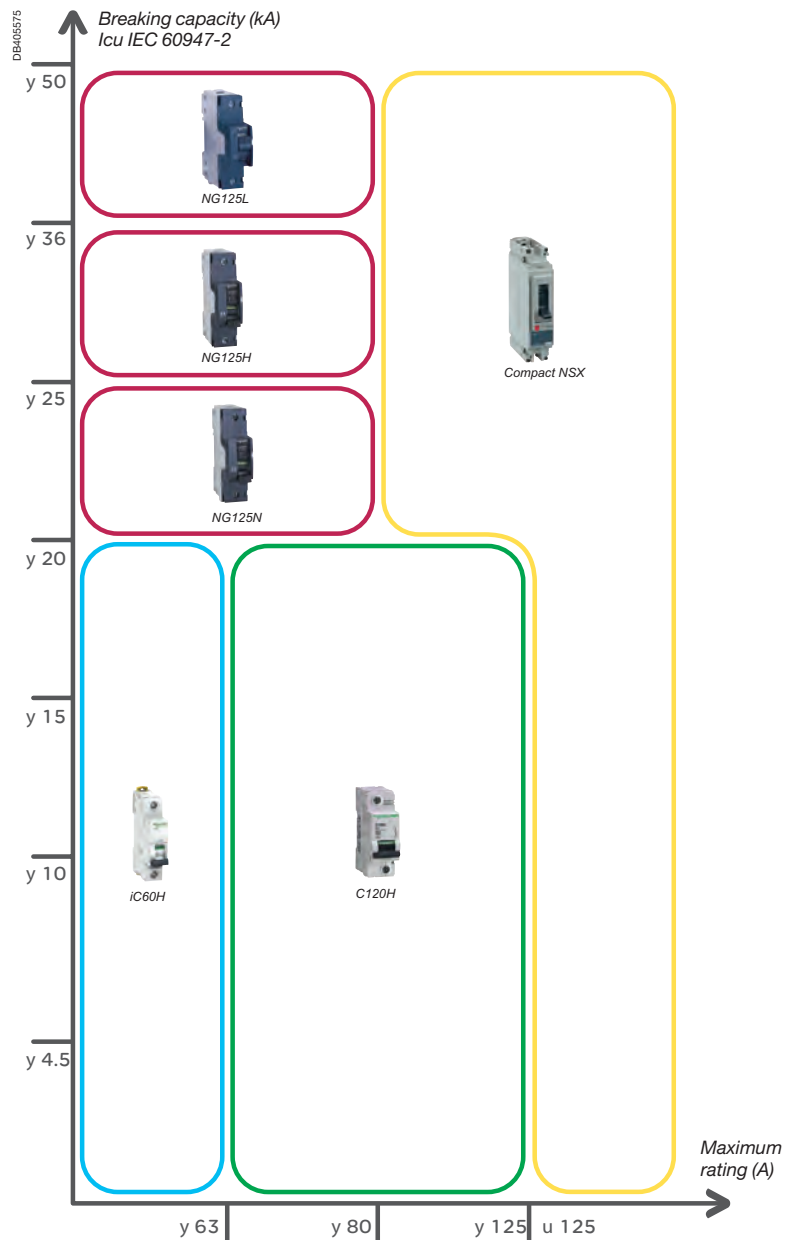
### Standard solution depending on the network and the requirements of the installation (In / Isc)

In addition to the parameters shown on the following pages, the tables below illustrate our range of circuit breakers according to the nominal current of the load and short-circuit current at the point of installation.

- Circuit breaker rating.
- Breaking capacity of the circuit breaker.



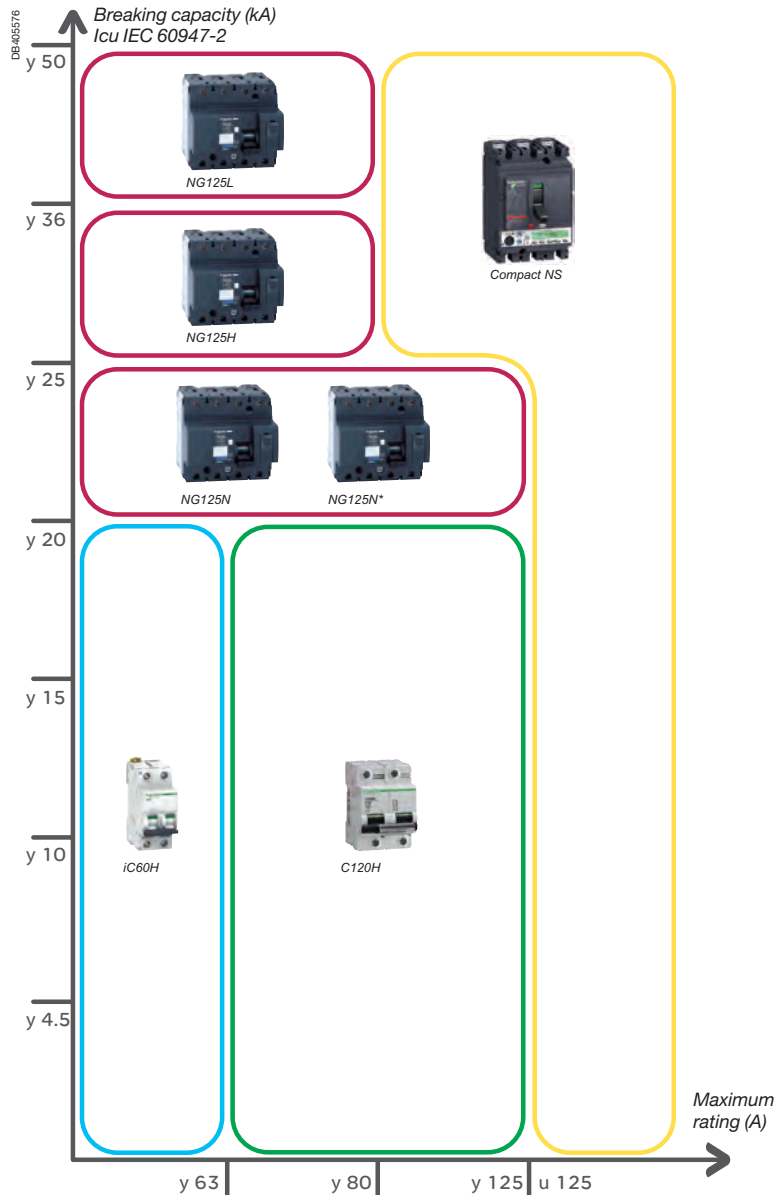
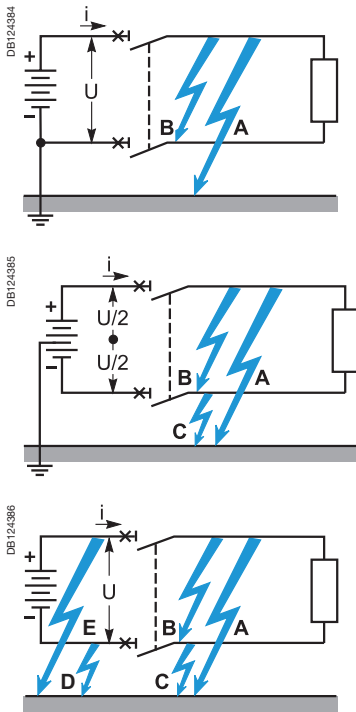
### 1 pole isolation solution (1P)



# Circuit breakers for direct current applications (cont.)

## 24 V - 48 V direct current applications

### 2 poles isolation solution (2P)

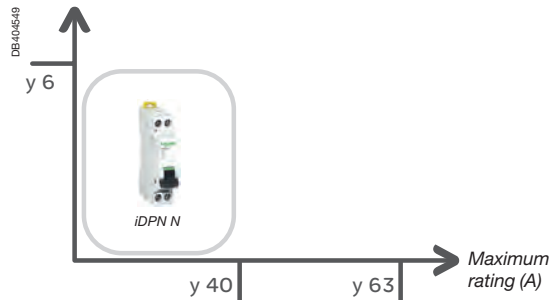
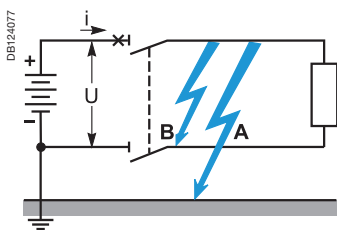


(\*) 3P NG125N connected in a two-pole configuration to reach 125 A (1P / 2P NG125 has a maximum rating of 80 A).

### 1 pole isolation solution (1P+N)

Specific use of the iDPN range in a network with one polarity earthed and both poles isolated: compact solution (1P+N in 18 mm).

Breaking capacity (kA)  
 $I_{cu}$  IEC 60947-2



(\*) iC60a breaking capacity  $I_{cu}$  = 10 kA.

# Circuit breakers for direct current applications (cont.)

## 24 V - 48 V direct current applications

### Constraints related to "direct current" applications

In direct current, inductors and capacitors do not disturb the operation of the installation in steady state. Capacitors are charged and inductors no longer oppose changes in the current.

However, they create transient phenomena when the circuit opens or closes, during which time the current varies. Actual loads have both characteristics and generate oscillatory phenomena.

### Type of load

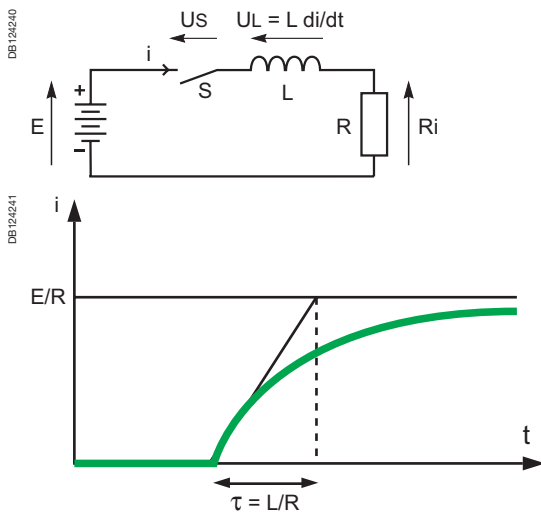
#### Inductive load

An inductive load will tend to lengthen the current interrupt or establishment time, because the inductance  $L$  then opposes the change in the current ( $L di/dt$ ).

The transient phenomenon will mainly be characterised by a time constant imposed by the load and whose value corresponds approximately to the interrupt or closing time that the switchgear has to withstand. In addition, during the interrupt time, the switchgear must be able to withstand the additional energy stored in the inductor in steady state.

An inductive load therefore requires particular attention with respect to its time constant.

A low value (typically  $< 5$  ms) facilitates interruption.

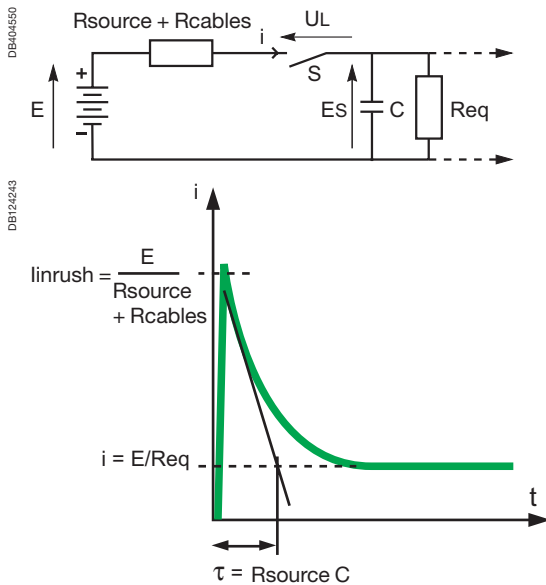


Inductive load

#### Capacitive load

During a closing operation, a capacitive load will cause an inrush current due to the load on the capacitor, virtually under short-circuit condition at the beginning of the phenomenon.

On opening, it will tend to discharge. The time constant is generally very low ( $< 1$  ms) and its effect is secondary with respect to the inrush current. A capacitive load will require particular attention to the inrush or discharge current surges.



Capacitive load

# Circuit breakers for direct current applications (cont.)

## 24 V - 48 V direct current applications

### Time constant L/R

When a short-circuit occurs across the terminals of a direct current circuit, the current increases from the operating current ( $< I_n$ ) to the short-circuit current  $I_{sc}$  during a time depending on the resistance  $R$  and the inductance  $L$  of the short-circuited loop.

The equation that governs the current in this loop is:  $U = Ri + Ldi/dt$ .

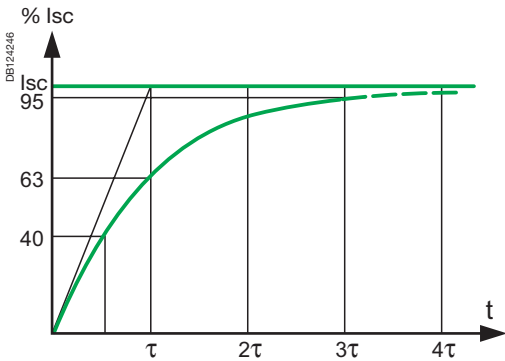
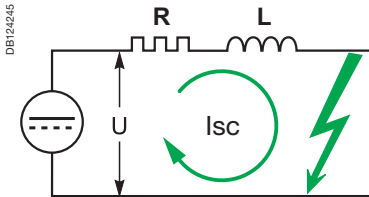
A short-circuit current is established (neglecting  $I_n$  with respect to  $I_{sc}$ ) by the equation:

$$i = I_{sc} (1 - \exp(-t/\tau)),$$

where  $\tau = L/R$  is the time constant used to establish the short-circuit.

In practice, after a time  $t = 3\tau$  the short-circuit is considered to be established, because the value of  $\exp(-3) = 0.05$  is negligible compared to 1.

The lower the corresponding time constant (e.g. battery circuit), the faster a short-circuit is established.



L/R	Description	DC applications
2 ms	Very fast short-circuit	<ul style="list-style-type: none"> <li>■ Photovoltaic applications</li> </ul>
5 ms	Fast short-circuit established	<ul style="list-style-type: none"> <li>■ Resistive or slightly inductive circuits:                             <ul style="list-style-type: none"> <li><input type="checkbox"/> indicator light</li> <li><input type="checkbox"/> trip units (MN, MX)</li> <li><input type="checkbox"/> motor armatures</li> <li><input type="checkbox"/> battery charger/uninterruptible power supply (UPS)</li> </ul> </li> <li>■ Capacitive circuits: electronic controller</li> </ul>
15 ms	Standardised value used in standard IEC 60947-2	<ul style="list-style-type: none"> <li>■ Inductive circuits:                             <ul style="list-style-type: none"> <li><input type="checkbox"/> electromagnetic coil</li> <li><input type="checkbox"/> contactor coil</li> <li><input type="checkbox"/> motor inductor</li> </ul> </li> </ul>
30 ms	Slower short-circuit established	<ul style="list-style-type: none"> <li>■ Highly inductive circuits:                             <ul style="list-style-type: none"> <li><input type="checkbox"/> electromagnetic coil</li> <li><input type="checkbox"/> contactor coil</li> <li><input type="checkbox"/> motor inductor</li> </ul> </li> </ul>

In general, the system time constant is calculated under worst case conditions, across the terminals of the generator.

# Circuit breakers for direct current applications (cont.)

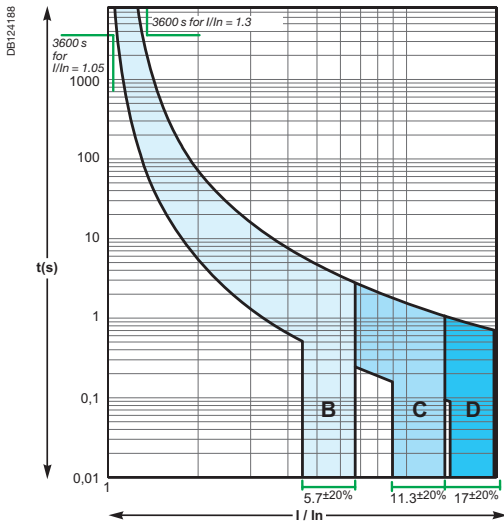
## 24 V - 48 V direct current applications

### Tripping curves

We can choose our solution according to the inrush currents generated by our loads, in the same way as for alternating current. In direct current, the same thermal tripping curves are obtained as in alternating current. The only difference is that the magnetic thresholds are offset by a coefficient  $\sqrt{2}$  compared to the curves obtained in alternating current.

Characteristics of the various curves and their applications:

Curves	Magnetic thresholds		DC applications
	AC	DC	
Z	2.4 to 3.6 In	3.4 to 5 In	<ul style="list-style-type: none"> <li>Resistive loads</li> <li>Loads with electronic circuits</li> </ul>
B	3.2 to 4.8 In	4.5 to 6.8 In	<ul style="list-style-type: none"> <li>Motor inductor: starting current 2 to 4 In</li> <li>Battery charger/Uninterruptible power supply (UPS)</li> </ul>
C	6.4 to 9.6 In	9.05 to 13.6 In	<ul style="list-style-type: none"> <li>Electronic controller</li> </ul>
D et K	9.6 to 14.4 In	13.6 to 20.4 In	<ul style="list-style-type: none"> <li>Electromagnetic coil: inrush overvoltage 10 to 20 Un</li> <li>LV relay</li> <li>Trip units (MN, MX)</li> <li>Indicator light</li> <li>PLCs (industrial programmable logic controllers)</li> </ul>

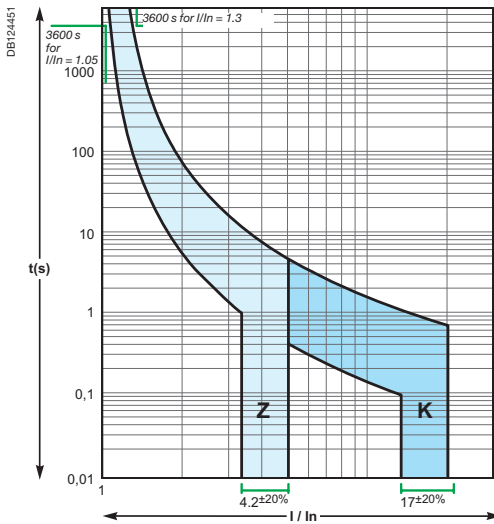


Curves B, C, D, ratings 6 A to 63 A

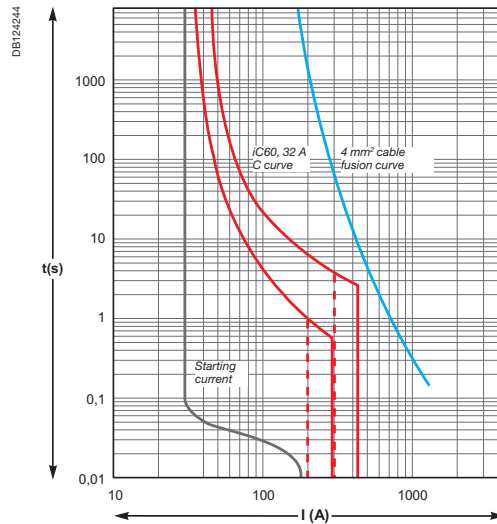
The figures opposite are iC60 tripping curves showing DC magnetic thresholds and normative limits

### Example

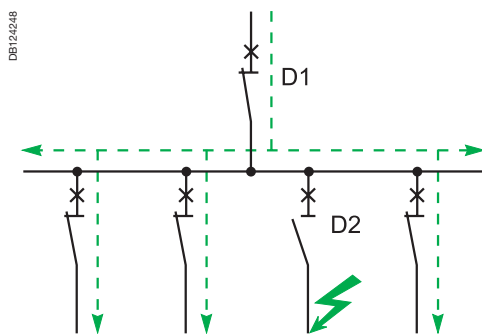
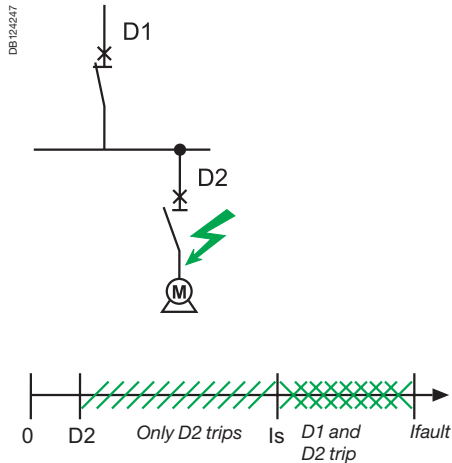
Protection of the 4 mm<sup>2</sup> cable supplying a load at In = 30 A with a 32 A rating and a tripping curve that allows the starting current for this load to be absorbed.



Curves Z, K, ratings 6 A to 63 A



Curve C, rating 32 A (AC magnetic thresholds in dotted lines)



### Continuity of service of the solutions

#### Discrimination of the direct current protection devices

Discrimination is a key element that must be taken into account right from the design stage of a low-voltage installation to allow continuity of service of the electrical power.

Discrimination involves coordination between two circuit breakers connected in series, so that in the event of a fault, only the circuit breaker positioned immediately upstream of the fault trips. A discrimination current  $I_s$  is defined as:

- $I_{\text{fault}} < I_s$ : only D2 removes the fault, discrimination ensured,
- $I_{\text{fault}} > I_s$ : both circuit breakers may trip, discrimination not ensured.

Discrimination may be partial or total, up to the breaking capacity of the downstream circuit breaker. To ensure total discrimination, the characteristics of the upstream device must be higher than those of the downstream one.

The same principles apply to designing both direct current and alternating current installations. Only the limit currents change when direct current is used.

Once again, we find the same concepts of discrimination:

- **total**: up to the breaking capacity of the downstream device. Our tests have been performed at up to 25 kA or 50 kA depending on the breaking capacity of the devices in question.
- **partial**: indication of the discrimination limit current  $I_s$ . Discrimination is ensured below this value; above this value, the upstream device participates in the breaking process,
- **none**: no discrimination ensured, the upstream and downstream circuit breakers will trip.

For further information about the discrimination concept for protection devices in general, refer to technical supplement 557E4300, "Discrimination of modular circuit breakers".

#### Total discrimination solutions

In the following tables, we offer you solutions that favour continuity of service (total discrimination between circuit breakers), for different short-circuit currents.

Total discrimination: 20 kA

		Upstream		Curve C		Time constant (L/R) = 15 ms				
In (A)		iC60H				iC120H			NS	
		10 - 16	20 - 25	32	40	50 - 63	80	100	125	≥ 100
Downstream										
iC60H	≤ 3	T	T	T	T	T	T	T	T	T
Curves B,C	4		T	T	T	T	T	T	T	T
	6				T	T	T	T	T	T
	10						T	T	T	T
	13						T	T	T	T
	16 to 25						T	T	T	T
	32							T	T	T
	40								T	T
	50 - 63								T	T

Total discrimination: 36 kA

		Upstream		Curve C		Time constant (L/R) = 15 ms				
In (A)		NG125H		NS						
		80		≥ 100						
Downstream										
NG125H	10	T								
Curves B,C	16 to 63									T

Total discrimination: 50 kA

		Upstream		Curve C		Time constant (L/R) = 15 ms				
In (A)		NG125L		NS						
		80		≥ 100						
Downstream										
NG125L	10	T								
Curves B,C	16 to 63									T

Total discrimination.

No discrimination.



# Circuit breakers for direct current applications (cont.)

## 24 V - 48 V direct current applications

### Coordination with loads

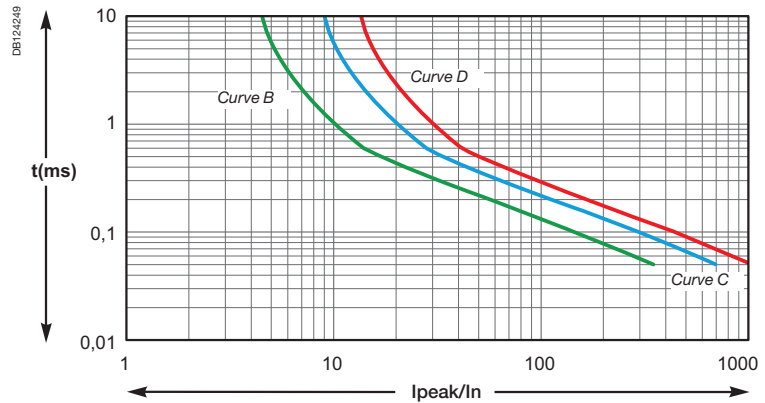
As seen above, the circuit-breaker characteristics chosen depend on the type of load downstream of the installation.

The rating depends on the size of the cables to be protected and the curves depend on the load inrush current.

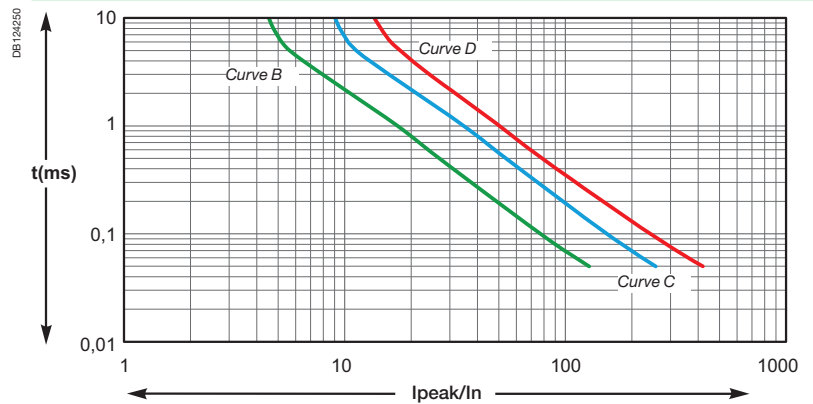
### Product selection according to the load inrush current

When certain "capacitive" loads are switched on, very high inrush currents appear during the first milliseconds of operation. The following graphs show the average DC non-tripping curves of our products for this time range (50  $\mu$ s to 10 ms).

#### iC60



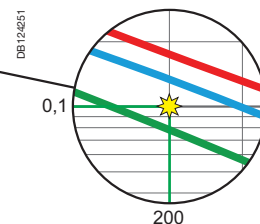
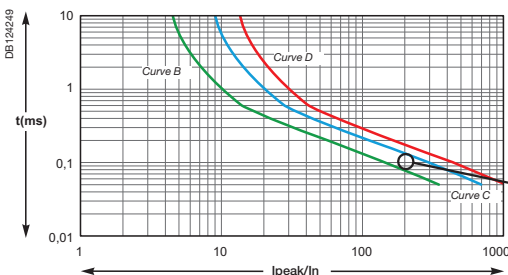
#### NG125 / C120



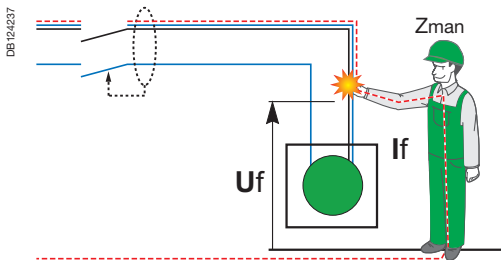
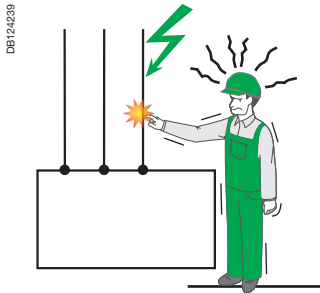
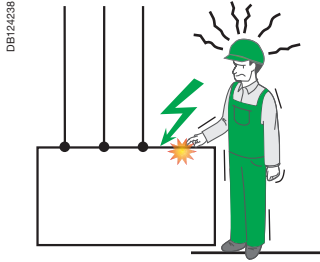
This information allows us to select the most appropriate product, according to the load specifications: curve and rating.

### Example

When an iC60 is used with a load with current peaks in the order of 200  $I_n$  during the first 0.1 millisecond, a curve C or D product must be installed.



## Circuit breakers for direct current applications (cont.) 24 V - 48 V direct current applications



Standards: IEC 60479-2, NF C 15100, IEC 60755.

### Personal protection

Personal protection (earth-leakage protection) is not mandatory for this voltage range (24-48 V DC).

In fact, according to the standards currently in force, the minimum ventricular fibrillation current  $I_f$  for human beings is in the order of 25 mA for alternating current (50 Hz), whereas for direct current, it is more than 50 mA.

The table below shows the data according to the standards and conditions:

Environment		Voltage specifications	
		AC	DC
Dry environment	$U_f = Z \times I_f$	50 V	100 V
Wet environment	$U_f = Z \times I_f$	25 V	50 V
		$Z_{man} = 2000 \text{ Ohm}$	
		$Z_{man} = 1000 \text{ Ohm}$	

With  $Z$  corresponding to the impedance of the human body in the different types of environment,  $I_f$  being the current passing through the body and  $U_f$  the minimum contact voltage required to reach the danger current.

Under normal operating conditions, this voltage range (< 50 V) is therefore not dangerous to human beings.

# Circuit breakers for direct current applications (cont.)

## 24 V - 48 V direct current applications

### Examples of applications

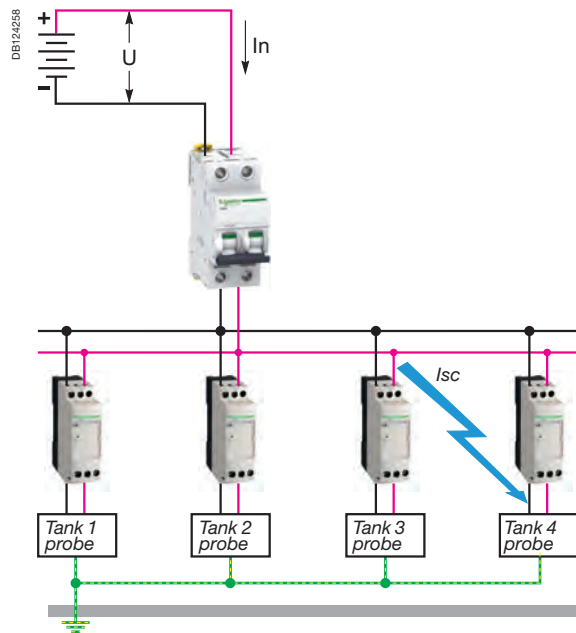
#### Industrial applications

Monitoring of agro-food tanks with 24 V DC converters for probes and other sensors

- Isolated network:
- $I_{sc} = 20 \text{ kA}$ ,
- $I_n = 40 \text{ A}$ .

#### Solution

iC60H 2P 40 A + 24 V converters

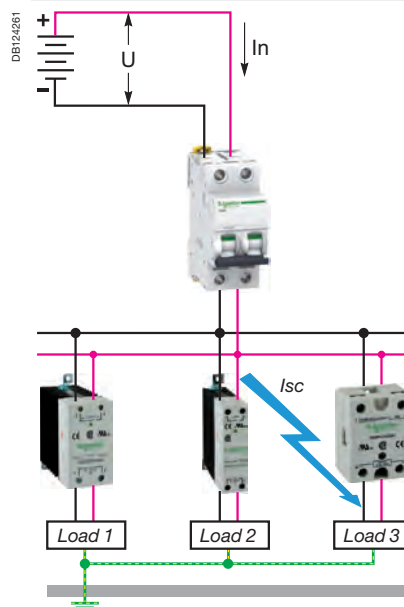


Control of industrial process measurement by 12/24/48 V DC control

- Isolated network:
- $I_{sc} = 20 \text{ kA}$ ,
- $I_n = 40 \text{ A}$ .

#### Solution

iC60H 2P 40 A + DC solid-state relays



# Circuit breakers for direct current applications (cont.)

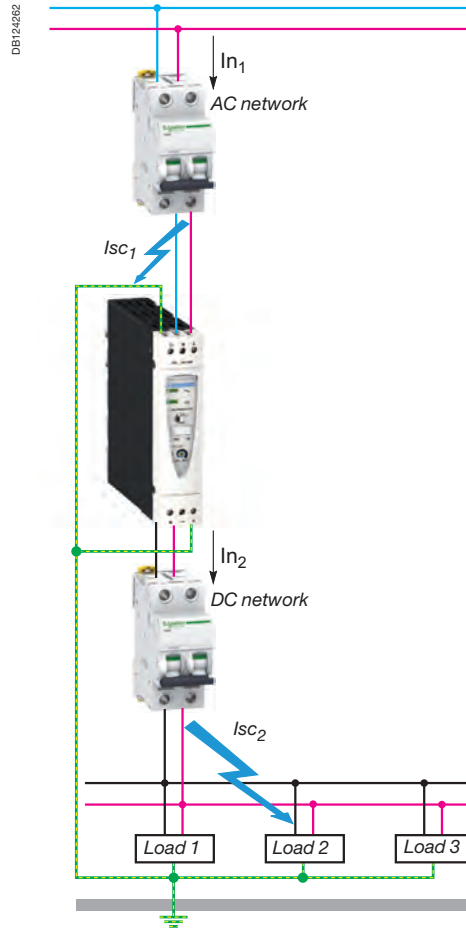
## 24 V - 48 V direct current applications

### 24 V DC generator power supply protection

- Earthed network:
- $I_{sc} = 10 \text{ kA} / I_n = 63 \text{ A}$ ,
- $I_{sc} = 10 \text{ kA} / I_n = 20 \text{ A}$ .

### Solution

iC60H 2P 63 A + iC60N 2P 20 A + DC loads



# Circuit breakers for direct current applications (cont.)

## 24 V - 48 V direct current applications

### Tertiary applications

Control and monitoring of the 48 V DC emergency lighting distribution for a shopping centre

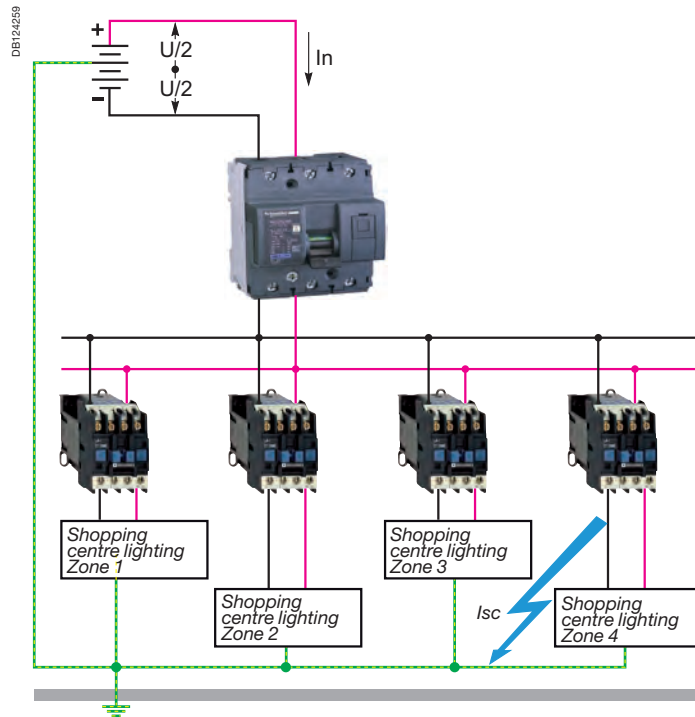
■ Mid-point of the network:

□  $I_{sc} = 20 \text{ kA}$ ,

□  $I_n = 125 \text{ A}$ .

### Solution

NG125H 3P 125 A + power contactors



# Circuit breakers for direct current applications (cont.)

## 24 V - 48 V direct current applications

### Power supply protection by 24 V DC direct current generator

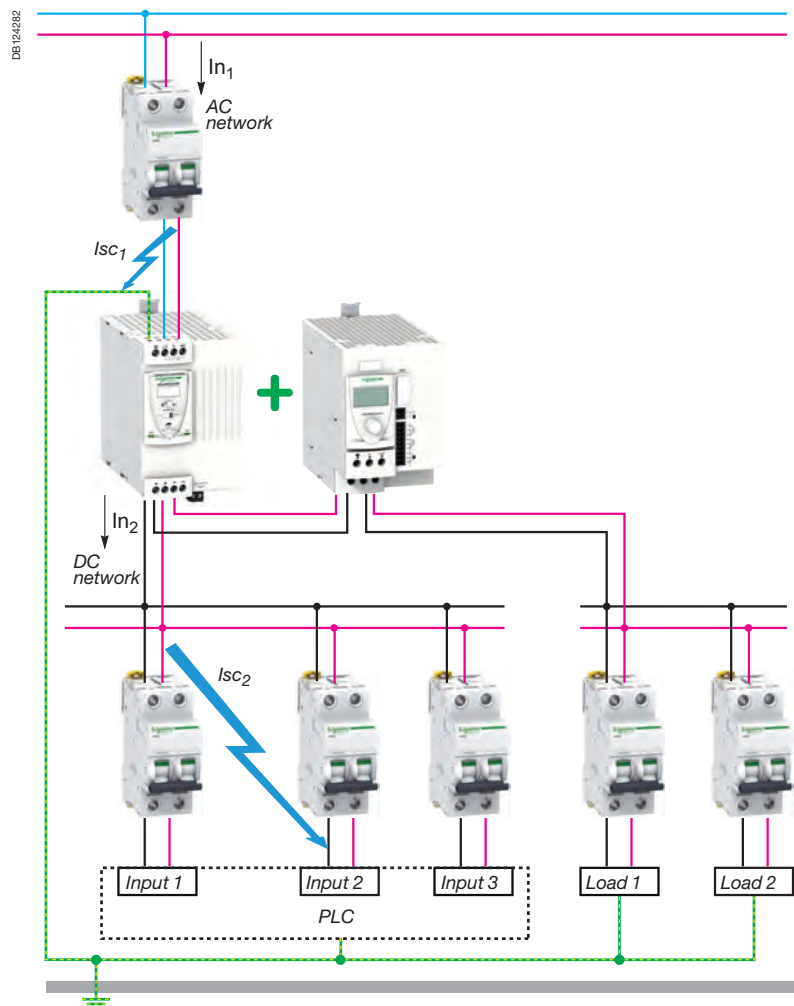
- Earthed network:
- $I_{sc1} = 10 \text{ kA} / I_n = 40 \text{ A}$ ,
- $I_{sc2} = 10 \text{ kA} / I_n = 2/4/6 \text{ A}$ .

### Solution

iC60H 2P 40 A + iC60H 2P 2/4/6 A + PLC inputs + DC loads

The Phaseo network failure solution provides the installation (or part thereof) with a 24 V DC power supply in the event of a mains voltage failure:

- throughout the mains failure, to ensure the continuity of service of the installation.
- during a limited time to allow:
  - data to be backed up,
  - actuators to be put in the fallback position,
  - a generating set to be started up,
  - the operating systems to be shut down,
  - remote supervision data to be transmitted.



### Compatibility of 50/60 Hz equipment with a 400 Hz network

The performance of products designed for domestic frequencies of 50/60 Hz is impacted by the specific properties of networks of 400 Hz frequency.

Phenomena due to the increased frequency influence the behaviour of the copper components of transformers, cables and protective equipment.

Some types of equipment designed for 50/60 Hz networks may not be suitable. You should check whether or not a product is compatible and also apply any correction factors given by the manufacturer.

### Circuit breakers

Depending on the technologies used, modular circuit breakers designed for 50/60 Hz can be used at 400 Hz.

To choose the performance of a modular circuit breaker:

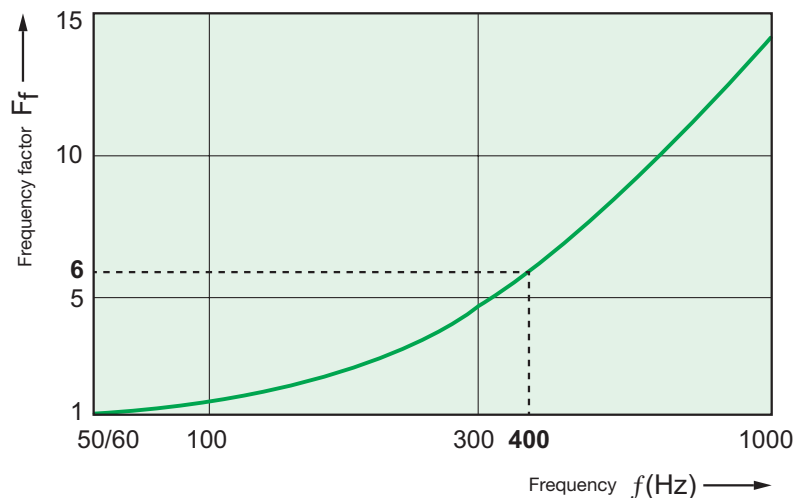
- do not take any thermal derating into account (In at 400 Hz is equivalent to In at 50 Hz).
- increase the magnetic tripping threshold, according to the table below.
- check that the short-circuit current on the installation is less than the breaking capacity of the circuit breaker. The breaking capacity of the circuit breakers at a frequency of 400 Hz is the same as at frequencies of 50/60 Hz. This characteristic is generally complied with, due to the fact that the short-circuit current of a 400 Hz generator is relatively low. In most cases, the generator I<sub>sc</sub> does not exceed four times the rated current.

Circuit breaker	Curve	Magnetic trip thresholds		Tolerance
		50 Hz	400 Hz	
iDPN	B	4 In	6 In	± 20 %
	C	8 In	12 In	
	D	12 In	18 In	
iC60	B	4 In	5.6 In	
	C	8 In	11.2 In	
	D	12 In	16.8 In	
C60	B	4 In	5.1 In	
	C	8.5 In	10.9 In	
	D	12 In	15.4 In	
C120	The NG125 and C120 circuit breakers are not suitable for networks of 400 Hz frequency. Refer to the Compact NSX offer.			
NG125	The NG125 and C120 circuit breakers are not suitable for networks of 400 Hz frequency. Refer to the Compact NSX offer.			

### Earth leakage protection devices

The residual current device trip thresholds designed for 50/60 Hz increase with the frequency, but since the human body is less sensitive to the passage of a current at 400 Hz, protection is still ensured for the users.

According to the IEC 60479-2 standard, at 400 Hz the ventricular fibrillation threshold is higher by a ratio of 6 (which means that the physiological effect of a 180 mA current at 400 Hz will be the same as that of a 30 mA current at 50/60 Hz).



Variations in the ventricular fibrillation threshold for shock durations exceeding the period of cardiac cycle (as per IEC 60479-2).

### Compatibility of residual current devices at 400 Hz:

Depending on the type and the technology employed, a residual current device designed for a frequency of 50/60 Hz will or will not be capable of ensuring protection for users in accordance with the requirements of the standard.

Type of protection and type of equipment	Use possible on network of 400 Hz frequency	Limit	
A type	Not compatible	Trip threshold exceeding the limit given by the curve	
AC type	Not recommended	Excessive sensitivity with risk of unwanted tripping (poor guarantee of continuity of service)	
Si type	iID	YES	
	Vigi iC60	Not compatible	Trip threshold exceeding the limit given by the curve
	iDPN Vigi,	YES	

Note: The choice of an iID residual current circuit breaker ensures protection for users at 400 Hz while ensuring good continuity of service.

At 400 Hz, the test function of residual current devices designed for 50/60 Hz is not operational due to the increase in the trip threshold.

### Auxiliary function

#### Voltmetric releases

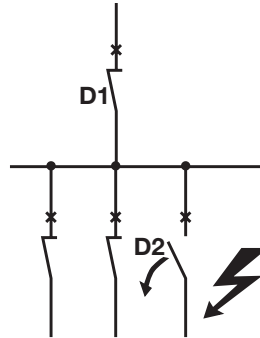
If a circuit breaker needs to be provided with a voltmetric release whose control circuit is powered by the 400 Hz network, it is necessary to use a release auxiliary of appropriate characteristics for 400 Hz networks:

Type	Voltage	Cat. no.
Undervoltage release iMN	115 V AC - 400 Hz	A9A26959



## Discrimination

The table below indicates where total discrimination exists between devices.



Upstream circuit breaker	Compact	Rating (A)	MGE1003X	MGE1253X	MGE1603X	MGE2003X	MGE2503X	MGE4003X	MGE6303X
multi 9	iC60H	10 - 16	■	■	■	■	■	■	■
		20 - 25		■	■	■	■	■	■
		32 - 40		■	■	■	■	■	■
		50 - 63		■	■	■	■	■	■

**Note:** For further information on this product range: consult us.

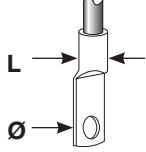
## Guidance for motor loads

Specific “magnetic only” MCCBs are available for short circuit protection of motors. However, the standard MCCB may be used, as detailed below.

	Max motor size (kW)	Running current (A) @ 415V
16A	2.2	5.0
25A	3.7	7.5
40A	4	8.4
63A	9	17
80A	15	28
100A	22	40
125A	25	47
160A	33	60
200A	45	80
250A	69	128

### Note:

- These tables offer guidance only, for DOL starting assuming:
  - A starting current of 7 x FLC
  - Run-up time = 8 seconds for motors
    - < 3kW
    - 10 seconds for motors
    - > 3kW
- The running current is a typical value and may vary from manufacturer to manufacturer

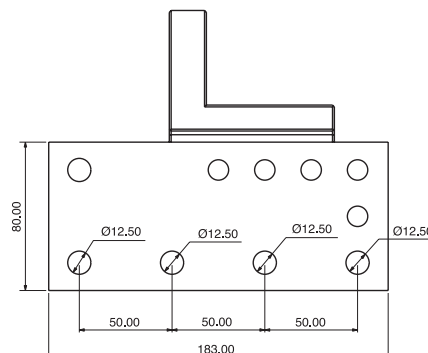


Current	Device		Possible terminal capacity for crimped lug (mm)		Breaking capacity 415V
			Ø	@ L	
100A	MGP100	MCCB SP	6	25	25,000A @ 240V
100A	MGP100X	MCCB TP	6	25	36,000A
160A	MGP160X	MCCB TP	6	25	36,000A
250A	MGP250X	MCCB	8	25	36,000A
	MGP250NA	Switch disconnecter	8	25	-
400A	MGP400X	MCCB	10	32	50,000A
	MGP400A	Switch disconnecter	10	32	-
630A	MGP630X	MCCB	10	32	50,000A
	MGP630NA	Switch disconnecter	10	32	-
800A	NS800		12	44	50,000A
	NS800NA	Switch disconnecter	12	44	-
	MGP INC	Direct connection	10	32	-
	Outgoing	Earth connection	6	25mm tunnel	-
	Outgoing	Neutral connection	6	25	-
	Incoming	Earth connection	10	32	-
	Incoming	Neutral connection	12	40	-

Other connections available on request. If you require higher breaking capacity, consult us.

### 1600A Panelboard

Incoming connection details  
 4 - Ø12.5 holes on 50 mm pitch  
 Pole pitch = 70mm  
 Distance to gland plate = 708mm



## External influences

In many national and international standards, a large number of external influences to which an electrical installation can be subjected are indexed and coded: presence of water, presence of solid objects, risk of impact, vibrations, presence of corrosive substances, etc. These influences may be present with variable intensity depending on the conditions of installation: The presence of water may be in the form of a few drops or total immersion.

## Protection index

European standard EN60529 gives a protection code (IP) which characterises the ability of equipment to withstand the following external influences:








- Presence of solid bodies
- Presence of water

This code comprises two digits, depending on these external influences. The protection index is assigned to the equipment following a series of tests laid down in the respective standards.

## Test according to EN60529






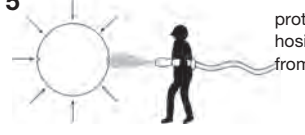
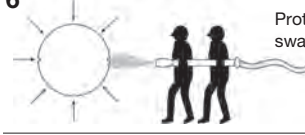

1st digit

### Protection against solid bodies

<b>0</b>		no protection
<b>1</b>		Protection against solid bodies greater than 50 mm
<b>2</b>		Protection against solid bodies greater than 12.5mm
<b>3</b>		Protection against solid bodies greater than 2.5 mm
<b>4</b>		Protection against solid bodies greater than 1 mm
<b>5</b>		Protection against dust (no harmful deposits)
<b>6</b>		Total protection against dust

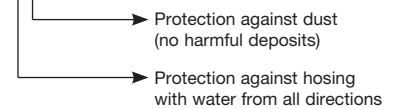
2nd digit

### Protection against liquids

<b>0</b>		No protection
<b>1</b>		Protection against vertical drops of water (condensation)
<b>2</b>		Protection against drops of water falling up to 15° from vertical
<b>3</b>		Protection against rainwater up to 60° from vertical
<b>4</b>		Protection against water projected from all directions
<b>5</b>		protection against hosing with water from all directions
<b>6</b>		Protection against swamping with water
<b>7</b>		Protection against immersion

Example

**IP 55**



# Earth Loop Impedance Values for Miniature Circuit Breakers

Type iC60H Type B			
Rating	0.4 Sec	5 Sec	
1A	46	46	
2A	23	23	
4A	11.5	11.5	
6A	7.6	7.6	
10A	4.6	4.6	
16A	2.88	2.88	
20A	2.3	2.3	
25A	1.84	1.84	
32A	1.44	1.44	
40A	1.15	1.15	
50A	0.92	0.92	
63A	0.73	0.73	

Type iC60H Type C			
Rating	0.4 Sec	5 Sec	
1A	23	29.49	
2A	11.5	14.38	
4A	5.75	7.42	
6A	3.88	4.89	
10A	2.3	2.95	
16A	1.44	1.84	
20A	1.15	1.47	
25A	0.92	1.18	
32A	0.72	0.92	
40A	0.58	0.74	
50A	0.46	0.59	
63A	0.37	0.47	

Type iC60H Type D			
Rating	0.4 Sec	5 Sec	
1A	16.43	29.49	
2A	8.21	14.38	
4A	4.11	7.42	
6A	2.74	4.89	
10A	1.64	2.95	
16A	1.03	1.84	
20A	0.82	1.47	
25A	0.66	1.18	
32A	0.51	0.92	
40A	0.41	0.74	
50A	0.33	0.59	
63A	0.26	0.47	

Type iC120H Type B			
Rating	0.4 Sec	5 Sec	
10A	4.6	4.6	
16A	2.88	2.88	
20A	2.3	2.3	
25A	1.84	1.84	
32A	1.44	1.44	
40A	1.15	1.15	
50A	0.92	0.92	
63A	0.73	0.73	
80A	0.57	0.57	
100A	0.46	0.46	
125A	0.36	0.36	

Type iC120H Type C			
Rating	0.4 Sec	5 Sec	
10A	2.3	2.87	
16A	1.44	1.79	
20A	1.15	1.44	
25A	0.92	1.15	
32A	0.72	0.9	
40A	0.58	0.71	
50A	0.46	0.57	
63A	0.37	0.45	
80A	0.29	0.35	
100A	0.23	0.28	
125A	0.18	0.23	

Type iC120H Type D			
Rating	0.4 Sec	5 Sec	
10A	1.64	2.87	
16A	1.03	1.79	
20A	0.82	1.44	
25A	0.66	1.15	
32A	0.51	0.9	
40A	0.41	0.71	
50A	0.33	0.57	
63A	0.26	0.45	
80A	0.21	0.35	
100A	0.16	0.28	
125A	0.13	0.23	

Type NG125N/H Type B			
Rating	0.4 Sec	5 Sec	
80A	0.57	0.57	
100A	0.46	0.46	
125A	0.36	0.36	

Type NG125N/H Type C			
Rating	0.4 Sec	5 Sec	
10A	2.3	2.87	
16A	1.44	1.79	
20A	1.15	1.44	
25A	0.92	1.15	
32A	0.72	0.9	
40A	0.58	0.71	
50A	0.46	0.57	
63A	0.37	0.45	
80A	0.29	0.35	
100A	0.23	0.28	
125A	0.18	0.23	

Type NG125N/H Type D			
Rating	0.4 Sec	5 Sec	
80A	0.21	0.35	
100A	0.16	0.28	
125A	0.13	0.23	

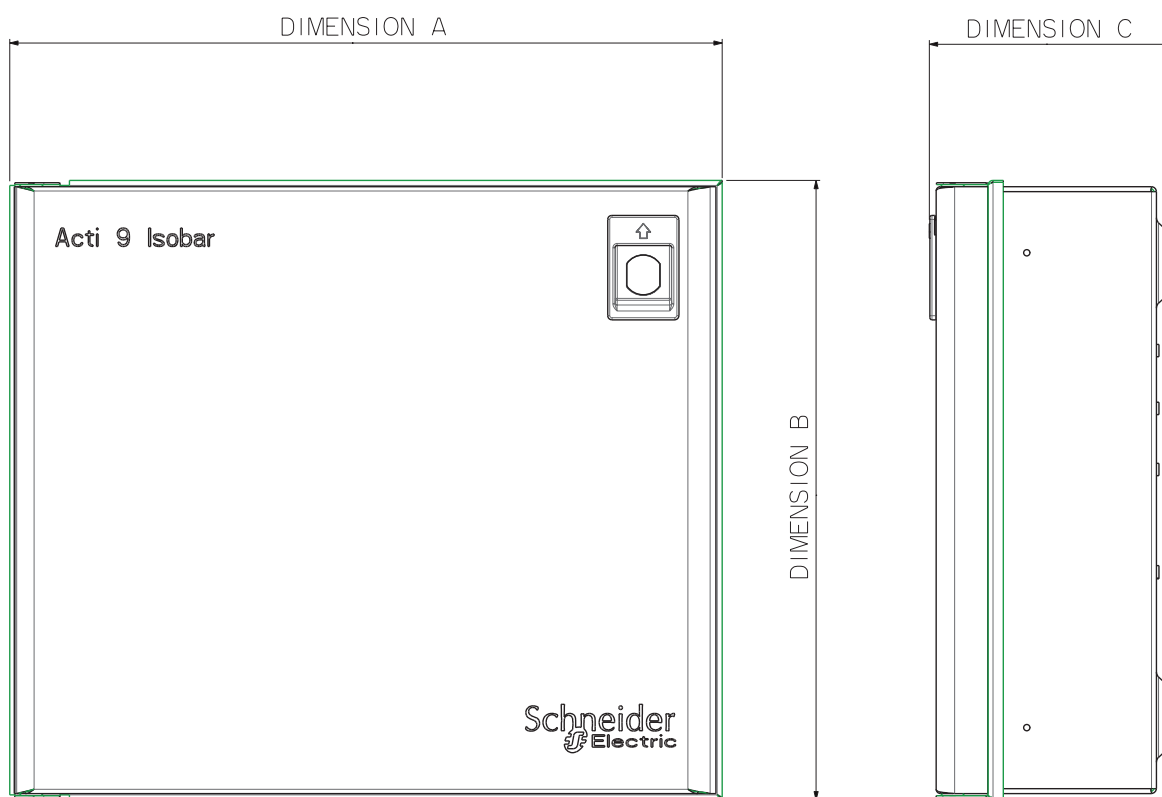


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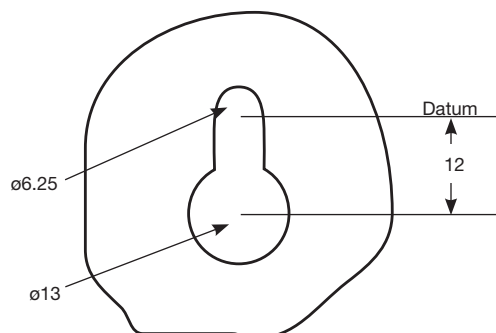
<b>Acti 9 isobar distribution boards</b> .....	<b>pages 12/2 to 12/4</b>
A type .....	page 12/2
B type .....	pages 12/3 to 12/4
<b>Heavy duty distribution board 100A</b> .....	<b>page 12/5</b>
<b>Powerpact 4</b> .....	<b>pages 12/6 to 12/9</b>
Powerboards and panelboards 250A and 400/630A .....	page 12/6
Powerboards and panelboards 250A, 400/630A and 800A .....	page 12/7
Extension boxes .....	page 12/8
Metering extensions .....	page 12/9
<b>Panelboards 1600A</b> .....	<b>page 12/10</b>
<b>Safepact 2</b> .....	<b>page 12/11</b>
<b>MGF fusegear</b> .....	<b>page 12/12</b>
<b>Busbar chamber</b> .....	<b>page 12/13</b>
<b>Powerpact 4 pan assembly and incoming MCCB</b> .....	<b>page 12/14</b>
<b>Outgoing pan assembly 630A only</b> .....	<b>page 12/15</b>
<b>Outgoing pan assembly 800A only</b> .....	<b>page 12/16</b>
<b>Enclosures - Mini Opale, G9</b> .....	<b>page 12/17</b>
<b>Pragma surface mounted enclosures and interfaces</b> .....	<b>page 12/18</b>
<b>Kaedra</b> .....	<b>pages 12/19 to 12/22</b>

# Acti 9 Isobar A type distribution boards

Part number	A	B	C
SEA9AN2	200	300	117
SEA9AN6	273	300	117
SEA9AN10, SEA9AN26DS	345	300	117
SEA9SNI4, SEA9AN26SL, SEA9AN66DS, SEA9AN616MS, SEA9ANI08MS	417	300	117
SEA9ANI8, SEA9AN6S6, SEA9AN5I0SL, SEA9AN96SL, SEA9ANI06DS, SEA9AN624MS, SEA9ANI016MS, SEA9ANI48MS	489	300	117
SEA9AN27, SEA9ANI0SI0, SEA9ANI432MS	417	530	117



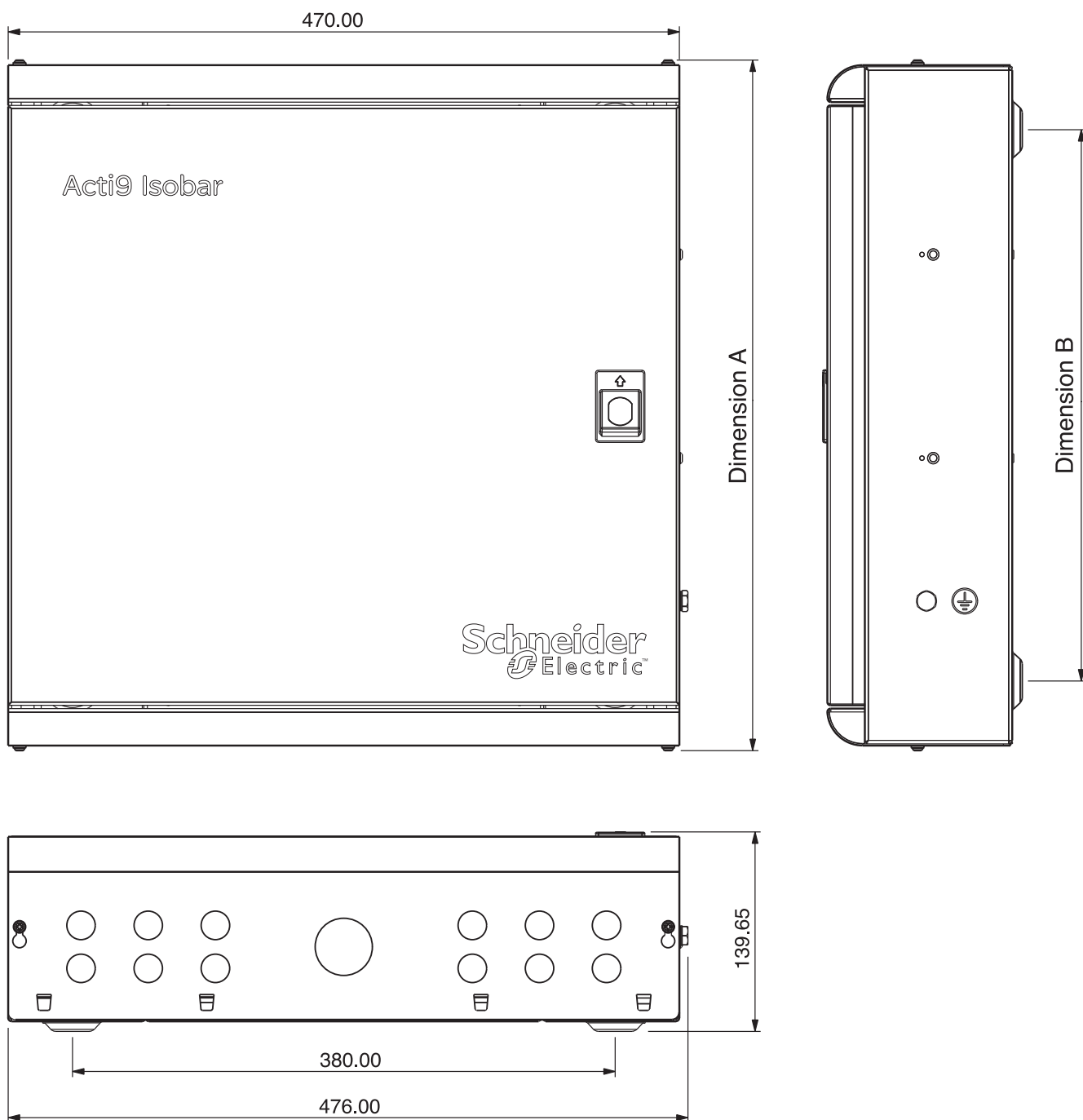
Key hole slot dimensions



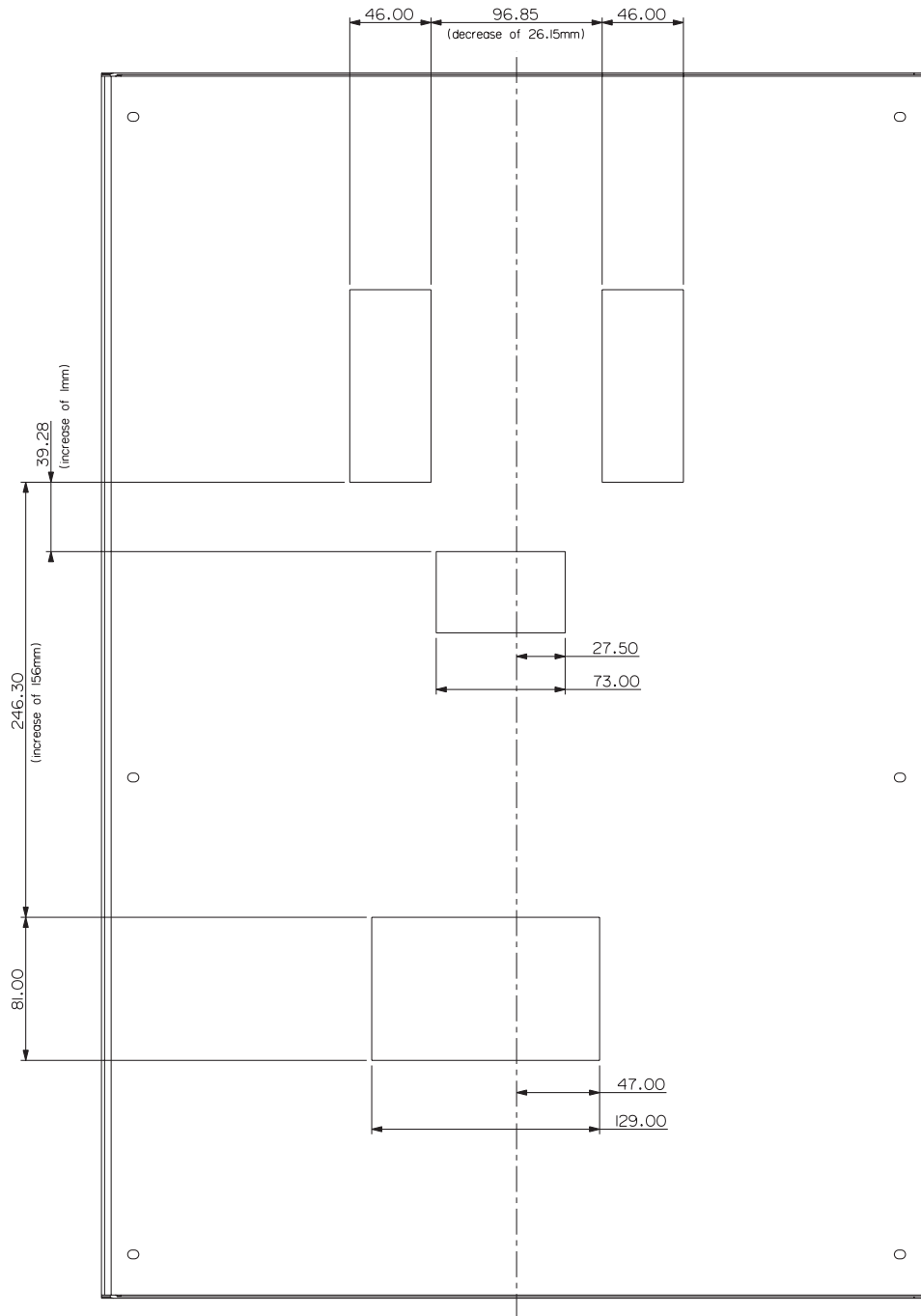
## Dimensions (mm)

## Acti9 Isobar B type distribution boards

Part number	A	B
SEA9BN4,SEA9BN6	484	386
SEA9BN8	538	440
SEA9BN12	700	602
SEA9BN16, MGBN18	862	710
SEA9BN24	1024	872
SEA9BN split metering	1294	1192



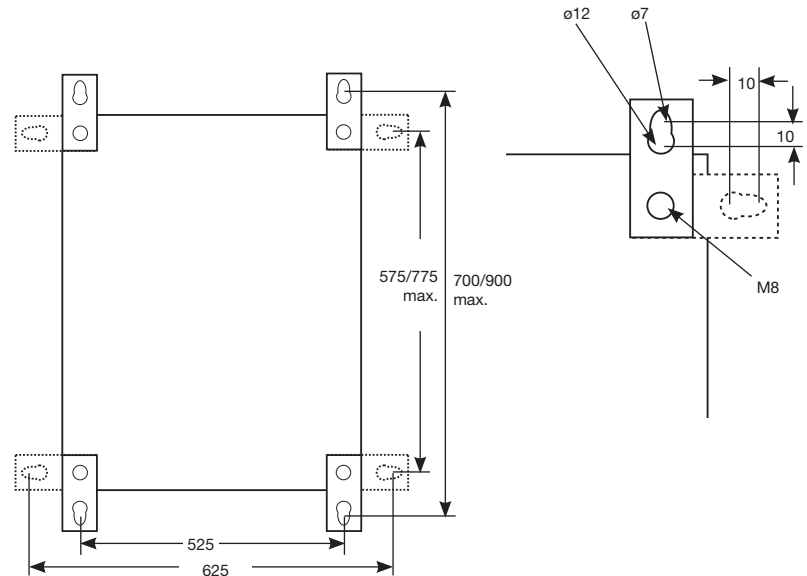




## Heavy duty distribution board (100A) IP55 weatherproof

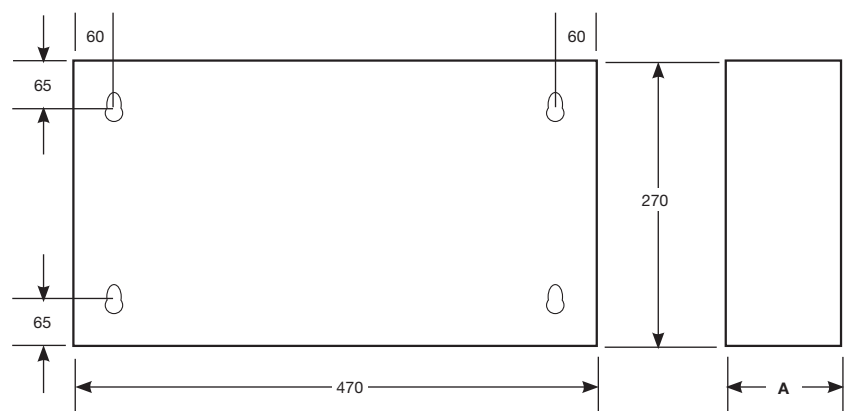
Part number	Number of	Dimensions (mm)		
		Height	Width	Depth
SEA9BN6HDGK/G-R	6	650	600	290*
SEA9BN8HDGK/G-R	8	650	600	290*
SEA9BN12HDGK/G-R	12	850	600	290*
SEA9BN16HDGK/G-R	16	850	600	290*

\* Denotes the maximum depth dimensions with key fitted.



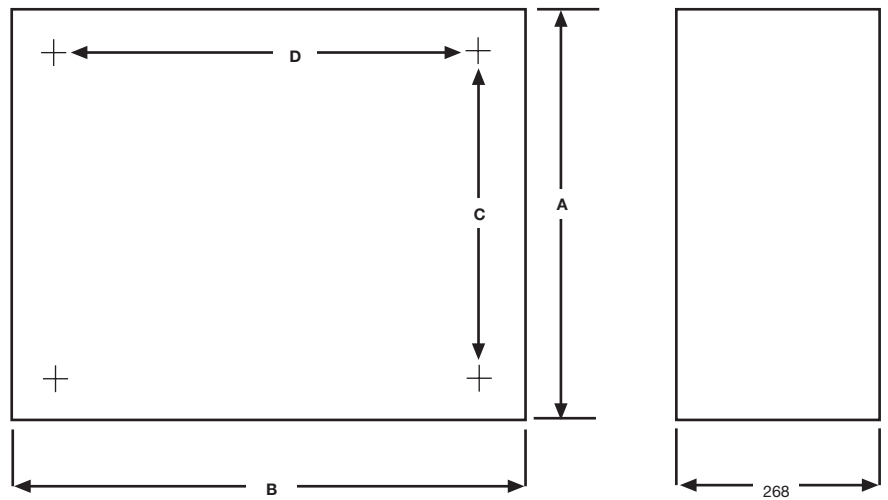
### B board extension box enclosures

Part number	A
SEA9BNEXN	124
SEA9BNEX034N	140
SEA9BNKWH	124
SEA9BNEXA15N	140
SEA9BN100CCI	140
SEA9BNDSI	124



## Powerpact 4 powerboards and panelboards 250A and 400/630A

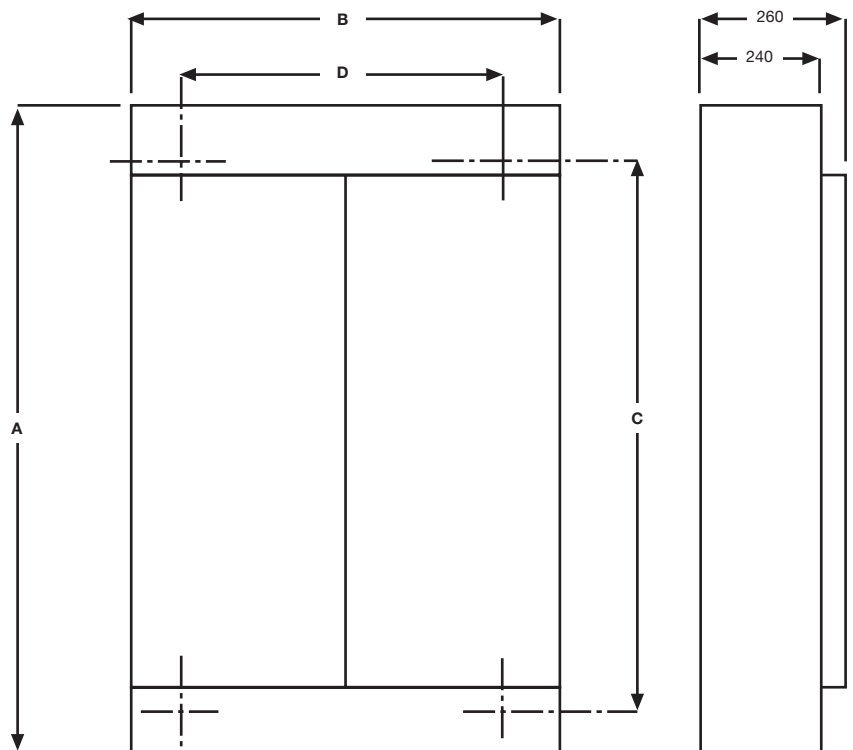
### 250A powerboard



Board ref.	A	B	C	D
MG25C2 & MG25C2M	650	600	442	306
MG25C4 & MG25C4M	650	778	442	484
MG25EXC	650	600	442	306

C and D are the fixing dimensions about the centre line

### 250, 400/630A panelboard



Board ref.	A	B	C	D
MG2C5	679	850	541	670
MG2C7	784	850	646	670
MG2C9	889	850	751	670
MG2C13	1074	850	920	670
MG6C6	1178	850	1035	710
MG6C12	1493	850	1350	710
MG6C18	1808	850	1665	710

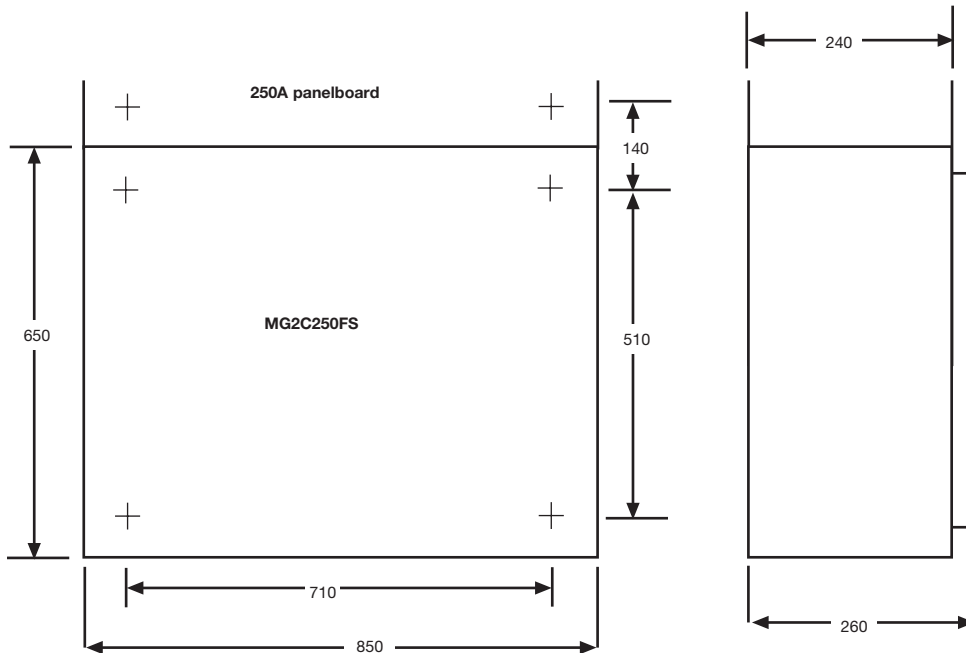
C and D are the fixing dimensions about the centre line

#### Material thickness

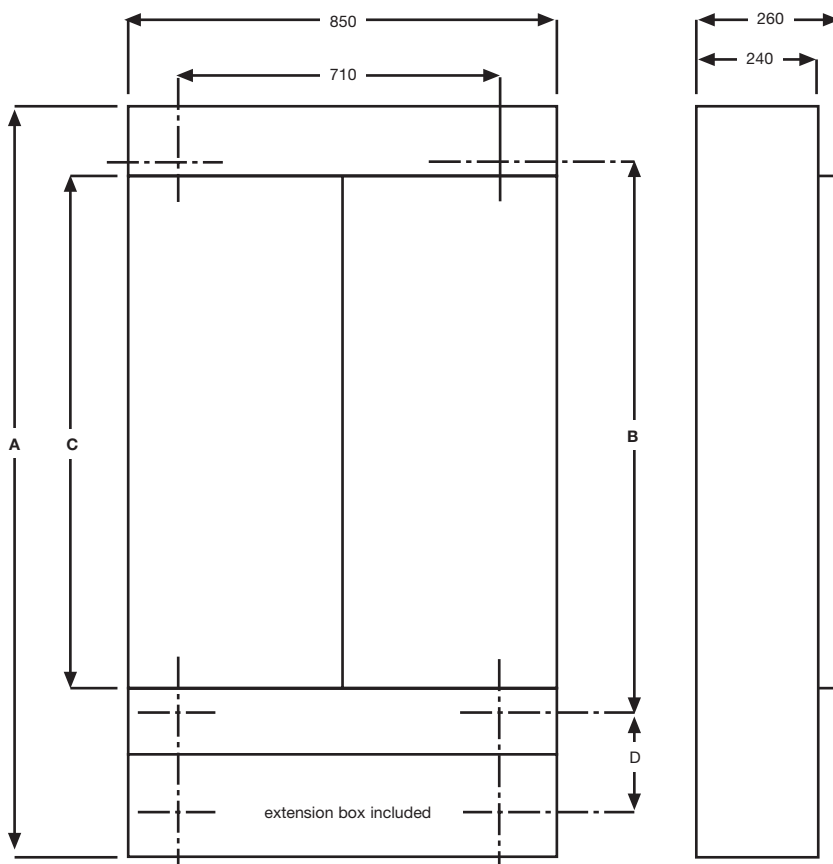
1.2mm cover

1.6mm enclosure

### Fuse switch incomer for 250A panelboard

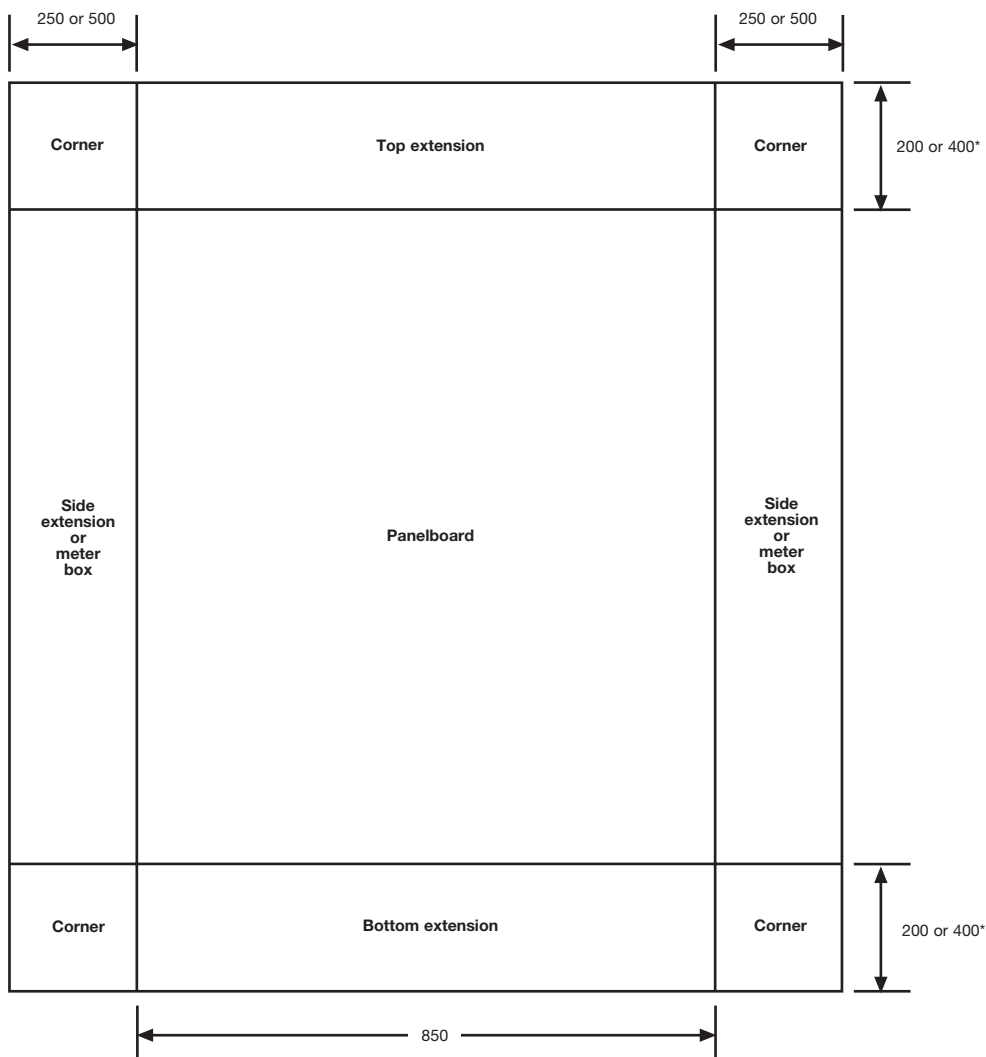


### 800A panelboard



Board ref.	A	B	C	D
<b>MG8C6</b>	1578	1035	991	172
<b>MG8C12</b>	1893	1350	1306	172
<b>MG8C18</b>	2208	1665	1621	172

**Material thickness**  
1.2mm cover  
1.6mm enclosure



All extension boxes are the same depth as the main board - 240mm.

\* 400mm extension box is fitted as standard at the incoming end of the 800A panelboard.

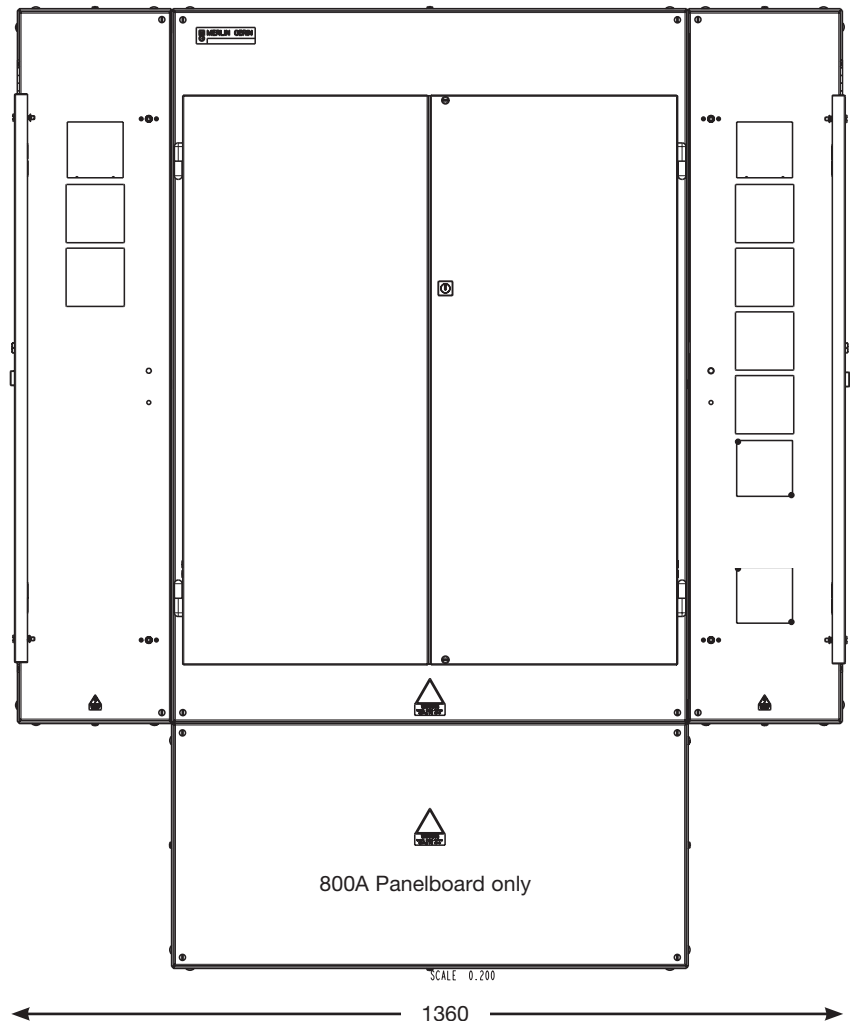
Corner units are available to suit all combinations of top/bottom and side extension boxes.

## Overall dimension table

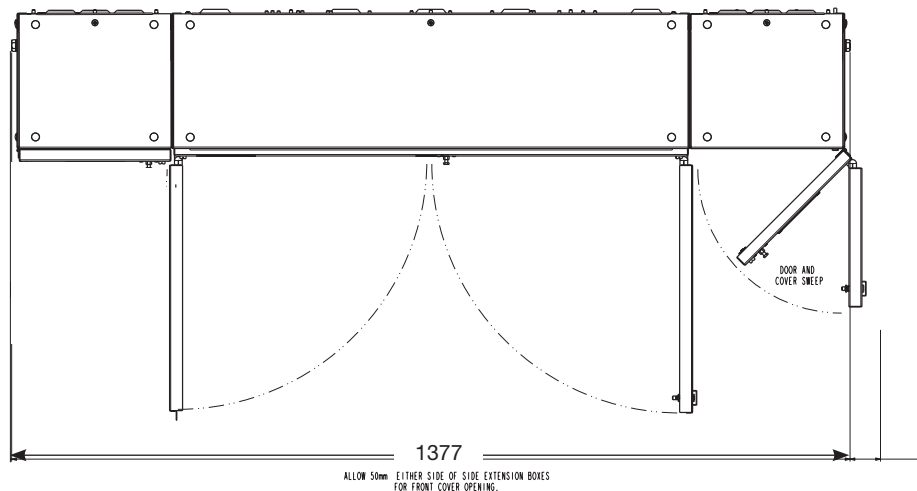
Panelboard Part number	MG25C2	MG25C2M	MG25C4	MG25C4M	MG2C5	MG2C7	MG2C9	MG2C13	MG6C6	MG6C12	MG6C18	MG8C6	MG8C12	MG8C18
<b>Height Standard</b>	653	653	653	653	679	784	889	1074	1178	1493	1808	1583	1898	2213
With 1 top or bottom ext box					883	988	1093	1278	1382	1697	2012	1787	2102	2417
with top & bottom ext box					1087	1192	1297	1482	1586	1901	2216	1991	2306	2621
<b>Width Standard</b>	600	600	778	778	850	850	850	850	850	850	850	850	850	850
with 1-250mm side ext box									1105	1105	1105	1105	1105	1105
with 1-500mm side ext box									1360	1360	1360	1360	1360	1360
with 1-600mm side ext box	1200	1200	1378	1378										
with 1-250 & 1-500mm side ext box								1615	1615	1615	1615	1615	1615	
with 2-250mm side ext boxes									1360	1360	1360	1360	1360	1360
with 2-500mm side ext boxes									1870	1870	1870	1870	1870	1870
<b>Depth</b>	263	263	263	263	263	263	263	263	263	263	263	263	263	263

## Dimensions (mm)

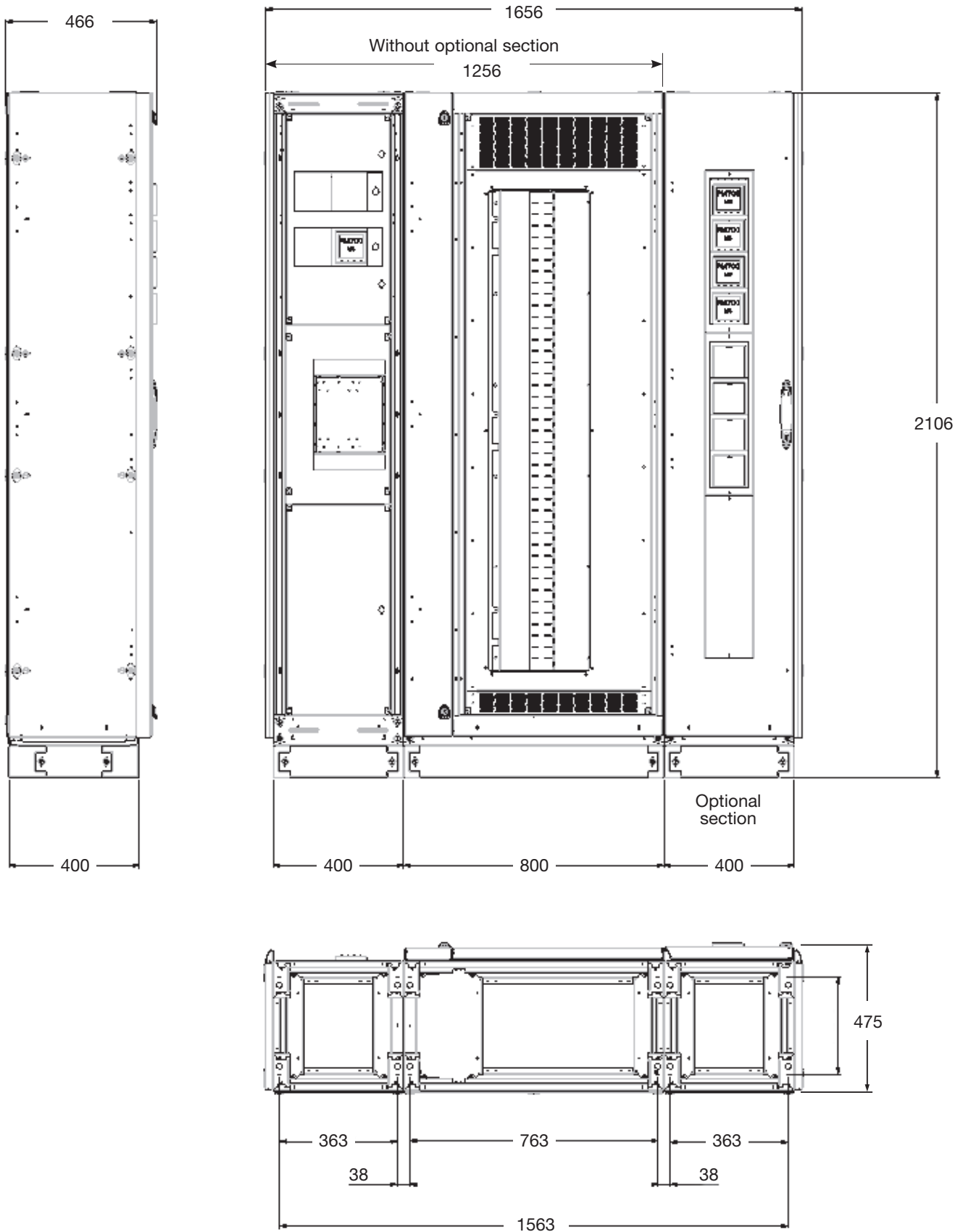
# Powerpact 4 metering extensions 630, 800A panelboard with side extension metering boxes

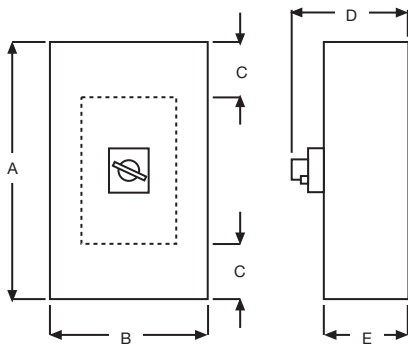


The side extensions with metering are dimensionally the same as standard 250mm side extensions



All apertures are 92mmsq. to accept standard DIN 96 meters.

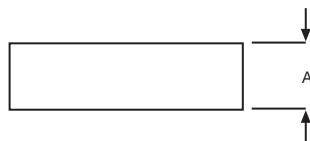




### Safepact 2 MCCB or switch disconnector general purpose enclosure IP40

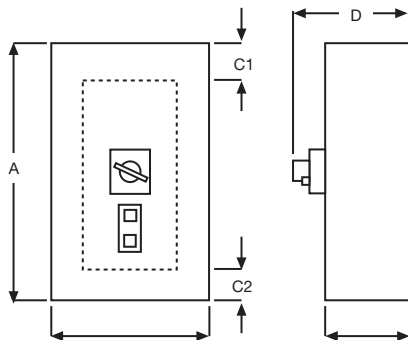
Rating	Height A	Width B	Cable space C	Overall depth D	Enclosure depth E
Up to 250A	420	230	140	211	145
630A	700	356	236	235	169

**Note:** C\* - we recommend fitting cable extension boxes on each end of the 160, 250 and 630A ratings, unless utilising trunking



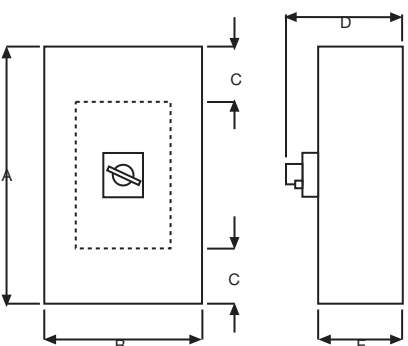
### Extension boxes for Safepact 2 MCCB enclosures

Height (A)	Part number
100	MGEX 160C
200	MGEX 250C
120	MGEX 630C



### Safepact 2 MCCB or switch disconnector general purpose enclosure IP40 including earth leakage

Rating	Height A	Width B	Cable space C1 C2		Overall depth D	Enclosure depth E
Up to 100A	100A	420	230	140 65	211	145
	160A	520	230	140 165		
	250A	620	230	140 265		
400A	820	356	236	256	235	169
630A						

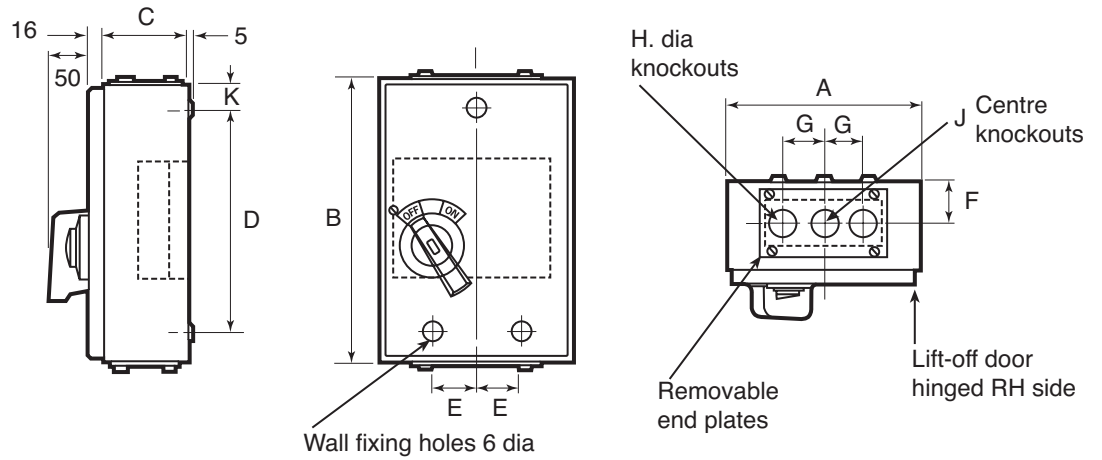


### Enclosed Interpact

Rating	Height A	Width B	Cable space C	Overall depth D	Enclosure depth E
63A	350	350	130	300	250
100A	350	350	125	300	250
160A	350	350	125	300	250
250A	450	350	165	300	250
320A	650	350	235	300	250
400A	650	350	235	300	250
500A	650	350	235	300	250
630A	650	350	235	300	250



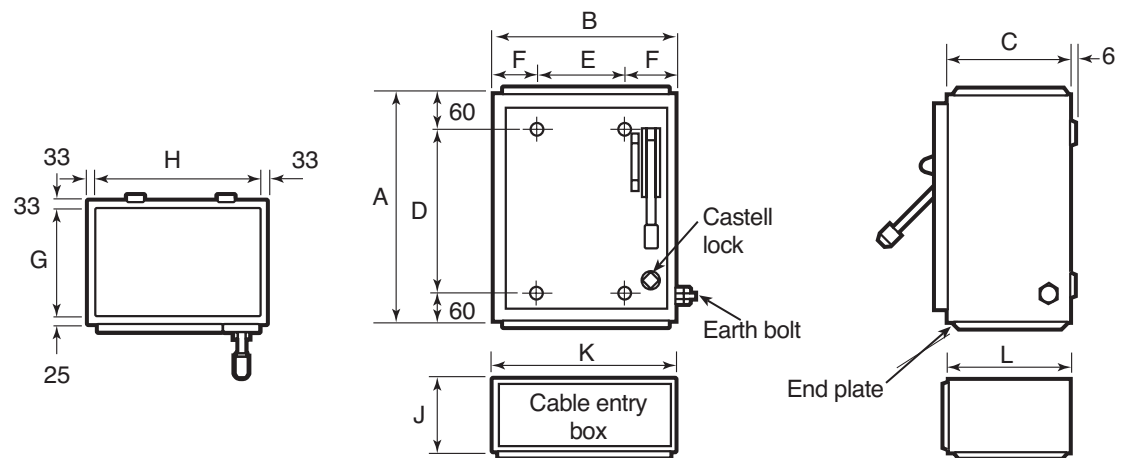
**Switch disconnecter fuse MGFA**  
**Switch disconnecter MGFL**



Rating	A	B	C	D	E	F	G	H	J	Weight Kg*
20A	210	240	105	160	50	51	44	20	25	4.10
32A	210	240	105	160	50	51	44	20	25	4.82
63A	235	350	105	270	55	51	50	32	32	5.34
100A	260	400	120	320	65	51	60	38	40	7.37

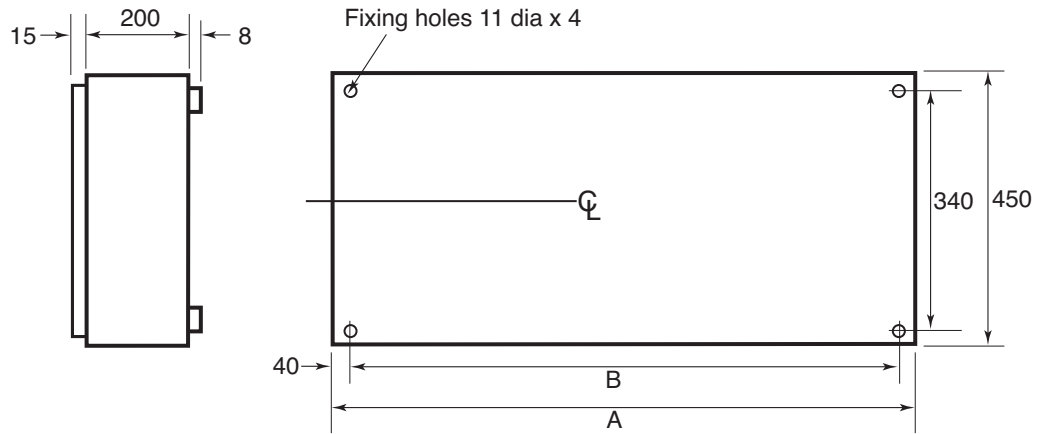
\* Weights do not include the fuse links

**Fuse switch disconnecter MGFS**  
**Switch disconnecter MGFD**



Rating	A	B	C	D	E	F	G	H	J	K	L	Weight Kg*
100A	380	292	200	260	130	81	142	226	100	292	220	15.6
160A	380	292	200	260	130	81	142	226	150	292	220	15.6
200/ 250A	380	340	200	260	180	80	142	274	180	340	220	19.5
400A	455	489	270	335	289	100	212	423	300	489	290	36.2
500A	455	489	270	335	289	100	212	423	300	489	290	36.2
630A	455	489	270	335	289	100	212	423	400	489	290	36.2

\* Weights do not include the fuse links



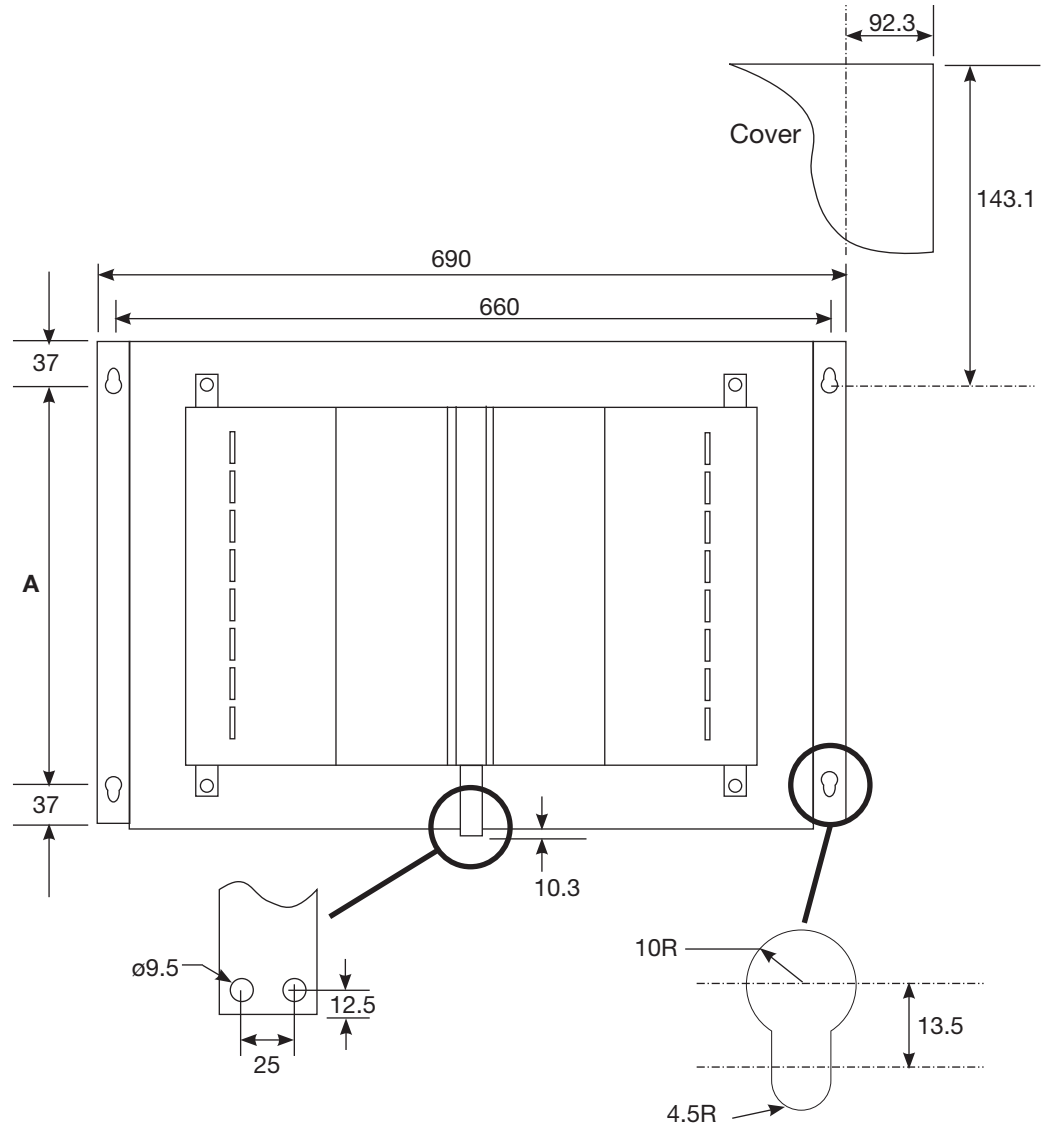
Type	A	B
MBFB...07TN	750	670
MBFB...12TN	1200	1120
MBFB...18TN	1800	1720



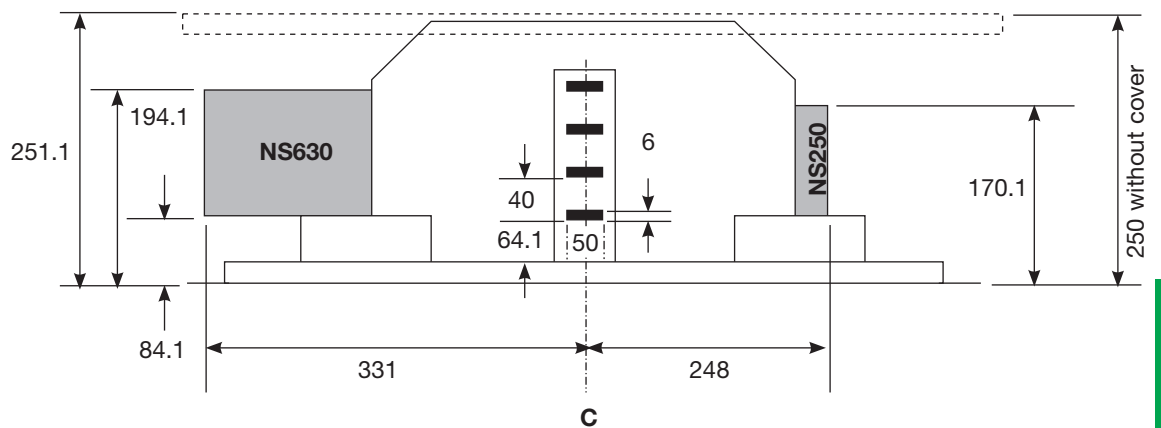
# Dimensions (mm)

# Outgoing pan assembly 630A only

Reference	A
6 way	346
12 way	661
18 way	976
24 way	1291
30 way	1606

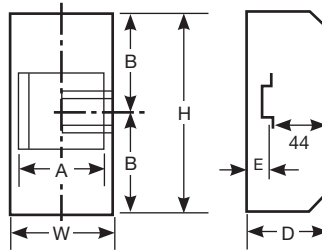


## Incoming busbar connections direct to outgoing pan assembly

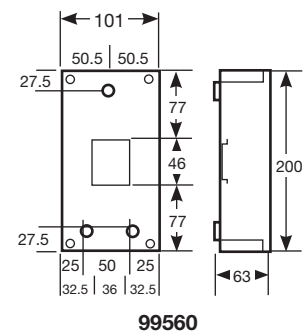
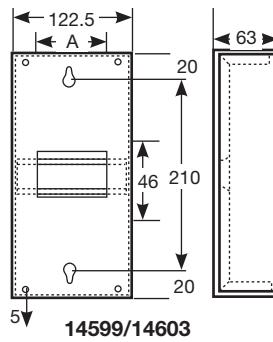




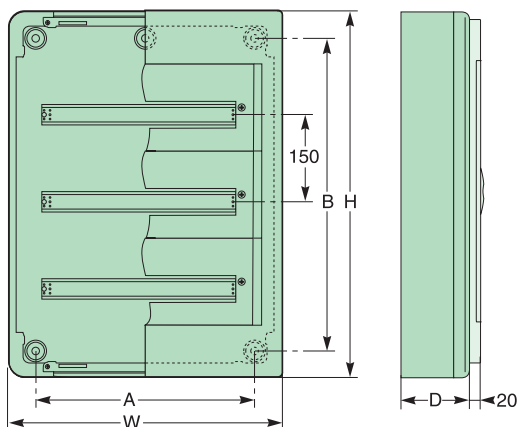
Mini Opale enclosures						
Part number	H	W	D	A	B	E
13392	130	44	57	36	65	11
13394	130	80	57	72	65	11
13396	160	119	65	108	80	19
13398	160	155	65	151	80	19



G9 enclosures	
Part number	A
14599	72
14603	99



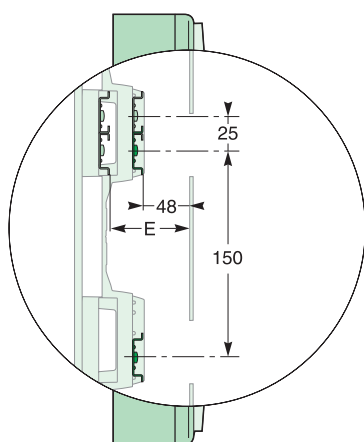
## Enclosures Pragma surface mounted enclosures and interfaces



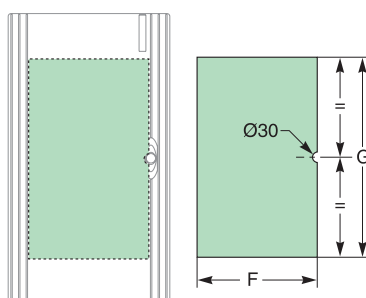
### Surface mounted enclosures

Enclosure		Dimensions (mm)						G	J
		H	W	D	A	B	E		
13 modules	1R	300	336	123 (115)	160	200	73	253	149
	2R	450				350			299
	3R	600				500			449
	4R	750				650			599
24 modules	1R	300	550	148 (136)	340	150	84		121
	2R	450				300			271
	3R	600				450			421
	4R	750				600			571
	5R	900				750			721
	6R	1050				900			871

### Panel for customisation of the transparent door 13 module enclosures

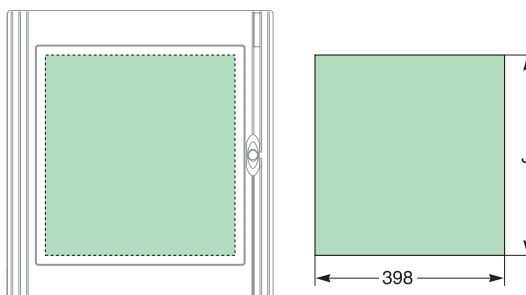


The different positions of the DIN rail in height and depth.



Panel thickness: 0.5 mm max.

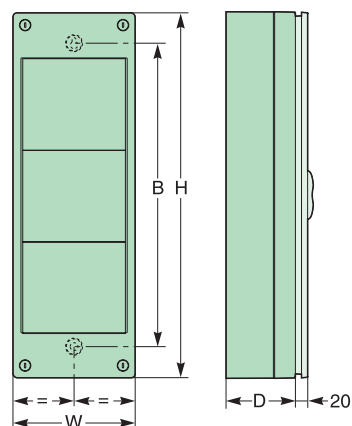
### 24 module enclosures



Panel thickness: 0.5 mm max.

### Interfaces

Enclosure	Associated with enclosure	Dimensions (mm)			
		H	W	D	B
1R	13 modules	300	200	115	206
2R		450			356
3R		600			506
1R	24 modules	300	200	136	175
2R		450			325
3R		600			475



## Pre-cutouts

The new European standard EN 50262 generalises metric dimensions for cable glands.

To simplify the transition, the entire Kaedra range is equipped with pre-cutouts both in ISO/metric standardisation and in PG standardisation. Each pre-cutout is marked:

- Simple pre-cutout adapted to the metric cable gland:

M16

- Double pre-cutout:

- External: pre-cutout adapted to the metric cable gland/ISO
- Internal: pre-cutout adapted to the PG cable gland

M20  
PG11

## Cable glands

Type of pre-cutout	For cables of diameter (mm)
M16	4 - 8
M20	6 - 12
M25	12 - 18
M32	18 - 25
M50	30 - 38
PG11	5 - 10
PG16	10 - 14
PG21	14 - 17
PG29	19 - 26
PG36	22 - 32

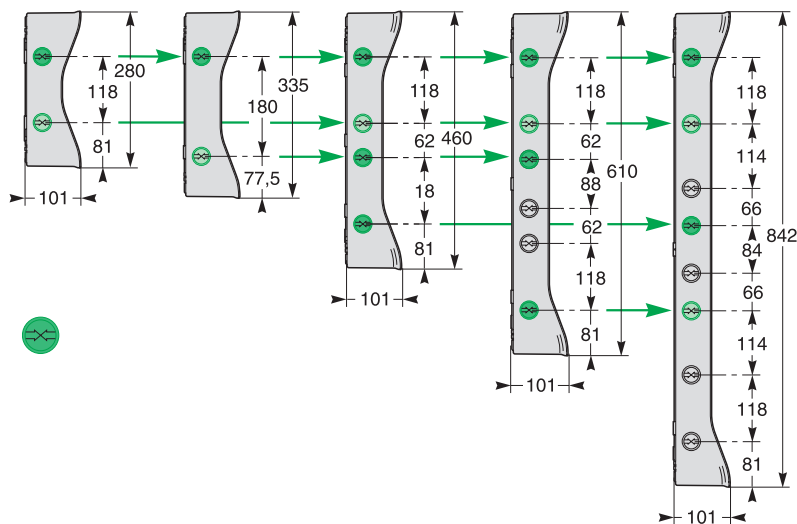
## Associations

The enclosures can be associated:

- Horizontally, regardless of their height (see diagram below)
- Vertically, if their width is identical.

Use the association kit, Part number 13934 (2 sleeves + 4 nuts + 4 seals) in the M32 pre-cutouts marked with a double arrow.

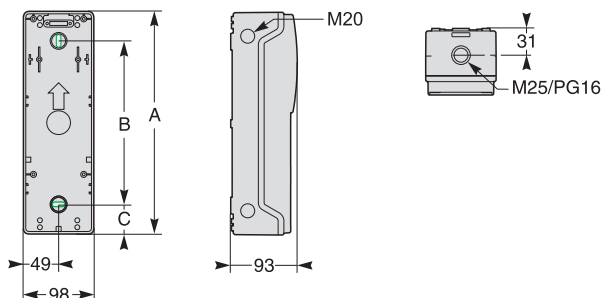
Insertion of cables between the enclosures is possible, while preserving the degree of protection IP65.





## Weatherproof mini enclosures

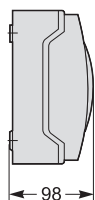
Weatherproof mini enclosures for power outlets



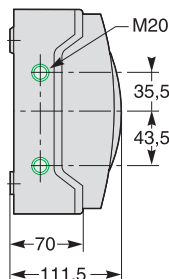
A	B	C	Weight (g)
248	166	41	550
310	228	41	600
392	310	41	700

## Weatherproof mini enclosures for modular switchgear

3 modules

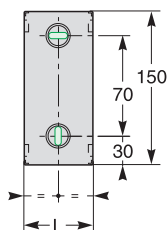


4, 6, 8 and 12 modules

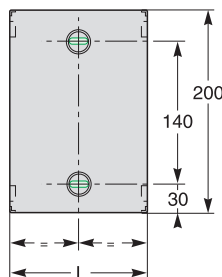


Number of modules	A	L	Weight (g)
3	-	80	300
4	-	123	500
6	-	159	650
8	88	195	850
12	160	267	1050

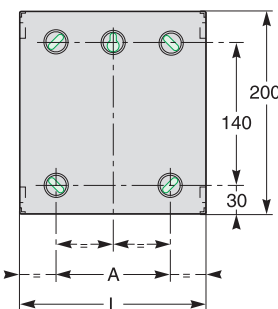
3 modules



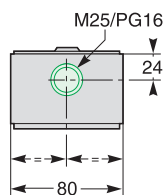
4 and 6 modules



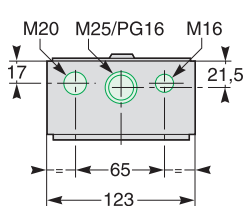
8 and 12 modules



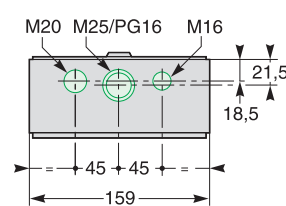
3 modules



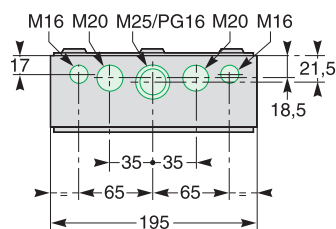
4 modules



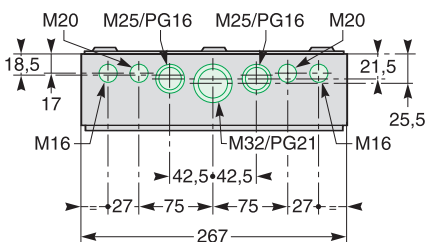
6 modules



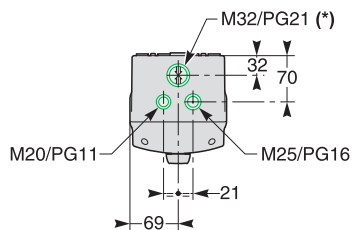
8 modules



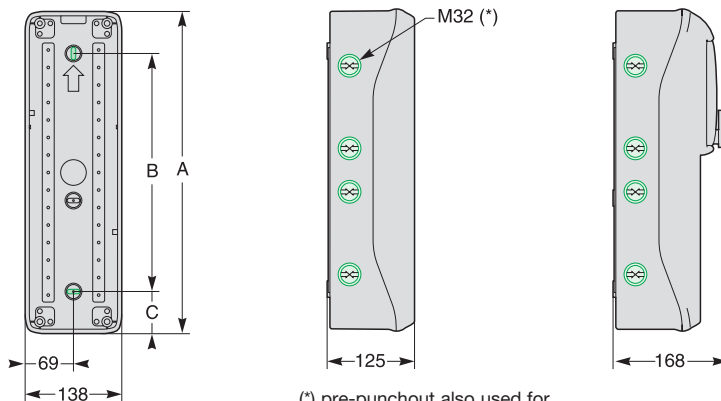
12 modules



A	B	C	Weight (g)
460	251	104.5	1450
460	251	104.5	1250
460	251	104.5	1400
460	251	104.5	1400
610	490	60	1650



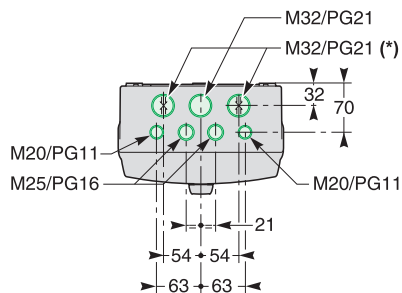
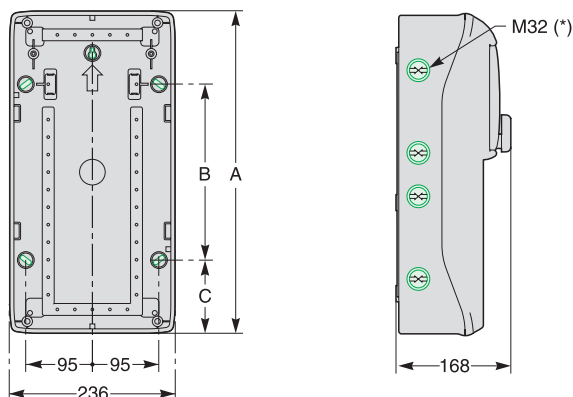
## Weatherproof enclosures 5 modules



(\*) pre-punchout also used for enclosure association

A	B	C	Weight (g)
460	251	104.5	2050
460	251	104.5	1900
460	251	104.5	1900

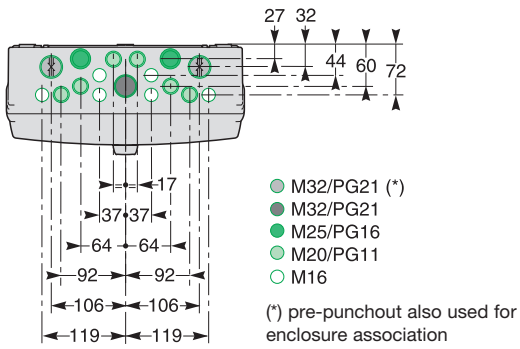
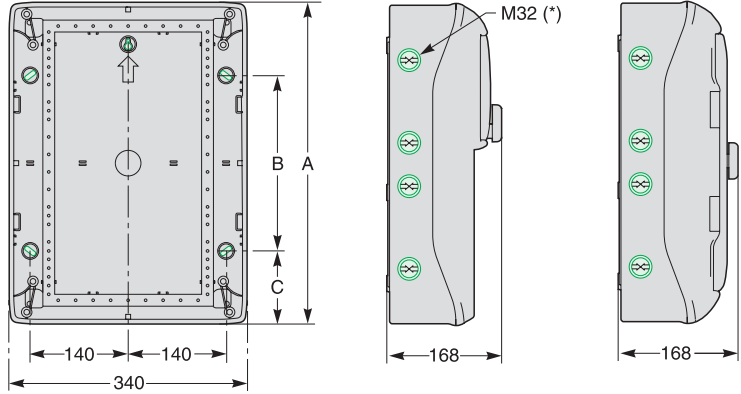
## 8 modules



(\*) pre-punchout also used for enclosure association

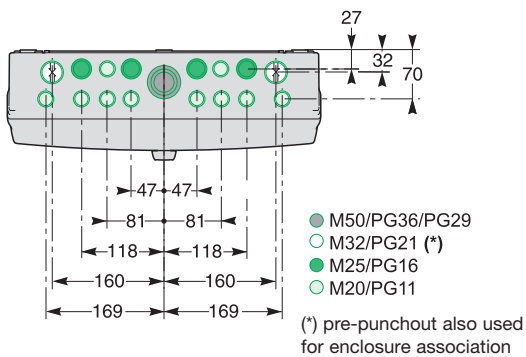
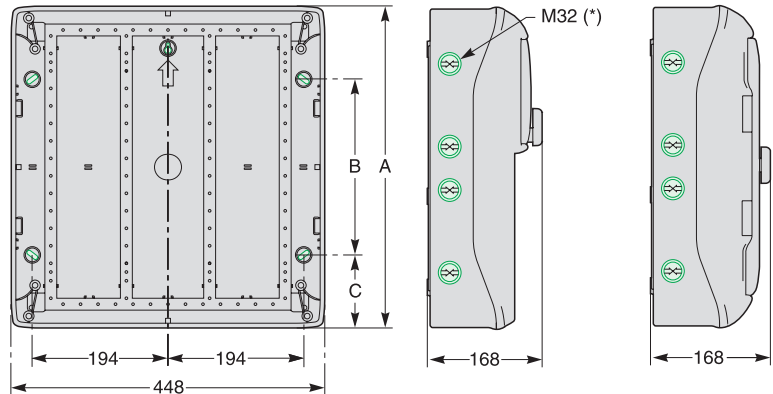
A	B	C	Weight (g)
280	118	81	1900
335	170	82.5	2200
335	170	82.5	2150
460	251	104.5	3100
460	251	104.5	2850
460	251	104.5	3300
460	251	104.5	2650
460	251	104.5	2700
610	401	104.5	4100
460	251	104.5	4550

## Weatherproof enclosures 12-13 modules



A	B	C	Weight (g)
280	118	81	2400
280	118	81	1950
460	251	104.5	3850
460	251	104.5	3550
460	251	104.5	4150
460	251	104.5	3200
460	251	104.5	3150
460	251	104.5	3300
610	401	104.5	3150
610	401	104.5	5600
610	401	104.5	4050
842	633	104.5	6500
842	633	104.5	6600

## 18-19 modules



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04047	10/6	13445	10/31	14979	10/7
04224	10/8	13446	10/31	15111	7/35
8908	8/19	13448	10/31	15112	7/35
8961	8/16	13450	10/31	15113	7/35
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8963	8/16	13599	10/31	15125	7/49
10209	10/31	13735	10/15 10/31	15126	7/49
10210	10/31	13736	10/15 10/31	15151	7/51
10220	10/31	13929	10/31	15152	7.51
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10545	10/4	13935	10/31	15202	7/87
10546	10/4	13936	10/31	15208	7/87
10547	10/4	13937	10/31	15209	7/87
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13139	10/31	13945	10/31	15335	7/73
13140	10/31	13946	10/31	15336	7/73
13141	10/31	13947	10/31	15337	7/72
13142	10/31	13948	10/31	15341	7/75
13143	10/31	13949	10/31	15359	7/63
13144	10/31	13950	10/31	15363	7/62
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13176	10/17 10/18	13981	10/23	15482	7/82
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13181	10/18	13986	10/23	16315	4/4
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13190	10/26	13991	10/21	16330	4/2 4/4
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13192	10/26	13993	10/18 10/28	16361	4/2 4/4
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13196	10/26	14210	10/8	16552	7/101
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13198	10/26	14599	10/10	16643	4/4
13199	10/26	14603	10/10	16644	4/4
13260	10/31	14811	10/5	16645	4/4
13361	10/31	14812	10/5	16646	4/4
13362	10/31	14813	10/5	17400	3/18
13363	10/31	14814	10/5	18264	5/2
13364	10/31	14818	10/5	18265	5/2
13387	10/15	14885	10/5	18266	5/2
13392	10/10	14915	10/8	18267	5/2
13394	10/10	14936	10/7	18268	5/2
13396	10/10	14937	10/7	18269	5/2
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21102	3/24	83995	10/31	A9A27062	2/26
21103	3/24	83996	10/31	A9A27063	2/26
21104	3/24	83997	10/31	A9C15032	7/27
21105	3/24	99217	10/8	A9C15404	7/22
21106	3/24	99219	10/8	A9C15405	7/22
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21505	10/4	A9A26476	2/21	A9C20532	7/4
21507	10/4	A9A26477	2/21	A9C20536	7/4
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26975	3/17	A9A26500	2/21	A9C20632	7/4
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SEA9NI2504SM	1/9				
SEA9NKIT	1/7				
SEA9NPB250TB	1/15				
SEA9NTB2504	1/12				
SEA9PD	1/14				
SEA9R11280	1/6				
SEA9R11291	1/6				
SEA9R11480	1/12				
SEA9R12263	1/6				
SEA9R12280	1/6				
SEA9R12291	1/6				
SEA9R12463	1/12				
SEA9R14280	1/6				
SEA9R14291	1/6				
SEA9R15280	1/6				
SEA9R15291	1/6				
SEA9R15463	1/12				
SEA9R15491	1/12				
SEA9R41263	1/6				
SEA9R41463	1/12				
SEA9R44263	1/6				
SEA9R44463	1/12				
SEA9TB1001	1/13				
SEA9TB1252	1/6				
SEA9TB1254	1/12				
SELA	2/25				
SEP0404M5	8/27				
SEP1004M5	8/27				
SEP1604M5	8/27				
SEP2504M5	8/27				
SEP4004M5	8/27				
SEP400M5M	8/27				
SEP6304M5	8/27				
SEP630M5M	8/27				
SEPINTP1	8/27				
SEPINTPEGX	8/22				
TRV00121	8/28				
TRV00210	8/28				
TRV00217	8/28				
TRV00810	8/28				
TRV00820	8/28				
TRV00870	8/28				
TRV00880	8/28				

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