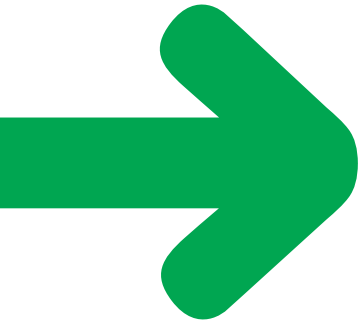


Acti 9

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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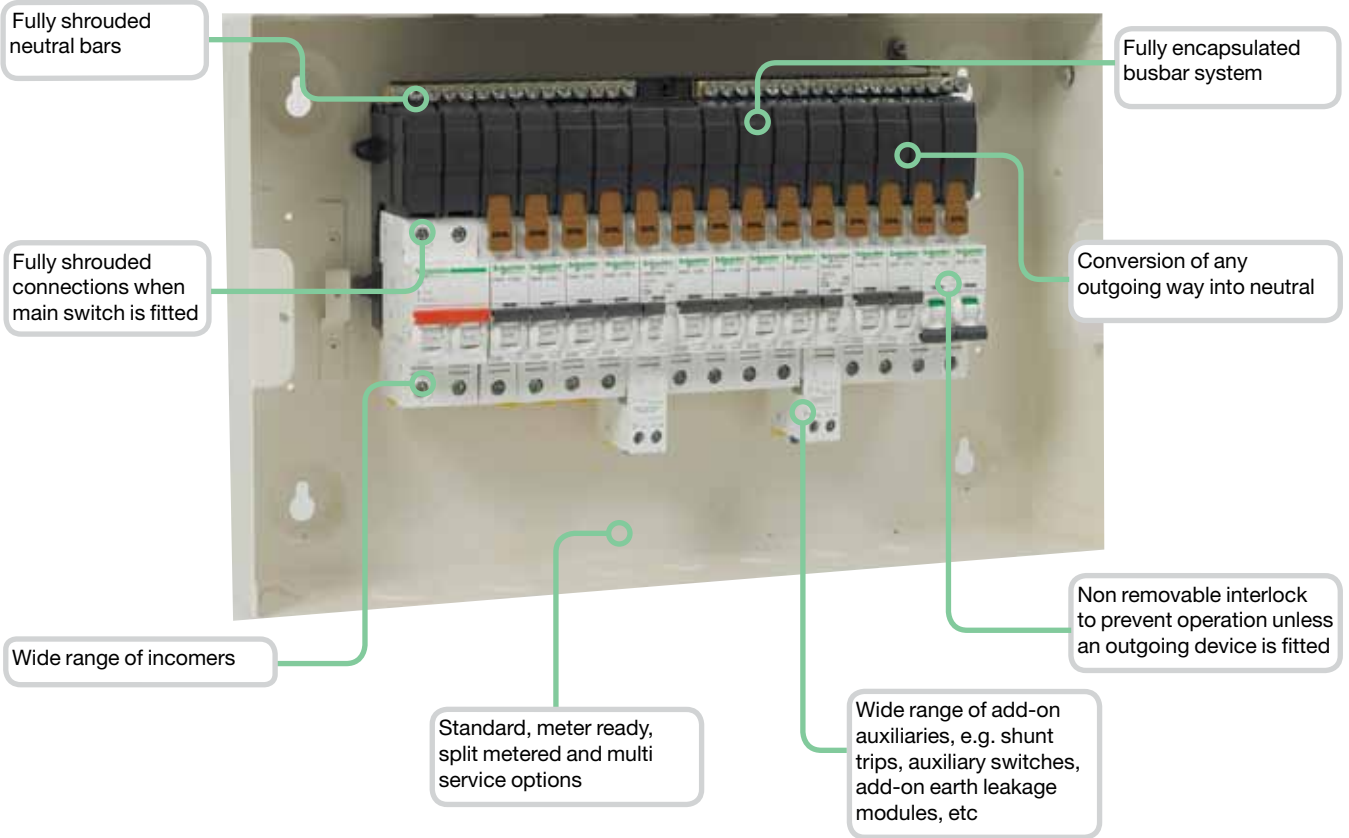
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Features

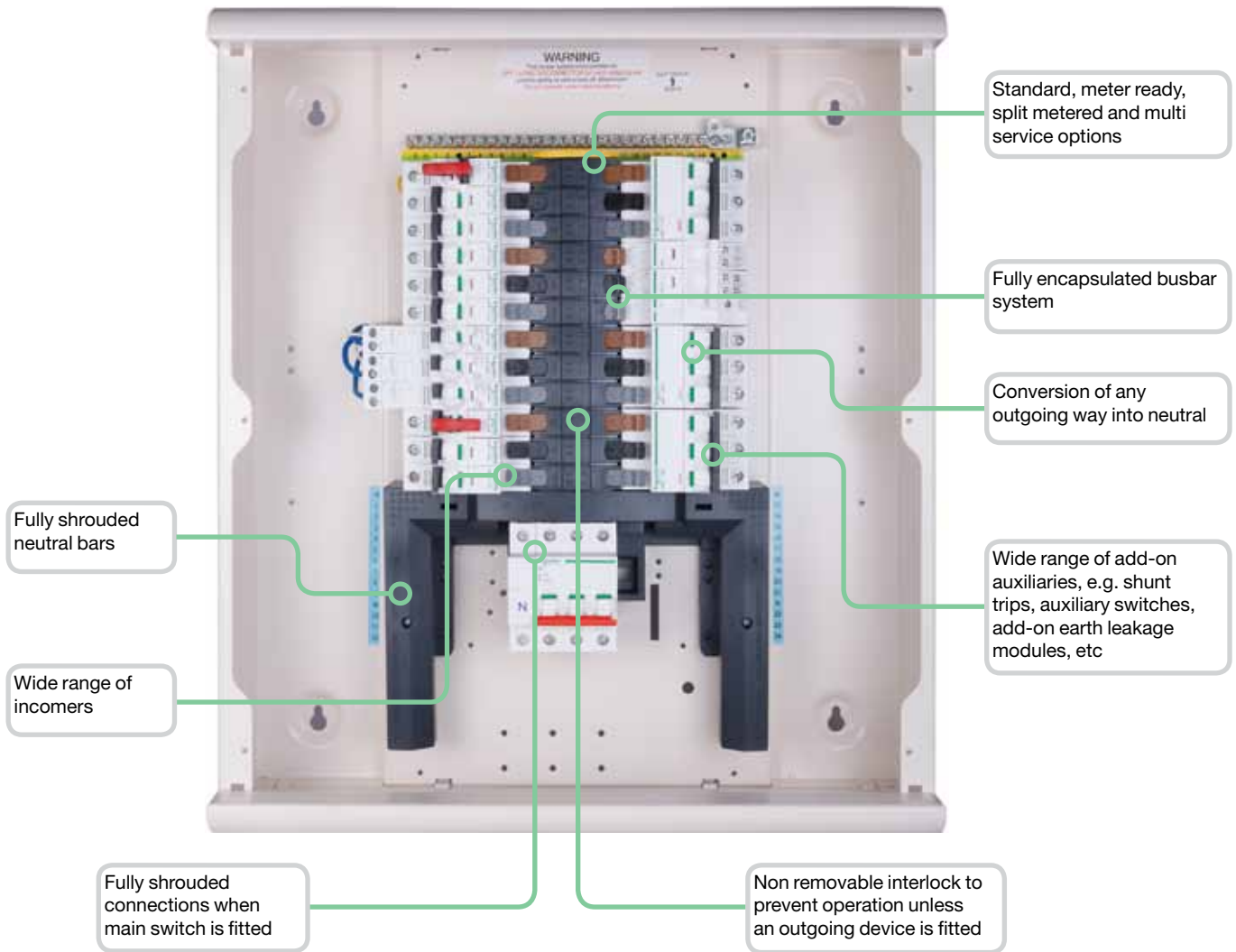
Acti 9 Isobar A type single phase distribution boards

1



- 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



- 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

Acti 9 Isobar A type distribution boards

1

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

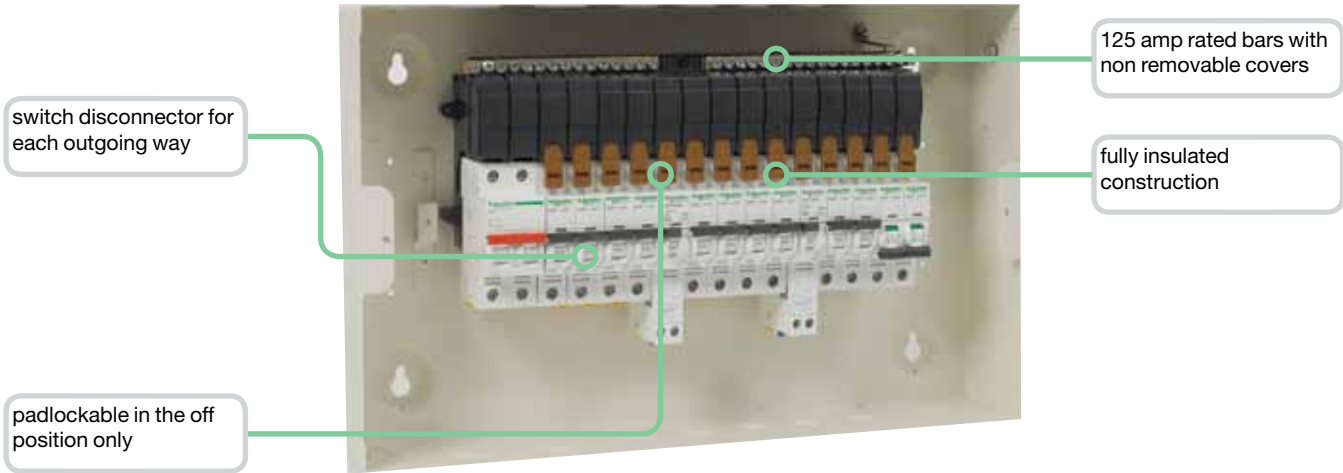
| Acti 9 Isobar Standard distribution boards busbar rating 125 amp | | |
|--|---------------|----------------|
| Incomers not included | No of SP ways | No of DP ways* |
| SEA9AN2 | 2 | 1 |
| SEA9AN6 | 6 | 3 |
| SEA9AN10 | 10 | 5 |
| SEA9AN14 | 14 | 7 |
| SEA9AN18 | 18 | 9 |
| SEA9AN27 | 27 | 12 |

*When used with distributed neutral



| Acti 9 Isobar Multi service distribution boards busbar rating 125 amp | | |
|---|---------------|----------------------------|
| Incomers not included | No of SP ways | Useable DIN rail 18mm ways |
| SEA9AN108MS | 10 | 4 |
| SEA9AN1432MS | 14 | 16 |
| SEA9AN616MS | 6 | 8 |
| SEA9AN624MS | 6 | 12 |
| SEA9AN148MS | 14 | 4 |
| SEA9AN1016MS | 10 | 8 |

| Acti 9 Isobar Split load distribution boards busbar rating 125 amp | | |
|--|-----------------|---------------------|
| Incomers not included | Unprotected way | RCCB 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 |
|--|-------------------------|--------------------------------|------------------------|
| According to BE EN 61439-3 | | | |
| Withstand | conditional | 25kA | 25kA |
| | unconditional | 25kA/50mS | 25kA/50mS |
| | | 17kA/200mS | 17kA/200mS |
| insulation voltage (Ui) | | 500V | 500V |
| Pollution degree | | 3 | 3 |
| Rated impulse withstand voltage (Uimp) | | 6kV | 6kV |
| Current rating (A) | direct connection | 125A | Terminal block 125A |
| | Switch disconnecter | 125A | Power switch 125A |
| | RCCB sensitivities (mA) | 30, 100, 300, 300TD, 100A | |
| Degree of protection (IEC 60529) | | External IP3X 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 | Section 1 SP ways | Section 2 SP 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 | Meter used | A9M17067 A9MEM2010 |

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 |



| Incomers | | | |
|---|--------|------------|-------------|
| Switch disconnecter | | Rating (A) | No of poles |
| SEA9R1252 | | 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 |
| SEA9R11280 | 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 (overall dimensions add 50mm to width and height) | | |
|---|--|------------|
| 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 |

Acti 9 Isobar B type distribution boards

1



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 |

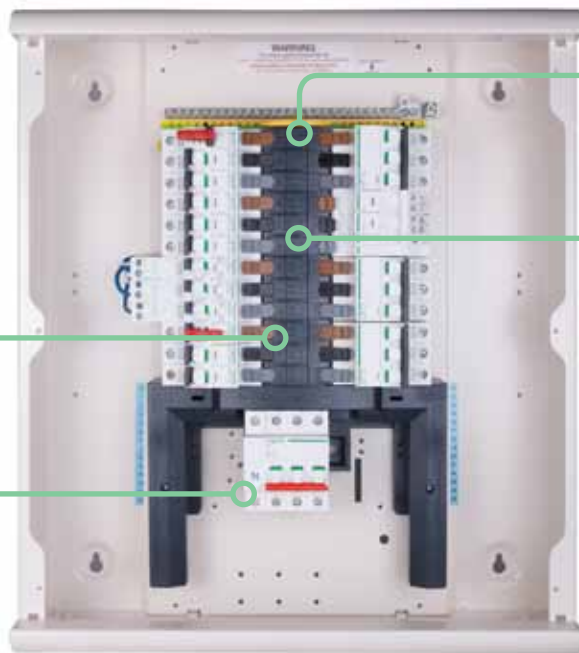
| Acti 9 Isobar Meter ready distribution boards busbar rating 250 amp | | | |
|---|---------------|---------------|---------------|
| | No of TP ways | No of SP ways | No of DP ways |
| SEA9BN6M | 6 | 18 | 9 |
| SEA9BN8M | 8 | 24 | 12 |
| SEA9BN12M | 12 | 36 | 18 |
| SEA9BN16M | 16 | 48 | 24 |
| SEA9BN18M | 18 | 54 | 26 |
| SEA9BN24M | 24 | 72 | 36 |

*Metering kits page 1/10

| Acti 9 Isobar Split metered* distribution boards busbar rating 125 amp switch disconnecter fitted | | | | |
|---|-------------------------------------|---------------|-------------------------------------|---------------|
| | Lower pan assembly No of TP ways | No of SP ways | Upper pan assembly No of TP ways | No of SP ways |
| 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 |
| SEA9BN2506S8 | 8 | 24 | 8 | 24 |
| 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

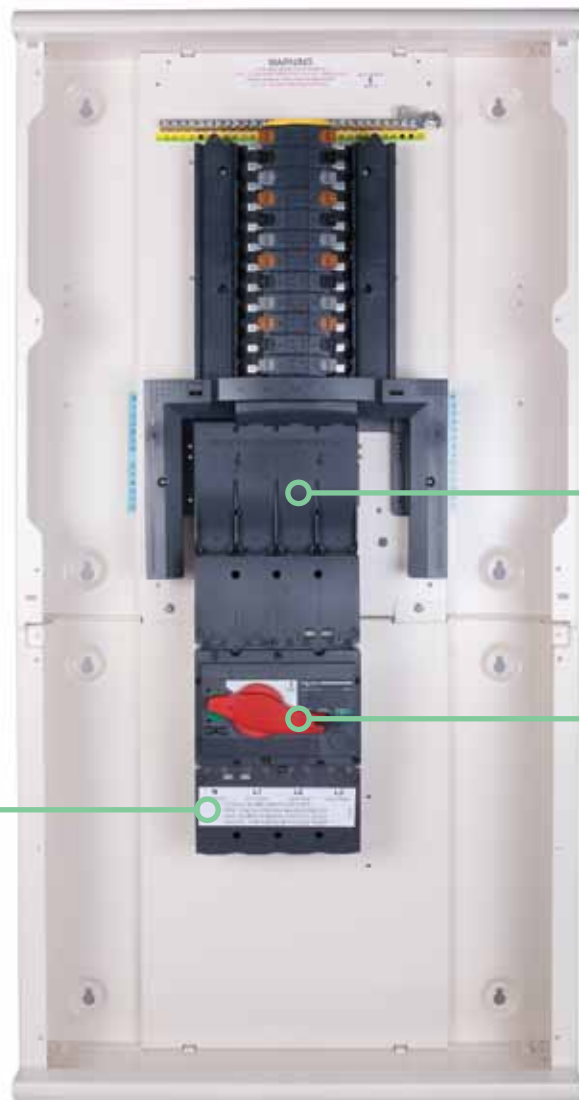


250 amp rated bars with non removable covers

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 | | | |
|---|---|------------|--------------|
| | | 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 | |
| | | 160-200-250 | Interpact | |
| MCCB | 100-160-200-225-250 | | | |
| Degree of protection (IEC 60529) | | External IP3X or 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 | | |

SEA9BN6HDGK



Main characteristics Acti 9 Isobar Heavy Duty

| 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 impulse 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 | | |

Anti condensation measures should be taken if installed in an external location

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 | 470 | 139 |
| ■ | ■ | 125 amp | 28 | 1290 | 470 | 139 |
| ■ | ■ | 250 amp | 32 | 1694 | 470 | 139 |
| 250 amp incoming section | | ■ | 4 | 405 | 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

SEA91253N



SEA9NI2504



SEA9R14463



SEA9TB1254



SEA9BNDM250SD



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

| Incomers | | | | | | | |
|---|------------------|-------------|----------|-------------|---------------|------|-----|
| Switch disconnecter | Rating (A) | No of poles | Standard | Meter ready | Split Metered | IP55 | |
| SEA91253N | 125 | 3P+N | Int | Int | Int | Int | Int |
| SEA91254 | 125 | 4 | Int | 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 | |
| A9R41463 | 30 | 63 | 4 | Int | Int | Int | Int |
| A9R12463 | 100 | 63 | 4 | Int | Int | Int | Int |
| A9R44463 | 300 | 63 | 4 | Int | Int | Int | Int |
| A9R15463 | 300/time delayed | 63 | 4 | Int | Int | Int | Int |
| A9R11480 | 30 | 80 | 4 | Int | Int | Int | Int |
| A9R14491 | 300 | 100 | 4 | Int | Int | Int | Int |
| A9R15491 | 300/time delayed | 100 | 4 | Int | Int | Int | Int |
| SEA9NI160RCCB | adjustable | 160 | ■ | Ext | Ext | Ext | ■ |
| Terminals for direct connection | Rating (A) | No of poles | Standard | Meter ready | Split metered | IP55 | |
| SEA9TB1254 | 125 | 4 | Int | 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 | ■ |
| Contactormeter 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 270mm enclosures | Rating (A) | No of poles | Standard | Meter ready | Split metered | IP55 | |
| SEA9BNDM160SD | Interpact SD | 160 | 4 | Ext 270mm | ■ | ■ | ■ |
| SEA9BNDM200SD | Interpact SD | 200 | 4 | Ext 270mm | ■ | ■ | ■ |
| SEA9BNDM250SD | Interpact SD | 250 | 4 | Ext 270mm | ■ | ■ | ■ |
| SEA9BNDM160M | NSX MCCB | 160 | 4 | Ext 270mm | ■ | ■ | ■ |
| SEA9BNDM200M | NSX MCCB | 200 | 4 | Ext 270mm | ■ | ■ | ■ |
| SEA9BNDM250M | NSX MCCB | 250 | 4 | Ext 270mm | ■ | ■ | ■ |
| Single phasing kits | Rating (A) | No of poles | Standard | Meter ready | Split metered | IP55 | |
| SEA9125SPEV | 125 | 4 | Int | Int | Int | Int | Int |
| SEA9250SPEV | 250 | 4 | Int | Int | Int | ■ | |



| 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 | SEA9NB12 |
| SEA9BN16SXS | Slotted front cover + overall door | 4 | 68 | SEA9NB16 |
| SEA9BN24SXS | Slotted front cover + overall door | 5 | 85 | SEA9NB24 |
| 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 | SEA9NB12 |
| SEA9BN16SXP | Plain front cover + overall door | 4 | 68 | SEA9NB16 |
| SEA9BN24SXP | Plain front cover + overall door | 5 | 85 | SEA9NB24 |



| 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 bar 26 hole |
| SEA9LA | Pack of 3 padlock attachment MCB |
| 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 |
| SEA9BNBCE25 | Clean earth B boards 25 hole |
| SEA9BNWL | TP&N Labels |
| SEA9BNC | Neutral shroud (spare) |
| 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) |
| SEA9ISOKEY | Pack of 5 disconnecter keys |
| SEA9BGPEXN | Gland plate for Acti9 Isobar 4 extension |
| SEA9FCF | Pack of 10 cover fixing screws |



1

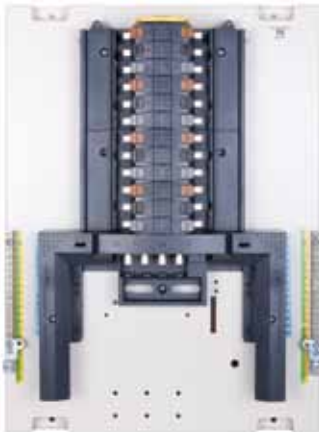
SEA9BN4PS



SEA9BN6PS



SEA9BN8E



SEA9BN4TN



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

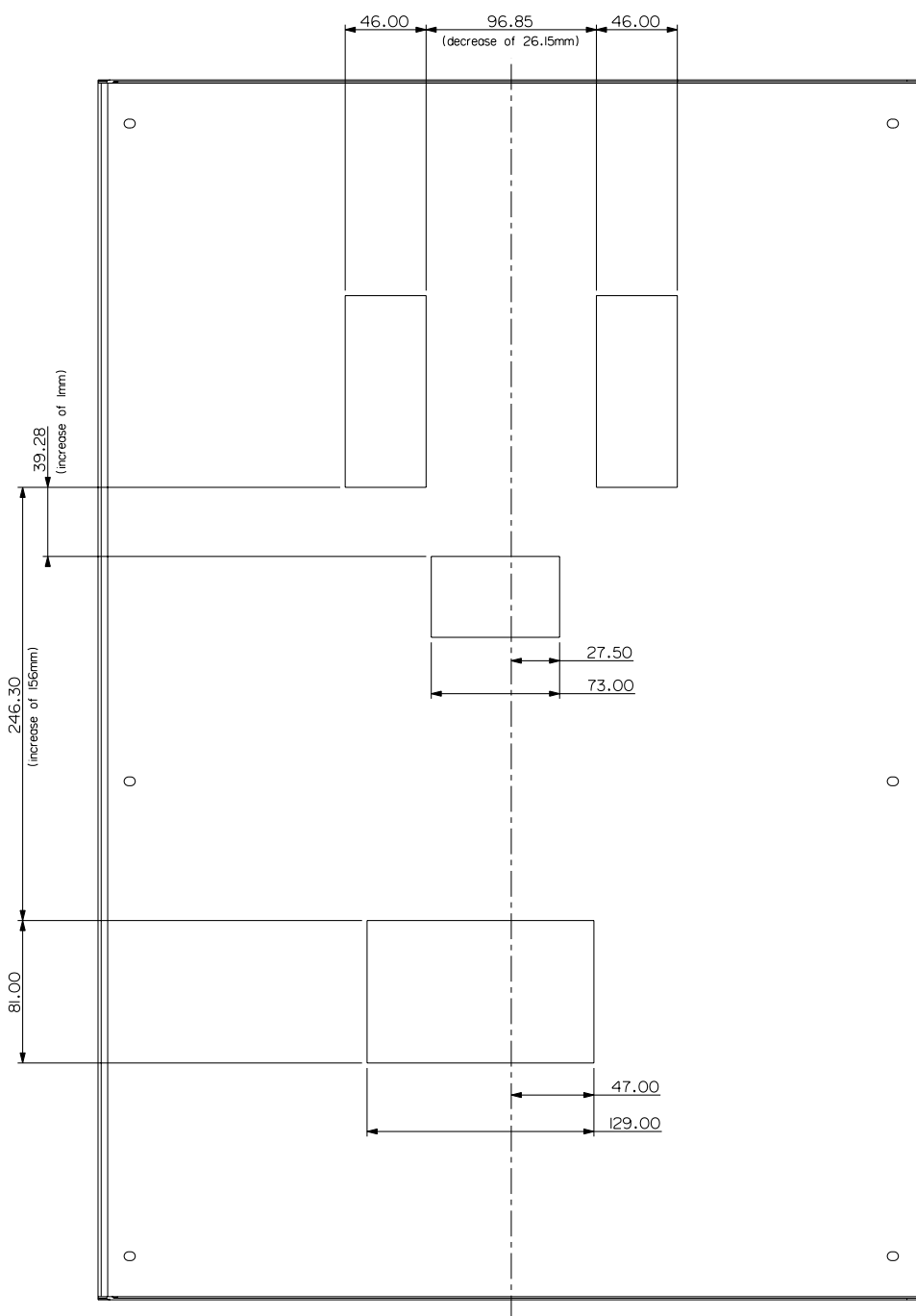


Pan assemblies - accessories

| Reference | Description |
|--------------|---|
| SEA9NPB250TB | 250 amp incoming terminal block for E/PEV |
| SEA9BINCKIT | MCCB/Interpact connection kit for use with SEA9NPB250TB |
| SEA9TB2253 | 225 amp terminal block for PS/TN |

1

Dimensions (mm)



iC60H circuit breakers (curve B, C, D) pages 2/2 to 2/4

iC60H and iC60H2 RCB0 10, 30 and 100 mA. pages 2/5 to 2/8

Vigi iC60 add-on residual current devices. pages 2/9 to 2/12

 A type pages 2/9 to 2/10

 SI type page 2/11

 AC type page 2/12

iID residual current circuit breakers pages 2/13 to 2/16

 A type page 2/13

 SI type page 2/14

 AC, A, SI type pages 2/15 to 2/16

Electrical auxiliaries for iC60, iID, iDPN Vigi, RCA and ARA. pages 2/17 to 2/23

***Accessories for iC60, iID, iDPN Vigi, Reflex iC60, RCA
ARA and iSW. pages 2/24 to 2/29***





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) |
|---|--------------|--------------|--------------|-------|-------|---------------------------------|
| Ph/Ph (2P, 3P, 4P) | Voltage (Ue) | | | | | |
| | 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 | 100 % of Icu |
| | 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 |

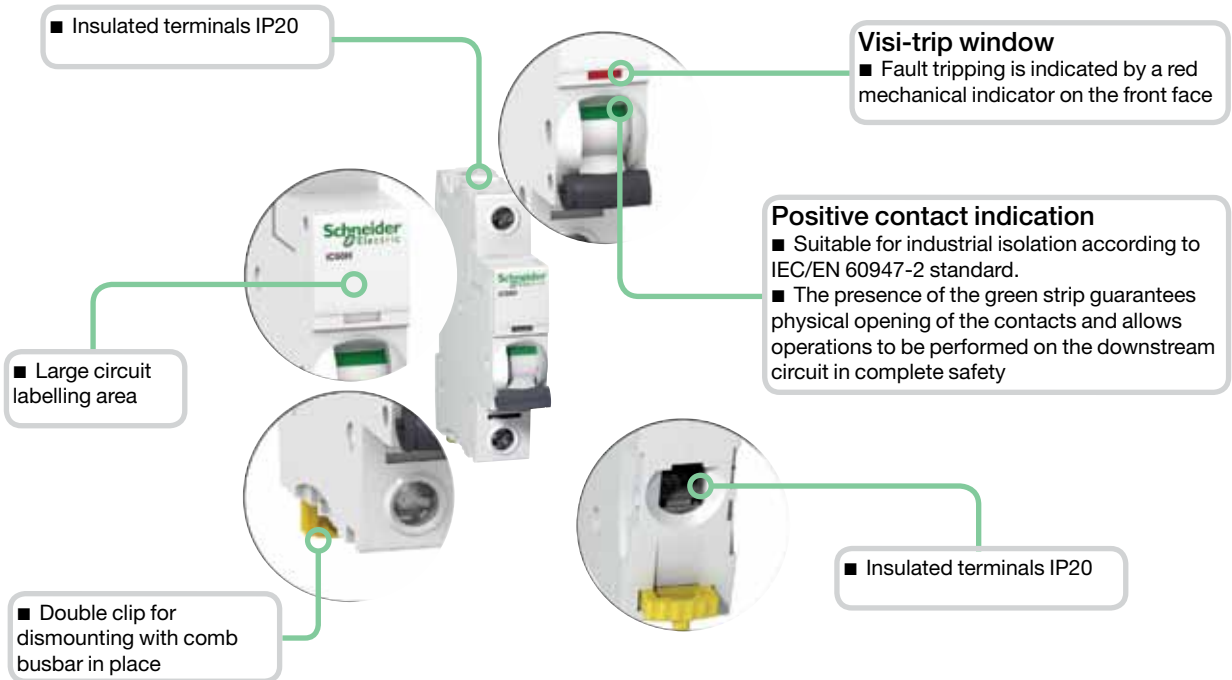
| Breaking capacity (Icn) according to IEC/EN 60898-1 | |
|---|-------------------|
| Ph/Ph | Voltage (Ue) |
| Ph/Ph | 400 V |
| Ph/N | 230 V |
| Rating (In) | 1 to 63 A 10000 A |

Direct current (DC)

| Breaking capacity (Icu) according to IEC/EN 60947-2 | | | | | | Service breaking capacity (Ics) |
|---|--------------|-------|----------------|----------------|----------------|---------------------------------|
| Between +/- | Voltage (Ue) | | | | | |
| | 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 | 20 kA | 10 kA |

Catalogue numbers

| iC60H circuit breaker | | | | | | |
|-----------------------|----------|----------|----------|----------|----------|----------|
| Type | 1P | | | 2P | | |
| | | | | | | |
| Current rating (In) | Curve | | | Curve | | |
| | 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 | | |

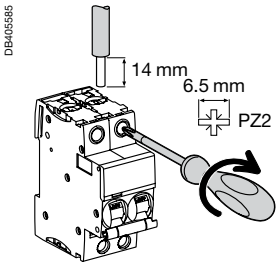


- Increased product service life thanks to:
 - overvoltage resistance by high level of industrial performances conception (pollution degree, rated impulse withstand voltage and insulation voltage),
 - high performance limitation (see limitation curves),
 - fast closing independent of the speed of actuation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

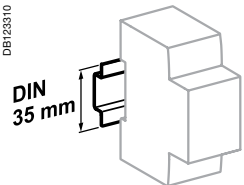
| E-45095 | 3P | | | E-45097 | 4P | | |
|---------|----------|----------|----------|----------|----------|----------|---------|
| | Curve B | Curve C | Curve D | | Curve B | Curve C | Curve D |
| | A9F53301 | A9F54301 | A9F55301 | A9F53401 | A9F54401 | A9F55401 | |
| | A9F53302 | A9F54302 | A9F55302 | 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

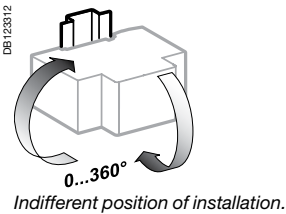
Connection



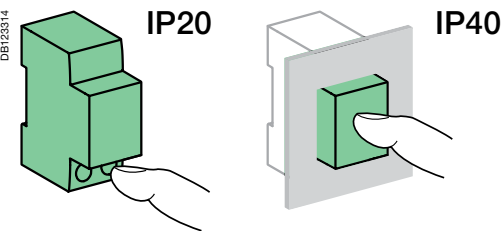
| Rating | Tightening torque | Without accessory | | With accessories | | |
|------------|-------------------|-------------------------|-------------------------|--------------------------------|---------------------------------------|------------------------|
| | | Rigid | Flexible or ferrule | 50 mm ² Al terminal | Screw-on connection for ring terminal | Multi-cables terminal |
| 1 to 25 A | 2 N.m | DB1229345 | DB1229346 | DB1229345 | DB118789 | DB118787 |
| 32 to 63 A | 3.5 N.m | 1 to 25 mm ² | 1 to 16 mm ² | - | Ø 5 mm | - |
| | | 1 to 35 mm ² | 1 to 25 mm ² | 50 mm ² | | 3 x 16 mm ² |
| | | | | | | 3 x 10 mm ² |



Clip on DIN rail 35 mm.



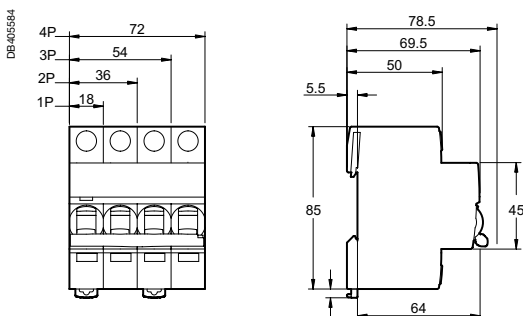
Indifferent position of installation.



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 50°C |
| Magnetic tripping | B curve 4 In ± 20 % |
| | C curve 8 In ± 20 % |
| | D curve 12 In ± 20 % |
| 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 |
| | Insulation classe II |
| 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 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 when the neutral needs to be isolated.

2

Alternating current (AC) 50/60 Hz

Breaking capacity (I_{cn}) according to IEC 61009-1

| Ph/N | Voltage (U _e) | |
|--------------------------|---------------------------|---------|
| | 110 V | 240 V |
| Rating (I _n) | 6 to 45 A | 10000 A |

Accessory

Padlocking device

- A9A27049 for pack of 10. 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 _{Δn}) | 10 mA | 30 mA | 100 mA | |
| <small>DB405038</small> | 240 | Rating (I _n) 6 A | - | A9D31806 | - | 2 |
| | | 10 A | - | A9D31810 | - | |
| | | 16 A | - | A9D31816 | - | |
| | | 20 A | - | A9D31820 | - | |
| | | 25 A | - | A9D31825 | - | |
| | | 32 A | - | A9D31832 | - | |
| | | 40 A | - | A9D31840 | - | |
| <small>DB405038</small> | 110 | Rating (I _n) 10 A | - | A9D19810 | - | 2 |
| | | 16 A | - | A9D19816 | - | |
| | | 20 A | - | A9D19820 | - | |
| | | 25 A | - | A9D19825 | - | |
| | | 32 A | - | A9D19832 | - | |
| | 240 | Rating (I _n) 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 |



IEC 61009-1,
IEC 61009-2-2,
AS/NZS 61009.1

- The 2-pole iC60H2 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 (30 mA sensitivities),
 - protection of equipment against fires set by leakage currents (300 mA sensitivity).
 - iC60H2 RCBO switches neutral, together with phase. It is therefore suitable for all circuits, whatever the earthing system (except for TN-C).

Alternating current (AC) 50/60 Hz

Breaking capacity (Icn) according to IEC 61009-1

| Ph/N, Ph/Ph | Voltage (Ue) | |
|-------------|--------------|---------|
| | 110 V | 240 V |
| Rating (In) | 10 to 32 A | 10000 A |


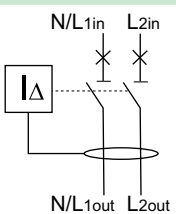
Accessory

Padlocking device

- A9A27049 for pack of 10. Used to lock the toggle in the "open" or "closed" position by 4 mm diameter padlock (not supplied).

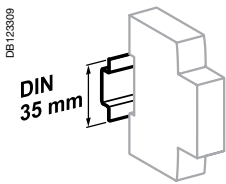
Catalogue numbers

iC60H2 RCBO 10000

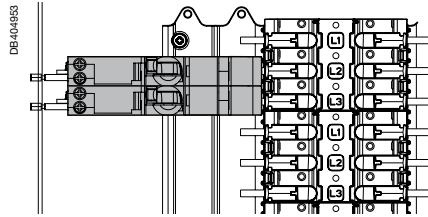
| 2P | | A  | Width in 9-mm modules | |
|---|-----|--|-----------------------|----------|
|  | 110 | Rating (In) | 4 | |
| | | 10 A | | A9D19210 |
| | | 16 A | | A9D19216 |
| | | 20 A | | A9D19220 |
| | | 25 A | | A9D19225 |
| | | 32 A | | A9D19232 |
| | 240 | Rating (In) | | |
| | | 10 A | | A9D11210 |
| | | 16 A | | A9D11216 |
| | | 20 A | | A9D11220 |
| | | 25 A | | A9D11225 |
| | | 32 A | | A9D11232 |
| Operating frequency | | 50...60 Hz | | |

Technical data

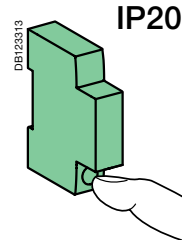
| Main characteristics | | iC60H RCBO | iC60H2 RCBO |
|---|-----------------------------|---|-------------|
| Insulation voltage (Ui) | | 400 V AC | |
| Rated impulse withstand voltage (Uimp) | | 4 kV | |
| Rated residual operating current (IΔn) | | 10, 30, 100 mA | 30 mA |
| Thermal tripping | Reference temperature | 50°C | |
| Limitation class | | 3 | |
| Surge current withstand (8/20 μs) without tripping | | 250 A | |
| Rated nominal breaking capacity (Icn) | | 10,000 A | 10,000 A |
| Phase/earth rated residual breaking and making capacity (IΔm) | | 7,500 A | 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 +60°C | |
| Storage temperature | | -40°C to +85°C | |
| Tropicalization | | Treatment 2 (relative humidity: 95 % at 55°C) | |



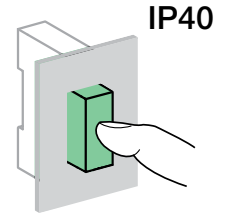
Clip on DIN rail 35 mm.



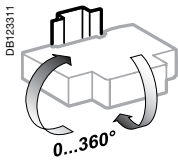
Installation on Isobar.



IP20



IP40

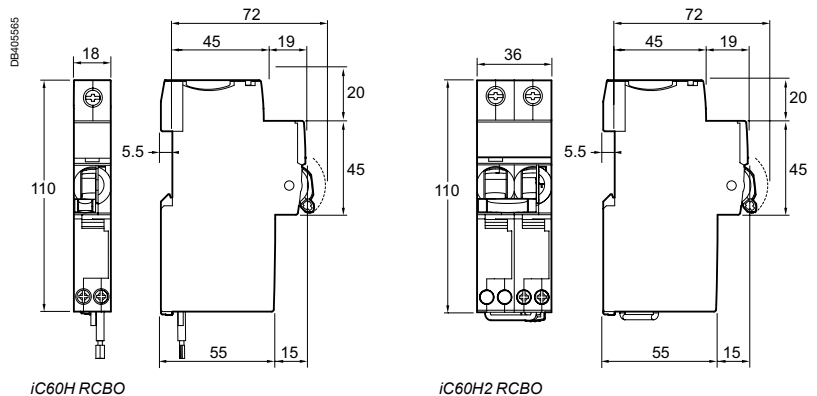


Indifferent position of installation.

Weight (g)

| iC60 RCBO | |
|-------------|-----|
| iC60H RCBO | 205 |
| iC60H2 RCBO | 332 |

Dimensions (mm)



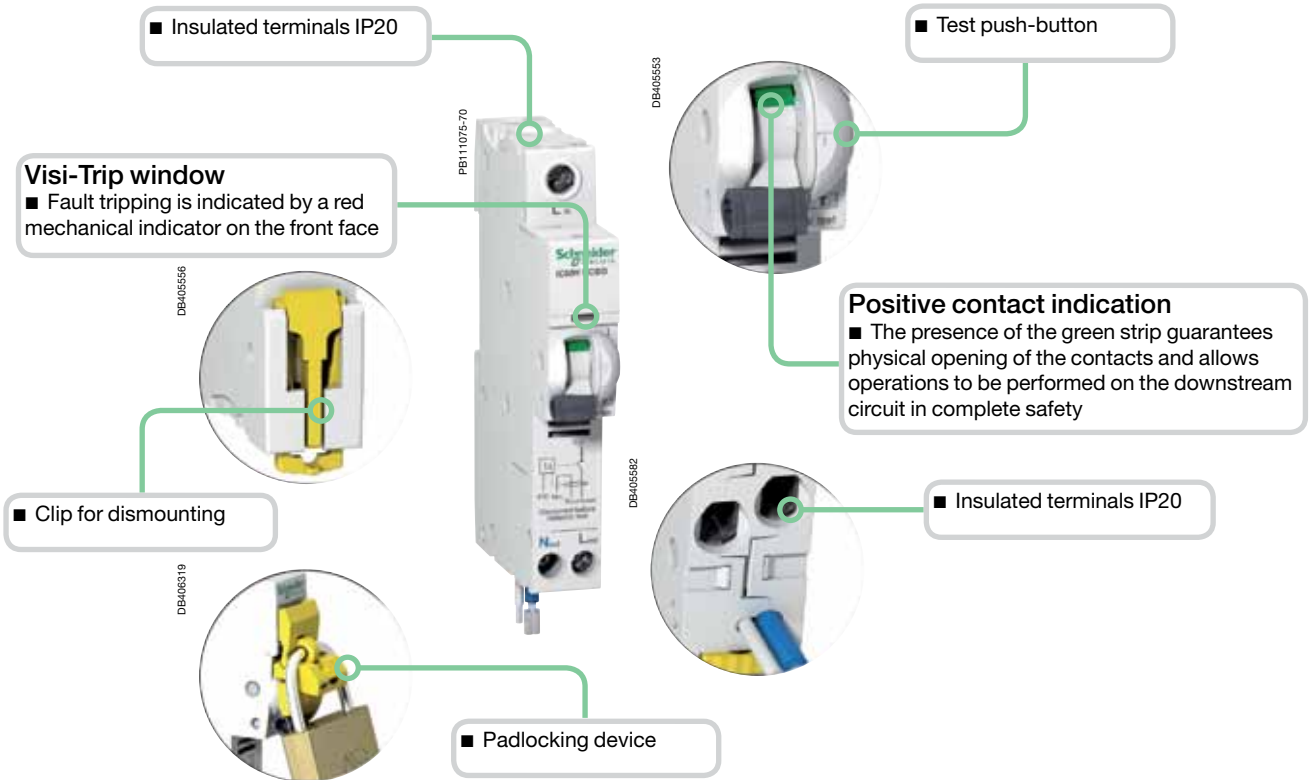
Protection

Earth leakage protection

iC60H RCBO

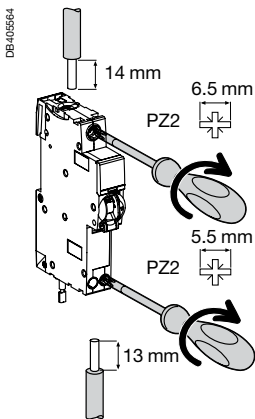
10, 30 and 100mA (cont.)

2



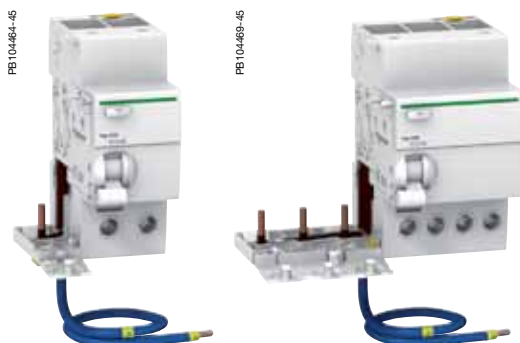
- Increased product service life thanks to fast closing independent of the speed of actuation of the toggle.
- Remote indication, open/closed/tripped, by optional auxiliary contacts.

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 | | | 2 N.m | 1 to 16 mm ² |

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 (≥ 100 mA),
 - protection of installations against the risk of fire (300 mA),
 - use with 1/2 pole or 3/4 pole iC60H.

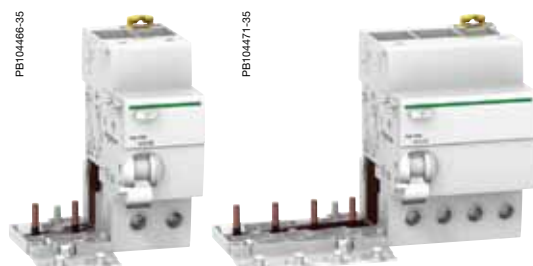
2

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 | | |
| DB122462 | Rating | 25 A | | | 3 | |
| | | 63 A | A9V02663 A9V01663* | A9V03663 | A9V06663 | 4 |
| DB122464 | Rating | 63 A | A9V02763 | - | A9V06763 | 6 |
| | | | | | | |
| Voltage rating (Ue) | | 230 - 240 V, 400 - 415 V Except * 110 V | | | | |
| Operating frequency | | 50/60 Hz | | | | |




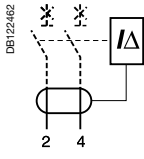


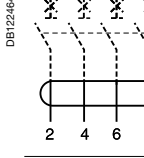
IEC/EN 61009-1

2



- 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 (≥ 100 mA),
 - protection of installations against the risk of fire (300 mA or 500 mA)),
 - use with 2 pole or 4 pole iC60H only.

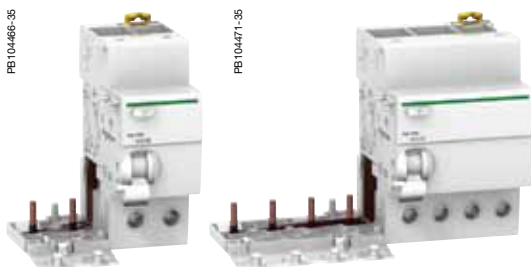
Catalogue numbers

| 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  | | |
|  | Rating | 25 A | A9V51225 | A9V22225 | A9V54225 | A9V26225 | - | - | 3 |
| | | 63 A | A9V51263 | A9V22263 | A9V54263 | A9V26263 | A9V25263 | A9V29263 | 4 |
| 4P | Sensitivity | 30 mA | 100 mA | 300 mA | 500 mA | 300 mA  | 1000 mA  | | |
|  | 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 | | | | | | | |

Protection Earth leakage protection

Vigi iC60 add-on residual current devices (SI type)

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 (≥ 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.

2

Catalogue numbers

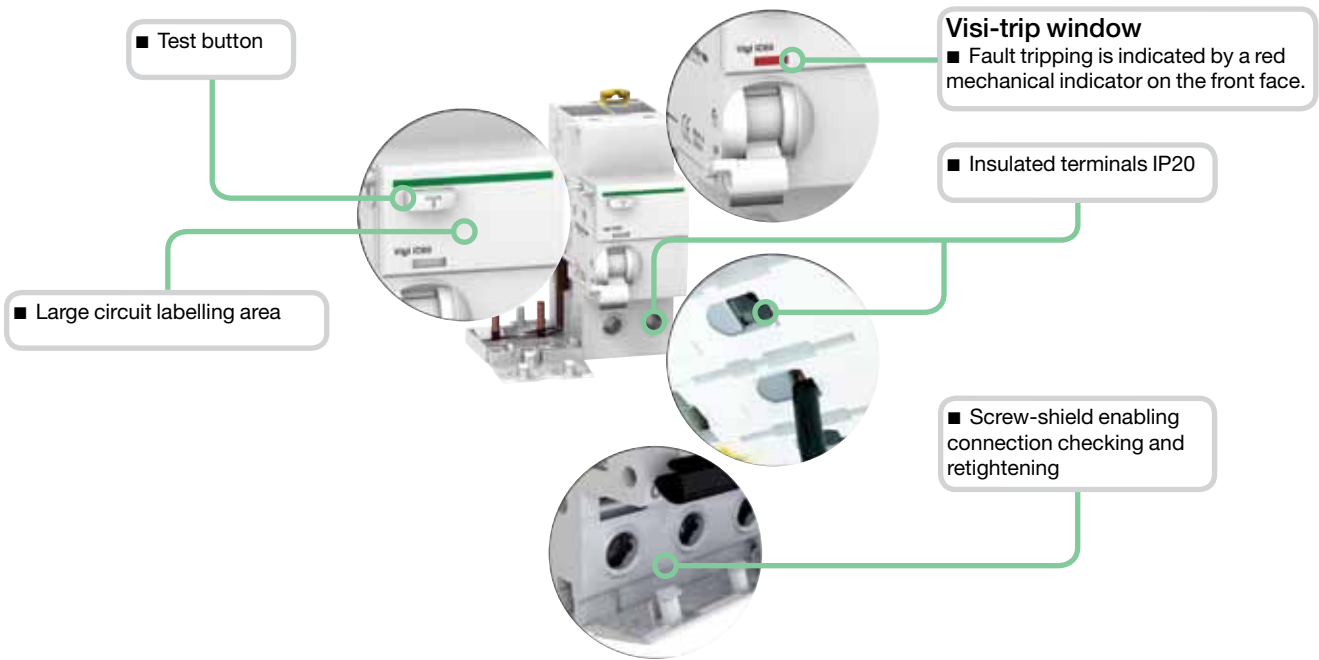
| Vigi iC60 add-on residual current devices | | | | | | |
|---|---------------------|--------------------------|-----------------|-----------------|-----------------|-----------------------|
| Type | SI | | | | | Width in 9 mm modules |
| Product | Vigi iC60 | | | | | |
| Auxiliaries | Without auxiliaries | | | | | |
| 2P | Sensitivity | 10 mA | 30 mA | 300 mA | 1000 mA | |
| | Rating | 25 A | A9V30225 | A9V61225 | - | 3 |
| | | 40 A | - | A9V61240 | - | 4 |
| | | 63 A | - | A9V61263 | A9V65263 | A9V39263 |
| 4P | Sensitivity | 10 mA | 30 mA | 300 mA | 1000 mA | |
| | Rating | 25 A | - | A9V61425 | - | 6 |
| | | 40 A | - | A9V61440 | - | 7 |
| | | 63 A | - | A9V61463 | A9V65463 | A9V39463 |
| Voltage rating (Ue) | | 230 - 240 V, 400 - 415 V | | | | |
| Operating frequency | | 50/60 Hz | | | | |

Protection Earth leakage protection

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

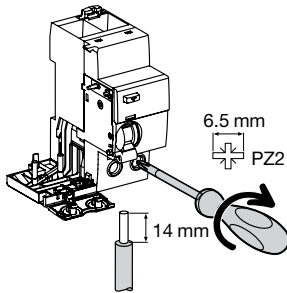
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
PB104466-40

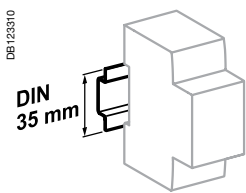


Connection

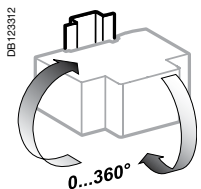
DB122948



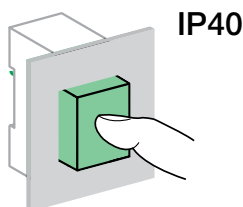
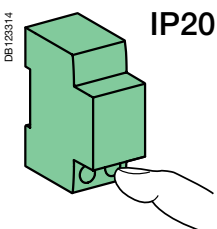
| Type | Rating | Tightening torque | Copper cables | |
|-----------|------------|-------------------|--|--|
| | | | Rigid | Flexible or ferrule |
| Vigi iC60 | 25 A | 2 N.m |  1 to 25 mm ² |  1 to 16 mm ² |
| | 40 to 63 A | 3.5 N.m | | |





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 A |
| | A type (selective ) | 3 kA |
| 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 |

PB10472-40



PB10473-40



IEC/EN 61008-1

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

Catalogue numbers

| iID residual current circuit breakers | | | | | | | | | |
|---------------------------------------|-------------|-------------|----------|----------|----------|----------|----------|----------------------|----------|
| Type | A | | | | | | | Width in 9 mm module | |
| Product | iID | | | | | | | | |
| Auxiliaries | | | | | | | | | |
| 2P | Sensitivity | 10 mA | 30 mA | 100 mA | 300 mA | 500 mA | 300 mA | | |
| | 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 |
| 4P | Sensitivity | 10 mA | 30 mA | 100 mA | 300 mA | 500 mA | 300 mA | | |
| | 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 | | | | | | | | |

| iID residual current circuit breakers for 110/230 V | | | |
|---|-------------|-------|----------------------|
| Type | A | | Width in 9 mm module |
| Product | iID | | |
| Auxiliaries | | | |
| 2P | Sensitivity | 30 mA | |
| | Rating | 63 A | A9R08263 |
| | | | |
| 4P | Sensitivity | 30 mA | |
| | Rating | 63 A | A9R08463 |
| | | | |
| Voltage rating (Ue) | 2P | 110 V | |
| | 4P | 230 V | |
| Operating frequency | 50/60 Hz | | |




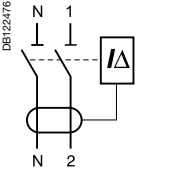


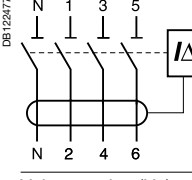


IEC/EN 61008-1

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

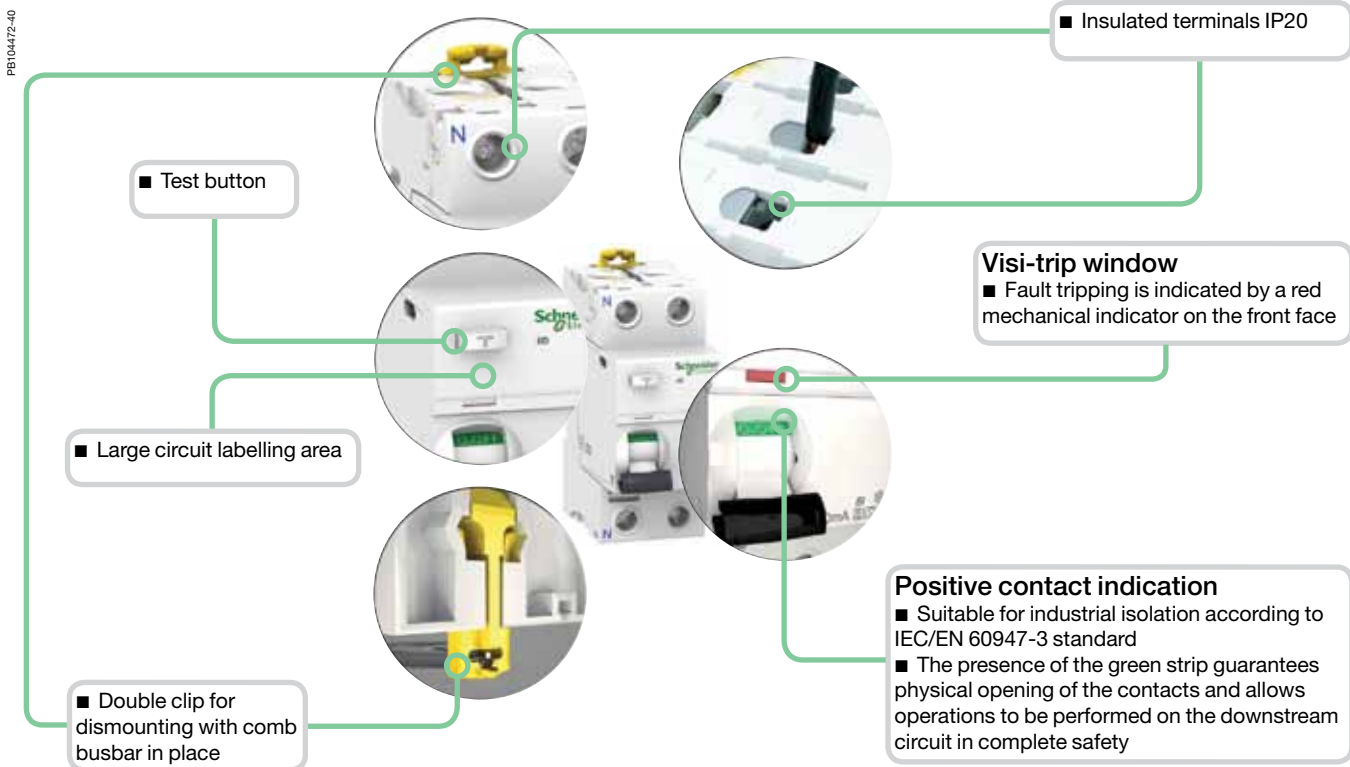
The **SI** type provides increased immunity from electrical interference and polluted or corrosive environments.

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 | | |
| 4P | Sensitivity | 10 mA | 30 mA | 300 mA | 300 mA  | 500 mA  | | |
|  | Rating | 25 A | - | A9R61425 | - | - | 8 | |
| | | 40 A | - | A9R61440 | - | A9R35440 | | A9R37440 |
| | | 63 A | - | A9R61463 | A9R34463 | A9R35463 | | A9R37463 |
| | | 80 A | - | A9R31480 | - | A9R35480 | | A9R37480 |
| | | 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, SI types)



SI type

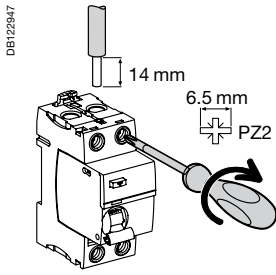
The *SI* type provides increased immunity from electrical interference and polluted or corrosive environments.

Protection Earth leakage protection

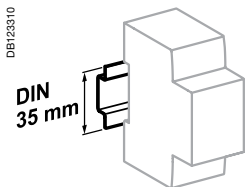
iID residual current circuit breakers (AC, A, S/I types) (cont.)

2

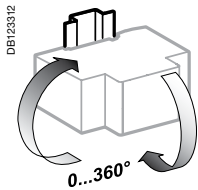
Connection



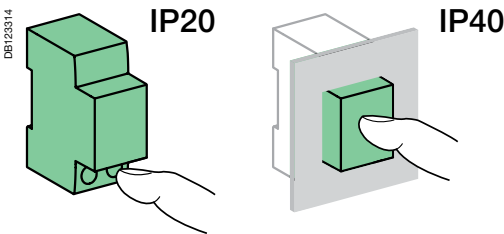
| Type | Tightening torque | Without accessory | | With accessories* | | |
|------|-------------------|-------------------------|--------------------------------------|-----------------------------------|---------------------------------------|---|
| | | Copper cables Rigid | Copper cables Flexible or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



Clip on DIN rail 35 mm.



Indifferent position of installation.



Technical data

| Main characteristics | | | |
|---|---|------------------------------|---------------|
| Insulation voltage (U _i) | 500 V | | |
| Pollution degree | 3 | | |
| Rated impulse withstand voltage (U _{imp}) | 6 kV | | |
| According to IEC/EN 61008-1 | | | |
| Making and breaking capacity (I _m /I _{Δm}) | 1500 A | | |
| Surge current withstand (8/20 μs) without tripping | AC and A types (no selective S) | 250 kA | |
| | AC, A types (selective S) | 3 kA | |
| | S/I type | 3 kA | |
| Conditional rated short circuit current (I _{nc} /I _{Δc}) | 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 | 15,000 cycles |
| | | 80 to 100 A | 10,000 cycles |
| | Mechanical | | 20,000 cycles |
| Operating temperature | AC type | -5°C to +60°C | |
| | A and S/I 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 Acti 9 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

DB04939



2

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

PB104474-25



PB104475-25














DB123583






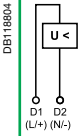
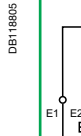


| | |
|----------------------------------|---|
| 1 (iOF/SD+OF or iOF+SD24 or iSD) | 1 iOF/SD+OF |
| 1 iOF | 1 (iSD or iOF or iOF/SD+OF) |
| None | 1 iOF+SD24 |
| None | None |
| 1 iSD | 1 iSD |
| None | 1 (iSD or iOF or iOF/SD+OF or iOF+SD24) |
| 1 iOF | 1 (iSD or iOF or iOF/SD+OF) |
| None | 1 (iSD 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 disconnecter has been tripped open.




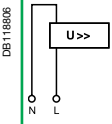
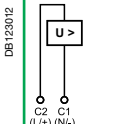
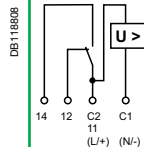
| Tripping auxiliaries | Remote control | Device | Vigi iC60 |
|--|--|---|--|
|  PB104496-25 | ARA automatic recloser or RCA remote control | iC60 circuit breaker or iID residual current circuit breaker | Vigi iC60 add-on residual current device |
| 1 (iMN, iMNs, iMNx or iMX, iMX+OF or iMSU) max. | - |  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. |  PB108256-25 <i>ARA</i> |  PB104437-25 <i>iC60</i> |  PB104466-25 <i>Vigi iC60</i> |
| None | - |  PB104472-25 <i>iID</i> | - |
| 1 (iMX or iMN or iMSU) max. |  PB106253-25 <i>RCA</i> |  PB104437-25 <i>iC60</i> |  PB104466-25 <i>Vigi iC60</i> |
| None | - | - | - |

| | | Tripping | | | | | | |
|---|------|---|---|--|---|---|---------------|-----------|
| Auxiliaries | | iMN | | iMNs | | iMNx | | |
| Type | | Undervoltage release | | | | | | |
| | | Instantaneous | | Delayed | | Independent of the supply voltage | | |
| | |  |  |  |  |  | | |
| Function | | <ul style="list-style-type: none"> Trips the device with which it is combined when its input voltage decreases (between 70 % and 35 % U_n). Prevents device closing again until its input voltage is restored | | <ul style="list-style-type: none"> Not tripping on transient voltage dip (up to 0.2 s) | | <ul style="list-style-type: none"> Tripping of the associated device by opening of the control circuit (e.g. push-button, dry contact) A drop in the supply voltage does not trip the associated device A locking push-button control allows the circuit protected (e.g. machine control) to be placed in safety configuration | | |
| Wiring diagrams | |  | | | |  | | |
| Use | | <ul style="list-style-type: none"> Emergency stoppage by normally closed push button Ensures the safety of power supply circuits for several machines by preventing "uncontrolled" restarting | | <ul style="list-style-type: none"> Emergency stoppage with fail-safe principle Insensitive to control circuit voltage variation to increase service continuity Important: Before any servicing operation switch off the mains power supply (voltage presence at terminals E1/E2) | | | | |
| Catalogue numbers | | A9A26960 | A9A26961 | A9A26959 | A9A26963 | A9A27108 | A9A26969 | A9A26971 |
| iC60, iID, iDPN Vigi, RCA and ARA | | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Technical specifications | | | | | | | | |
| Rated voltage (U _e) | V AC | 220...240 | 48 | 115 | 220...240 | 24 | 220...240 | 380...415 |
| | V DC | – | 48 | – | – | 24 | – | – |
| 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





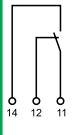
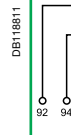

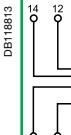
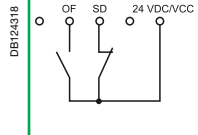
Electrical auxiliaries for
iC60, iID, iDPN Vigi, RCA and ARA
(cont.)

| iMSU | | | | | iMX | | | iMX+OF | | | | |
|--|--|--|--|--|---|--|--|--|----------|--|----------|----------|
| Overvoltage release | | | | | Shunt release | | | With Open/Close auxiliary contact | | | | |
|  | | | | |  | | |  | | | | |
| <ul style="list-style-type: none"> 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 | | | | | <ul style="list-style-type: none"> Trips the breaker when powered | | | <ul style="list-style-type: none"> Includes an open/close contact (OF) to indicate the "open" or "closed" position of the breaker | | | | |
|  | | | | |  | | |  | | | | |
| <ul style="list-style-type: none"> Protection of equipment against overvoltages on the electrical network (neutral conductor break) Voltage monitoring between phase and neutral conductors | | | | | <ul style="list-style-type: none"> Emergency stoppage by normally open push button | | | <ul style="list-style-type: none"> Emergency stoppage by normally open push button Remote indication of the position of the associated breaker | | | | |
| 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 | | |

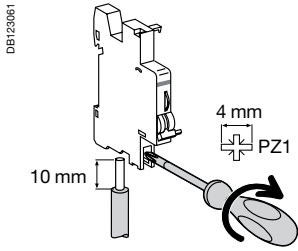
Protection
Circuit protection
Earth leakage protection





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

2

| | | 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"> Changeover contact indicates "open" or "closed" position of the breaker | <ul style="list-style-type: none"> Changeover contact indicates position of the breaker; upon: <ul style="list-style-type: none"> electrical fault action on tripping auxiliary Same indication as VISI-TRIP | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> 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"> electrical fault actuation of the tripping auxiliary "Open" or "Closed" position of the associated device |
| Wiring diagrams | |  |  |   |  |
| Use | | <ul style="list-style-type: none"> Remote indication of the position of the associated breaker | <ul style="list-style-type: none"> Remote indication of tripping upon a fault of the associated breaker | <ul style="list-style-type: none"> Remote indication of position and/or tripping upon a fault of the associated breaker | <ul style="list-style-type: none"> Remote indication of position and tripping upon a fault of the associated breaker |
| Catalogue numbers | | A9A26924 | A9A26927 | A9A26929 | A9A26897 |
| iC60, iID, iDPN Vigi, RCA and ARA | | ■ | ■ | ■ | ■ |
| 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 | - |
| Red mechanical indicator | | - | 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 | | | 2 mA mini, 50 mA maxi |
| | 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 | 1 NO/NC | 1 NO/NC + 1 NO/NC | 1 NO/NC |
| Operating temperature | °C | -35...+70 | -35...+70 | -35...+70 | -25...+70 |
| Storage temperature | °C | -40...+85 | -40...+85 | -40...+85 | -40...+85 |

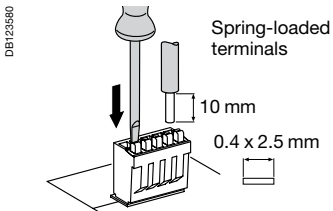
Connection





| Type | Tightening torque | Copper cables | | Multi-cables terminal | |
|------------------------|-------------------|---|---|---|---|
| | | Rigid | Flexible | Rigid cables | Cables with ferrule |
| | |  |  |  |  |
| Indication auxiliaries | 1 N.m | 1 to 4 mm ² | 0.5 to 2.5 mm ² | 2 x 2.5 mm ² | 2 x 1.5 mm ² |
| Tripping auxiliaries | 1 N.m | 1 to 6 mm ² | 0.5 to 4 mm ² | 2 x 2.5 mm ² | 2 x 2.5 mm ² |

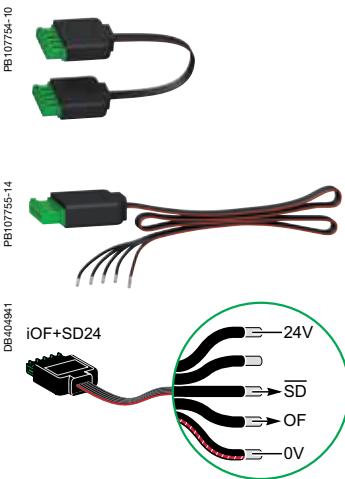


Ti24 connector connection



| Type | Catalogue numbers | Copper cables | |
|----------------|-------------------|---|---|
| | | Rigid | Flexible |
| | |  |  |
| Ti24 interface | A9XC2412 | 1 x 0.5 to 1.5 mm ² | 1 x 0.5 to 1.5 mm ² |

Ti24 prefabricated cables connection



| Type | Catalogue numbers | Length |
|--|-------------------|--------|
| Connection for Acti 9 Smartlink | | |
| 6 short prefabricated | A9XCAS06 | 100 mm |
| 6 medium-sized prefabricated | A9XCAM06 | 160 mm |
| 6 long prefabricated | A9XCAL06 | 870 mm |
| Connection for PLC type terminals | | |
| 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 | | | |
| | |  | | |  | | | |
| Function | | <p>Front or side-mounted control</p> <ul style="list-style-type: none"> ■ Degree of protection: IP55 rotary handle ■ Installation: <ul style="list-style-type: none"> □ the control mechanism is mounted on the device □ the rotary handle is fixed to the front or side of the enclosure ■ Front-mounted (on door or faceplate) <ul style="list-style-type: none"> ■ Prevents the door from opening when the device is in the ON position (can be deactivated) ■ Can be padlocked when the device is in the "open" position (can be padlocked with the device in the "closed" position subject to adaptation) ■ Can be locked by padlock of (dia. 5 to 8 mm), not supplied with the device ■ Pushbutton: iID test available in the front face of the rotary handle | | | <ul style="list-style-type: none"> ■ The Laser Square tool brings the accuracy to align the circuit breaker and the rotary handle | | <p>Allows a breaker to be removed or replaced quickly, without handling the connections</p> <ul style="list-style-type: none"> ■ Degree of protection: IP20 ■ Consists of: <ul style="list-style-type: none"> □ a base to be fastened on a rail (or panel) □ 2 "blades" to be fastened in the device's terminals ■ Connection: tunnel terminals for cable up to 35 mm² rigid, 25 mm² flexible, ■ Installation: <ul style="list-style-type: none"> □ in universal enclosure □ on horizontal rail ■ Height: 178 mm ■ Not compatible with Vigi iC60 and auxiliaries ■ Can be locked by padlock of (dia. 6 mm), not supplied with the device | |
| 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

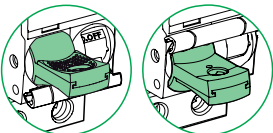
Accessories for iC60, iID, iDPN Vigi,
 Reflex iC60, RCA, ARA and iSW (cont.)

Padlocking device

PE104492-15



DB12399B



Used to padlock breaker in open or closed position

- Padlock diameter: 3 to 6 mm
- Sealable (max. diameter: 1.2 mm)
- Locking in ON position does not prevent tripping of the breaker in the event of faults
- Suitable for IEC/EN 60947-2 compliant disconnection

| MCB/RCCB | MCB in ISOBAR | RCBO in ISOBAR |
|----------|---------------|----------------|
| A9A26970 | SEA9LA | A9A27049 |
| 10 | 3 | 10 |

| |
|---|
| ■ |
| ■ |
| ■ |
| ■ |
| ■ |
| ■ |







Protection

Circuit protection

Earth leakage protection

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

2

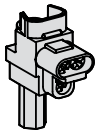
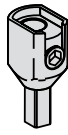




| Security | | | | | | |
|-------------------------------------|--|---|--|---|---|---|
| Accessories | Screw shield | | Terminal shield | | Inter-pole barrier | Spacer |
| |  |  |  |  |  |  |
| Function | Prevents any contact with the connecting screws <ul style="list-style-type: none"> Upgrades degree of protection to IP20D Sealable, max. diameter 1.2 mm | | Prevents any contact with the terminals <ul style="list-style-type: none"> Upgrades degree of protection to IP20D Sealable, max. diameter 1.2 mm Set of two, for upstream and downstream terminals For 3 poles: A9A26975 + A9A26976 For 4 poles: 2 X A9A26976 | | Enhances insulation between connections: cables, terminals, lugs, etc | <ul style="list-style-type: none"> Used to: <ul style="list-style-type: none"> complete rows separate devices. Width: 1 x 9 mm module Allows cable routing from one row to another, (above and below), up to 6 mm² |
| 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 |
| Suitability | | | | | | |
| iC60 | - | ■ | ■ | ■ | ■ | ■ |
| iSW | - | - | ■ | ■ | ■ | ■ |
| Vigi iC60 | ■ | - | - | - | - | ■ |
| iID | - | ■ | - | ■ | ■ | ■ |
| Reflex iC60 or RCA+iC60 or ARA+iC60 | - | ■ | ■ | ■ | ■ | ■ |
| ARA+iID | - | ■ | - | ■ | ■ | ■ |

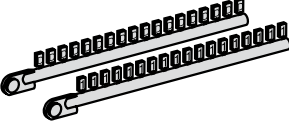
Protection

Circuit protection

Earth leakage protection

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

| | | Connection | | |
|-----------------------|---|---|---|----------|
| Accessories | Multi-cable terminal | 50 mm ² terminal Al | Screw-on connection for ring terminal | |
| |  |  |  | |
| Function | | | | |
| | For 3 copper cables: ■ Rigid up to 16 mm ² ■ Flexible up to 10 mm ² | For aluminium cables from 16 to 50 mm ² | For lug tipped cables, front or rear mounting | |
| |  |  |  | ∅ 5 mm |
| 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 | | | | | |
| |  | | | | | |
| Used for connection identification | | | | | | |
| 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

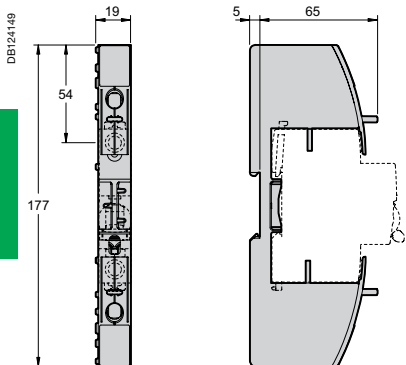
Circuit protection

Earth leakage protection

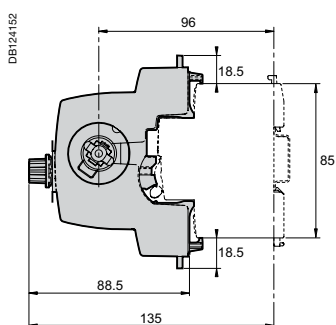
Accessories for iC60, iID, iDPN Vigi, Reflex iC60, RCA, ARA, iSW (cont.)

Dimensions (mm)

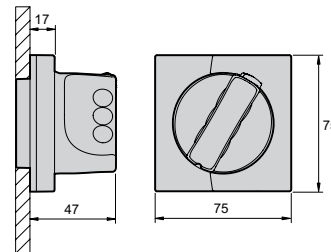
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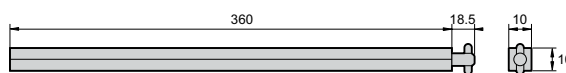
Plug-in base



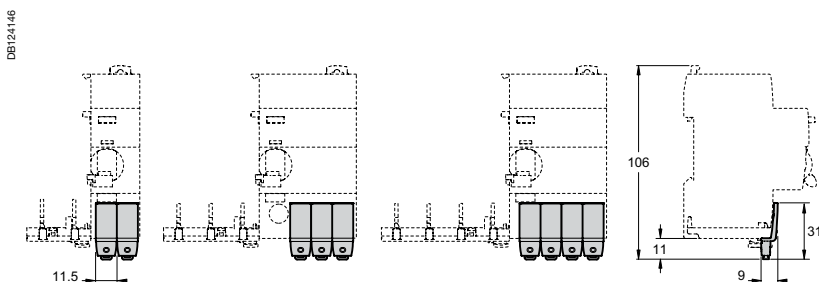
Adapter mechanism



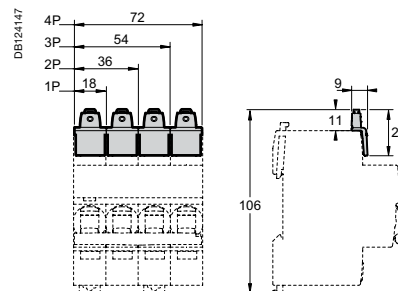
Handle



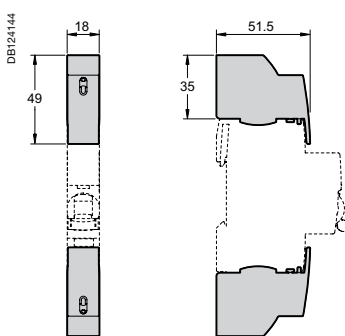
Rotary handle



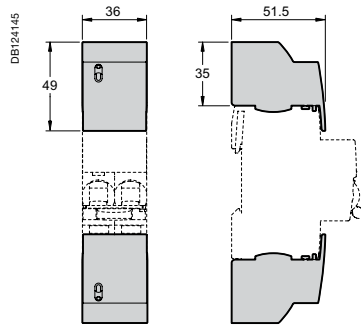
Screw shield 1P (A9A26982)



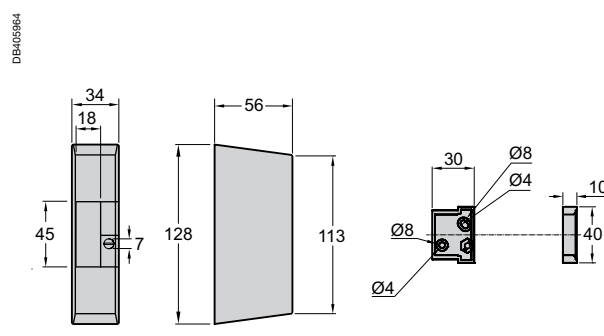
Screw shield 4P (A9A26981)



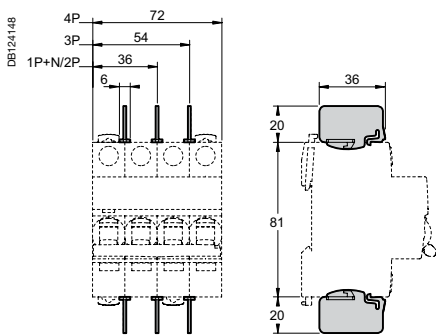
Terminal shield 1P



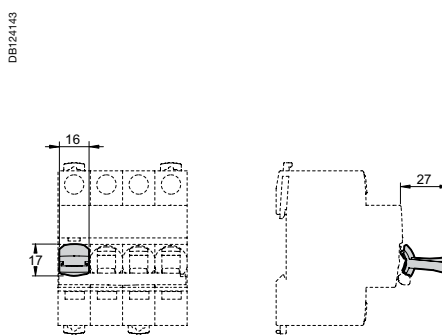
Terminal shield 2P



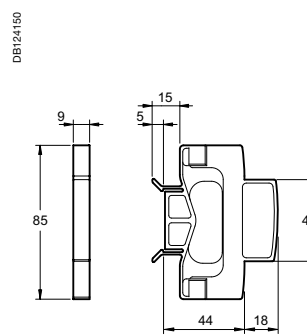
Wall mounted



Inter-pole barrier



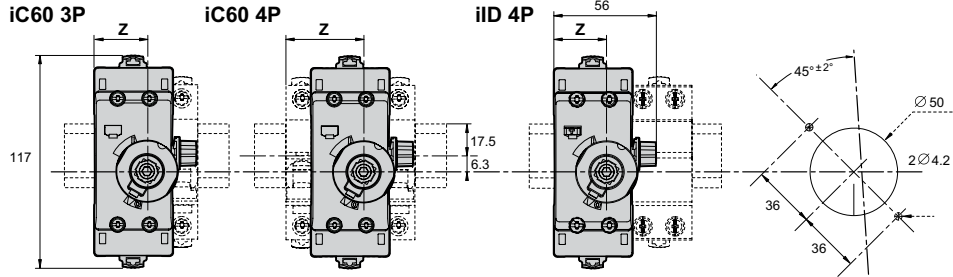
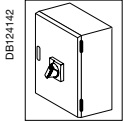
Padlocking device



Spacer

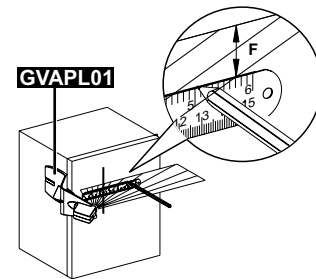
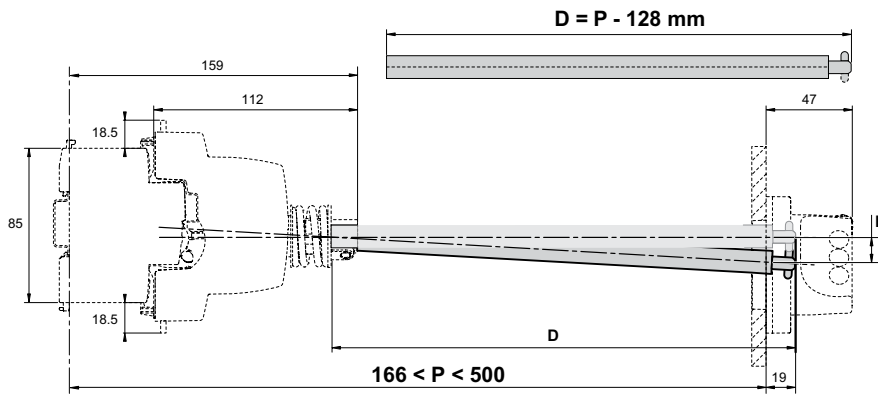
Rotary handle installation

Dimensions (mm)



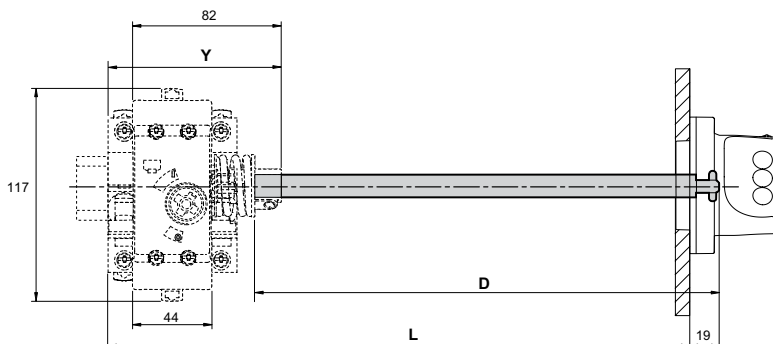
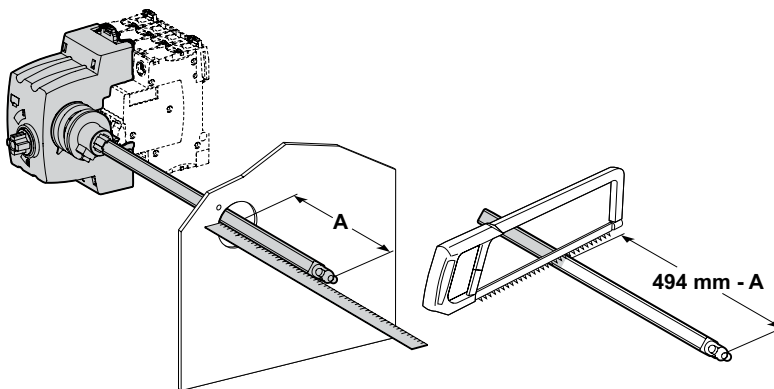
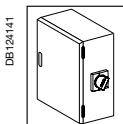
| iC60 | Z (mm) |
|-----------|--------|
| 2P | 25.3 |
| 2P + Vigi | 25.3 |
| 3P | 25.3 |
| 3P + Vigi | 43 |
| 4P | 43 |
| 4P + Vigi | 43 |

| 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

iDPN circuit breakers **pages 3/2 to 3/4**

Residual current devices iDPN Vigi **pages 3/5 to 3/7**

iC120H circuit breakers (curves B, C, D) **pages 3/8 to 3/10**

Vigi iC120 add-on residual current devices **pages 3/11 to 3/15**

- Type AC page 3/11
- Type A page 3/12
- Type SI page 3/13
- Technical pages 3/14 to 3/15

Accessories for iC120, DPN, DPN Vigi, C60H-DC, SW60-DC, C60NA-DC, C60PV-DC, iSW devices **pages 3/16 to 3/19**

- Installation page 3/16
- Safety page 3/17
- Connection page 3/18
- Identification page 3/19

Electrical auxiliaries for iC120, DPN, DPN Vigi, ID, C60H-DC, SW60-DC, C60PV-DC, C60NA-DC devices **pages 3/20 to 3/23**

- Tripping pages 3/20 to 3/21
- Identification page 3/22
- Connection page 3/23

P25M **pages 3/24 to 3/27**

- 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

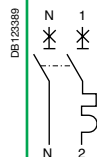
The circuit breakers are designed for protection against short-circuit and overload currents, for the control and disconnection of final distribution circuits in service sector, agricultural and industrial applications, in TT earthing system or with multiple earthed neutral (TN-S) requiring neutral cutoff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

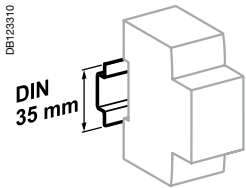
3



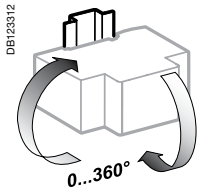
Catalogue numbers

| iDPN N circuit breakers | | |
|-------------------------|-------------------------------|----------|
| Type | 6000 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 | |

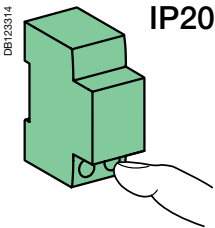




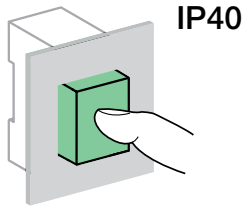
Clip on DIN rail 35 mm.



Indifferent position of installation.

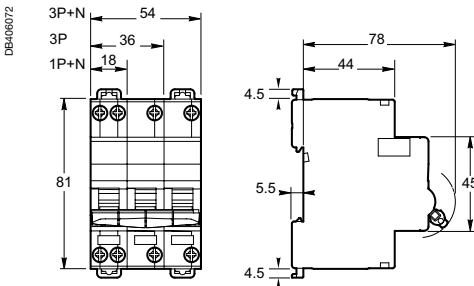


IP20



IP40

Dimensions (mm)



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 In |
| | C curve | 5 to 10 In |
| | D curve | 10 to 14 In |

According to IEC/EN 60898-1

| | |
|--|------------|
| Limitation class | 3 |
| Rated breaking capacity (Icn) | 6000 A |
| Service breaking capacity (Ics) | 100 % Icn |
| Rated breaking and making capacity on a single pole (Icn1) | Icn1 = Icn |

According to IEC 60947-2

| | |
|--|----------|
| Rated impulse withstand voltage (Uimp) | 4 kV |
| Breaking capacity (Icu) | 10 kA |
| Service breaking capacity (Ics) | 75 % Icu |
| Pollution degree | 3 |

Additional characteristics

| | | | |
|--|---|--------------|--------------|
| Degree of protection (IEC 60529) | Device only | IP20 | |
| | Device in modular enclosure | IP40 | |
| 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 | | |

Weight (g)

| Circuit breaker | |
|-----------------|------|
| Type | iDPN |
| 1P+N | 115 |

3

■ Reinforced cable pull-out strength: serrated terminals

■ Automatic cable guiding in the correct position: terminals with guard

■ Assembly and disassembly with comb busbar in place by operating toggle latches at the top and bottom of the products

■ Where there is a comb tooth, the connection of cables of cross section 16 mm² remains possible

Markings

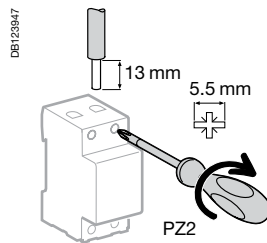
- Area for 4 marking clips alongside the downstream terminal
- Area for marking by 12 mm high label on the front panel

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 with ferrule |
| DT40, iDPN, C40 | 2 N.m | DB122945 | DB122946 |
| DT60 | 3.5 N.m | 0.75 to 16 mm ² | 0.33 to 10 mm ² |
| | | 0.5 to 35 mm ² | 0.5 to 25 mm ² |

- 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 (≤ 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

3

| iDPN N Vigi 6000 | | | |
|---------------------|--------------------|-----------------------|----------|
| Type | AC | Width in 9 mm modules | |
| Auxiliaries | | | |
| 1P+N Curve B | Sensitivity | 30 mA | |
| | Rating (In) | 4 A | A9D55604 |
| | | 6 A | A9D55606 |
| | | 10 A | A9D55610 |
| | | 16 A | A9D55616 |
| | | 20 A | A9D55620 |
| | | 25 A | A9D55625 |
| | | 32 A | A9D55632 |
| | 40 A | A9D55640 | |
| 1P+N Curve C | Sensitivity | 30 mA | |
| | Rating (In) | 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 | |

| iDPN N Vigi 6000 | | | |
|---------------------|--------------------|-----------------------|----------|
| Type | A | Width in 9 mm modules | |
| Auxiliaries | | | |
| 1P+N Curve B | Sensitivity | 30 mA | |
| | Rating (In) | 10 A | A9D06610 |
| | | 16 A | A9D06616 |
| | | 20 A | A9D06620 |
| 1P+N Curve C | Sensitivity | 30 mA | |
| | Rating (In) | 10 A | A9D01610 |
| | | 16 A | A9D01616 |
| | | 20 A | A9D01620 |
| Voltage rating (Ue) | | 230 V AC | |
| Operating frequency | | 50 Hz | |

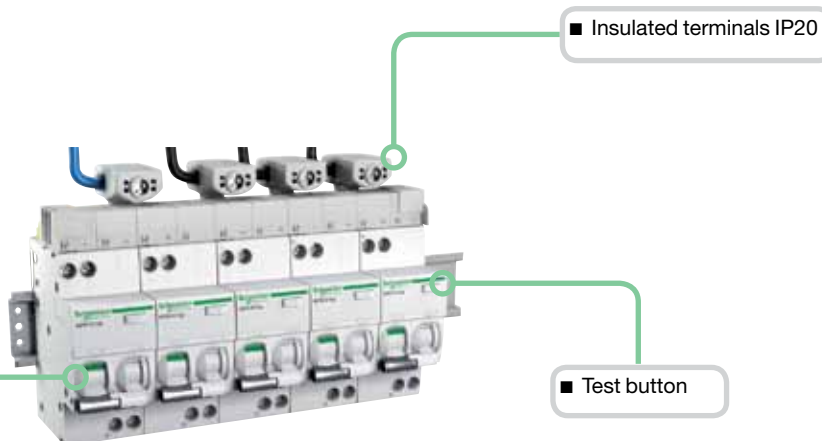
3

DB40595-40

■ Fast contact closure

Visi-trip double window

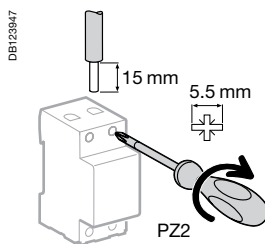
- Fault tripping circuit breaker is indicated by a red mechanical indicator on the front face.
- Earth fault is indicated by a red mechanical indicator on the front face



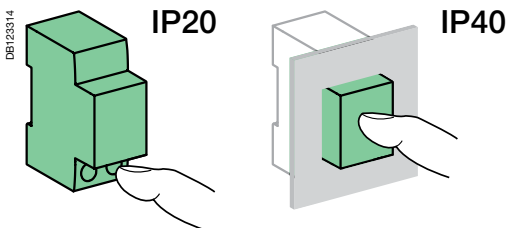
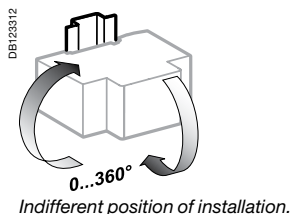
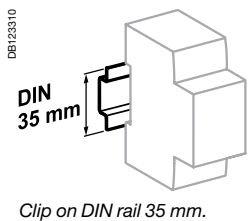
Positive contact indication

- 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

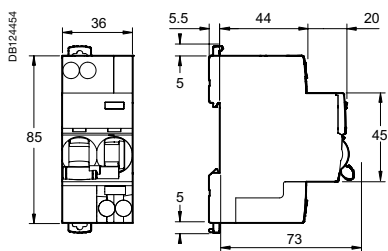
Connection



| Rating | Tightening torque | Copper cables | |
|-----------|-------------------|-------------------------|-------------------------|
| | | Rigid | Flexible or ferrule |
| 4 to 40 A | 2 N.m | DB122945 | DB122946 |
| | | 1 to 16 mm ² | 1 to 10 mm ² |



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 Curve C |
| | Between 3 and 5 In 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 A |

Additional characteristics

| | | |
|--|--|---|
| Earth leakage protection with instantaneous tripping | 30 mA | |
| Degree of protection (IEC 60529) | Device only Device in modular enclosure | IP20 IP40 Insulation classe II |
| Endurance (O-C) | Electrical Mechanical | ≤ 20 A ≥ 25 A 20,000 cycles 10,000 cycles 20,000 cycles |
| Overvoltage category (IEC 60364) | | III |
| Operating temperature | Type AC | -5°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 |



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.

3



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 ⁽¹⁾ | |
| 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 | |

| Breaking capacity (Icn) to IEC/EN 60898-1 | | |
|---|--------------|-------------|
| Type | Voltage (V) | |
| 1P, 2P, 3P, 4P | 230 to 400 V | |
| Rating (In) | 63 to 125 A | 15000 A |
| | | 50 % of Icn |

⁽¹⁾ 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) |
|---|--------------|---------|---------|---------|---------|---------------------------------|
| | Voltage (Ue) | | | | | |
| Between +/- | 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 | |

Catalogue numbers

| iC120H circuit breaker | | | | | | |
|------------------------|----------|----------|----------|----------|----------|----------|
| Type | 1P | | | 2P | | |
| | | | | | | |
| 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 | | |

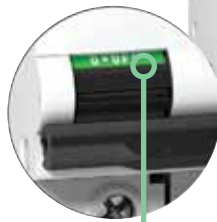
Note: For current ratings below 63 amp use IC60H

PB107916-40

■ Terminals insulated to IP20



■ Location for 4 clip-on terminal markers



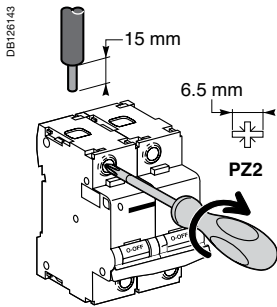
Positive contact indication

- 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 | | |
|----------|----------|----------|----------|----------|----------|
| | | | | | |
| Curve | | | Curve | | |
| B | C | D | B | C | D |
| 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 | | |

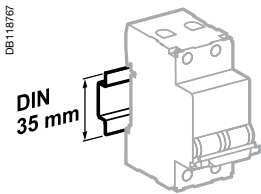
Connection



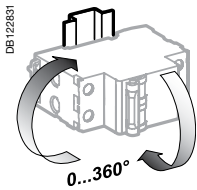
| Rating | Tightening torque | Without access. | | With accessories | | | |
|-------------|-------------------|-------------------------|---------------------------|-----------------------------|--|------------------------|------------------------|
| | | Rigid | Flexible or with ferrule | 50 mm ² Al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

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

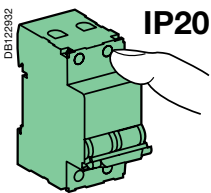
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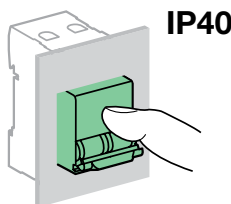
Clips onto 35 mm DIN rail.



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

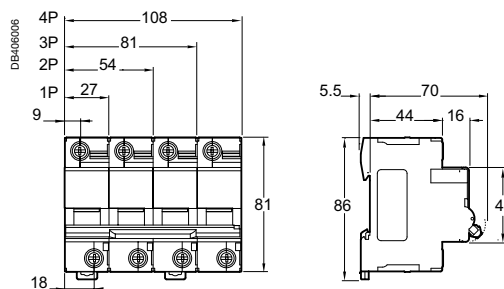
| | | |
|----------------------------------|-------------------------------|---|
| Degree of protection (IEC 60529) | Device only | IP20 |
| | Device in a modular enclosure | IP40 (IPXXD) |
| Endurance (O-C) | Electrical | 63 A |
| | | 80...125 A |
| | Mechanical | |
| | | 10000 cycles (O-C) |
| | | 5000 cycles (O-C) |
| | | 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)



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 (≥ 300 mA),
- protection of installations against fire hazards (300 mA to 1000 mA).

PB107924-30



2P

PB107925-30






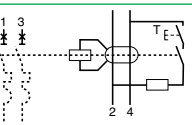
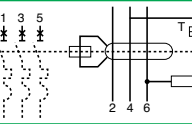
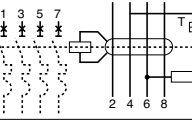
3P

PB107926-30



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  | |
|  <p>dess. 077</p> | | A9N18563 | A9N18564 | A9N18565 | A9N18544 | A9N18545 | 7 |
|  <p>dess. 078</p> | | A9N18566 | A9N18567 | A9N18568 | A9N18546 | A9N18547 | 10 |
|  <p>dess. 078B</p> | | A9N18569 | A9N18570 | A9N18571 | A9N18548 | A9N18549 | 10 |
| Operating voltage (Ue) | | 230...415 V | | | | | |
| Operating frequency | | 50/60 Hz | | | | | |



EN 61009



2P



3P



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 (≥ 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 | Vigi iC120 | | | | | | Width in 9 mm modules | |
| Product | Sensitivity | 30 mA | 300 mA | 500 mA | 300 mA | 500 mA | 1000 mA | | |
| 2P | Sensitivity | A9N18572 | A9N18573 | A9N18574 | - | - | - | 7 | |
| 3P | Sensitivity | A9N18575 | A9N18576 | A9N18577 | - | - | - | 10 | |
| 4P | Sensitivity | A9N18578 | A9N18579 | A9N18580 | A9N18587 | A9N18588 | A9N18589 | 10 | |
| Operating voltage (Ue) | | 230...415 V | | | | | | | |
| Operating frequency | | 50/60 Hz | | | | | | | |



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 (≥ 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 unwanted 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 unwanted tripping caused by transient voltage surges (lightning strike, operation of switchgear on the network, etc.)



2P



3P

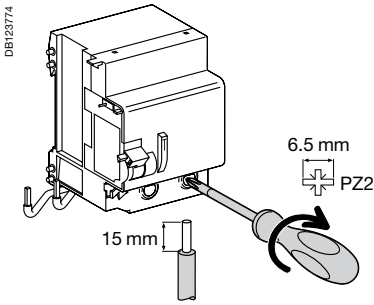


4P

Catalogue numbers

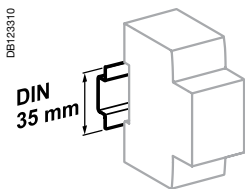
| Vigi iC120 add-on residual current devices | | | | | | | |
|--|-------------|-------------|----------|----------|----------|----------|-----------------------|
| Type | SI | Vigi iC120 | | | | | Width in 9 mm modules |
| Product | Sensitivity | 30 mA | 300 mA | 500 mA | 300 mA | 1000 mA | |
| 2P |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

Connection

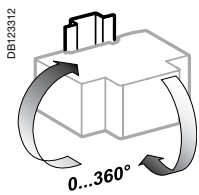


| Type | Sensitivity | Tightening torque | Copper cables | |
|------------|--------------|-------------------|-------------------------|--------------------------|
| | | | Rigid | Flexible or with ferrule |
| Vigi iC120 | 30...1000 mA | 3.5 N.m | 1 to 50 mm ² | 1 to 35 mm ² |

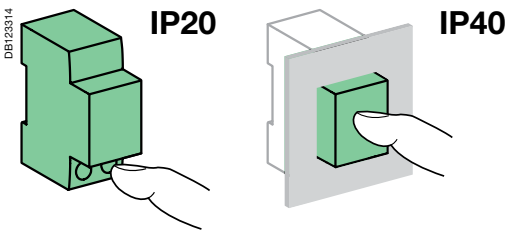
3



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 S) | 250 Å |
| | Types AC and A (selective S) | 3 kÅ |
| | Types SI (non-selective S) | 3 kÅ |
| | Types SI (selective S) | 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 |

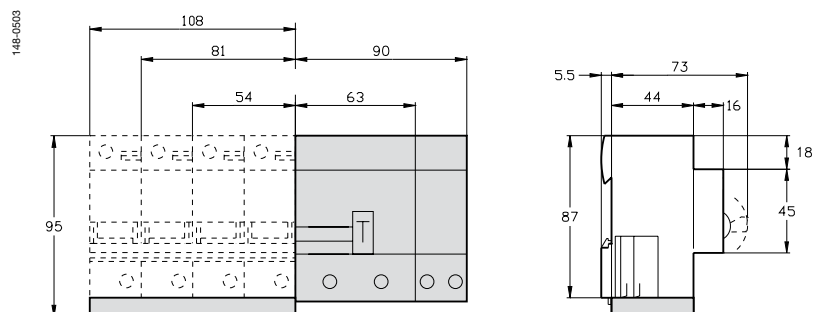
Weight (g)

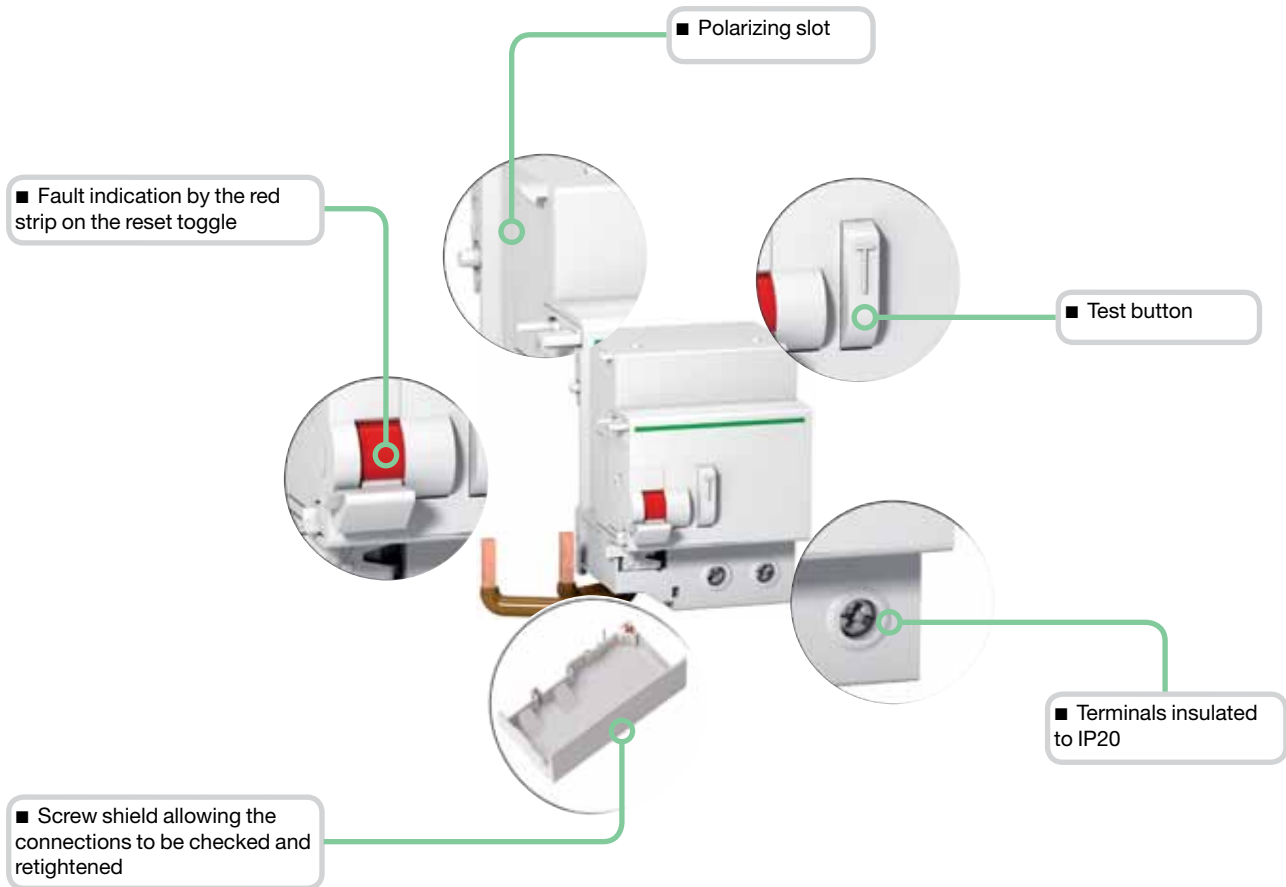
Add-on residual current devices

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

Dimensions (mm)

iC120 + Vigi iC120








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>Front or side control of 2, 3 and 4-pole circuit breakers</p> <ul style="list-style-type: none"> ■ Degree of protection: IP40 ■ A complete rotary handle consists of: <ul style="list-style-type: none"> □ a circuit-breaker operating sub-assembly, cat. no. 27046, □ a handle cat. no. 27047 or a handle cat. no. 27048 ■ Installation: <ul style="list-style-type: none"> □ the circuit-breaker operating sub-assembly cat. no. 27046 is fixed to the circuit breaker □ the removable handle cat. no. 27047 is mounted on the removable front panel or on the enclosure door □ the fixed handle cat. no. 27048 is fixed to the front or side panel of the enclosure | | <p>Allows a circuit breaker to be quickly removed or replaced, without touching the connections</p> <ul style="list-style-type: none"> ■ Degree of protection: IP20 ■ It consists of: <ul style="list-style-type: none"> □ a base to be fixed to a rail (or panel) □ 2 "blades" to be fixed in the device terminals ■ Connection: tunnel terminals for cables up to 50 mm² (rigid) or 35 mm² (flexible) ■ Installation: <ul style="list-style-type: none"> □ on backplate □ on a horizontal rail ■ Centreline between two rows: 200 mm ■ Only on the circuit breaker, without a Vigi device or auxiliary ■ Padlocking option (8 mm dia. padlock not supplied) | | <p>Used to padlock a circuit breaker in the "open" or "closed" position</p> <ul style="list-style-type: none"> ■ Diameter of the padlock: 8 mm max. ■ Locking in the ON position does not prevent the circuit breaker from tripping in the event of a fault ■ Isolation: in conformity with IEC/EN 60947-2. | | |
| Cat. numbers | | 27047 Removable extended handle | 27048 Fixed handle | 27046 Operating sub-assembly | 26996 (1 per pole) | 26997 (1 per pole) | 27145 | 26970 |
| Set of | | 1 | 1 | 1 | 1 | 1 | 4 | 2 |
| Suitable for the following devices: | | | | | | | | |
| iC120 | ■ 2P, 3P, 4P | | | | | ■ ≤ 63 A | | |
| iC120 + Vigi iC120 | ■ 2P, 3P, 4P | | | | | | ■ | |
| DPN, DPN Vigi | ■ 3P, 4P | | | | | | | ■ |
| C60H-DC | ■ 2P | | | | | | | ■ |
| SW60-DC, C60NA-DC, C60PV-DC | | | | | | | | ■ |
| iSW | ■ iSW ≥ at 4 modules of 9 mm | | | | ■ iSW 40 to 63 A | | | ■ |

Protection
Circuit protection
Earth leakage protection








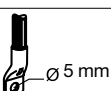
Accessories for iC120, DPN, DPN Vigi,
C60H-DC, SW60-DC, C60NA-DC,
C60PV-DC, iSW devices (cont.)

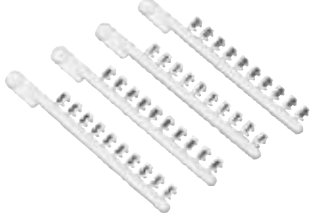
| Safety | | | | | | | |
|---|---|-------------------|---|---|-------|--|--|
| Accessories | Screw shield | | Terminal shield | | | Interpole barrier | Spacer |
| 066870_SE-33  | PB124114  | | 066889_SE-38  | DB123898  | | | PB104485-38  |
| Function | Prevents all contact with the fixing screws <ul style="list-style-type: none"> ■ The degree of protection becomes IP40 ■ Sealable, max. diameter 1.2 mm ■ Dividable | | Prevents all contact with the terminals <ul style="list-style-type: none"> ■ Degree of protection becomes IP40 ■ Sealable, max. diameter 1.2 mm <ul style="list-style-type: none"> ■ 1P ■ 1P ■ 2P ■ 3P: 1 x 26975 + 1 x 26976 ■ 4P: 2 x 26976 | | | Improves the insulation between the connections: cables, terminals, lugs, etc. <ul style="list-style-type: none"> ■ Used to: <ul style="list-style-type: none"> <input type="checkbox"/> complete the rows <input type="checkbox"/> separate the devices ■ Width: 1 x 9 mm module ■ Allows that 2 cables are routed from one row to another (above and below), up to 6 mm² | |
| 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 | ■ |

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 ² Al terminal | Screw-on connection for ring terminal | Connection kit for ring terminals | Terminal for rear connector | |
| |  |  |  |  |  | |
| | DB118780 | DB118782 | DB123887 | 0688867N-23 | DB118784 | |
| Function | <p>For 3 copper cables:</p> <ul style="list-style-type: none"> ■ Rigid up to 16 mm² ■ Flexible up to 10 mm² | <p>For 16 to 50 mm² aluminium cables</p> | <p>For lug tipped cables, front or rear mounting</p> | <p>For terminal up to 63 A, front or rear access (screw Ø 5 mm)</p> <ul style="list-style-type: none"> ■ It incorporates a "conductive" part and an "insulating" part which ensures the phase-to-phase clearance | <p>For cable up to 50 mm² or by terminal</p> <ul style="list-style-type: none"> ■ Supplied with a 1P terminal shield | |
| |  |  |  | | | |
| | DB118787 | DB122935 | DB118789 | | | |
| Cat. numbers | 19091 | 19096 | 27060 | 27053 | 17400 | 18528 |
| Set of | 4 | 3 | 1 | 8 | 2 | 2 |
| iC120 | ■ | ■ | ■ | ■ | - | ■ |
| Vigi iC120 | ■ | ■ | ■ | - | - | - |
| DPN, DPN Vigi | - | - | - | ■ | - | - |
| C60H-DC, iSW 40 to 125 A | ■ | ■ | ■ | ■ | ■ | - |
| SW60-DC, C60NA-DC | ■ | ■ | ■ | ■ | - | - |
| C60PV-DC | - | - | - | ■ | - | - |
| Tightening torque | 2 N.m | | 10 N.m | 2 N.m | - | - |
| Stripping length | 11 mm | | 13 mm | - | - | - |
| Tools to be used | Diameter 5 mm or PZ2 | | Hc 1/5" or 5 mm | Diameter 5 mm | Diameter 5 mm | - |

| | | Identification | | | |
|---|--|--|--|---|--|
| Accessories | | Clip-on terminal marker strip | | | |
| 0312MD-SE-23 | |  | | | |
| Function | | For connection identification | | | |
| Cat. 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 | | | | |
| iC120 | ■ 4 markers max. per pole | | | | |
| Vigi iC120 | ■ 4 markers max. per device | | | | |
| DPN, DPN Vigi | ■ 4 markers max. per pole | | | | |
| C60H-DC, SW60-DC, C60NA-DC, C60PV-DC | ■ 4 markers max. per pole | | | | |




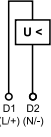
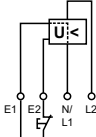
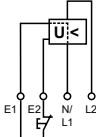
Protection

Circuit protection

Earth leakage protection

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

3




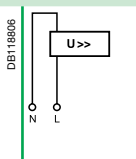
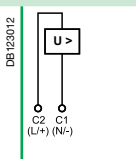
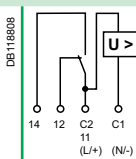
| | | Tripping | | | | | |
|---|------|--|-----------------|--|-----------------|---|-----------------|
| Auxiliaries | | MN | | MNs | | MNx | |
| Type | | Undervoltage release | | | | | |
| | | Instantaneous | | Delayed | | Independent of the supply voltage | |
| | |  | |  | |  | |
| Function | | <ul style="list-style-type: none"> Causes the device with which it is associated to trip when its input voltage decreases (between 70 % and 35 % of U_n). Prevents the device from closing until its input voltage has been restored | | <ul style="list-style-type: none"> No tripping in the event of transient voltage dips (up to 0.2 s) | | <ul style="list-style-type: none"> Tripping of the associated device by opening of the control circuit (e.g. push-button, dry contact) A drop in the supply voltage does not trip the associated device A locking push-button control allows the circuit protected (e.g. machine control) to be placed in safety configuration | |
| Wiring diagrams | |  | |  | |  | |
| Utilization | | <ul style="list-style-type: none"> Emergency stop via a normally-closed pushbutton Ensures the safety of the power supply circuits of several machines by preventing accidental startups | | | | <ul style="list-style-type: none"> Fail-safe emergency stop Insensitive to the variation in the control circuit voltage to improve continuity of service Important: Before any servicing operation switch off the mains power supply (voltage presence at terminals E1/E2) | |
| Catalogue numbers | | A9N26960 | A9N26961 | A9N26959 | A9N26963 | A9N26969 | A9N26971 |
| iC120, DPN, DPN Vigi, ID | | ■ | ■ | ■ | ■ | ■ | ■ |
| C60H-DC, SW60-DC, C60PV-DC, C60NA-DC | | ■ | ■ | ■ | ■ | ■ | ■ |
| Technical specifications | | | | | | | |
| 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 |
| Standards | | | | | | | |
| IEC/EN 60947-1 | | ■ | | ■ | | ■ | |
| IEC/EN 60947-5-1 | | - | | - | | - | |
| EN 60947-2 | | ■ | | ■ | | - | |
| EN 62019-2 ⁽¹⁾ | | - | | - | | - | |

(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 | | |
|  | | | | |  | | |  | | |
| <p>■ 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</p> | | | | | <p>■ Trips the associated device when it is powered on</p> | | | <p>■ Includes an open/close contact (OF) to indicate the "open" or "closed" position of the breaker</p> | | |
|  | | | | |  | | |  | | |
| <p>■ Protection of the devices against overvoltages on the electrical network (break in the neutral conductor) ■ Monitoring the voltage between the phase conductor and the neutral conductor</p> | | | | | <p>■ Emergency stop via a normally-open pushbutton.</p> | | | <p>■ Emergency stop via a normally-open pushbutton ■ Remote indication of the position of the associated device</p> | | |
| A9N26500 | | | | | A9N26476 | A9N26477 | A9N26478 | A9N26946 | A9N26947 | A9N26948 |
| ■ | | | | | ■ | ■ | ■ | ■ | ■ | ■ |
| - | | | | | ■ | ■ | ■ | ■ | ■ | ■ |
| 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 | | |
| - | | | | | - | | | 3 A / 415 V AC 6 A / ≤ 240 V AC | | |
| - | | | | | - | | | 1 NO/NC | | |
| -25...+50 | | | | | -25...+50 | | | -25...+50 | | |
| -40...+85 | | | | | -40...+85 | | | -40...+85 | | |
| ■ | | | | | ■ | | | ■ | | |
| - | | | | | - | | | - | | |
| - | | | | | - | | | - | | |
| - | | | | | - | | | - | | |






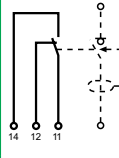
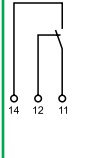
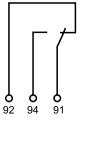
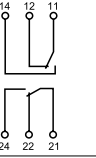
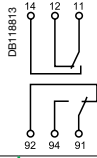

Protection

Circuit protection

Earth leakage protection

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

3

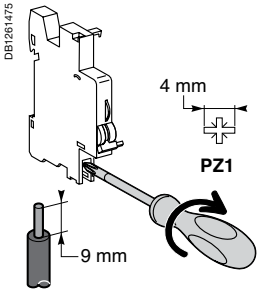
| | | Indication | | | | |
|---|------|---|--|--|--|--|
| Auxiliaries | | OF.S | OF | SD | OF+SD/OF | OF+SD24 |
| Type | | Open/closed auxiliary contact | Open/closed auxiliary contact | Fault indicating contact | Double open/closed or fault indicating contact | Double open/close and fault indicating contact |
| | |  |  |  |  |  ComReady |
| Function | | <ul style="list-style-type: none"> Changeover contact indicating the "open" or "closed" position of the associated device <p>⚠ Compulsory for the addition of tripping or indication auxiliaries on a residual current circuit breaker ID</p> | <ul style="list-style-type: none"> Changeover contact indicating the "open" or "closed" position of the associated device | <ul style="list-style-type: none"> Changeover contact indicating the position of the associated device in the event of: <ul style="list-style-type: none"> electrical fault action on the tripping auxiliary <p>⚠ Not compatible with a ID residual current circuit breaker, use an OF+SD/OF in the SD position</p> | <ul style="list-style-type: none"> The OF+SD/OF auxiliary is a two-in-one product: choice of OF + SD or OF + OF contact via the selector switch | <ul style="list-style-type: none"> 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"> electrical fault actuation of the tripping auxiliary "Open" or "Closed" position of the associated device |
| Wiring diagrams | |  |  |  |  |   |
| | | | | | OF position | SD position |
| Utilization | | <ul style="list-style-type: none"> Remote indication of the position of the associated device | <ul style="list-style-type: none"> Remote indication of the position of the associated device | <ul style="list-style-type: none"> Remote fault tripping indication of the associated device | <ul style="list-style-type: none"> Remote position and/or fault tripping indication of the associated device | <ul style="list-style-type: none"> Remote indication of position and tripping upon a fault of the associated breaker |
| Catalogue numbers | | A9N26923 | A9N26924 | A9N26927 | A9N26929 | A9N26899 |
| ID | | ■ | ■ | ■ | ■ | ■ |
| iC120, DPN, DPN Vigi, C60H-DC, C60H-DC, SW60-DC, C60PV-DC, C60NA-DC | | - | ■ | ■ | ■ | ■ |
| Technical specifications | | | | | | |
| 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 | - |
| | | | | | | |
| 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 |
| | | | | | | |
| Storage temperature | °C | -40...+85 | -40...+85 | -40...+85 | -40...+85 | -40...+85 |
| | | | | | | |
| Standards | | | | | | |
| IEC/EN 60947-1 | | - | - | - | - | - |
| IEC/EN 60947-5-1 | | ■ | ■ | ■ | ■ | ■ IEC 60947-5-4 |
| EN 60947-2 | | - | - | - | - | - |
| EN 62019-2 ⁽¹⁾ | | ■ | ■ | ■ | ■ | - |

(1) For iC120, DPN.

Protection
Circuit protection
Earth leakage protection

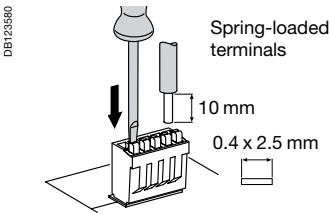
Electrical auxiliaries for iC120, DPN, DPN Vigi, ID, C60H-DC, SW60-DC, C60PV-DC, C60NA-DC devices (cont.)

Connection



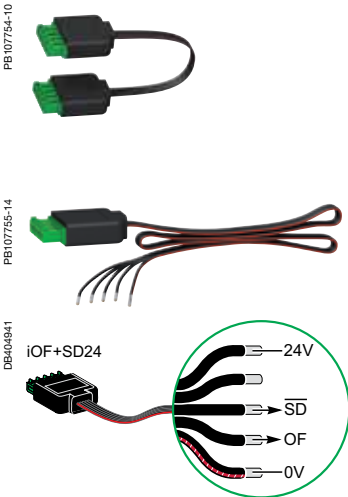
| Type | Tightening torque | Copper cables | |
|-------------------------------------|-------------------|----------------------------|--------------------------|
| | | Rigid | Flexible or with ferrule |
| Indication and tripping auxiliaries | 1 N.m | 0.5 to 2.5 mm ² | 2 x 1.5 mm ² |

Ti24 connector connection



| Type | Catalogue numbers | Copper cables | |
|----------------|-------------------|--------------------------------|--------------------------------|
| | | Rigid | Flexible |
| Ti24 interface | A9XC2412 | 1 x 0.5 to 1.5 mm ² | 1 x 0.5 to 1.5 mm ² |

Ti24 prefabricated cables connection

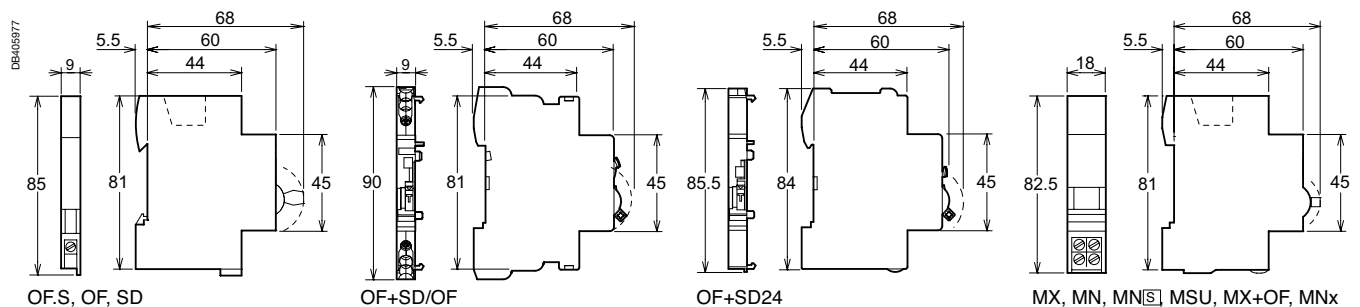


| Type | Cat. no. | Length |
|--|-----------------|--------|
| Connection for Acti 9 Smartlink | | |
| 6 short prefabricated | A9XCAS06 | 100 mm |
| 6 medium-sized prefabricated | A9XCAM06 | 160 mm |
| 6 long prefabricated | A9XCAL06 | 870 mm |
| Connection for PLC type terminals | | |
| 6 long prefabricated on a single side | A9XCAU06 | 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 | | | | | | | | | | 3 | 75 |
| 4 | | | | | | | | | | 3 | 75 |
| 6.3 | | | | | | | | | | 3 | 75 |
| 10 | | | 15 | 50 | 8 | 50 | 6 | 75 | 3 | 75 | |
| 14 | | | 15 | 50 | 8 | 50 | 6 | 75 | 3 | 75 | |
| 18 | | | 15 | 50 | 8 | 50 | 6 | 75 | 3 | 75 | |
| 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 Voltage (V AC) | | | | | | Rating In (A) | Setting | Cat. no. | Width in 9 mm modules |
| | 230 | 400 | 415 | 440 | 500 | 690 | | | | |
| 3P | - | - | - | - | - | - | 0.16 | 0.1-0.16 | 21100 | 5 |
| | - | - | - | - | - | - | 0.25 | 0.16-0.25 | 21101 | 5 |
| | - | - | - | - | - | - | 0.40 | 0.25-0.40 | 21102 | 5 |
| | - | - | - | - | - | 0.37 | 0.63 | 0.40-0.63 | 21103 | 5 |
| | - | - | - | 0.37 | 0.37 | 0.55 | 1.0 | 0.63-1 | 21104 | 5 |
| | - | 0.37 | - | 0.55 | 0.75 | 1.1 | 1.6 | 1-1.6 | 21105 | 5 |
| | 0.37 | 0.75 | 1.1 | 1.1 | 1.1 | 1.5 | 2.5 | 1.6-2.5 | 21106 | 5 |
| | 0.75 | 1.5 | 1.5 | 1.5 | 2.2 | 3 | 4.0 | 2.5-4 | 21107 | 5 |
| | 1.1 | 2.2 | 2.2 | 3 | 3.7 | 4 | 6.3 | 4-6.3 | 21108 | 5 |
| | 2.2 | 4 | 4 | 4 | 5.5 | 7.5 | 10 | 6-10 | 21109 | 5 |
| | 3 | 5.5 | 5.5 | 7.5 | 9 | 11 | 14 | 9-14 | 21110 | 5 |
| | 4 | 7.5 | 9 | 9 | 10 | 15 | 18 | 13-18 | 21111 | 5 |
| | 5.5 | 9 | 11 | 11 | 11 | 18.5 | 23 | 17-23 | 21112 | 5 |
| | 5.5 | 11 | 11 | 11 | 15 | 22 | 25 | 20-25 | 21113 | 5 |



Limiting unit

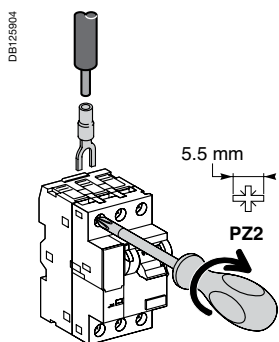
| Type | Rating In (A) | Cat. no. | Width in 9 mm modules |
|-----------|---------------|--------------|-----------------------|
| 3P | 63 | 21115 | 5 |

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

Load protection Motor starter protection

P25M (cont.)

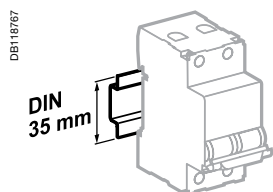
Connection



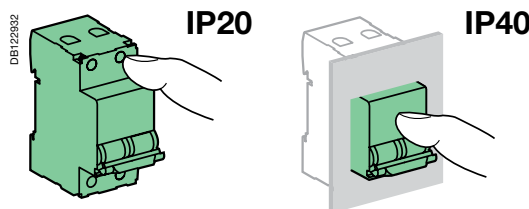
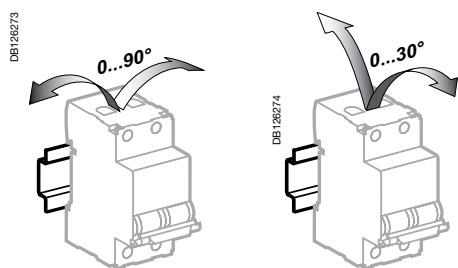
P25M

| 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 ² | | 2 x 1.5 ... 6 mm ² | 1 x 25 mm ² or 2 x 10 mm ² |

3



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 | 100,000 cycles |
| Settings | Sensitive to missing phase |
| | 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 %) |

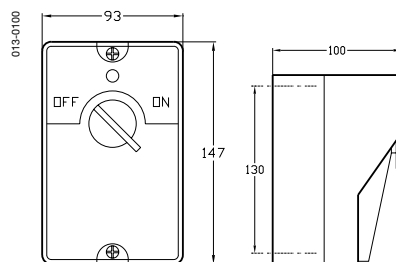
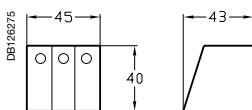
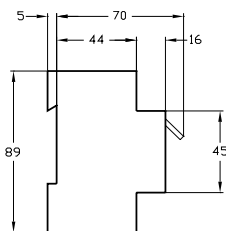
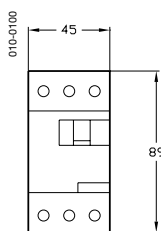
Other characteristics

| | |
|-------------------------------------|--|
| 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

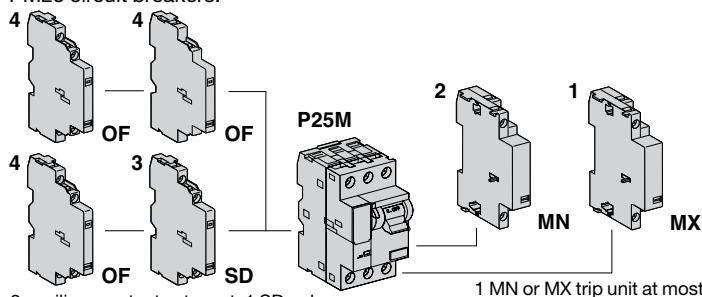
Technical
Section 11

Dimensions
Section 12

Connection

| Cables | | | |
|-------------------|------------------------------|---------------------------------|---------------------------------|
| | Rigid | Flexible | Flexible with ferrule |
| Mini | 1 x 1 to 2.5 mm ² | 1 x 0.75 to 2.5 mm ² | 1 x 0.75 to 1.5 mm ² |
| Maxi | 2 x 1 to 2.5 mm ² | 2 x 0.75 to 2.5 mm ² | 2 x 0.75 to 1.5 mm ² |
| Tightening torque | 1.4 N.m | | |

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



2 auxiliary contacts at most, 1 SD only.
SD is always mounted next to the P25M.

3

Catalogue numbers

Trip units

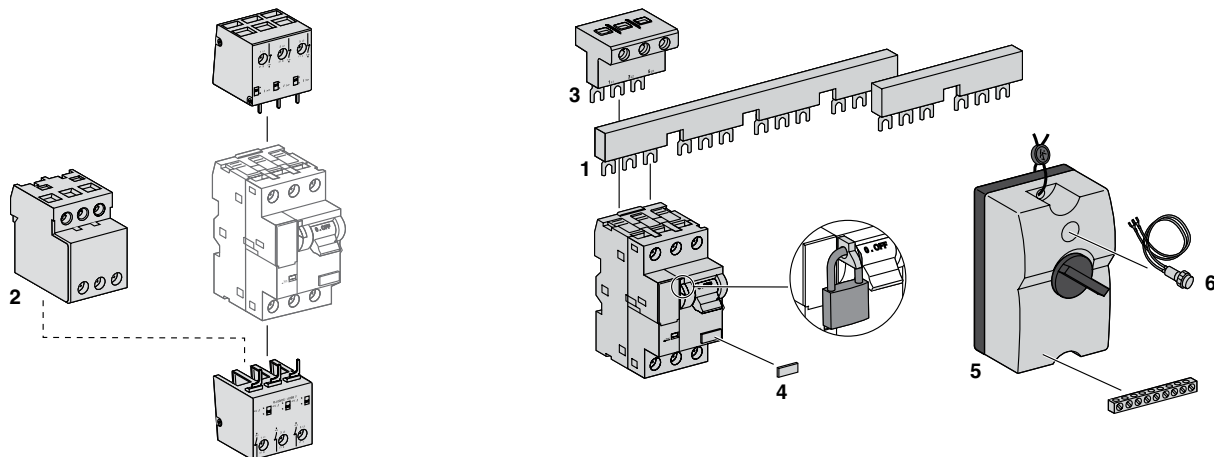
| Type | Control voltage (V AC) | Width in 9 mm modules | Cat. no. | |
|--|------------------------|------------------------|----------|----------------|
| 1 MX shunt release | | | | |
| <ul style="list-style-type: none"> Emergency stoppage by normally open push button Causes tripping of the associated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

Auxiliary contacts

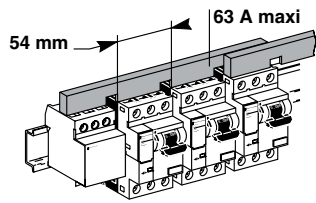
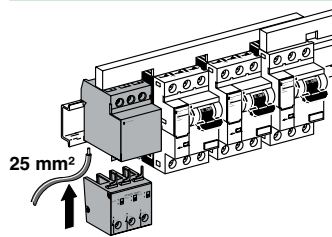
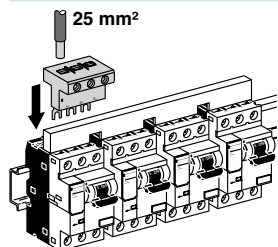
| Type | Width in 9 mm modules | Cat. no. |
|--|-----------------------|------------|
| 3 Position and fault tripping indication contacts | | |
| F + SD.F | | 1 21118 |
| O + SD.F | | 1 21119 |
| F + SD.O | | 1 21120 |
| O + SD.O | | 1 21121 |
| 4 Position contacts | | |
| O + F | | 1 21117 |
| F + F | | 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

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



Catalogue numbers

| | Type | Cat. no. |
|---|--|----------------------|
| 1 Comb busbars  | 2 P25M feeders | GV2G254 |
| | 4 P25M feeders | GV2G454 |
| | Protection end-piece | GV2G10 |
| 2 Downstream terminal block  | | GV2G05+LA9E07 |
| | GV2G05: Downstream terminal block LA9E07: Cover for downstream terminal block | |
| 3 Insulated connector  | | GV2G09 |
| 4 Clip-on terminal markers | see module CM907003E | |
| 5 Insulating enclosure Individual installation of a P25M circuit breaker with an auxiliary contact block and trip unit. Double insulation \square and sealed to IP55. L = 93, H = 147, P = 100 (mm) | | 21133 |
| 6 Neon indicator light 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

Surge protection kits **page 4/18**

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 μ s (8/20 μ 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

PE104275-35



iPRF1 12.5r

PE104280-35

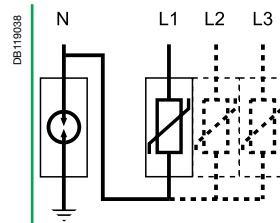


PRD1 25r

PE104284-35

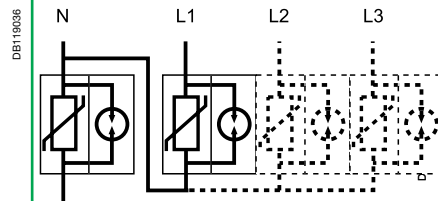


PRD1 Master



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

| Type | Product solution | |
|-----------------------------|------------------|-------------|
| Fixed surge arrester | 1P+N | 3P+N |
| 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.

| 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 | |
|------------------------------------|--------------------------|---------------------|--|--------------------------------------|--|------------------------------------|---------------------------------|--------------------------------|--|-----------------|
| Fixed surge arrester | | 9 mm modules | Surge arrester | Surge arrester + disconnecter | | | | | | |
| iPRF1 12.5r | Type 1 + 2 | | | | | | | | | |
| | 1P+N | 4 | 12.5/50 N/PE | | 50 | 25 | 1.5 | 230 | 350 | A9L16632 |
| | 3P+N | 8 | 12.5/50 N/PE | | 50 | 25 | 1.5 | 230 / 400 | 350 | A9L16634 |
| Withdrawable surge arrester | | | | | | | | | | |
| PRD1 25r | Type 1 + 2 | | | | | | | | | |
| | 1P+N | 8 | 25/100 N/PE | | 40 | 25 | 1.5 | 230/400 | 350 | 16330 |
| | 3P+N | 16 | 25/100 N/PE | | 40 | 25 | 1.5 | 230/400 | 350 | 16332 |
| PRD1 Master | Type 1 | | | | | | | | | |
| | 1P+N | 8 | 25/100 N/PE | | - | 25 | 1.5 | 230/400 | 350 | 16361 |
| | 3P+N | 16 | 25/100 N/PE | | - | 25 | 1.5 | 230/400 | 350 | 16363 |
| Spare cartridge | | | | | | | | | | |
| C1 Master-350 | - | 4 | - | - | - | 25 | 1.5 | - | 350 | 16314 |
| C1 25-350 | - | 23 mm | - | - | - | 25 | 1.5 | - | 350 | 16315 |
| C2 40-350 | - | 12 mm | - | - | - | 20 | 1.4 | - | 350 | 16316 |
| C1 Neutral-350 | - | 4 | - | - | - | - | - | - | 350 | 16317 |

4

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

DB123370



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

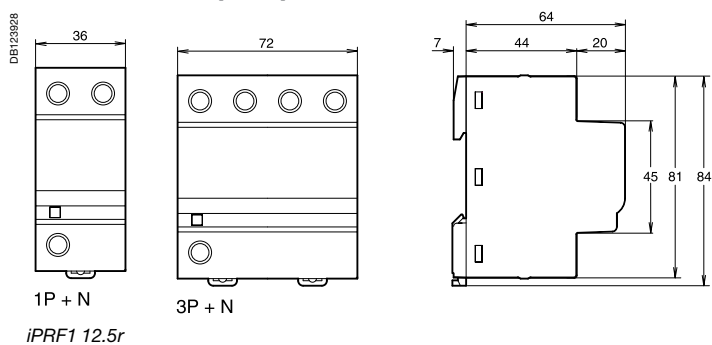
Technical data

| | | 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 ² | 10...50 mm ² | 2.5...35 mm ² | 10...35 mm ² |
| | Flexible cable | 10...25 mm ² | 10...35 mm ² | 2.5...25 mm ² | 10...25 mm ² |
| 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 |

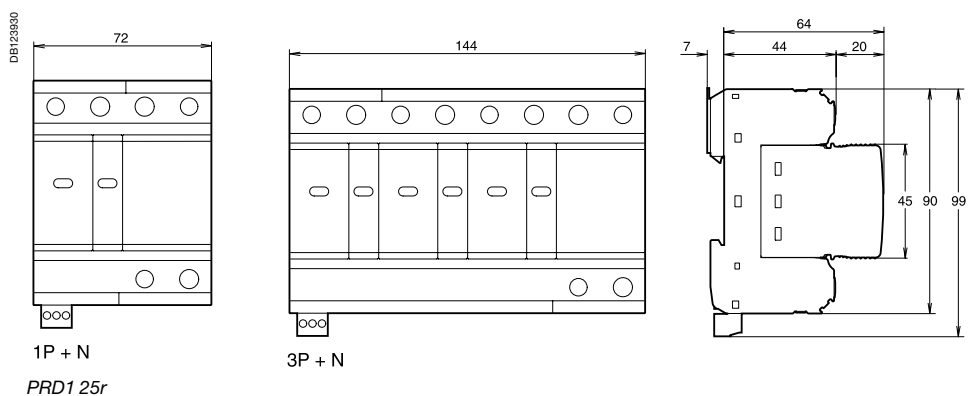
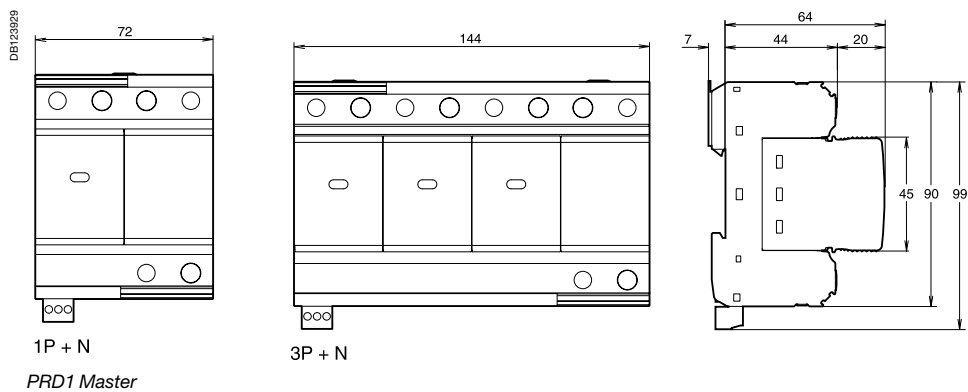
Choice of disconnecter (maximum current rating) / surge arrester

| Type | I _{imp} : impulse current | I _{sc} : prospective short-circuit current at the installation point | | | | |
|-------------|------------------------------------|---|---------------------|--------------------------|--------------------------|-------|
| | | 10 kA | 15 kA | 25 kA | 36 kA | 50 kA |
| iPRF1 12.5r | 12.5 kA | 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 | |

Dimensions (mm)



4



iPRD surge arresters

PE110281-60



Terminals
■ IP20

Satisfactory operation indication
■ By mechanical indicator
□ white: operating
□ red: cartridge must be replaced

■ Transfer to Acti 9 Smartlink



Connection iPRD surge arrester with its short circuit disconnecter

TT / TN-S
Power supply through the top
Connection with cables

PE110285-50



Surge arrester iPRD 3P+N + iC60H 3P+N

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

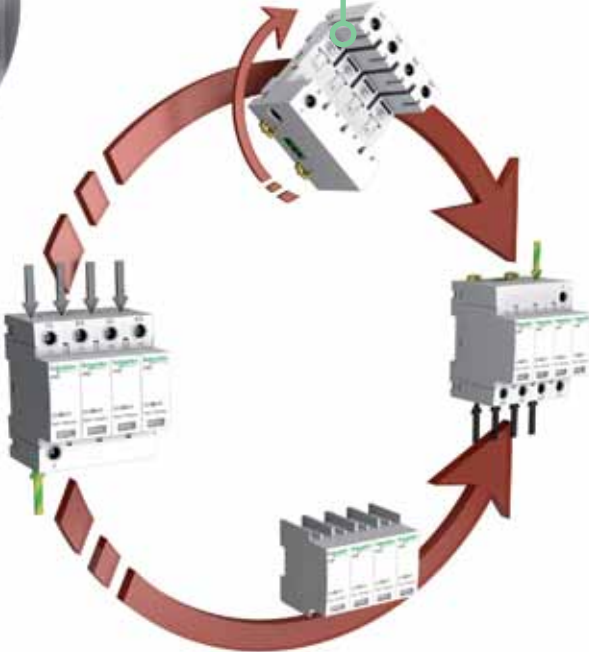
TT / TN-S
Power supply through the bottom
Connection with comb busbar

PE110793-50



Surge arrester iPRD 3P+N + iC60H 3P+N

PE110287-80



Surge arrester iPRD 4P + iC60N 4P



iPRD withdrawable surge arresters allow quick replacement of damaged cartridges.
 Type 2 surge arresters are tested with a 8/20 μ s current wave.
 Type 3 surge arresters are tested with a 1.2/50 μ s and 8/20 μ s combined wave.

Each surge arrester in the range has a specific application:

- **incoming protection (type 2):**
 - the iPRD65r is recommended for a very high risk level (strongly exposed site)
 - the iPRD40(r) is recommended for a high risk level
 - the iPRD20(r) is recommended for a medium risk level
- **secondary protection (type 2 or 3):**
 - the iPRD8(r) ensures secondary protection of loads to be protected and is placed in cascade with the incoming surge arresters. This surge arrester is required when the loads to be protected are at a distance of more than 10 m from the incoming surge arrester.

The iPRD surge arresters with “r” indication have remote transfer of the information: “cartridge to be replaced”.

4



2P



4P

Catalogue number iPRD surge arresters

| Rated discharge current (Imax) | Nominal discharge current (In) | Type of protection | | Network | |
|---|--------------------------------|--------------------|-----------|----------------------|----------------------|
| | | Incoming | Secondary | 1P+N | 3P+N |
| | | | | | |
| iPRD65 | | | | | |
| 65 kA Very high risk level (strongly exposed site) | 20 kA | iPRD65 | | A9L65501 | A9L65601 |
| iPRD40 | | | | | |
| 40 kA High risk level | 15 kA | iPRD40 | | A9L40501 A9L40500 | A9L40601 A9L40600 |
| iPRD20 | | | | | |
| 20 kA Medium risk level | 5 kA | iPRD20 | | A9L20501 A9L20500 | A9L20601 A9L20600 |
| iPRD8 | | | | | |
| 8 kA Secondary protection: placed near the loads to be protected when they are at a distance of more than 10 m from the incoming surge arrester | 2.5 kA | | iPRD8 | A9L08501 A9L08500 | A9L08601 A9L08600 |



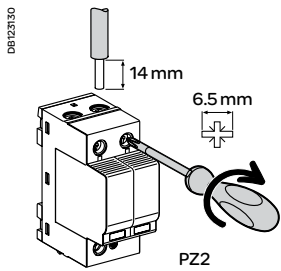
Cartridge

| Spare cartridges iPRD | | |
|-----------------------|---------------------------|----------|
| Type | Spare cartridges for | Cat. no |
| iPRD 65-350 | iPRD65r | A9L65102 |
| iPRD 40-350 | iPRD40, iPRD40r | A9L40102 |
| iPRD 20-350 | iPRD20, iPRD20r | A9L20102 |
| iPRD 8-350 | iPRD8, iPRD8r | A9L08102 |
| iPRD Neutral | All products (1P+N, 3P+N) | A9L00002 |

| | Earthing system | Transfer | Surge arrester name | Width in mod. of 9 mm | 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 |
| iPRD65 | | | | | | | | | | | |
| | TT & TN-S | ■ | iPRD65r 1P+N | 4 | - | ≤ 1.4 | ≤ 1.5 | 230 | - | 260 | 350 |
| | TT & TN-S | ■ | iPRD65r 3P+N | 8 | - | ≤ 1.4 | ≤ 1.5 | 230/400 | - | 260 | 350 |
| iPRD40 | | | | | | | | | | | |
| | TT & TN-S | ■ | iPRD40r 1P+N | 4 | - | ≤ 1.4 | ≤ 1.6 | 230 | - | 260 | 350 |
| | TT & TN-S | | iPRD40 1P+N | | - | ≤ 1.4 | ≤ 1.6 | | - | 260 | 350 |
| | TT & TN-S | ■ | iPRD40r 3P+N | 8 | - | ≤ 1.4 | ≤ 1.6 | 230/400 | - | 260 | 350 |
| | TT & TN-S | | iPRD40 3P+N | | - | ≤ 1.4 | ≤ 1.6 | | - | 260 | 350 |
| iPRD20 | | | | | | | | | | | |
| | TT & TN-S | ■ | iPRD20r 1P+N | 4 | - | ≤ 1.4 | ≤ 1.2 | 230 | - | 260 | 350 |
| | TT & TN-S | | iPRD20 1P+N | | - | ≤ 1.4 | ≤ 1.2 | | - | 260 | 350 |
| | TT & TN-S | ■ | iPRD20r 3P+N | 8 | - | ≤ 1.4 | ≤ 1.2 | 230/400 | - | 260 | 350 |
| | TT & TN-S | | iPRD20 3P+N | | - | ≤ 1.4 | ≤ 1.2 | | - | 260 | 350 |
| iPRD8 (1) Type 2 / Type 3 (1) | | | | | | | | | | | |
| | TT & TN-S | ■ | iPRD8r 1P+N | 4 | - | ≤ 1.4 | ≤ 1.2 | 230 | - | 260 | 350 |
| | TT & TN-S | | iPRD8 1P+N | | - | ≤ 1.4 | ≤ 1.2 | | - | 260 | 350 |
| | TT & TN-S | ■ | iPRD8r 3P+N | 8 | - | ≤ 1.4 | ≤ 1.2 | 230/400 | - | 260 | 350 |
| | TT & TN-S | | iPRD8 3P+N | | - | ≤ 1.4 | ≤ 1.2 | | - | 260 | 350 |

* **CM**: common mode (phase to earth and neutral to earth). * **DM**: differential mode (phase to neutral). **(1) Uoc**: combined waveform voltage: 10 kV.

Connection



| Type | Tightening torque | Copper cables | |
|------|-------------------|---------------------------|--------------------------|
| | | Rigid | Flexible or with ferrule |
| iPRD | 3.5 N.m | 2.5 to 25 mm ² | 4 to 16 mm ² |

4

Technical data

Main characteristics

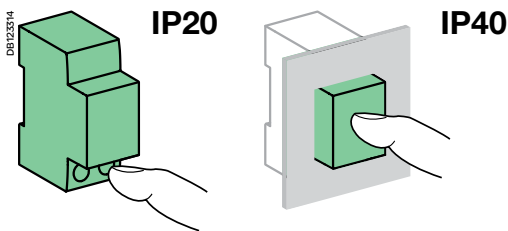
| | | |
|--|------------------------|----------------------------------|
| Operating frequency | | 50/60 Hz |
| Operating voltage (U _e) | | 230/400 V AC ±10 % |
| Permanent operating current (I _c) | | < 1 mA |
| Response time | | < 25 ns |
| Short circuit withstand (I _{sc}) | | 50 kA (50 Hz) |
| Temporary overvoltage withstand (U _T) | U _T (L-N) | 337 V AC / 5 s |
| | U _T (L-PE) | 442 V AC / 5 s |
| Temporary overvoltage Safe failure mode (U _T) | U _T (N-PE) | 1200 V AC / 200 ms |
| | U _T (L-PE) | 1453 V AC / 200 ms |
| | I _{PE} (N-PE) | 3 µA for 1P+N, 3P+N |
| Satisfactory operation indication: by mechanical indicator | White | In operation |
| | Red | Cartridge must be replaced |
| Remote indication of satisfactory operation | | By contact NO, NC 250 V / 0.25 A |

Additional characteristics

| | | |
|----------------------------------|-----------------------------|---|
| Degree of protection (IEC 60529) | Device only | IP20 (built-in) |
| | Device in modular enclosure | IP40 |
| Operating temperature | | -25°C to +60°C |
| Humidity range | | 5 % to 95 % |
| Type of connection terminals | | Tunnel terminals, 2.5 to 35 mm ² |
| Standards | | IEC 61643-11: 2011 $\overline{T2}$, $\overline{T3}$ and EN 61643-11: 2012 Type 2, Type 3 |

Surge arrester/circuit breaker association

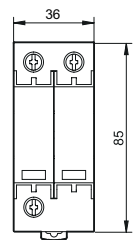
| Type of surge arrester | Associated circuit breaker (1 to 4 poles protected) |
|------------------------|---|
| iPRD65 | Curve C 50 A |
| iPRD40 | Curve C 40 A |
| iPRD20 | Curve C 25 A |
| iPRD8 | Curve C 20 A |



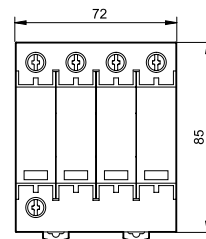
Weight (g)

| Surge arrester | |
|----------------|------|
| Type | iPRD |
| 1P+N | 220 |
| 3P+N | 450 |

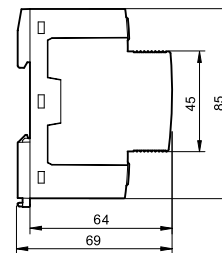
Dimensions (mm)



1P+N



3P+N



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.



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.

4



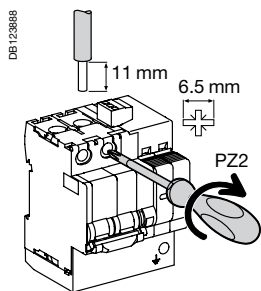
Replacement cartridges.

| Maximum discharge current (Imax) / Nominal discharge current (In) | Type of protection | | Network | |
|--|---------------------|----------------------|----------|----------|
| | Incoming protection | Secondary protection | 1P+N | 3P+N |
| 40 kA / 20 kA | | | | |
| High risk level | iQuick PRD40r | | A9L16292 | A9L16294 |
| 20 kA / 5 kA | | | | |
| Moderate risk level | iQuick PRD20r | | A9L16295 | A9L16297 |
| 8 kA / 2 kA | | | | |
| 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 |

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 ² | 2.5 to 25 mm ² |
| | | 2.5 to 35 mm ² 25 mm ² max. | 2.5 to 35 mm ² 25 mm ² 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 |
| iQuick PRD40r | | | | | | | | | | |
| 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 |
| iQuick PRD20r | | | | | | | | | | |
| 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 |
| iQuick PRD8r (2) Type 2 / Type 3 | | | | | | | | | | |
| 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.



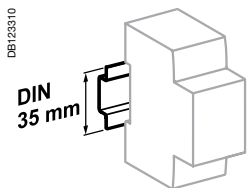
Pragma: the earth terminal block needs 1 support kit and 1 terminal block kit.

Accessories

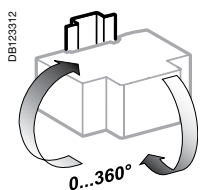
| Earth terminal block support | | | |
|---------------------------------------|--|----------------------------|-----------------|
| Type | | | Cat. no. |
| Support kit | | L = 4 blocks Batch of 1 | PRA90053 |
| 25 mm ² terminal block kit | | L = 1 block Batch of 5 | PRA90046 |

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

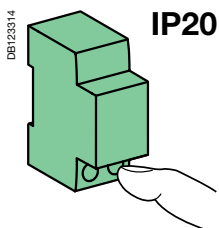
Technical data

Main characteristics

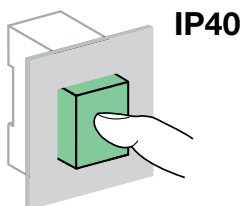
| | | | |
|--|---|--|----------------|
| Operating frequency | 50/60 Hz | | |
| Operating voltage (Ue) | 230/400 V AC | | |
| Disconnecter short-circuit withstand (Isc) | 25 kA (50 Hz) | | |
| Permanent operating current (Ic) | <1 mA | | |
| Response time | <25 ns | | |
| Status indication | By the cartridges | 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



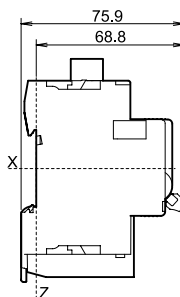
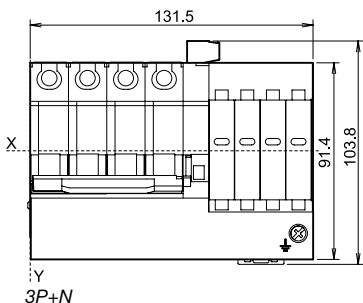
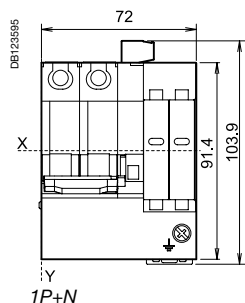
IP40

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 61740-51 T2
prEN 50539-11 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 _{CPV} (V) ⁽¹⁾ Maximum steady state voltage | | | Width in module of 9 mm | Cat. no. |
|--------------------------|--|--------------------------------------|-----------------------------|------|-------|---|------|-------|-------------------------|----------|
| | | | L+/- | L-/- | L+/L- | L+/- | L-/- | L+/L- | | |
| iPRD-DC40r 600PV | | | | | | | | | | |
| | 40 | 15 | 1.6 | 1.6 | 2.8 | 600 | 600 | 840 | 6 | A9L16434 |
| iPRD-DC40r 1000PV | | | | | | | | | | |
| | 40 | 15 | 3.9 | 3.9 | 3.9 | 1000 | 1000 | 1000 | 6 | A9L16436 |

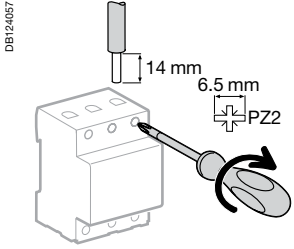
(1) U_{cpv} ≥ 1.2 x U_{oc stc} (U_{oc stc}: maximum no-load voltage of the photovoltaic generator "photovoltaic module manufacturer's data")



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 |

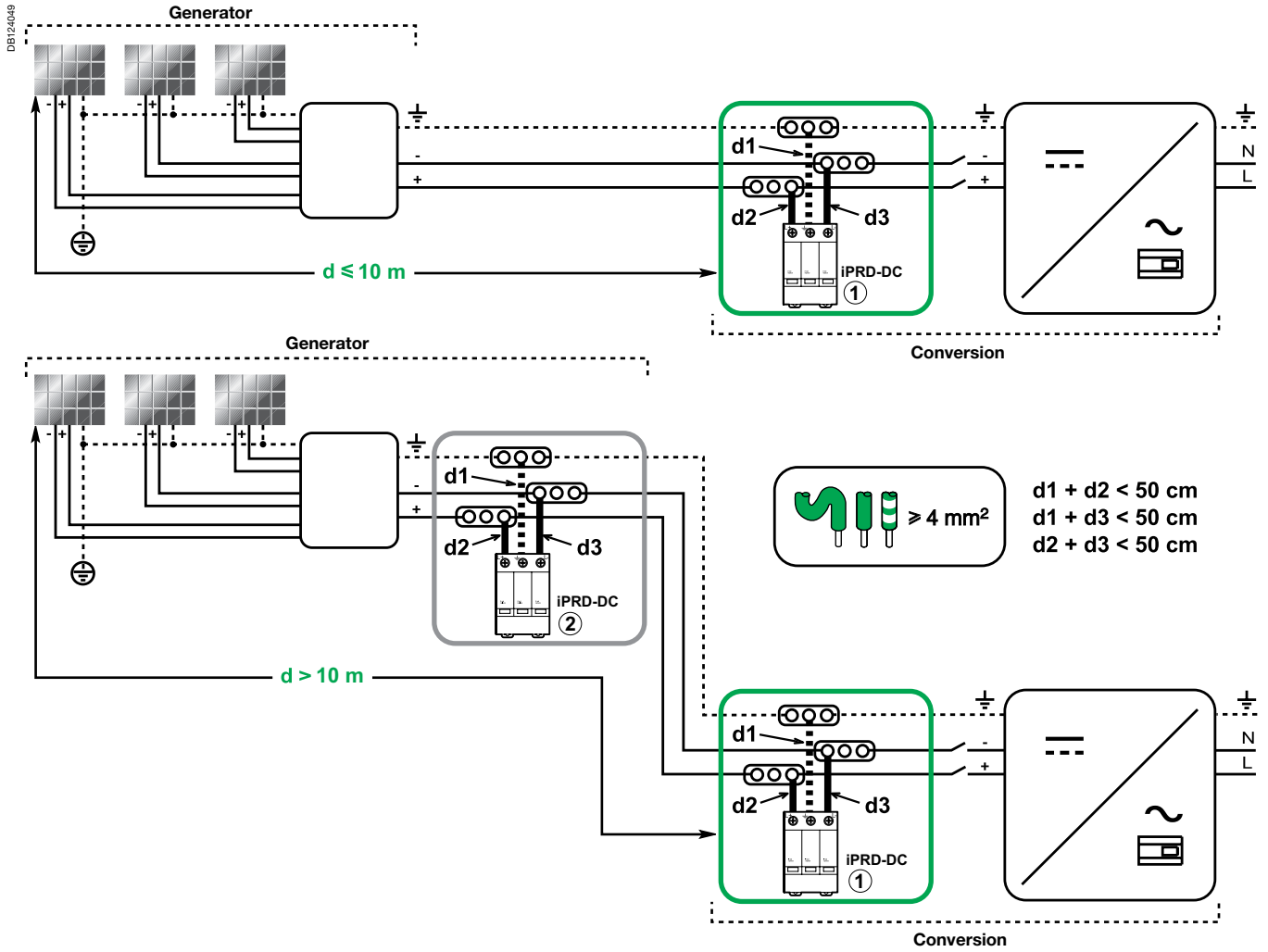
Connection



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

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.

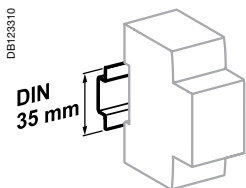


Protection

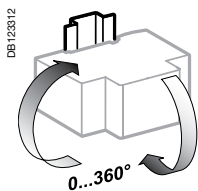
Load protection

iPRD-DC surge arresters

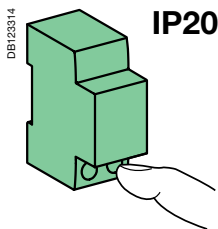
Withdrawable surge arresters type 2 for photovoltaic applications (cont.)



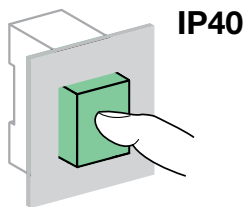
Clip on DIN rail 35 mm.



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) | | |

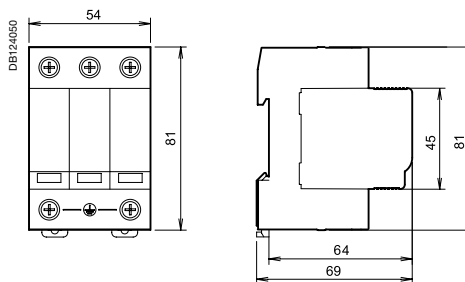
Weight (g)

Surge arresters

Type

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

Dimensions (mm)



Each kit is supplied with:

- iPRD surge arrester
- Correctly rated 4 pole or 2 pole iC60H disconnection miniature circuit breaker
- Distributed neutral bar and SEA9NKIT connection
- Insulated high IP rated enclosure with transparent cover and lock
- L1, L2, L3, N, E connecting cables



Surge protection kits

| Catalogue number | Type | Number of poles |
|------------------|----------------------------|-----------------|
| PRD1PN20R | Type 2 Surge Arrester 20kA | 1P+N |
| PRD1PN40 | Type 2 Surge Arrester 40kA | 1P+N |
| PRD1PN8 | Type 2 Surge Arrester 8kA | 1P+N |
| PRD3PN40 | Type 2 Surge Arrester 40kA | 3P+N |
| PRD3PN40R | Type 2 Surge Arrester 40kA | 3P+N |
| PRD3PN65R | Type 2 Surge Arrester 65kA | 3P+N |
| PRD3PN8 | Type 2 Surge Arrester 8kA | 3P+N |

| | |
|---|--------------------------|
| REDs, REDtest | pages 5/2 to 5/8 |
| 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 |
| | |
| RED A type 30 mA | pages 5/9 to 5/13 |
| 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



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

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** **RE**sidual current **D**evice**s** 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.



REDs 2P



REDs 4P



REDtest

| Residual current circuit breakers | 2P | 4P |
|---|------------------|--------------------|
| Making and breaking capacity, rated residual current ($\Delta I_m = I_m$) | 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

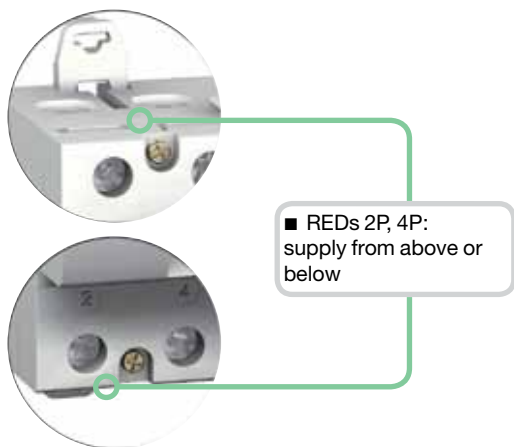
| A type | | | | Width in mod. of 9 mm | |
|---------------------|--------------------------------|-------------|-------|-----------------------|----|
| 2P | Rating 25 A 40 A 63 A | Sensitivity | 30 mA | 300 mA | 8 |
| | | 18687 | 18688 | | |
| | | 18689 | 18690 | | |
| | 18691 | 18692 | | | |
| Voltage rating (Ue) | | 230 V | | | |
| Frequency rating | | 50Hz | | | |
| 4P | Rating 25 A 40 A 63 A | Sensitivity | 30 mA | 300 mA | 14 |
| | | 18264 | 18265 | | |
| | | 18266 | 18267 | | |
| | 18268 | 18269 | | | |
| Voltage rating (Ue) | | 400 V | | | |
| Frequency rating | | 50 Hz | | | |

REDtest residual current circuit breakers

| A Type | | | Width in mod. of 9 mm | |
|---------------------|------------------------|-------------|-----------------------|----|
| 2P | Rating 25 A 40 A | Sensitivity | 30 mA | 10 |
| | | 18280 | 18281 | |
| | 18281 | | | |
| Voltage rating (Ue) | | 230 V | | |
| Frequency rating | | 50 Hz | | |

Protect Earth leakage protection Automatic recloser

REDs, REDtest (cont.)

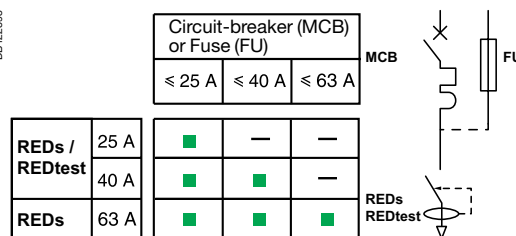


Coordination table, max short-circuit current (kA rms)

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

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

DB 1223983



DB404526

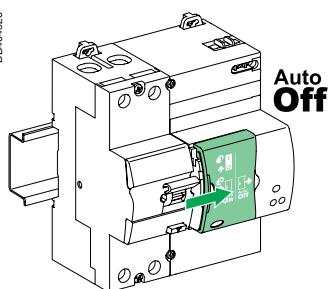


Fig. 1

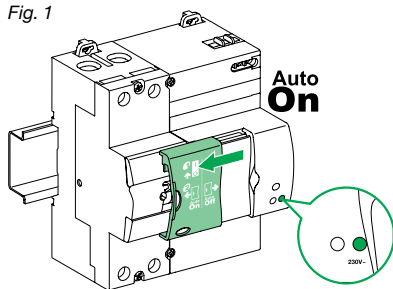
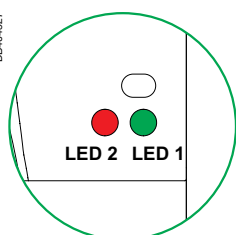


Fig. 2

DB404527



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

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.

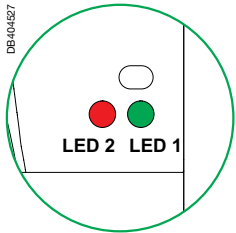
REDtest

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

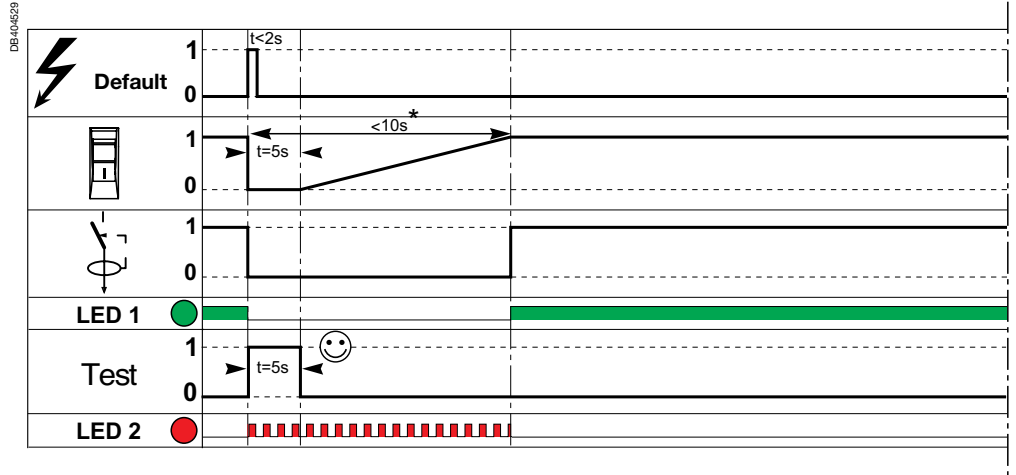
The test consists in opening and reclosing the REDtest, during which time continuity of supply of the downstream installation is guaranteed.

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 $R > R_{do}$ = reclose

5

| $I_{\Delta n}$ | 30 mA | 300 mA |
|----------------|-------|--------|
| Rd | 8 kΩ | 2.5 kΩ |
| Rdo | 16 kΩ | 5 kΩ |

Operation ON mode: long network fault

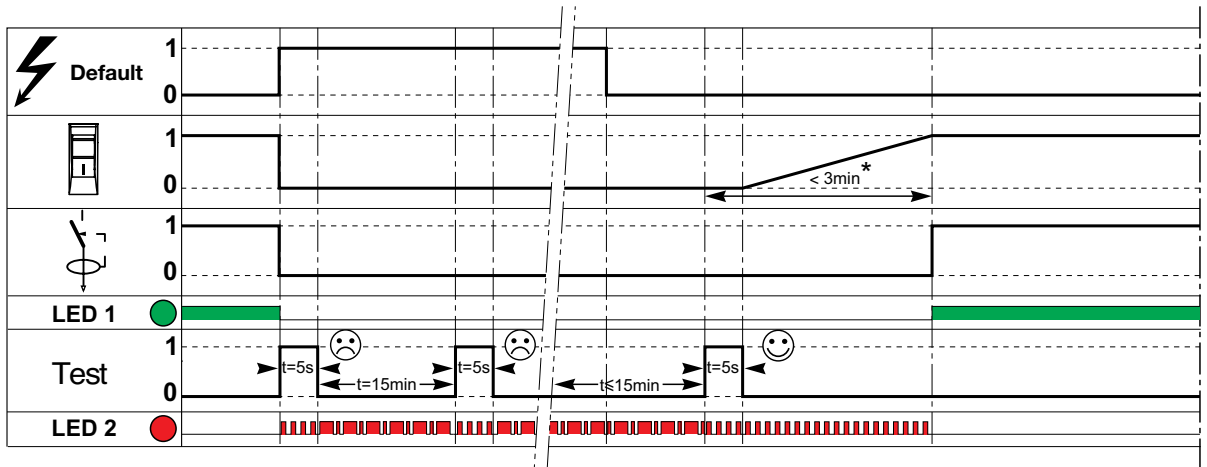
REDs

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.

DB404530



(*) Reclosing time.

Protect Earth leakage protection Automatic recloser

REDs, REDtest (cont.)

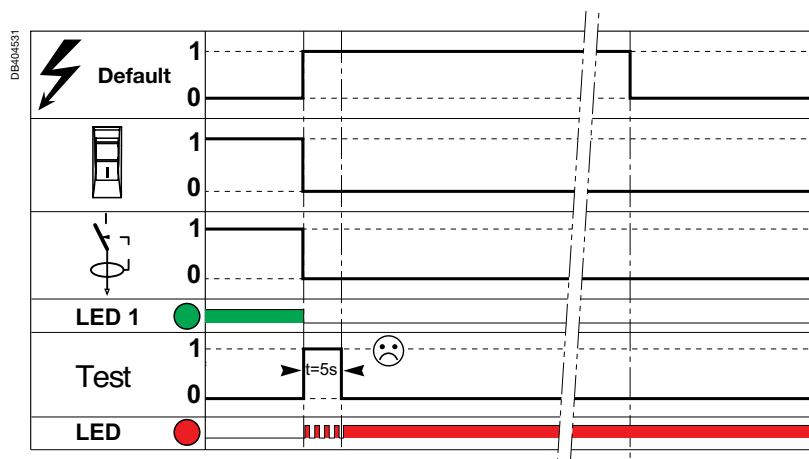
| | |
|-------------|---------------|
| $I\Delta n$ | 30 mA |
| Rd | 30 k Ω |
| Rdo | 70 k Ω |

Operation ON mode: long network fault (cont.)

REDtest

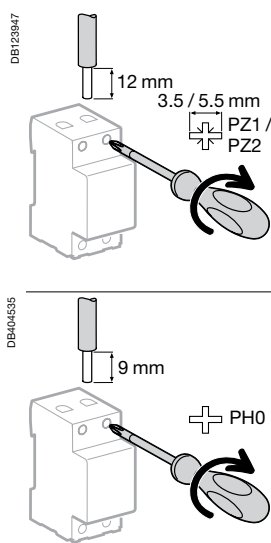
If the circuit is faulty for a length of time "greater than 5 seconds", the switch is prohibited from reclosing.

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



5

Connection

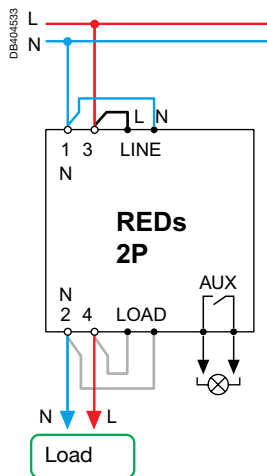


| Type | Tightening torque | Copper cables | |
|------|-------------------|---------------------|---------------------|
| | | Rigid | Flexible or ferrule |
| N, L | 2 N.m | 35 mm ² | 35 mm ² |
| AUX | 0.4 N.m | 2.5 mm ² | 2.5 mm ² |

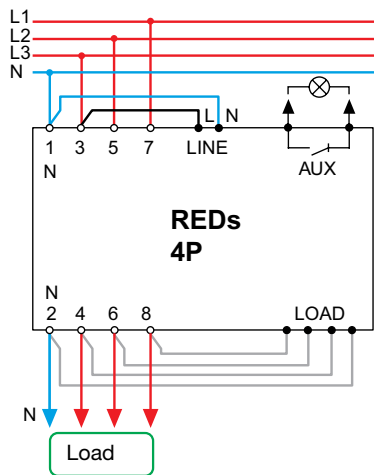
Connection by tunnel terminal with guard

Protect Earth leakage protection Automatic recloser

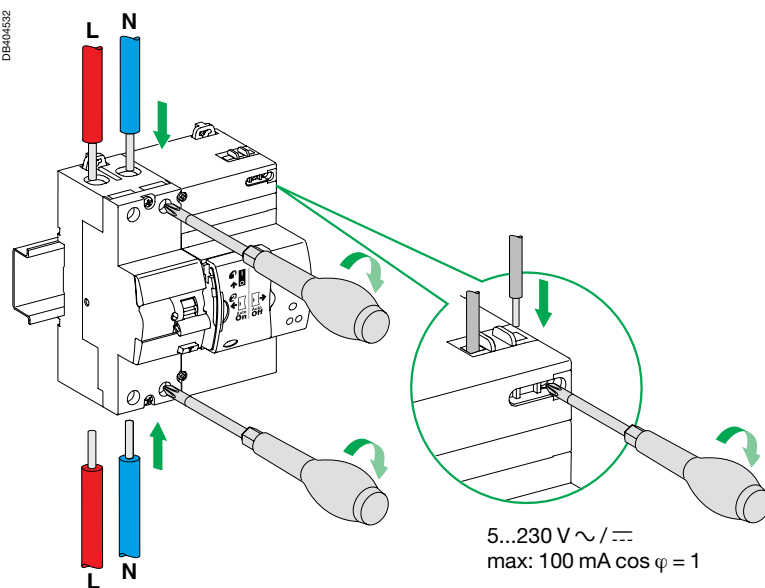
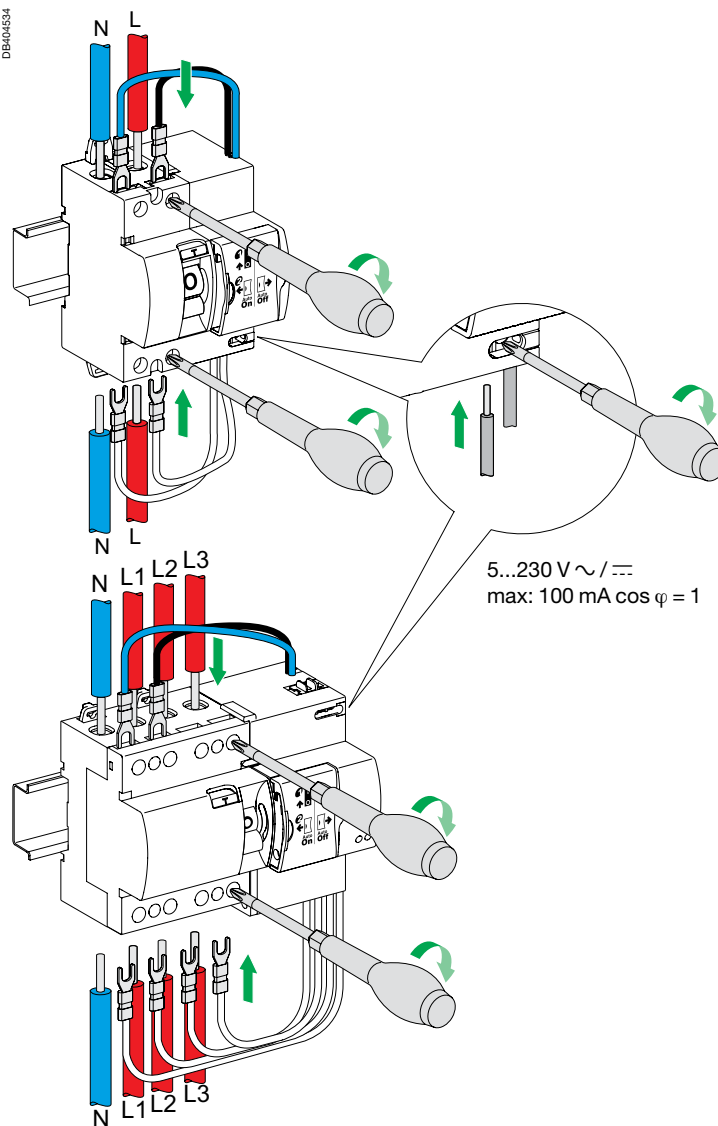
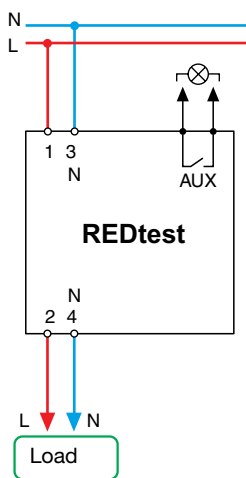
REDs, REDtest (cont.)



Wiring of non-polarized white wires

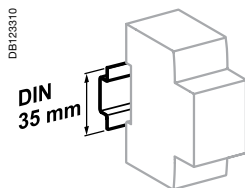


Wiring of non-polarized white wires

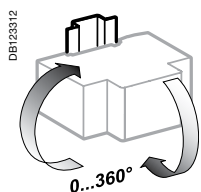


Protect Earth leakage protection Automatic recloser

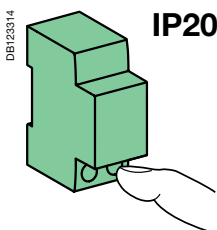
REDs, REDtest (cont.)



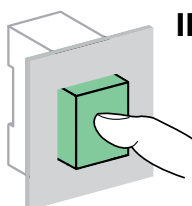
Clip on DIN rail 35 mm.



Indifferent position of installation.



IP20



IP40

Technical data

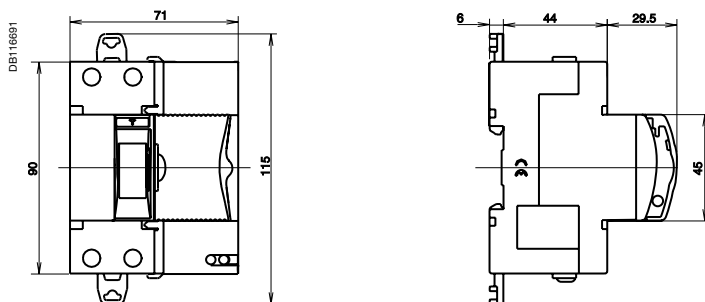
| Main characteristics | 2P | 4P |
|--|---|-------------|
| Common technical data | REDs, REDtest | REDs |
| Earthing grounding systems | TT and TN-S only | |
| Impulse withstand voltage (Uimp) | 4 kV | |
| Insulation voltage (Ui) | 500 V | |
| 8/20 µs wave immunity level | 250 Å | |
| Tropicalisation | 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 | | |
| 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) | |
| Recloser | | |
| 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 | |
| Indication | | |
| 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 | |
| Auxiliary contact | | |
| 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 mm ² | |

5

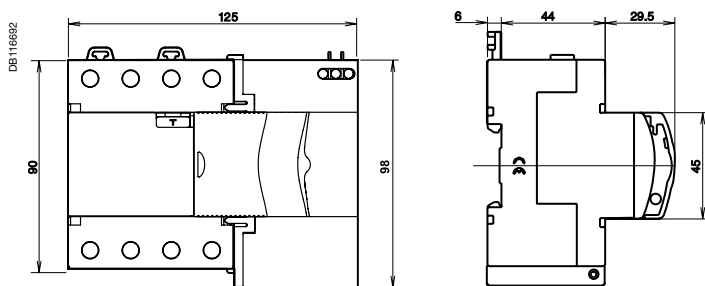
Weight (g)

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

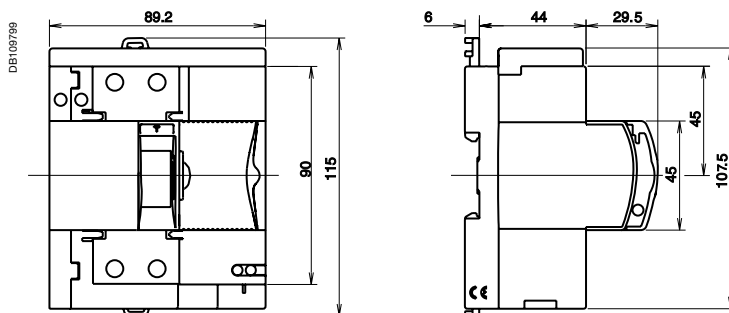
Dimensions (mm)



REDs 2P



REDs 4P



REDtest

5

Protect Earth leakage protection Automatic recloser

RED A type 30 mA



IEC 61008, EN 61008

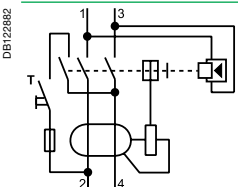
The RED **RE**sidual current **D**evice **rec**loser, is made up of a residual current device and a recloser.

- 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 | Sensitivity | 30 mA | 8 |
| | Rating | 25 A | |
| | | 40 A | 18695 |
| Voltage rating (Ue) | | 230 V | |
| Frequency rating | | 50 Hz | |

DBI122882

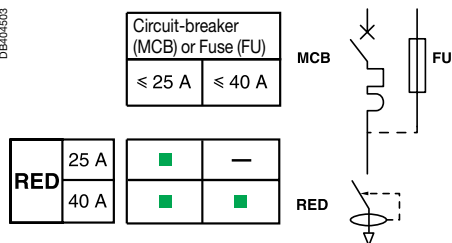


FB101779_SE-50



18681

DBI404503



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

Circuit-breakers, fuse / RED type A

| | Circuit-breakers | Circuit-breakers | | | | | | Fuse gL 63 |
|-------------------|------------------|------------------|-----|------|-------|-----|------|------------|
| | | C32 | K60 | DT40 | DT40N | C60 | C120 | |
| RED A Type | | | | | | | | |
| 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 |

5

Protect Earth leakage protection Automatic recloser

RED
A type
30 mA (cont.)

PE101779_SE-50



5

DE40-504

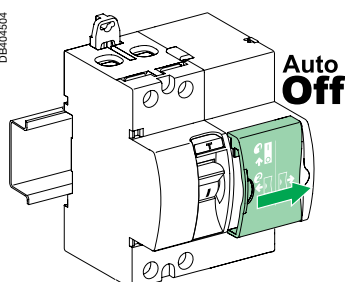


Fig. 1

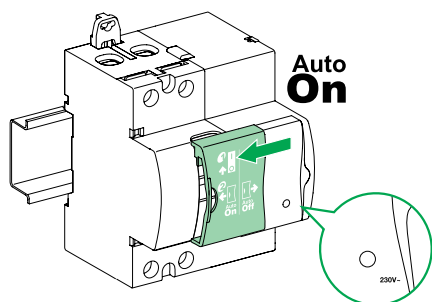


Fig. 2

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

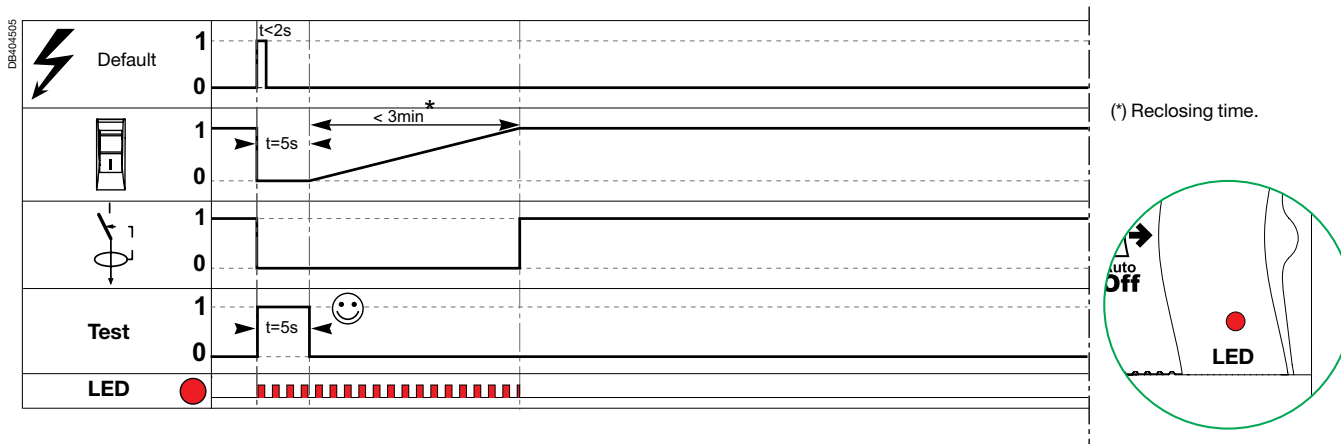
⚠ This is only possible in manual mode, i.e. sliding cover open in the Auto Off position. You can then manually test the device by pressing the Test key. The downstream installation is then temporarily broken. You must then manually reclose the RED by activating the O-I lever to power supply the downstream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

Protect Earth leakage protection Automatic recloser

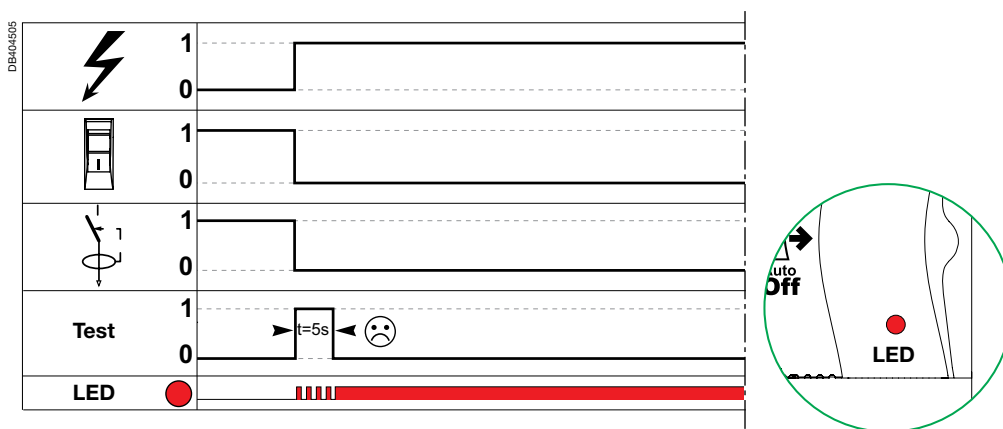
RED
A type
30 mA (cont.)

Operation ON mode

Temporary network fault



Long network fault



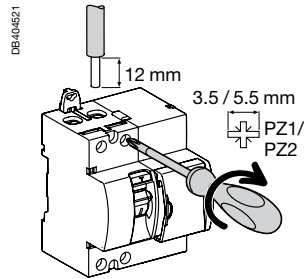
| $I\Delta n$ | 30 mA | 300 mA |
|-------------|---------------|----------------|
| Rd | 8 k Ω | 2.5 k Ω |
| Rdo | 16 k Ω | 5 k Ω |

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

Protect Earth leakage protection Automatic recloser

RED
A type
30 mA (cont.)

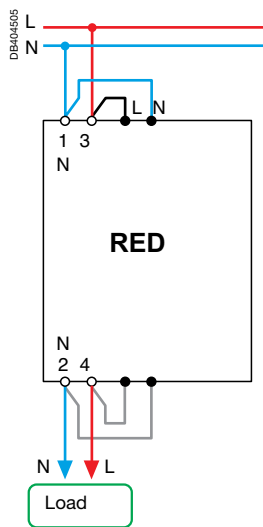
Connection



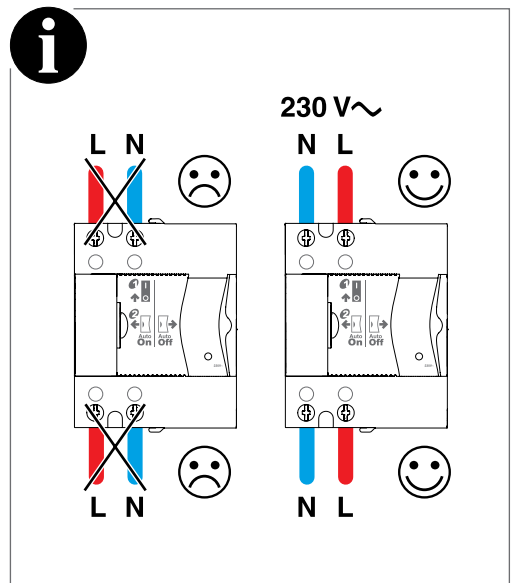
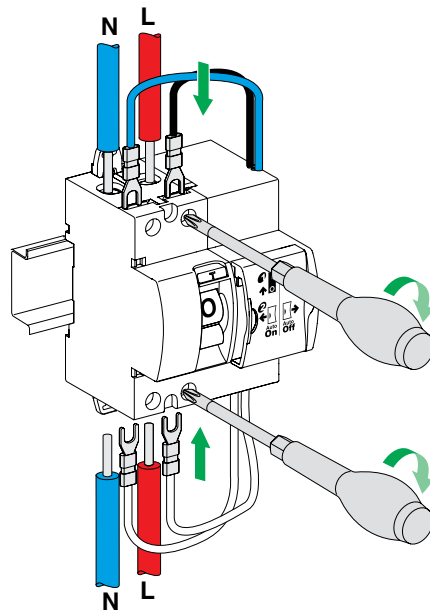
| Calibre | Tightening torque | Copper cables | |
|------------|-------------------|--------------------|---------------------|
| | | Rigid | Flexible or ferrule |
| 25 to 40 A | 2 N.m | 35 mm ² | 25 mm ² |

Connection by tunnel terminal with guard

5

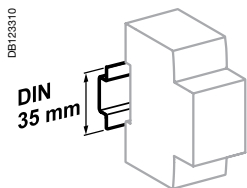


Wiring of non-polarized white wires

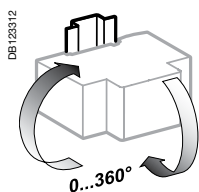


Protect Earth leakage protection Automatic recloser

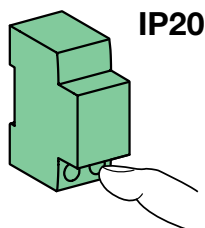
RED A type 30 mA (cont.)



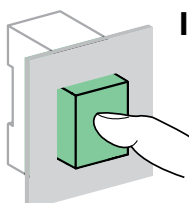
Clip on DIN rail 35 mm.



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 A |
| 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 ($I_{\Delta m} = I_m$) | 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

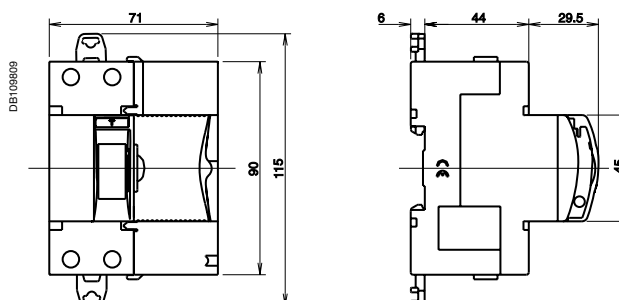
| | |
|-----------------------|--|
| RED status indication | Mechanical: by O-I (open-closed) 2-position lever Electrical: by 1 red indicator light on the front panel |
|-----------------------|--|

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 6/22**
Functions and installation page 6/16
Accessories and connectable devices page 6/17
Example of an installation page 6/18
Ethernet and Modbus Slave page 6/19
Technical characteristics..... pages 6/20 to 6/21
Connection page 6/22

Control, remote control Integrated control circuit breakers

Reflex iC60H (curves B, C, D)

PB106239-40



ComReady

PB106238-40



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) |
| Ph/Ph (2P, 3P, 4P) | Voltage (Ue) | | 380 to 415 V | |
| | 220 to 240 V | | | |
| Reflex iC60H | | | | |
| Rating (In) | 10 to 40 A | 30 kA | 15 kA | 50 % of Icu |

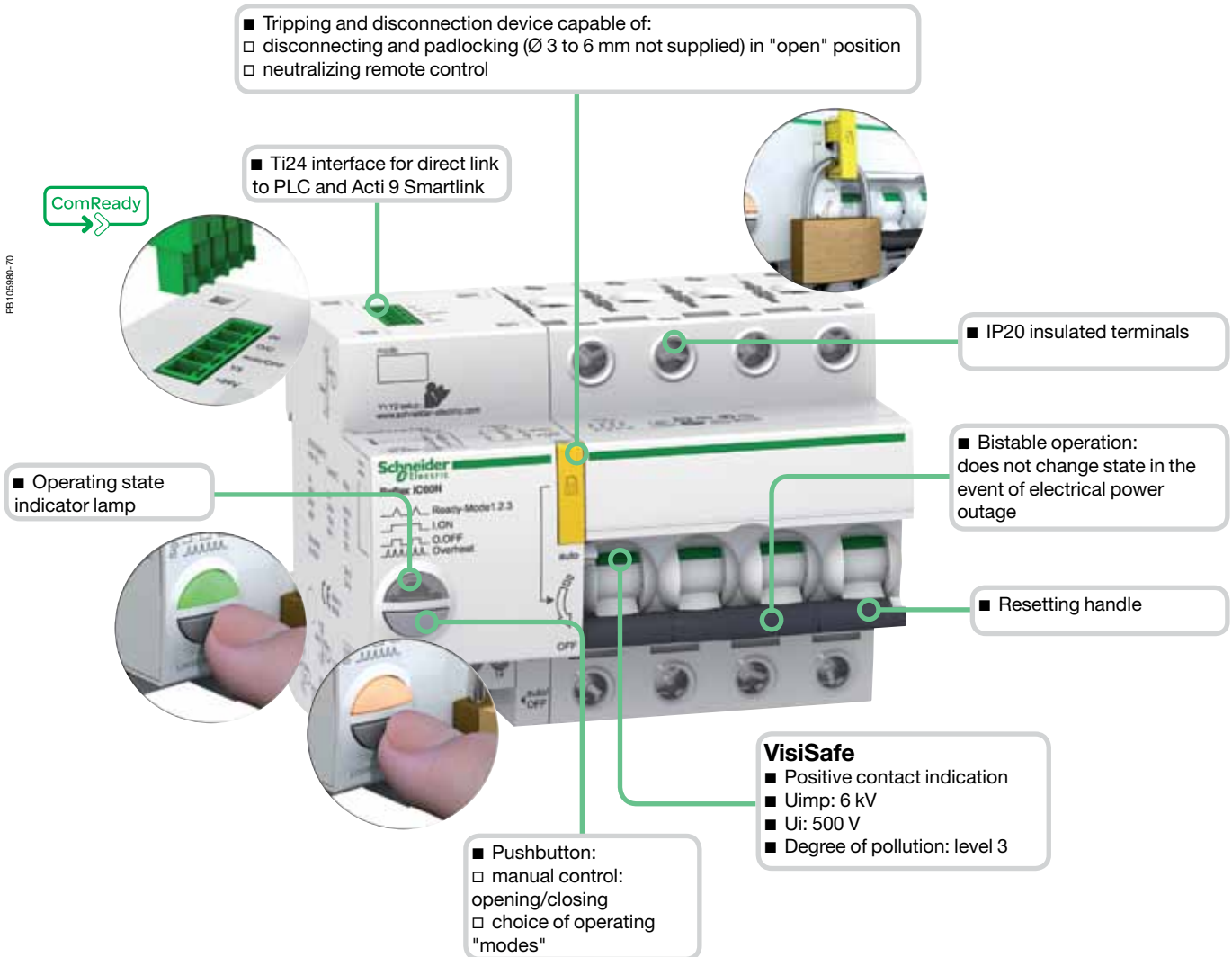
6

Catalogue numbers

| Reflex iC60 circuit breaker | | | | | | | | | |
|-----------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Type | 2P | | | 3P | | | 4P | | |
| Rating (In) | Curve | | | Curve | | | Curve | | |
| | B | C | D | B | C | D | B | C | D |
| Reflex iC60H | | | | | | | | | |
| With Ti24 interface | | | | | | | | | |
| 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.)



- 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) |
| 0 V | V DC power supply |

DB123765



DB123516



| | |
|----------|---|
| Y1 | Latched order control |
| Y2 | Control by impulse-type |
| N | 230 V AC power supply |
| P | |
| O/C | Control circuit state indication contact |
| | 11 12 14 |
| auto/OFF | Circuit-breaker tripping indication contact |
| | 21 22 24 |

Control, remote control Integrated control circuit breakers

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

DB123517

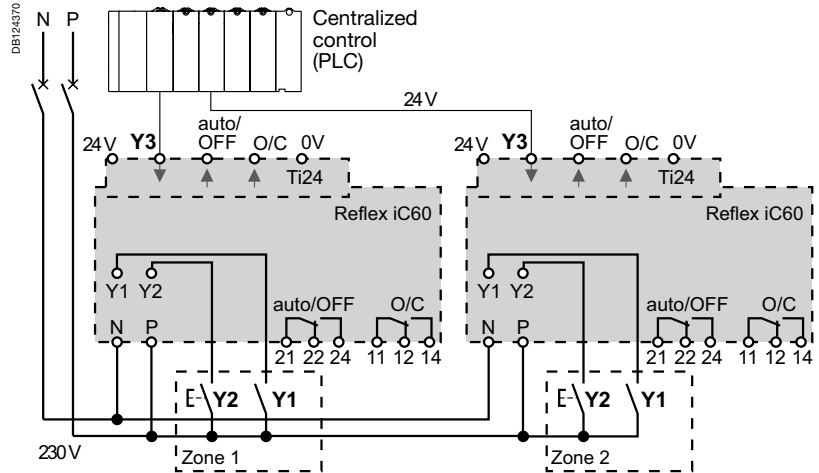


■ Operating state indicator lamp

■ Pushbutton for:
□ "mode" selection
□ opening/closing manual control

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

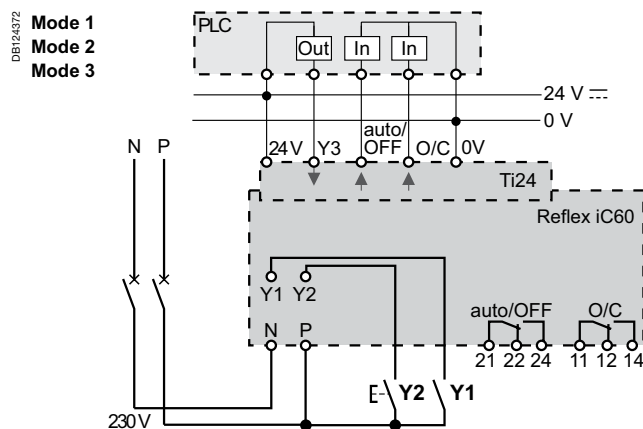


Table of modes

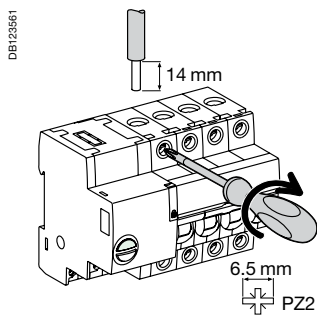
| | Mode 1 | Mode 2 | Mode 3 |
|---------------------------------|-----------------|-----------------|----------------|
| Reflex iC60 with interface Ti24 | ■ Possible mode | ■ Possible mode | ■ Default mode |

6

Control, remote control Integrated control circuit breakers

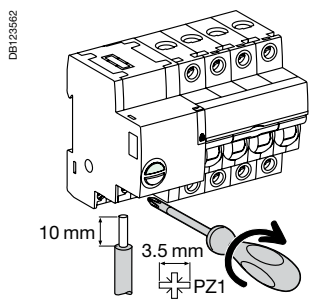
Reflex iC60H (curves B, C, D) (cont.)

Power connection



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

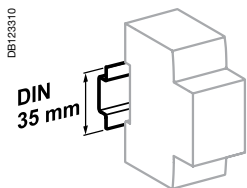
Control connection



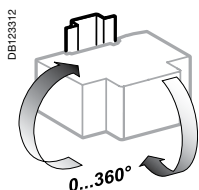
| Terminal | Tightening torque | Without accessories | | |
|--------------------------------------|-------------------------|----------------------------|----------------------------|----------------------------|
| | | Copper cables | | |
| | | Rigid | Flexible | Flexible with ferrule |
| Power supply (N/P) Inputs (Y1/Y2) | 1 N.m | 1 to 10 mm ² | 1 to 6 mm ² | 1 to 4 mm ² |
| Outputs (O/C, auto/OFF) | 0.7 N.m | 1 to 2.5 mm ² | 1 to 2.5 mm ² | 1 to 1.5 mm ² |
| Ti24 interface | Spring-loaded terminals | 0.5 to 1.5 mm ² | 0.5 to 1.5 mm ² | 0.5 to 1.5 mm ² |

Control, remote control Integrated control circuit breakers

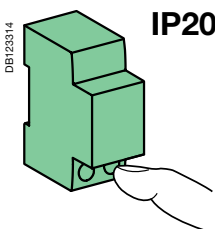
Reflex iC60H (curves B, C, D) (cont.)



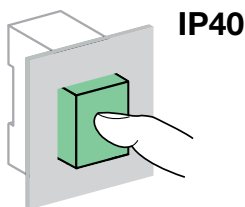
Clip on DIN rail 35 mm.



Indifferent position of installation.



IP20



IP40

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 I _n ± 20 % |
| | Curve C | 8 I _n ± 20 % |
| | Curve D | 12 I _n ± 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 ⁽¹⁾ |
| | AC5a - AC5b | Up to 15,000 cycles ⁽¹⁾ |
| | AC7c | Up to 20,000 cycles ⁽¹⁾ |
| 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



ARA iC60



ARA iID

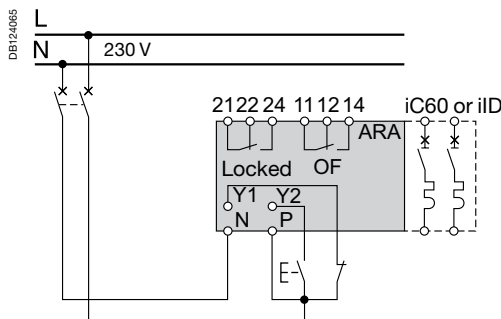
The ARA reclosing auxiliary can:

- 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



| 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 21 22 24 | Automatic recloser inhibition indication contact | |
| OF 11 12 14 | 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 |

ARA automatic reclosers (cont.)

For iC60 circuit breakers
and iID residual current circuit breakers





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.

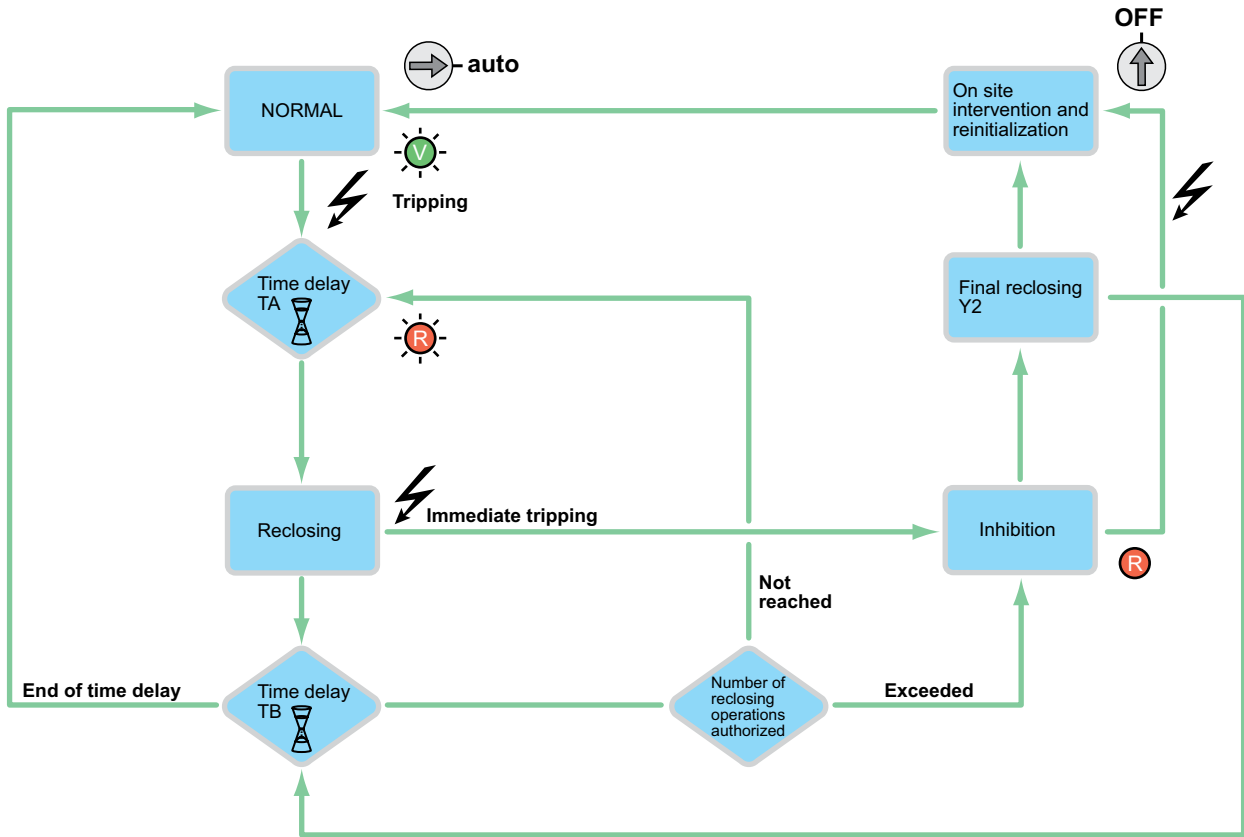
If, following these attempts, the fault is still present, the device places itself in waiting for manual reclosing, or final remote reclosing (Y2).

| ARA iC60 | | Number of reclosing attempts | Delay before reclosing | Check time | Final reclosing Y2 |
|--|------------|------------------------------|--|--|-----------------------|
| | | | TA | TB | |
| Program | | | | | |
| DB124061  DB124062  DB124063  DB124064  | 1 2 4 3 | 1 | 60 s | 6 min. | Once after inhibition |
| | 1 2 4 3 | 3 | 60 s 3 min. 3 min. | 2 min. 6 min. 6 min. | |
| | 1 2 4 3 | 5 | 60 s 3 min. 3 min. 3 min. 3 min. | 2 min. 6 min. 6 min. 6 min. 6 min. | |
| | 1 2 4 3 | 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 |

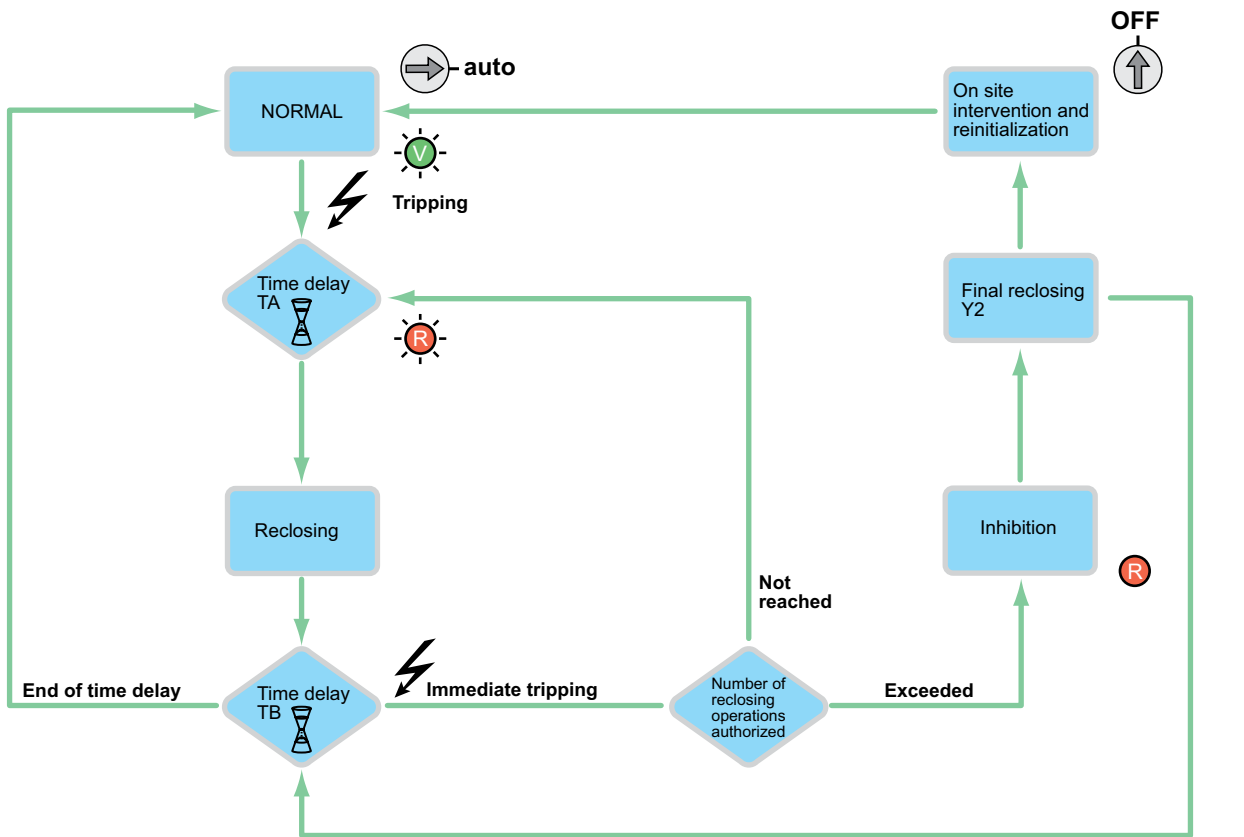
ARA iC60 operating diagram

DB404539



ARA iID operating diagram

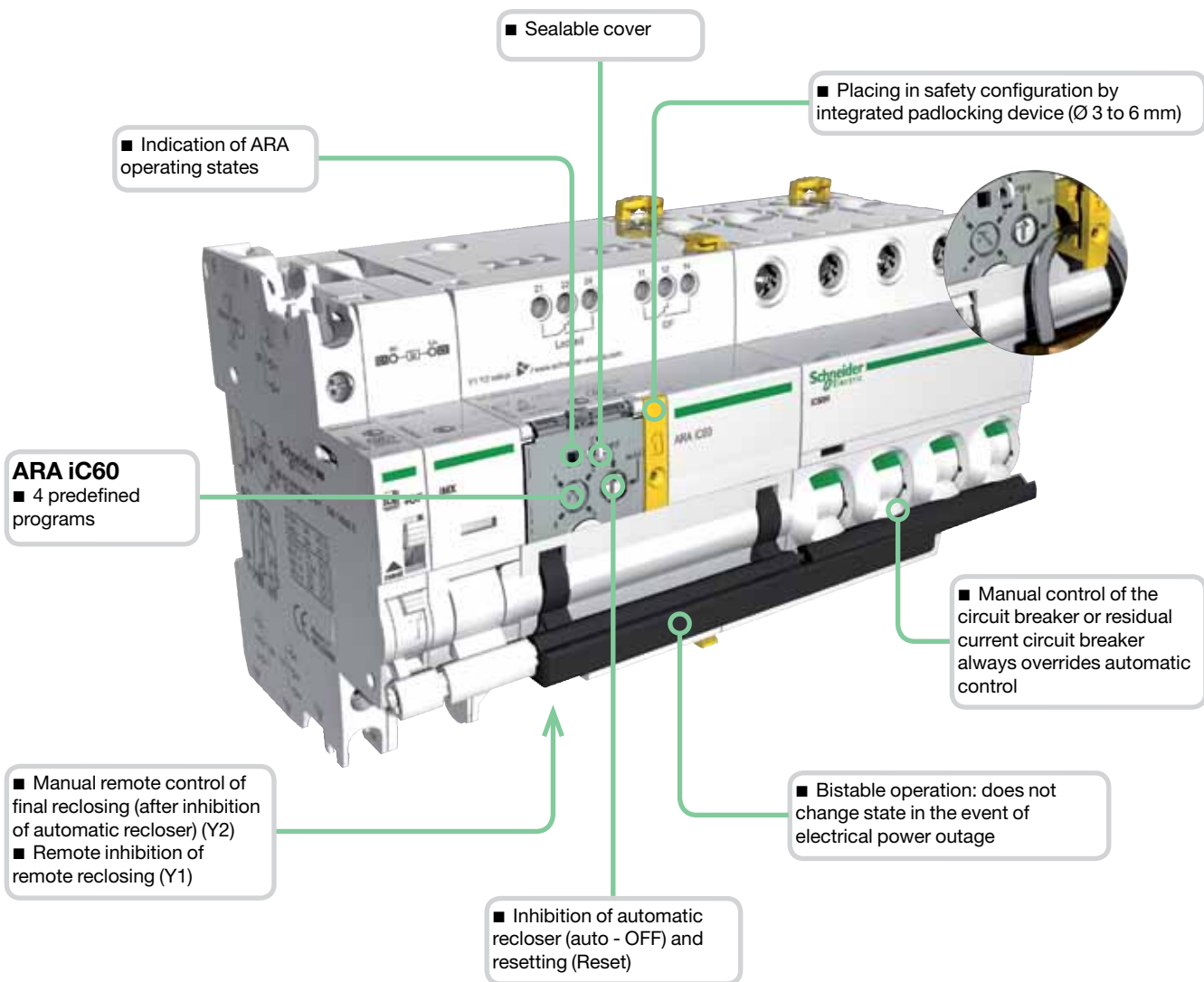
DB404538



ARA automatic reclosers (cont.)

For iC60 circuit breakers
and iID residual current circuit breakers

PB10055-104

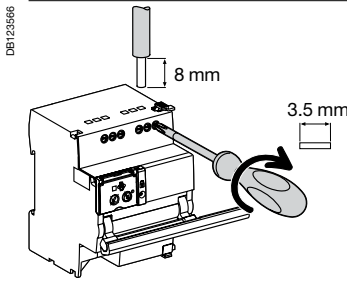
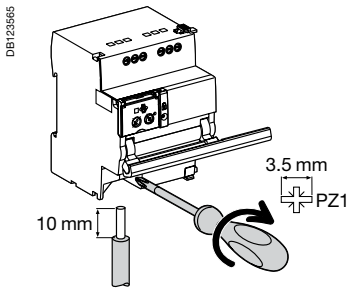


Control Remote control

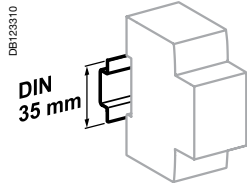
ARA automatic reclosers (cont.)

For iC60 circuit breakers
and iID residual current circuit breakers

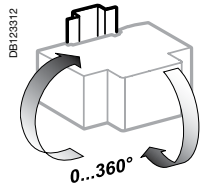
Connection



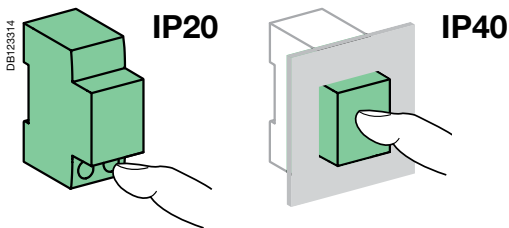
| Terminal | Tightening torque | Copper cables | | |
|--------------------------------------|-------------------|--|--|--|
| | | Rigid | Flexible | Flexible with ferrule |
| Power supply (N/P) Inputs (Y1/Y2) | 1 N.m | 0.5 to 10 mm ² 2 x 0.5 to 2 x 2.5 mm ² | 0.5 to 6 mm ² 2 x 0.5 to 2 x 2.5 mm ² | 0.5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



Clip on DIN rail 35 mm.



Indifferent position of installation.



Technical data

Control circuit

| | |
|--|---|
| Supply voltage (U _e) (N/P) | 230 V AC, 50/60 Hz |
| Control voltage (U _c) | 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 |

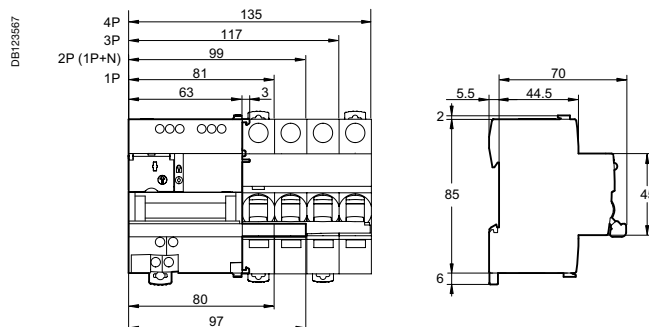
Additional characteristics

| | | |
|---|---|-----------------------------|
| Degree of protection (IEC 60529) | Device only | IP20 |
| | Device in a modular enclosure | IP40 Insulation class II |
| Insulation voltage (U _i) | 400 V | |
| Degree of pollution (IEC 60947) | 3 | |
| Rated impulse withstand voltage (U _{imp}) | 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)



PB106253-40



ComReady

PB106251-40



6

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 |
| For circuit breakers 1P, 1P+N, 2P | Voltage | | |
| Without Ti24 interface | 230 V AC, 50/60 Hz | A9C70112 | 7 |
| With Ti24 interface | 230 V AC, 50/60 Hz | A9C70122 | 7 |
| For 3P, 4P circuit breakers | | | |
| Without Ti24 interface | 230 V AC, 50/60 Hz | A9C70114 | 7 |
| With Ti24 interface | 230 V AC, 50/60 Hz | A9C70124 | 7 |
| Auxiliaries | | See module CA907000 and CA907002 | |

DE123813



Without Ti24 interface

DE123572



DE123573

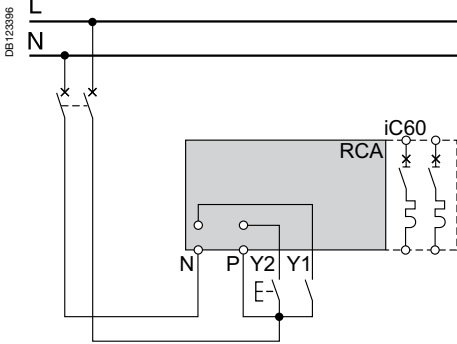


Legend

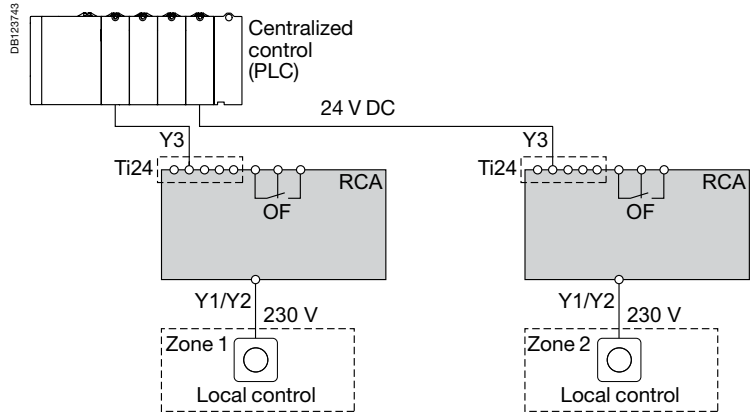
| Type | Application |
|------------------------------|---|
| OFF | All remote control inhibited |
| auto | |
| A | Circuit breaker remote reclosing after tripping allowed |
| B | Circuit breaker remote reclosing after tripping inhibited |
| Green indicator lamp | Remote control possible |
| Orange indicator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

Standard RCA

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



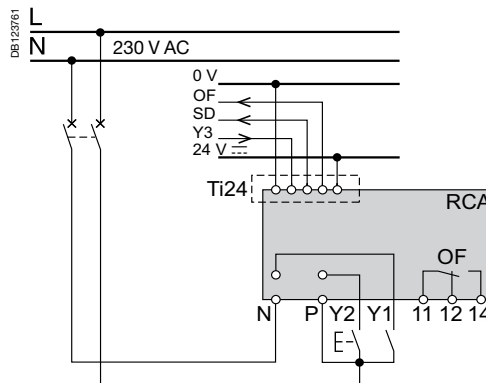
RCA Ti24



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

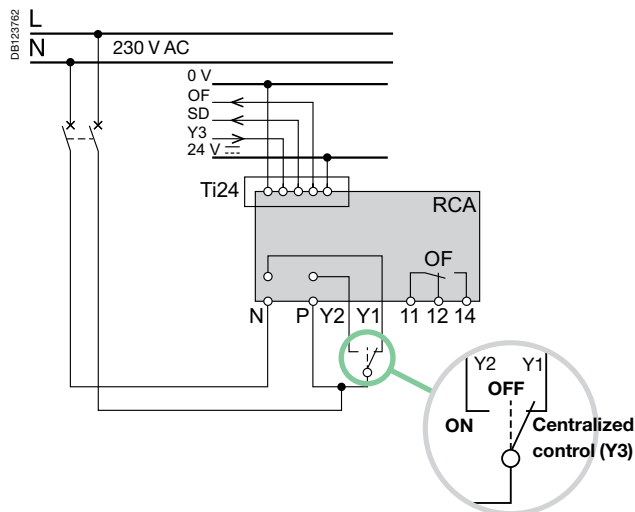
RCA Ti24 mode 1



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

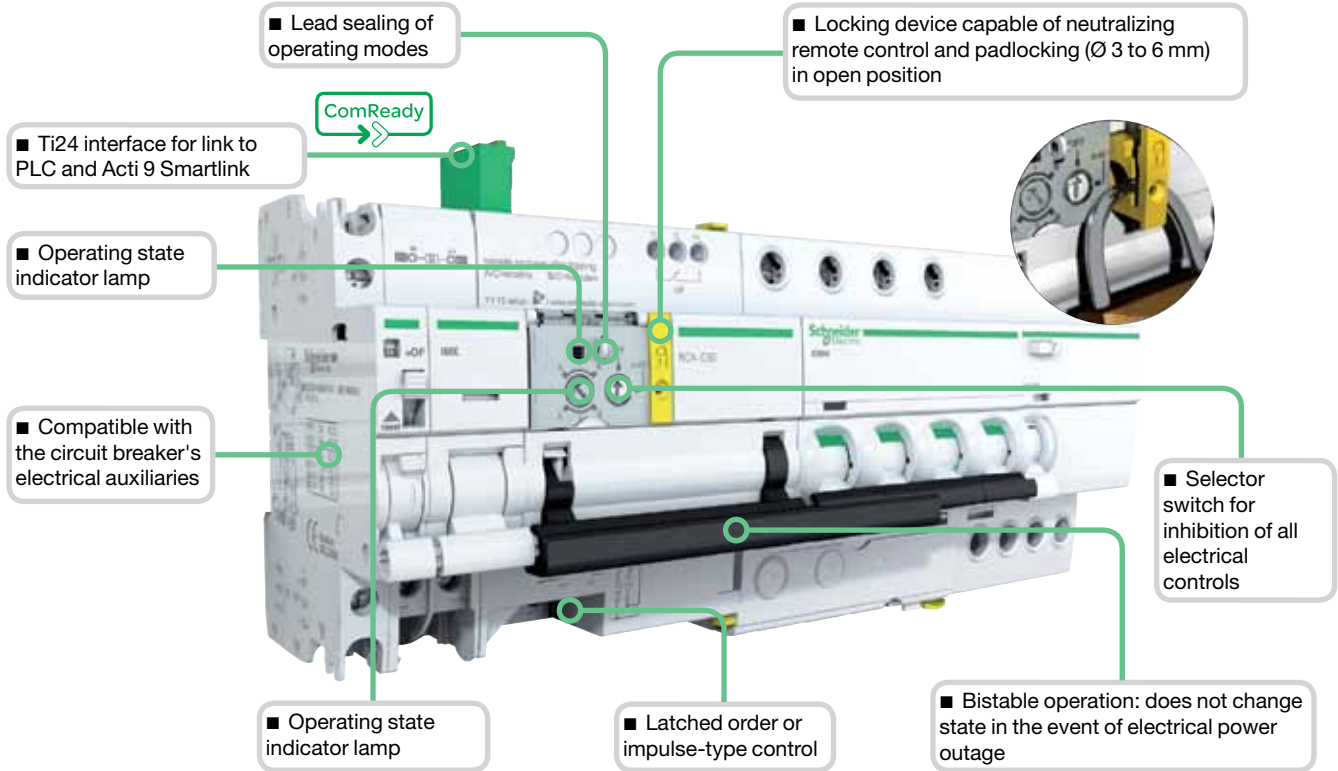
RCA Ti24 mode 3



Control Remote control

RCA remote controls (cont.) For iC60 circuit breakers

DB123576



6

DB123763



DB123579



DB123578



Legend

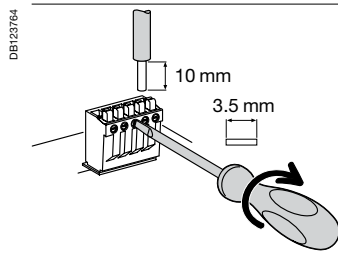
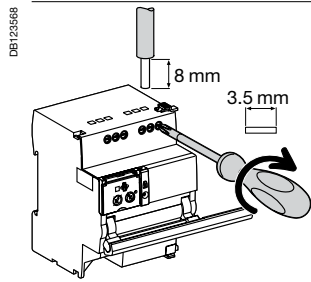
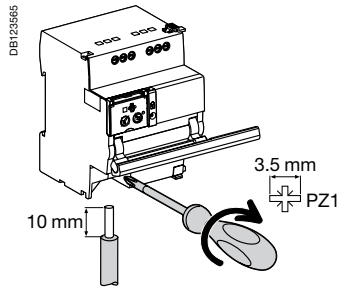
| Type | Application |
|--------|---|
| +24VDC | V DC power supply |
| Y3 | Latched order centralized control |
| SD | Circuit-breaker tripping information |
| OF | Control circuit state information (open/closed) |
| 0V | V DC power supply |
| Y1 | Latched order local control |
| Y2 | Impulse-type or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



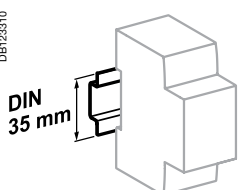
Indication auxiliaries Tripping auxiliaries RCA remote control iC60 circuit breaker Vigi iC60 add-on RCD

| | | | | |
|----------|---|---------------------|------------|------------------|
| <p>3</p> | <p>2</p> | <p>1</p> | | |
| No | 1 (iSD or iOF or iOF/SD+OF or iOF+SD24) | 1 (iMX or iMN) max. | <p>RCA</p> | <p>iC60</p> |
| 1 iOF | 1 (iSD or iOF or iOF/SD+OF) | No | | <p>Vigi iC60</p> |

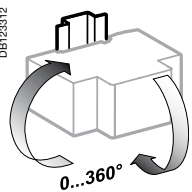
Connection



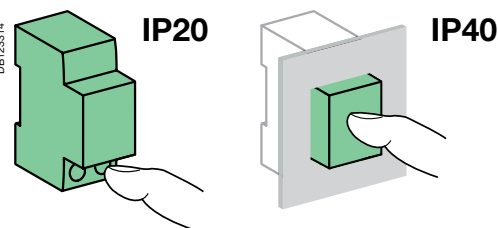
| Terminal | Tightening torque | Without accessories | | |
|--------------------------------------|-------------------------|--|--|--|
| | | Copper cables | Rigid | Flexible |
| Power supply (N/P) Inputs (Y1/Y2) | 1 N.m | 0.5 to 10 mm ² 2 x 0.5 to 2 x 2.5 mm ² | 0.5 to 6 mm ² 2 x 0.5 to 2 x 2.5 mm ² | 0.5 to 4 mm ² 2 x 0.5 to 2 x 2.5 mm ² |
| Outputs (OF) | 0.7 N.m | 0.5 to 2.5 mm ² 2 x 0.5 to 2 x 1.5 mm ² | 0.5 to 2.5 mm ² 2 x 0.5 to 2 x 1.5 mm ² | 0.5 to 1.5 mm ² 2 x 0.5 to 2 x 1.5 mm ² |
| Ti24 interface | Spring-loaded terminals | 0.5 to 1.5 mm ² | 0.5 to 1.5 mm ² | - |



Clip on DIN rail 35 mm.



Indifferent position of installation.



Technical data

Control circuit

| | |
|--|---|
| Supply voltage (U _e) (N/P) | 230 V AC, 50/60 Hz |
| Control voltage (U _c) | 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 (U _i) | | 400 V |
| Degree of pollution (IEC 60947) | | 3 |
| Rated impulse withstand voltage (U _{imp}) | | 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) |

IEC/EN 61131-2

Acti 9 Smartlink Modbus Slave and Acti 9 Smartlink Ethernet are used to transfer data from Acti 9 devices to a PLC or monitoring system via the communication system:

- Modbus serial line for Acti 9 Smartlink Modbus Slave
- Modbus Ethernet TCP/IP or http for Acti 9 Smartlink Ethernet.

Functions

Data transmission between the 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 opening/closing 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 opening/closing 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.
- Analog sensors only for Acti 9 Smartlink Ethernet:
 - temperature sensor
 - humidity sensor,
 - CO₂ detector,
 - optical detector
 - ...

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

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

Installation

- Mounting in switchboards:
 - width 24 modules per row
 - minimum spacing between rails 150 mm.
- Mounting on
 - DIN rail, with mounting kit A9XMFA04
 - Linergy FM 80 A, with locking clips supplied
 - Linergy FM 200 A, with mounting kit A9XM2B04.

Test

- The communication and cabling test for the connected devices can be performed using Acti 9 Smart Test software

PB10797-47



DE40452



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, Windows 7, Windows 8
- To be download on: Schneider Electric web sites:
 - schneider-electric.com or
 - schneider-electric country web site



DE405140

DB406513

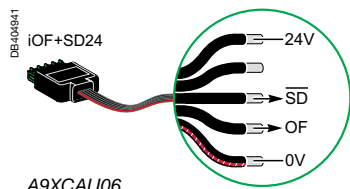




Acti 9 Smartlink Modbus Slave



Acti 9 Smartlink Ethernet



A9XCAU06



PB107804-43

Catalogue numbers

| Acti 9 Smartlink | | | |
|---|---|--------|-----------------|
| Type | | Set of | |
| Acti 9 Smartlink Modbus Slave | | 1 | A9XMSB11 |
| Supplied with | Modbus connector | 1 | |
| | 24 V DC power supply connector | 1 | |
| | Locking clips for mounting on Linergy FM 80 | 2 | |
| Acti 9 Smartlink Ethernet | | 1 | A9XMEA08 |
| Supplied with | Connector for 4-point analog output | 1 | |
| | Modbus connector | 1 | |
| | 24 V DC power supply connector | 1 | |
| | Locking clips for mounting on Linergy FM 80 | 2 | |
| Accessories | | | |
| USB cable link / 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 |
| | Linergy FM 200 A (4 adapters) | 1 | A9XM2B04 |
| Spare parts | Lock for Linergy FM 80 A (2 clips) | 1 | A9XMLA02 |



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 | |
| Impulse meters complying with the IEC 62053-21 standard | |
| 24 V DC indicator lamps, Harmony XVL range | |
| All loads not exceeding 100 mA, 24 V DC | |
| Light sensitive switches: example IC2000 | |
| Timers, thermostats, time switches, load shedding devices | |
| All 24 V DC auxiliary contacts, IEC 61131-2 type 1 | |
| With analog outputs | |
| Temperature and humidity sensors, with a 0-10 V or 4-20 mA output | |
| CO ₂ and optical detectors, with a 0-10 V or 4-20 mA output | |

Example of an installation



DB4-06505



Ethernet link
 ■ 10/100 MB Ethernet, Modbus TCP server

PBT13600-94



DB4-06544



DB4-06506

1 analog input channel
 ■ Example: temperature sensor connection

6

DB4-06508



Prefabricated cables
 ■ Simplified cabling
 ■ Fast and safe

DB4-06507



Modbus Communication
 ■ Up to 8 Acti 9 Smartlink Modbus Slave or others slaves Modbus connected

Connection to the Ethernet network

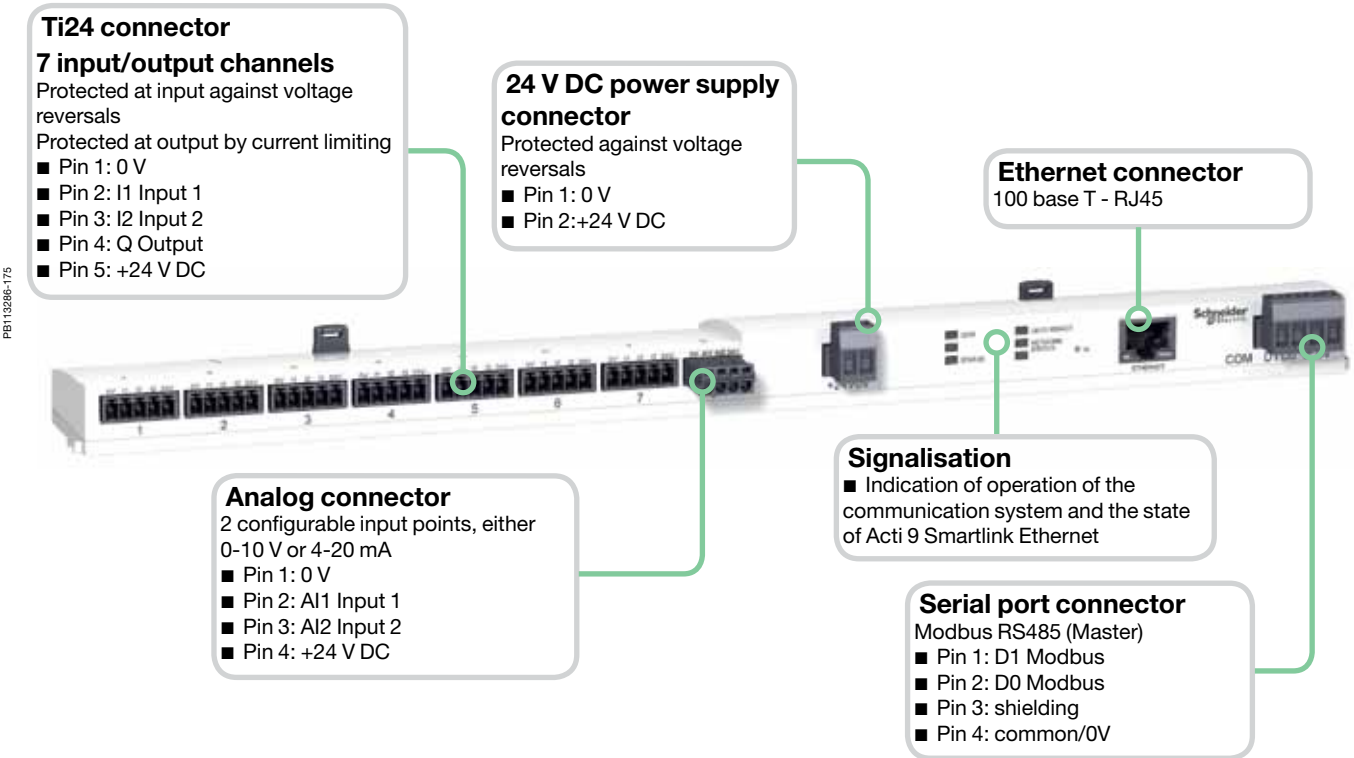
Acti 9 Smartlink Ethernet has an embedded web server that can be used to configure the connection to the Ethernet network

DB4-06473

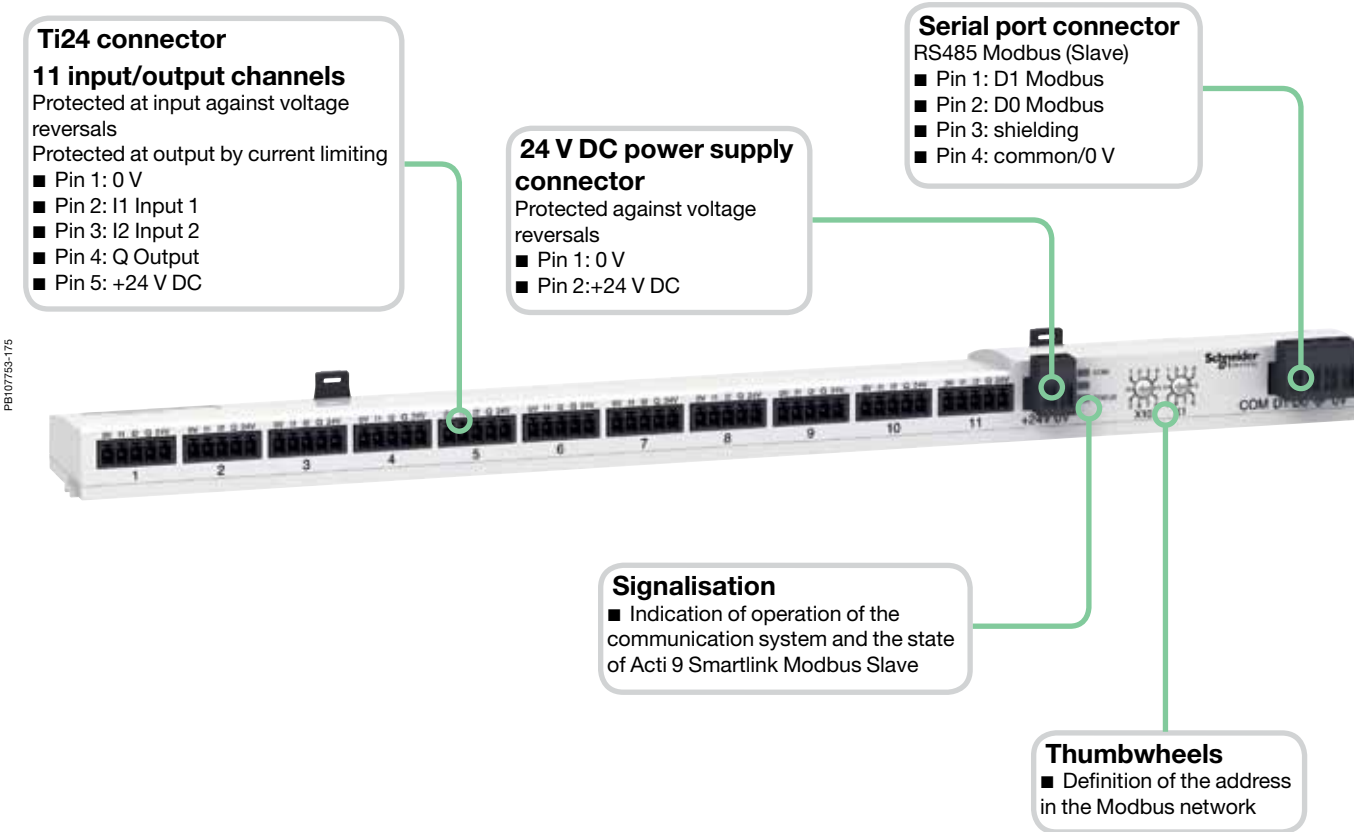


■ Web Page available, to configure Acti 9 Smartlink Ethernet communication Ethernet parameter, to visualize or control data

Acti 9 Smartlink Ethernet



Acti 9 Smartlink Modbus Slave



Common technical characteristics

| Power supply | | |
|--|-------------------------------|--|
| Rated | | 24 V DC \pm 20 % |
| Maximum input current | | 1.5 A |
| Maximum inrush current | | 3 A |
| Meter | | |
| Capacity | | 2 ³² pulses per input |
| Input characteristics | | |
| Number of channels | Acti 9 Smartlink Modbus Slave | 11 of 2-input channels |
| | Acti 9 Smartlink Ethernet | 7 of 2-input channels |
| Type of input | | Current collector Type 1 IEC 61131-2 |
| Maximum cable length | | 500 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 | 2 ms |
| | In state 0 | 2 ms |
| Isolation | | No isolation between channels |
| Negative sequence voltage protection | | Yes |
| Output characteristics | | |
| Number of output channels | Acti 9 Smartlink Modbus Slave | 11 |
| | Acti 9 Smartlink Ethernet | 7 |
| Type of output | | 24 V DC 0.1 A current source |
| Maximum cable length | | 500 m |
| Rated voltage | Voltage | 24 V DC |
| | Maximum current | 100 mA |
| Filtering time | In state 1 | 2 ms |
| | In state 0 | 2 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 ₂ S / SO ₂ / NO ₂ / Cl ₂ |
| 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 | | |
| Duration of saving memory | | 10 years |
| Prefabricated cables characteristics | | |
| Dielectric resistance | | 1 kV / 5 min |
| Minimum draw-out resistance | | 20 N |

Acti 9 Smartlink Modbus Slave 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 |
| Protocol | Master/Slave | |
| Type of device | Slave | |
| Modbus addressing range | 1 to 99 | |
| Maximum length of the bus | 1000 m | |
| Type of bus connector | 4-pin connector | |

Acti 9 Smartlink Ethernet technical characteristics

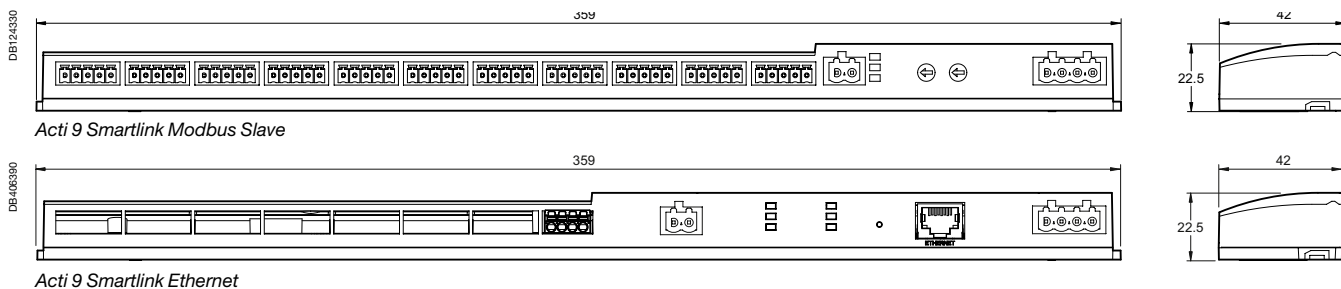
| Characteristics of the Ethernet link | |
|--------------------------------------|--|
| Link | 10/100 MB Ethernet |
| Protocol | Modbus TCP server http (Web pages) |
| Address mode | Static and dynamic (supplied, by default, in dynamic mode) |

| Characteristics of Gateway | |
|----------------------------|----------------------------|
| Protocol | Modbus TCP/IP -> Modbus SL |
| Modbus slave number | 8 |
| Modbus addressing range | 1 to 247 |

| Characteristics of the Modbus Master link | | |
|---|--------------------------------------|--|
| Link | Modbus serial connection, RTU, RS485 | |
| Transmission | Transfer rate | 9600 baud ... 19200 baud, self-adaptable |
| | Support | Shielded cable, double twisted pair |
| Maximum length of the bus | 1000 m | |
| Type of bus connector | 4-pin connector | |

| Characteristics of the analog inputs | |
|--------------------------------------|---|
| Number | 2 |
| Type | Separate configuration for each input, either 0-10 V or 4-20 mA |
| Measuring accuracy | 1/100 full scale |
| Resolution | 12 bits |
| Acquisition time | 500 ms |
| Isolation | No isolation between channels |
| Power supply | 0-24 V DC |
| Type of cable | Shielded cable, double twisted pair |
| Maximum cable length | 30 m |
| Protection | Short-circuit protection |

Dimensions (mm)



Weight (g)

| Acti 9 Smartlink | |
|-------------------------------|------------|
| Type | Weight (g) |
| Acti 9 Smartlink Modbus Slave | 195 |
| Acti 9 Smartlink Ethernet | 180 |

Connection

| | Terminal | Tightening torque | Copper cables | | |
|--|------------------------|------------------------|----------------------------|----------------------------|----------------------------|
| | | | Rigid | Flexible | Flexible with ferrule |
| <p>DB123560</p> <p>Connector cat. no: A9XC2412</p> | Ti24 interface | Spring loaded terminal | 0.5 to 1.5 mm ² | 0.5 to 1.5 mm ² | - |
| <p>DB406517</p> | Analog connector | 0.8 N.m | 0.1 to 1.5 mm ² | 0.1 to 1.5 mm ² | 0.1 to 1.5 mm ² |
| <p>DB124331</p> | Power supply connector | 0.8 N.m | 0.2 to 1.5 mm ² | 0.2 to 1.5 mm ² | 0.2 to 1.5 mm ² |
| <p>DB124341</p> | Modbus connector | 0.8 N.m | 0.25 mm ² | 0.25 mm ² | 0.25 mm ² |
| <p>DB405142</p> | | | | | |

6

iCT contactors **pages 7/2 to 7/13**
 iCT contactors pages 7/2 to 7/9
 Electrical auxiliaries pages 7/10 to 7/12
 Accessories page 7/13

Impulse relays **pages 7/14 to 7/28**
 iTL impulse relays pages 7/14 to 7/21
 iTLc, iTLm, iTLs with built-in auxiliary function page 7/19
 Electrical auxiliaries for iTL impulse relays pages 7/22 to 7/25
 Accessories for iTL impulse relays page 7/26
 iTL+ high-performance impulse relays pages 7/27 to 7/28

iIL indicator lights **page 7/29**

iPB pushbuttons **page 7/30**

iSW switches **pages 7/31 to 7/37**

iSSW linear switches **page 7/38**

iTR transformers **pages 7/39 to 7/40**

iSO bells and iRO buzzers **page 7/41**

STI isolatable fuse carriers **pages 7/42 to 7/45**

SBI fuse holder with indicator light **pages 7/46 to 7/47**

DIN rail selector switches iCMB, iCMD, iCME, iCMC, iCMV and iCMA **pages 7/48 to 7/50**

XB device holder **page 7/51**

Relays **pages 7/52 to 7/60**
 Time delay relays iRTA, iRTB, iRTC, iRTH, iRTL and iRTMF pages 7/54 to 7/55
 Interface relays iRBN and iRTBT page 7/56
 iRLI changeover and iERL extension relays page 7/57
 iRCP phase control, iRCI current control, IRCU voltage control and iRCC compressor control relays pages 7/58 to 7/59

Timers **pages 7/61 to 7/65**
 MIN, MINs, MINp and MINT pages 7/61 to 7/65

Time switches **pages 7/66 to 7/76**
 IHP, IH, IHH and ITA pages 7/66 to 7/69
 IHP and ITA pages 7/70 to 7/71
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Twilight switches **pages 7/81 to 7/86**
 IC100, 1C2000, IC2000P+, IC100k, abd IC Astro pages 7/81 to 7/83
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AMP/VLT/FRE digital meters **page 7/87**

Kilowatt-hour meters **pages 7/88 to 7/89**

Energy Meter Series iEM3000 **pages 7/90 to 7/92**

Power Meter Series PM3200 **pages 7/93 to 7/99**
 Functions and characteristics pages 7/93 to 7/96
 Installation and connection pages 7/97 to 7/99

CT current transformers **pages 7/100 to 7/108**

CH/CI counters **page 7/109**



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

7

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 | |
| Auxiliaries | | | | | | | | Contactors that can be equipped with auxiliaries | | | | |
| 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 | | No | No | Yes (for contactors 230 V - 50 Hz) | | | | No | Yes (for contactors 230 V - 50 Hz) | | | |

PP106115-39

Yellow clip

■ Clip-on system for electrical and mechanical connections between contactors ≥ 25 A and their auxiliaries

■ Insulated terminals IP20

■ Minimum noise

■ Large circuit labeling area

■ Mechanical contact position indicator

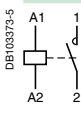
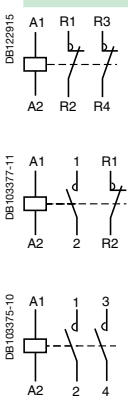
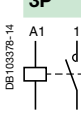
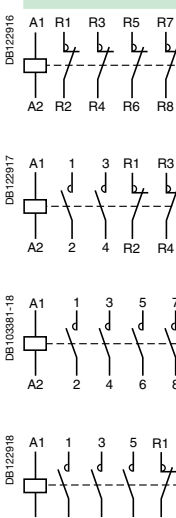
■ Consistent with the entire Acti 9 offer and with all types of lighting

■ 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

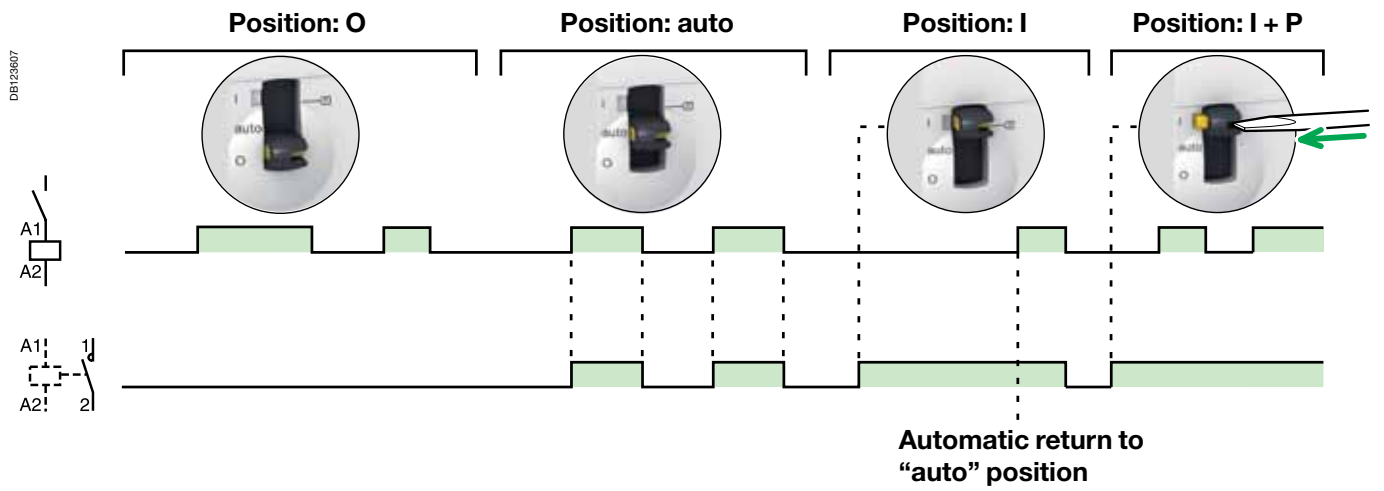
iCT contactors - 50 Hz

| Type | | | | | | Width in 9 mm modules | |
|--|-------------|-----------|--------------------------------|-----------|----------|-----------------------|---|
| 1P | Rating (In) | | Control voltage (V AC) (50 Hz) | Contact | A9C | | |
| | AC7a | AC7b | | | | | |
|  DB103373-5 | 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 | |
| | | | 230...240 | 1NO | A9C20531 | 2 | |
| | 25 A | 8.5 A | 220 | 1NO | A9C20531 | 2 | |
| | | | 230...240 | 1NO | A9C20731 | 2 | |
|  DB122915 DB103377-11 DB103375-10 | 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 | |
| | | 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 |
| | | 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 |
| | | 230...240 | 2NC | A9C20736 | 2 | | |
| | 40 A | 15 A | 220...240 | 2NO | A9C20842 | 4 | |
| | 63 A | 20 A | 24 | 2NO | A9C20162 | 4 | |
| | | | 220...240 | 2NO | A9C20862 | 4 | |
| | 100 A | - | 220...240 | 2NO | A9C20882 | 6 | |
|  DB103378-14 | 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 | |
|  DB122916 DB122917 DB103381-18 DB122918 | 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 | |
| | | 40 A | 15 A | 220...240 | 2NO+2NC | A9C20838 | 4 |
| | 220...240 | | | 4NO | A9C20844 | 6 | |
| | 63 A | 20 A | 220...240 | 4NO | A9C20847 | 6 | |
| | | | 24 | 4NO | A9C20164 | 6 | |
| | | | 220...240 | 4NO | A9C20864 | 6 | |
| | | | 24 | 4NC | A9C20167 | 6 | |
| | | 100 A | - | 220...240 | 4NC | A9C20867 | 6 |
| | 220...240 | | | 2NO+2NC | A9C20868 | 6 | |
| 220...240 | 3NO+1NC | | | A9C20869 | 6 | | |
| | | | 220...240 | 4NO | A9C20884 | 12 | |

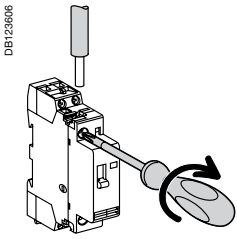
Catalogue numbers

| iCT manual control contactor 50 Hz | | | | | | | |
|------------------------------------|-------------|-----------|-----------------------------------|----------|----------|-----------------------|---|
| Type | Rating (In) | | Control voltage (V AC) (50/60 Hz) | Contact | | Width in 9 mm modules | |
| | 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...240 | 2NO | A9C21532 | 2 | |
| | | | 24 | 2NO | A9C21142 | 2 | |
| | | | 220...240 | 2NO | A9C21842 | 4 | |
| 40 A | 15 A | 24 | 2NO | A9C21162 | 4 | | |
| | | 220...240 | 2NO | A9C21862 | 4 | | |
| | 25 A | 8.5 A | 220...240 | 3NO | A9C21833 | 4 | |
| | 40 A | 15 A | 220...240 | 3NO | A9C21843 | 6 | |
| | | 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 | | |

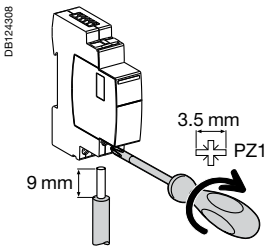
Operation (Manual control contactor)



Connection

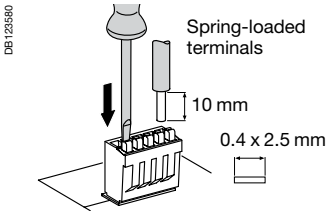


| Type | Rating | Length tripping | Circuit | Tightening torque | Copper cables | | |
|----------------------------|-----------|-----------------|---------|-------------------|-------------------------|---|---|
| | | | | | Rigid | Flexible or ferrule | |
| iCT | PZ1: 4 mm | 16 - 100 A | 9 mm | Control | 0.8 N.m | 1.5 to 2.5 mm: 2 x 1.5 mm ² | 1.5 to 2.5 mm: 2 x 2.5 mm ² |
| | | | | | | | |
| | PZ2: 6 mm | 40 A - 63 A | 14 mm | 3.5 N.m | 6 to 25 mm ² | 6 to 16 mm ² | |
| | | | | | | | 100 A |
| iACTs, iACTp, iACTc, iATEt | PZ1: 4 mm | - | 9 mm | - | 0.8 N.m | 1.5 to 2.5 mm: 2 x 1.5 mm ² | 1.5 to 2.5 mm: 2 x 2.5 mm ² |



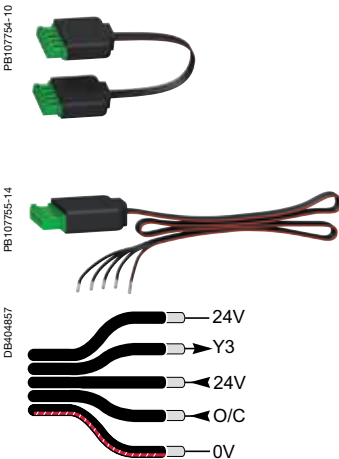
| Type | Terminals | Tightening torque | Copper cables | | |
|--------|-------------------------------------|-------------------|---|--|--|
| | | | Rigid | Flexible | Flexible or ferrule |
| iACT24 | Power supply (N/P) Input (Y1/Y2) | 1 N.m | 0.5 to 10 mm ² 2 x 0.5 to 2 x 2.5 mm ² | 0.5 to 6 mm ² 2 x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

Ti24 connector connection

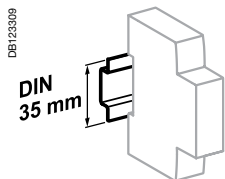


| Type | Catalogue numbers | Copper cables | |
|----------------|-------------------|--------------------------------|--------------------------------|
| | | Rigid | Flexible |
| Ti24 Interface | A9XC2412 | 1 x 0.5 to 1.5 mm ² | 1 x 0.5 to 1.5 mm ² |

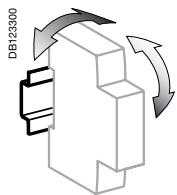
Ti24 prefabricated cables connection



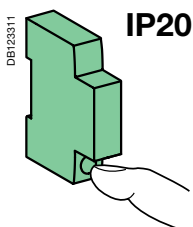
| Type | Catalogue numbers | Length |
|--|-------------------|--------|
| Connection for Acti 9 Smartlink | | |
| 6 short prefabricated | A9XCAS06 | 100 mm |
| 6 medium-sized prefabricated | A9XCAM06 | 160 mm |
| 6 long prefabricated | A9XCAL06 | 870 mm |
| Connection for PLC type terminals | | |
| 6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



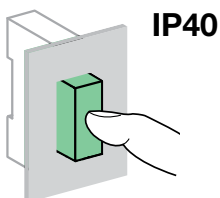
Clip on DIN rail 35 mm.



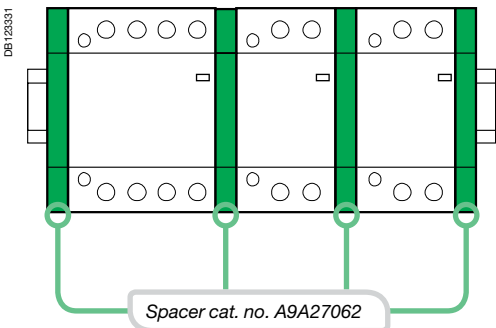
± 30° vertical.



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 ⁽¹⁾ | |
| 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

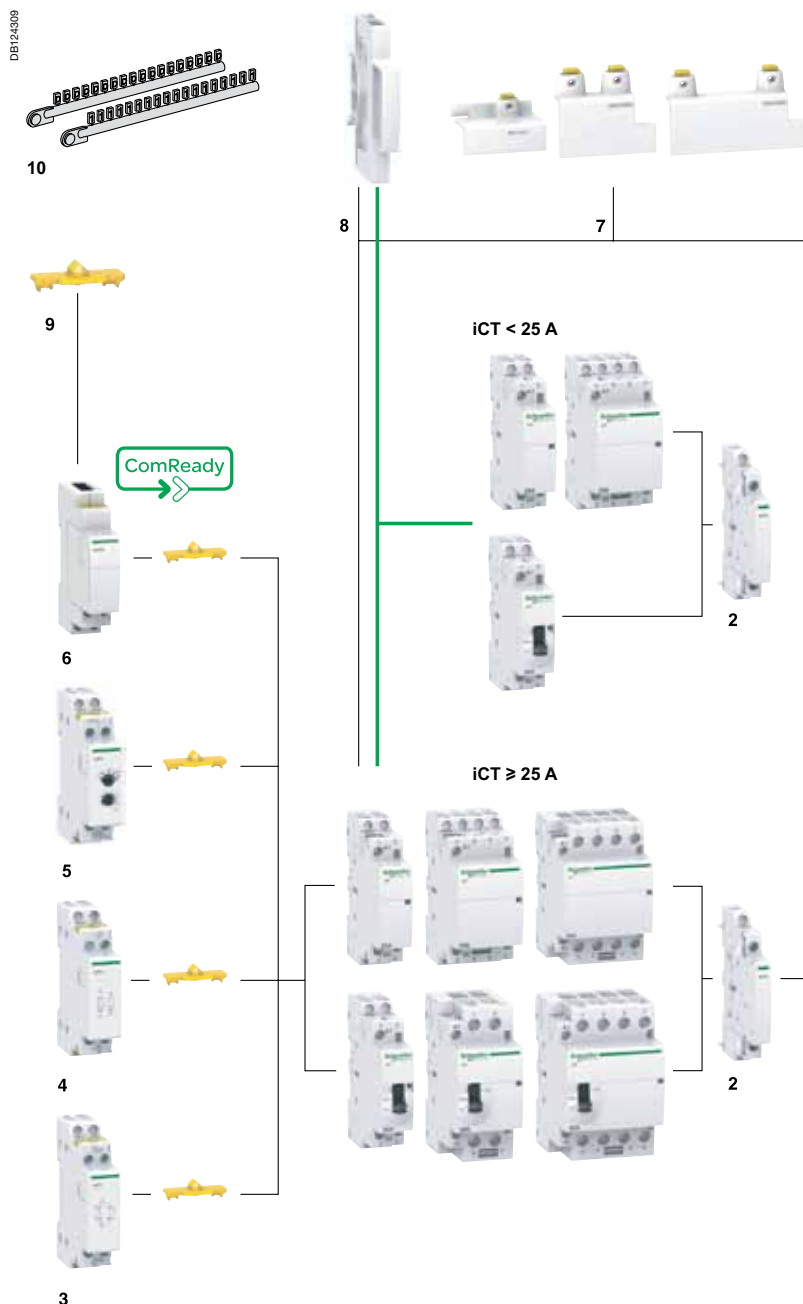
(1) In the case of contactor mounting in a enclosure for which the interior temperature is in range between 50°C and 60°C, it is necessary to use a spacer, cat. no. A9A27062, between each contactor




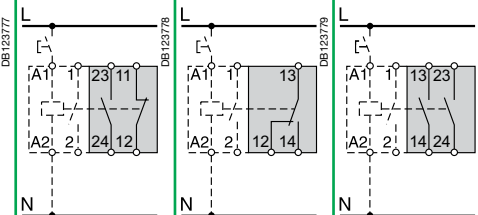
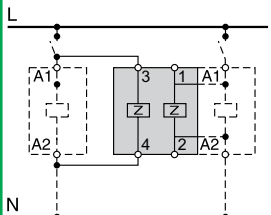
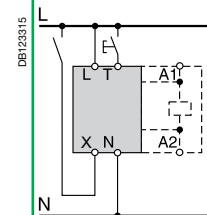
Mounting accessories

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

Auxiliaries

| Indication | | | |
|------------------------|--------|----------------|-----------------|
| 2 | iACTs | 1NO + 1NC | A9C15914 |
| | | 1CO | A9C15915 |
| | | 2NO | A9C15916 |
| Double control inputs | | | |
| 3 | iACTc | 230 V AC | A9C18308 |
| | | 24 V AC | A9C18309 |
| Coil suppression blocs | | | |
| 4 | iACTp | 12...48 V AC | A9C15919 |
| | | 48...127 V AC | A9C15918 |
| | | 220...240 V AC | A9C15920 |
| Time delay | | | |
| 5 | iATEt | 24...240 V AC | A9C15419 |
| Control and indication | | | |
| 6 | iACT24 | 230 V AC | A9C15924 |



| | | 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"> This auxiliary allows indication of the "open" or "closed" position of the contactor power contacts | | | <ul style="list-style-type: none"> This auxiliary is an interference suppressor which limits overvoltages on the control circuit | | | <ul style="list-style-type: none"> This auxiliary, combined with contactors, enables them to be controlled by 2 order types: <ul style="list-style-type: none"> impulse order for local control (input T) latched order for centralised control (input X) the last order received takes priority | |
| Wiring diagrams | |  | | |  | | |  | |
| Mounting | | <ul style="list-style-type: none"> Mounted to the right of iCT | | | <ul style="list-style-type: none"> Mounted to the left of iCT by yellow clips⁽¹⁾ By wires | | | <ul style="list-style-type: none"> Mounted to the left of iCT by yellow clips⁽¹⁾ | |
| Use | | - | | | <ul style="list-style-type: none"> The iACTp has 2 separate and identical circuits, allowing it to be combined with 2 different one on the iCT the other by wires | | | <ul style="list-style-type: none"> Mains power outages: <ul style="list-style-type: none"> < 70 ms: keeps its initial status > 80 ms: reset put back into operation by manual operation on input X or T. Minimum impulse duration: 250 ms | |
| Catalogue numbers | | A9C15914 | A9C15915 | A9C15916 | A9C15918 | A9C15919 | A9C15920 | A9C18308 | A9C18309 |
| Technical specifications | | | | | | | | | |
| Control voltage (U _e) | 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"> Minimum: 10 mA at 24 V DC/AC - cos φ = 1 Maximum: <ul style="list-style-type: none"> 5 A at 240 V AC - cos φ = 1 1 A at 130 V DC | | | - | | | - | |
| 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 ⁽²⁾ : 2 VA Holding ⁽²⁾ : 0.2 VA | |

(1) Electrical and mechanical link.
 (2) Maximum consumption of all contactors controlled.

Control (cont.)

iATEt

Time delay



- 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

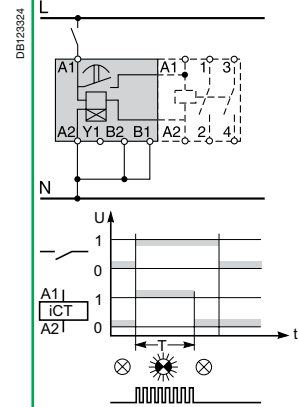
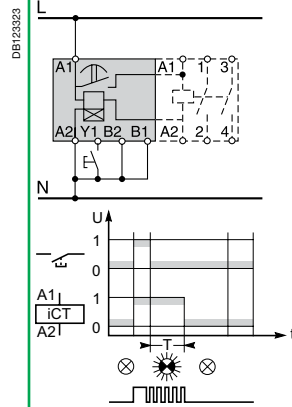
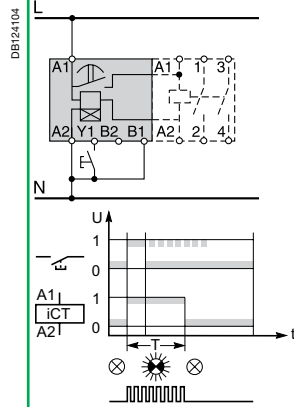
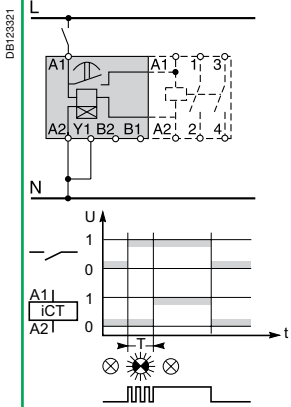
- Energize the contactor by closing a push button.
- The time delay starts as soon as the control contacts are closed.

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⁽¹⁾

A9C15419

24...240

24...110

50/60

2

-20°C to +50°C

-40°C to +80°C

Off-load: 5 VA
Inrush⁽²⁾: 3 A
Holding⁽²⁾: 0.2 A

Control and indication

| | |
|------------------|---------------------------------------|
| Auxiliary | iACT24 |
| Type | Control and indication 24 V DC |

With Ti24 connector



| | |
|-----------------|--|
| Function | <ul style="list-style-type: none"> ■ 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) ■ 230 V AC control |
|-----------------|--|

| | | |
|------------------------|--|---|
| Wiring diagrams | <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> |
|------------------------|--|---|






| | |
|-----------------|--|
| Mounting | <ul style="list-style-type: none"> ■ To the left of the iCT contactor using the yellow clips⁽¹⁾. ■ 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. |
|-----------------|--|

| | |
|--------------------|--|
| Utilization | <ul style="list-style-type: none"> ■ 230 V AC interface: <ul style="list-style-type: none"> □ 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: <ul style="list-style-type: none"> □ Y3: 24 V DC control of iCT closing on rising edge and opening on falling edge □ reading of the contactor 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) |
|--------------------|--|

| | |
|--------------------------|-----------------|
| Catalogue numbers | A9C15924 |
|--------------------------|-----------------|

| | | |
|--|------|--|
| 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 link.

| Security | | | | | |
|---|--|--|--|--|--|
| Accessories | Sealable screw shields | | | Yellow clips | Spacer |
| |  PB104485-15 |  PB104485-15 |  PB104487-15 |  PB106143-10 |  PB104483-40 |
| Function | | | | | |
| <ul style="list-style-type: none"> ■ Designed to cover terminals to avoid contact with device screws. ■ Allow sealing | | <ul style="list-style-type: none"> ■ Ensure the mechanical and/or electrical link between contactors and their auxiliaries. | | <ul style="list-style-type: none"> ■ Required to reduce temperature rise of modular devices installed side by side. ■ Recommended to separate electronic devices (thermostat, programmable clock, etc.) from electromechanical devices (relays, contactors). | |
| ■ 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 are used:

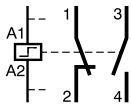
- Closing of the impulse relay pole(s) is triggered by an impulse on the coil.
- Having two stable mechanical positions, the pole(s) will be opened by the next impulse. Each impulse received by the coil reverses the position of the pole(s).
- Can be controlled by an unlimited number of pushbuttons.
-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

PB106131-34



Changeover contact iTLi

- This impulse relay has a changeover contact

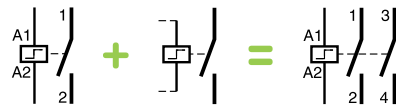


PB106134-34



Extensions iETL

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



PB106140-34



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

PB106136-34



Multi-level centralised control iATLc+c

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

PB107752-34



ComReady

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

PB106125-34



Time delay iATEt

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

PB106141-34



Control iATLz

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

PB106142-03



Step by step control iATL4

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

Mounting accessories

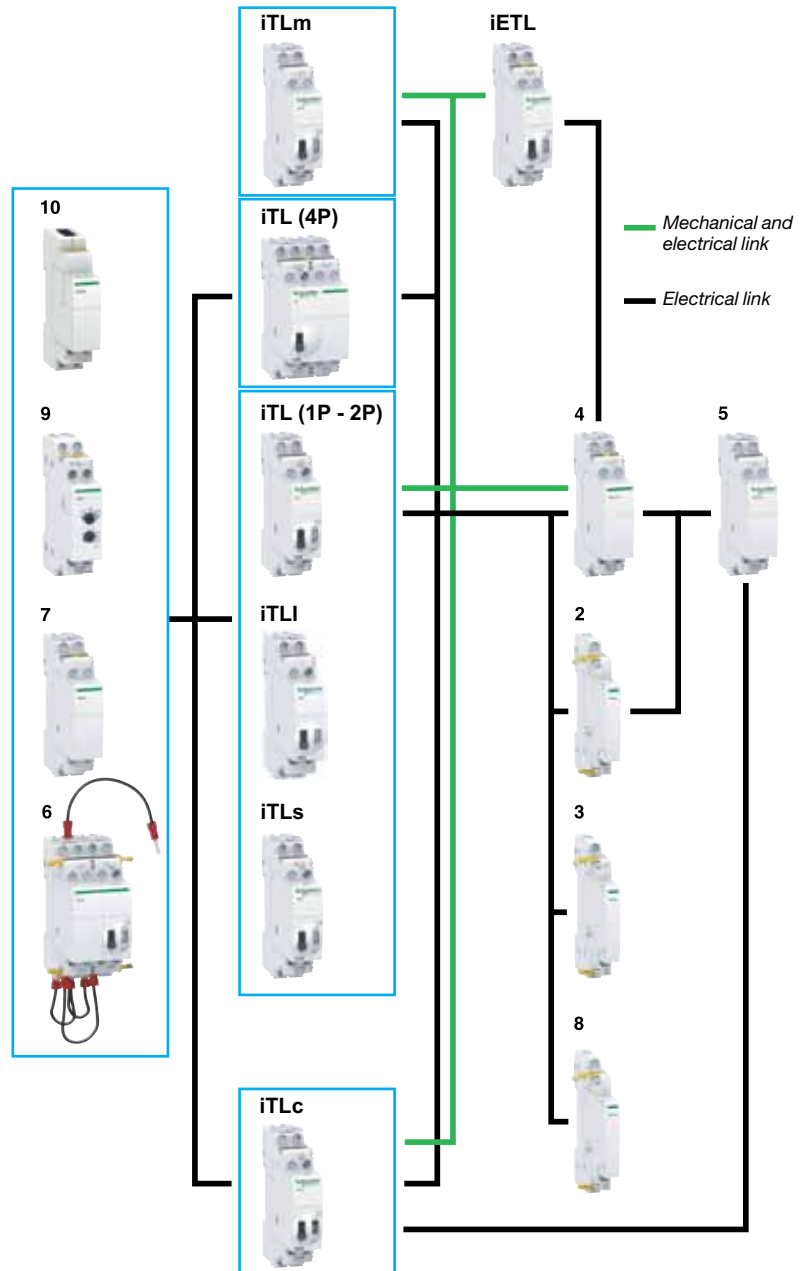
| | | | |
|----|--------------------------|------------|----------|
| 11 | Yellow clips | A9C15415 | |
| 12 | 9 mm spacer | A9A27062 | |
| 13 | Clip-on terminal markers | see module | CA907001 |

DB126831



Auxiliaries

| Centralised control | | | |
|-------------------------------------|----------------------------|----------------|----------|
| 2 | iATLc ^{(1),(3)} | 24...240 V AC | A9C15404 |
| Indication | | | |
| 3 | iATLs ⁽¹⁾ | 24...240 V AC | A9C15405 |
| Centralised control + indication | | | |
| 4 | iATLc+s ⁽³⁾ | 24...240 V AC | A9C15409 |
| Multi-level centralised control | | | |
| 5 | iATLc+c ^{(2),(3)} | 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 ⁽¹⁾ | 12...240 V AC | A9C15414 |
| Time delay control | | | |
| 9 | iATEt ⁽⁴⁾ | 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.

PE108128-41

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 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | | | |
| Control voltage | V AC | 230/240 | 130 | 48 | 24 | 12 | 230/240 | 130 | 48 | 24 | 12 | 230/240 | 130 | 48 | 24 | 230/240 | 48 | 24 | |
| | V DC | 110 | 48 | 24 | 12 | 6 | 110 | 48 | 24 | 12 | 6 | - | - | - | - | 110 | 24 | 12 | |
| Auxiliaries | | | | | | | | | | | | | | | | | | | |
| Extension | | | | | | | | | | | | | | | | | | | |
| iETL | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | |
| Centralised control + indication | | | | | | | | | | | | | | | | | | | |
| iATLc+s | | ■ | ■ | ■ | ■ | - | ■ | ■ | ■ | ■ | - | - | - | - | - | ■ | ■ | ■ | |
| Centralised control | | | | | | | | | | | | | | | | | | | |
| iATLc | | ■ | ■ | ■ | ■ | - | ■ | ■ | ■ | ■ | - | - | - | - | - | ■ | ■ | ■ | |
| Indication | | | | | | | | | | | | | | | | | | | |
| iATLs | | ■ | ■ | ■ | ■ | - | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Multi-level centralised control | | | | | | | | | | | | | | | | | | | |
| iATLc+c | | ■ | ■ | ■ | ■ | - | ■ | ■ | ■ | ■ | - | - | ■ | ■ | ■ | - | ■ | ■ | ■ |
| Latched control | | | | | | | | | | | | | | | | | | | |
| iATLm | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | - | - | - | - | ■ | ■ | ■ |
| Control for illuminated Pushbutton | | | | | | | | | | | | | | | | | | | |
| iATLz | | ■ | ■ | - | - | - | ■ | ■ | ■ | - | - | - | ■ | ■ | - | - | ■ | ■ | - |
| Step by step control | | | | | | | | | | | | | | | | | | | |
| iATL4 | | ■ | - | - | - | - | ■ | ■ | - | - | - | - | ■ | - | - | - | ■ | - | - |
| Time delay control | | | | | | | | | | | | | | | | | | | |
| iATEt | | ■ | ■ | ■ | (*) | ■ | - | ■ | ■ | ■ | ■ | ■ | (*) | - | ■ | ■ | ■ | ■ | (*) |
| Control and indication | | | | | | | | | | | | | | | | | | | |
| 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 |
| | 24 | 12 | A9C30111 | A9C30112 | A9C30111 + A9C32116 |
| | 48 | 24 | A9C30211 | A9C30212 | A9C30211 + A9C32216 |
| | 130 | 48 | A9C30311 | A9C30312 | A9C30311 + A9C32316 |
| | 230...240 | 110 | A9C30811 | A9C30812 | A9C30811 + A9C32816 |
| 32 A | 230...240 | 110 | A9C30831 | A9C30831 + A9C32836 | A9C30831 + 2 x A9C32836 |
| Width in 9 mm modules | | | 2 | 2 | 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 AC) | (V DC) | | |
| | (50/60 Hz) | | (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.)

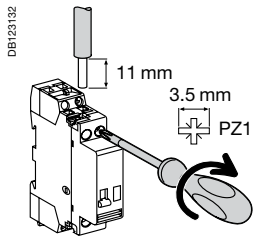
| iTLc impulse relay with centralised control | | | |
|---|---|-----------------|----------------------------|
| Type | 1P | 3P | |
| | | | |
| Rating (In) | Control voltage (Uc) (V AC) (50/60 Hz) | | |
| 16 A | 24 | A9C33111 | A9C33111 + A9C32116 |
| | 48 | A9C33211 | A9C33211 + A9C32216 |
| | 230...240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







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

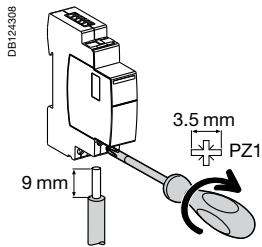
| iTLs impulse relay with remote indication* | | | | |
|--|-----------------------------|--------|-----------------|----------------------------|
| Type | 1P | 3P | | |
| | | | | |
| Rating (In) | Control voltage (Uc) | | | |
| 16 A | (V AC) (50/60 Hz) | (V DC) | | |
| | 24 | 12 | A9C32111 | A9C32111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




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

Connection

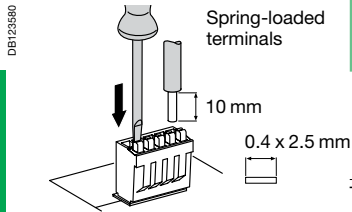




| Type | Rating | Circuit | Tightening torque | Copper cables | |
|--|--------|---------|-------------------|---|---|
| | | | | Rigid or ferrule | Flexible or ferrule |
| iTL, iTLi, iTLc, iTLm, iTLs, iETL | 16 A | Control | 1 N.m |  |  |
| | | Power | | | |
| iTL, iETL | 32 A | Control | 1.2 N.m |  |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



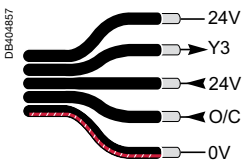
| Type | Terminals | Tightening torque | Copper cables | | |
|--------|-------------------------------------|-------------------|--|---|---|
| | | | Rigid | Flexible | Flexible or ferrule |
| iATL24 | Power supply (N/P) Input (Y1/Y2) | 1 N.m |  0.5 to 10 mm ² 2 x 0.5 to 2 x 2.5 mm ² |  0.5 to 6 mm ²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

Ti24 connector connection



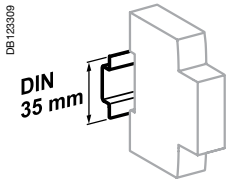
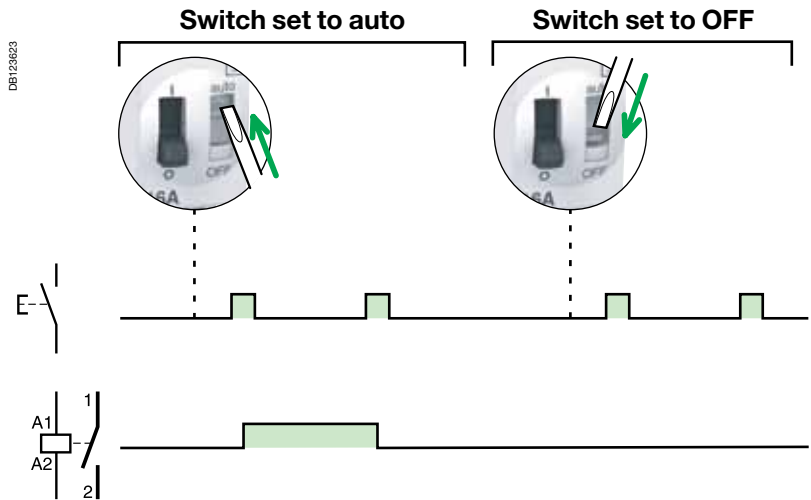
| Type | Catalogue numbers | Copper cables | |
|----------------|-------------------|---|---|
| | | Rigid | Flexible |
| Ti24 interface | A9XC2412 |  1 x 0.5 to 1.5 mm ² |  1 x 0.5 to 1.5 mm ² |

Ti24 prefabricated cables connection

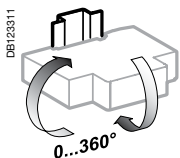


| Type | Catalogue numbers | Length |
|--|-------------------|--------|
| Connection for Acti 9 Smartlink | | |
| 6 short prefabricated | A9XCAS06 | 100 mm |
| 6 medium-sized prefabricated | A9XCAM06 | 160 mm |
| 6 long prefabricated | A9XCAL06 | 870 mm |
| Connection for PLC type terminals | | |
| 6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

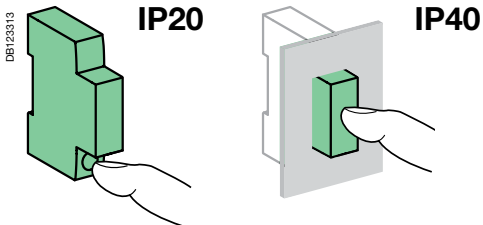
Operation



Clip on DIN rail 35 mm.





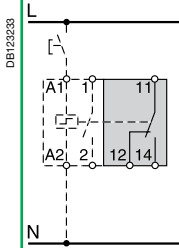
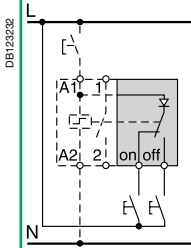
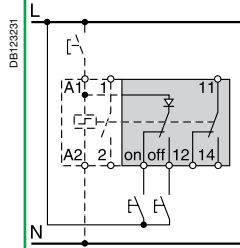
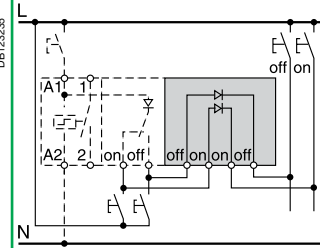






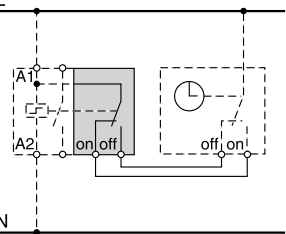
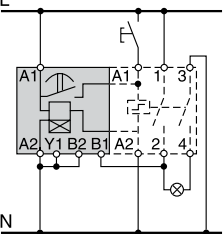
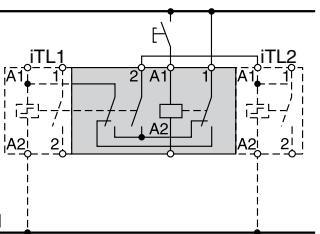
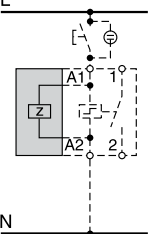
Indifferent position of installation.



Technical data

| Control circuit | | |
|--|---|-----------------------------|
| | iTL and iTLI 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 Un 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 (Ue) | 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 (Ui) | 440 V AC | |
| Pollution degree | 3 | |
| Rated impulse withstand voltage (Uimp) | 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) | |

| | | Indication | Control | | |
|---------------------------------------|---------------------|--|---|--|--|
| Auxiliaries | | iATLs | iATLc | iATLc+s | iATLc+c |
| Type | | Indication | Centralised control | Centralised control + indication | Multi-level centralised control |
| | |  |  |  |  |
| | | PB106139-34 | PB106137-34 | PB106140-34 | PB106136-34 |
| Function | | | | | |
| | | <ul style="list-style-type: none"> Allows remote indication of the associated impulse relay | <ul style="list-style-type: none"> 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 | <ul style="list-style-type: none"> And for remote indication of the mechanical status of each relay | <ul style="list-style-type: none"> 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 |
| Wiring diagrams | | | | | |
| | |  |  |  |  |
| | | DB123233 | DB123232 | DB123231 | DB123235 |
| | | - | - | - | <ul style="list-style-type: none"> Each group, made up of iTLc or (iTL or iTLI or iTLs) + iATLc+s, must only contain a single iATLc+c Maximum number of impulse relays that can be controlled: <ul style="list-style-type: none"> 230 V AC: 24 130 V AC: 12 48 V AC: 5 |
| Mounting | | | | | |
| | | <ul style="list-style-type: none"> Mounted to the right of iTL by yellow clips | <ul style="list-style-type: none"> Mounted to the right of iTL by yellow clips | <ul style="list-style-type: none"> Mounted to the right of iTL by yellow clips | <ul style="list-style-type: none"> Without mechanical link with impulse relays and auxiliaries |
| Catalogue numbers | | A9C15405 | A9C15404 | A9C15409 | A9C15410 |
| Technical specifications | | | | | |
| 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"> Minimum: 10 mA at 24 V AC/DC Maximum (IEC 60947-5-1): <ul style="list-style-type: none"> 12...240 V AC 6 A 12...24 V DC 6 A 15...240 V AC 2 A 13...24 V DC 2 A | - | <ul style="list-style-type: none"> Minimum: 10 mA at 24 V AC/DC Maximum (IEC 60947-5-1): <ul style="list-style-type: none"> 12...240 V AC 6 A 12...24 V DC 6 A 15...240 V AC 2 A 13...24 V DC 2 A | - |
| Number of contacts | | - | - | - | - |
| Operating temperature | °C | -20°C to +50°C | - | - | - |
| | Storage temperature | °C | -40°C to +70°C | - | - |

| iATLm | iATEt | iATL4 | iATLz |
|---|---|--|--|
| Latched control | Time delay | Step by step control | Control by illuminated push-buttons |
|  |  |  |  |
| <ul style="list-style-type: none"> Combined with an impulse relay, it operates on latched orders | <ul style="list-style-type: none"> Combined with an impulse relay, it automatically disconnects the circuit after a preset time | <ul style="list-style-type: none"> Allows the step by step sequence over 2 circuits | <ul style="list-style-type: none"> Used to control impulse relays by illuminated push-buttons, without operating risks |
|  |  |  |  |
| - | <ul style="list-style-type: none"> 5 time setting ranges: <ul style="list-style-type: none"> 1 to 10 s 6 to 60 s 2 to 10 min 6 to 60 min 2 to 10 h | <ul style="list-style-type: none"> The cycle is as follows: <ul style="list-style-type: none"> 1st impulse - iTL 1 closed, iTL 2 open 2nd impulse - iTL 1 open, iTL 2 closed 3rd impulse - iTL 1 and 2 closed 4th impulse - iTL 1 and 2 open 5th impulse - iTL 1 closed, iTL 2 open, etc | <ul style="list-style-type: none"> 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. For example: for 7 mA, fit 2 iATLz |
| <ul style="list-style-type: none"> Mounted to the right of iTL by yellow clips | <ul style="list-style-type: none"> Mounted to the left of iTL by yellow clips | <ul style="list-style-type: none"> Assembled between 2 impulse relays: according to the auxiliarisation table by yellow clips | <ul style="list-style-type: none"> Mounted to the left of iTL by yellow clips |
| A9C15414 | A9C15419 | A9C15412 | A9C15413 |
| 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

| | |
|-------------------|---------------------------------------|
| Auxiliaire | iATL24 |
| Type | Control and indication 24 V DC |

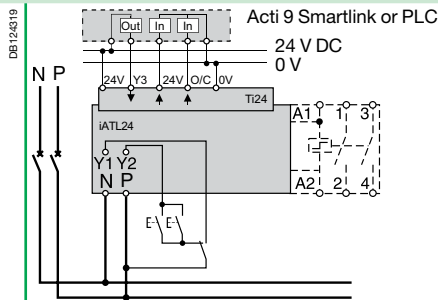
With Ti24 connector



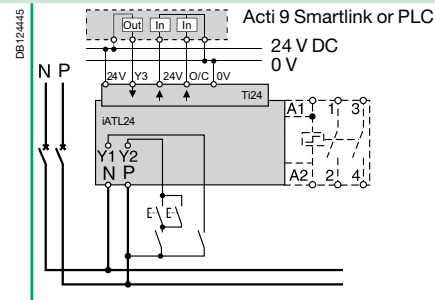
Function

- 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⁽¹⁾.
- 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)

| | |
|--------------------------|-----------------|
| Catalogue numbers | A9C15424 |
|--------------------------|-----------------|

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 |

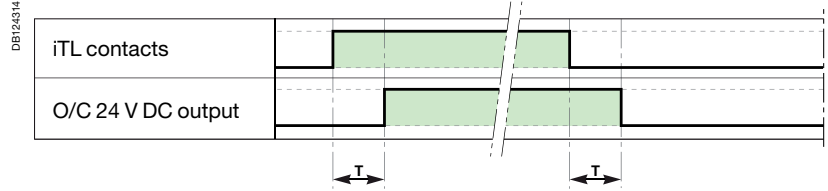
(1) Mechanical and electrical connection.

iTL impulse relays Electrical auxiliaries for iTL impulse relays (cont.)



Operation of the iATL24

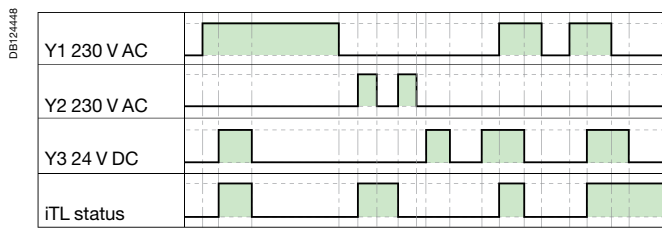
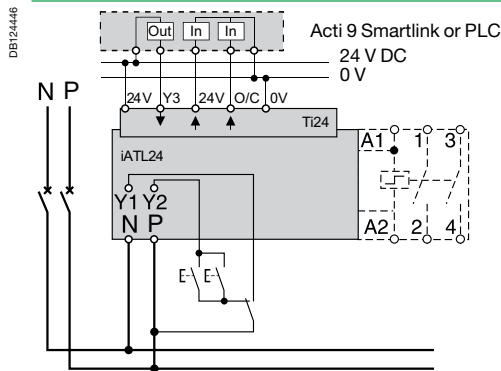
O/C 24 V DC output



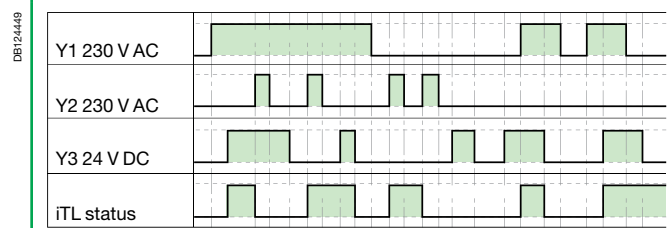
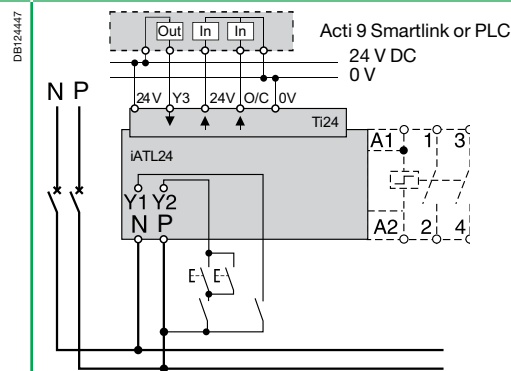
| Parameter | Min | Max |
|-----------|--------|--------|
| T | 100 ms | 200 ms |



- 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

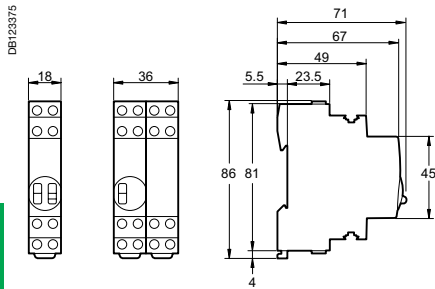


Wiring for non-exclusive 230 V AC and 24 V DC controls

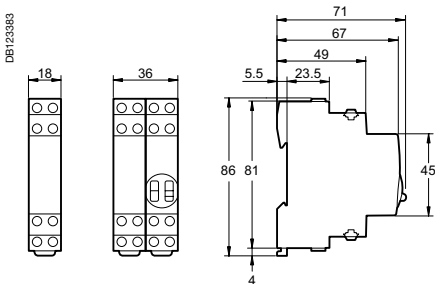


| Security | | |
|--------------------------|--|--|
| Accessories | Yellow clips | Spacer |
| |  <p>PB106143-10</p> |  <p>PB104483</p> |
| Function | | |
| | <ul style="list-style-type: none"> Ensure the mechanical and/or electrical link between impulse relays and their auxiliaries (set of 10). | <ul style="list-style-type: none"> Required to reduce temperature rise of modular devices installed side by side. Recommended to separate electronic devices (thermostat, programmable clock, etc.) from electromechanical devices (relays, contactors). |
| Catalogue numbers | | |
| | A9C15415 | A9A27062 |
| Technical specifications | | |
| Width in 9 mm modules | - | 1 |

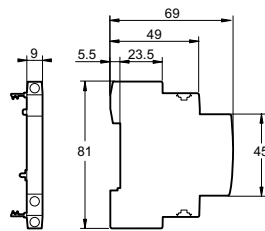
Dimensions (mm)



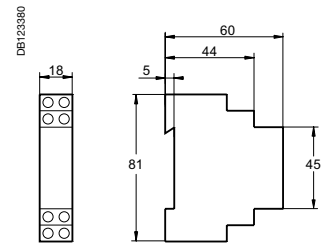
iTL 1P
iTLc
iTLm
iTLs
iTLi
iETL



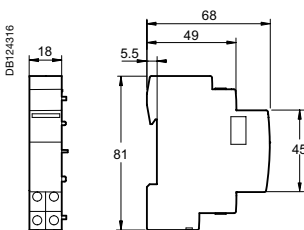
iATLc+s
iATLc+c
iATLz
iATL4



iATLc
iATLs
iATLm



iATEt



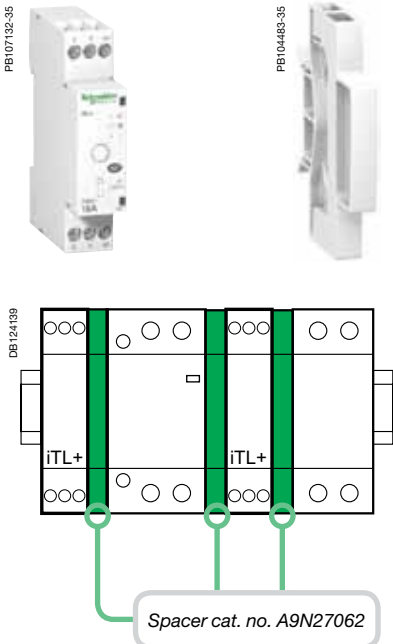
iATL24

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 ⁽¹⁾ |

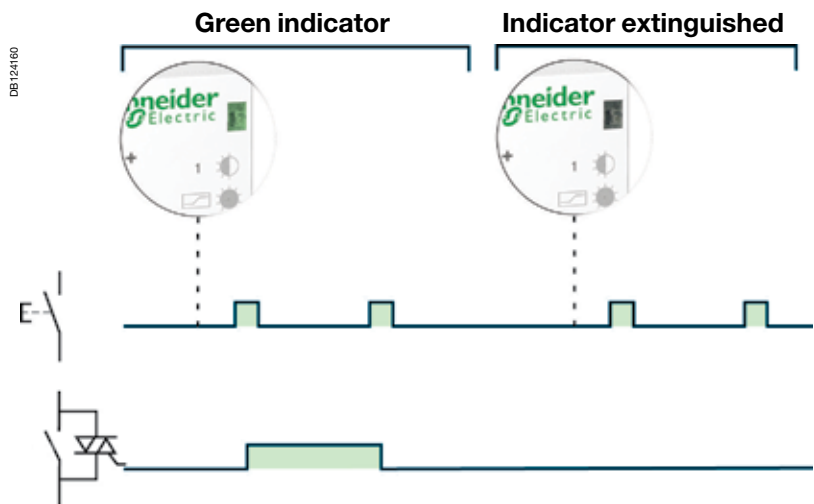
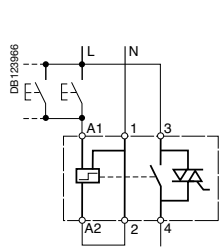
(1) Supplied with a 9 mm spacer (cat. no. A9N27062): to be used for mounting the iTL+ alongside a circuit breaker, contactor, impulse relay, etc., in order to maintain optimal operation.



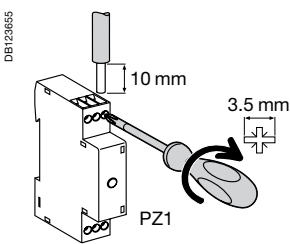
It is compulsory:

- 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

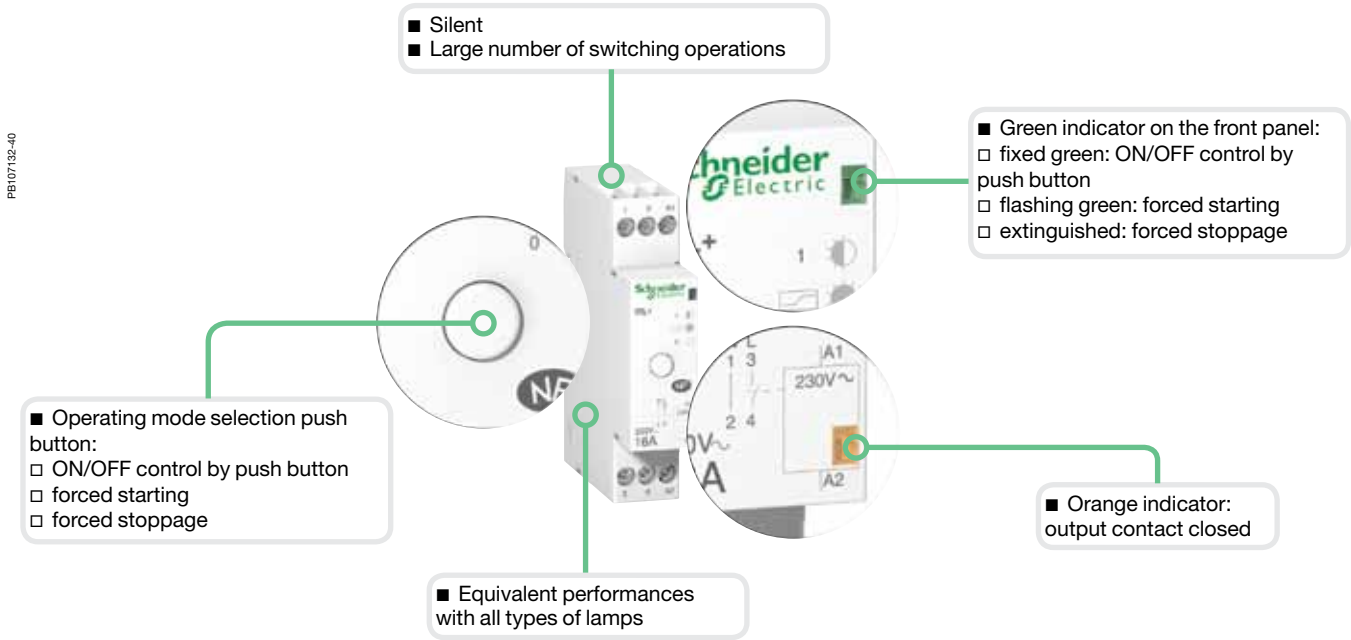


Connection



| 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.



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

Technical data

Control circuit

| | |
|---------------------------------|-----------------------------------|
| Coil voltage (Uc) | 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 (Ue) | 230 V AC | |
| Frequency | 50 Hz | |
| Electrical load | Minimum Maximum | 20 W 3600 W |
| Max. number of switching operations per minute | 6 | |

Other characteristics

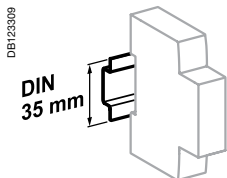
| | | |
|----------------------------------|-----------------------------|---|
| Degree of protection (IEC 60529) | Device only | IP20 |
| | Device in modular enclosure | IP40 Insulation class II |
| Endurance (O-C) | Electrical | 5.000.000 cycles (AC21 - AC22) |
| Noise level at activation | | < 30 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)

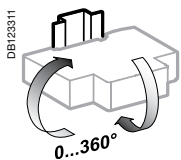
High-performance impulse relays

| Type | iTL+ |
|------|------|
| 1P+N | 70 |

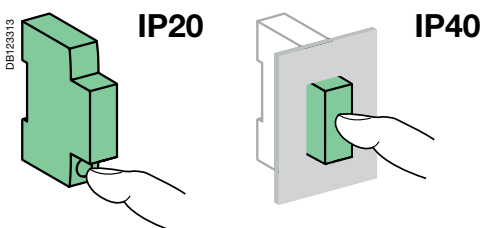
7



Clip on DIN rail 35 mm.








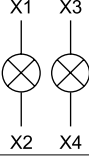
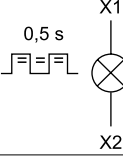
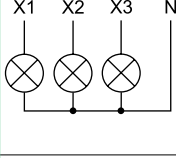
Indifferent position of installation.





IEC 60947-5-1

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

Catalogue numbers

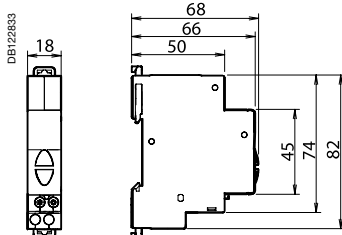
| iLL indicator lights | | | | | | | | | | |
|---------------------------|--|-----------------|-----------------|-----------------|-----------------|--|-----------------|--|--|--|
| Type | Single | | | | | Double | | Flashing light | Three-phase voltage presence indicator light | |
| |  | | | | |  | |  |  | |
| Diagram |  | | | | |  | |  |  | |
| Colour | Red | Green | White | Blue | Yellow | Green/red | White/white | Red | Red/red/red | |
| Cat. no. | | | | | | | | | | |
| 12...48 V AC/DC | A9E18330 | A9E18331 | A9E18332 | A9E18333 | A9E18334 | A9E18335 | - | - | - | |
| 110...230 V AC | A9E18320 | A9E18321 | A9E18322 | A9E18323 | A9E18324 | A9E18325 | A9E18328 | A9E18326 | - | |
| 230...400 V AC (3 phases) | - | - | - | - | - | - | - | - | A9E18327 | |
| Width in 9 mm modules | 2 | | | | | 2 | | 2 | 2 | |

Connection

| Tightening torque | Copper cables | |
|-------------------|---|---|
| | Rigid | Flexible or ferrule |
| 1 N.m |  |  |
| | 0.5 mm ² min. 2 x 2.5 mm ² max. | 0.5 mm ² min. 2 x 2.5 mm ² 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-7 4 | | 1 NO 1 E-7 2 | | 1 NO + 1 NC 1 3 E-7 2 4 | | 1 NO / 1 NC 1 3 E-7 E-7 2 4 | | 1 NO / 1 NO 1 3 E-7 E-7 2 4 | | 1 NO 1 X1 E-7 2 X2 | | 1 NC 3 X1 E-7 4 X2 | | 1 NO 1 X1- E-7 2 X2+ | | 1 NC 3 X1- E-7 4 X2+ | |
| Pushbutton Colour | Grey | Red | Grey | Grey | Green/red | Grey/grey | Grey | 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 | Green | Red | Green | Red | | |
| Cat. no. | A9E18030 | A9E18031 | A9E18032 | A9E18033 | A9E18034 | A9E18035 | A9E18036 | A9E18037 | A9E18038 | A9E18039 | A9E18038 | A9E18039 | A9E18038 | A9E18039 | A9E18038 | A9E18039 | | |
| Width in 9 mm modules | 2 | | | | 2 | | 2 | | | | | | | | | | | |

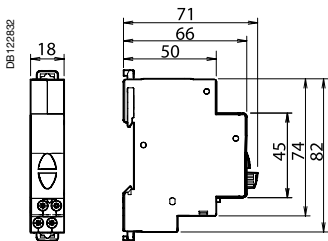
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Connection

| Tightening torque | Copper cables | |
|-------------------|--|--|
| | Rigid | Flexible or ferrule |
| DB122945 1 N.m | DB122946 | |
| | 0.5 mm ² min. 2 x 2.5 mm ² max. | 0.5 mm ² min. 2 x 2.5 mm ² 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.

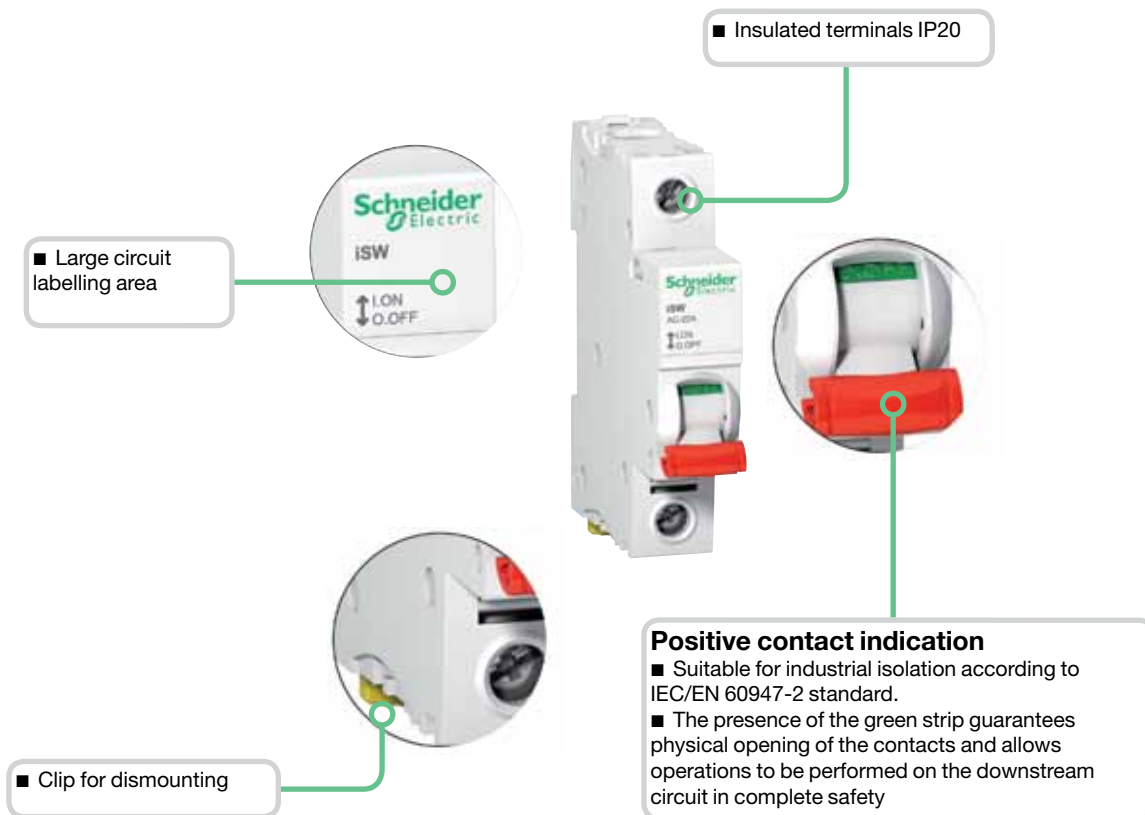


Catalogue numbers

| 40 to 125 A iSW switch-disconnectors | | | | | |
|--------------------------------------|---------|------------------------------|----------|-----------------------|----------|
| Type | | | | Width in 9 mm modules | |
| 1P | | | | | |
| DB118698 | Rating | Voltage (Ue) | | 2 | |
| | 1 | 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 | | |
| 2P | | | | | |
| DB118989 | Rating | Voltage (Ue) | | 4 | |
| | 1 3 | 40 A | 415 V AC | | A9S66240 |
| | 2 4 | 63 A | 415 V AC | | A9S66263 |
| | | 100 A | 415 V AC | | A9S66291 |
| | 125 A | 415 V AC | A9S66292 | | |
| 3P | | | | | |
| DB119000 | Rating | Voltage (Ue) | | 6 | |
| | 1 3 5 | 40 A | 415 V AC | | A9S66340 |
| | 2 4 6 | 63 A | 415 V AC | | A9S66363 |
| | | 100 A | 415 V AC | | A9S66391 |
| | 125 A | 415 V AC | A9S66392 | | |
| 4P | | | | | |
| DB119001 | Rating | Voltage (Ue) | | 8 | |
| | 1 3 5 7 | 40 A | 415 V AC | | A9S66440 |
| | 2 4 6 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 | | | |

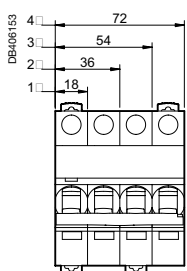


| Auxiliary | | | |
|--------------|----------------|---------------|-----------------------|
| Type | | | Width in 9 mm modules |
| DB118810 | Voltage (Ue) | | 1 |
| | 240...415 V AC | | |
| | | 24...130 V DC | |

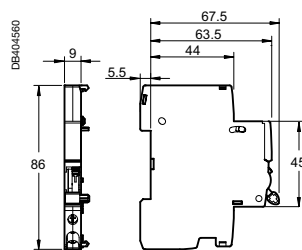
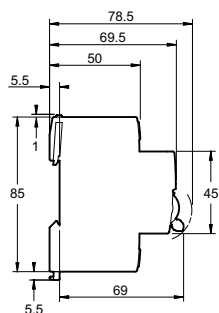


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Dimensions (mm)

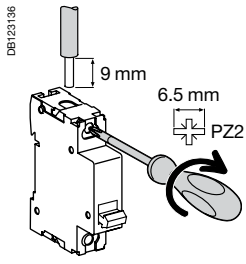



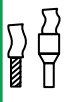
iSW

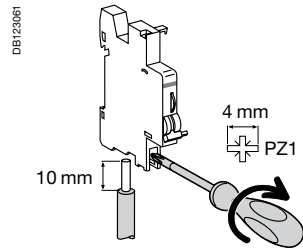






IOF

Connection



| Type | Rating | Tightening torque | Copper cables | |
|------|-------------|-------------------|---|---|
| | | | Rigid | Flexible or with ferrule |
| iSW | 40 to 125 A | 3.5 N.m |  ≤ 50 mm ² |  ≤ 35 mm ² |



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

Technical data

Main characteristics

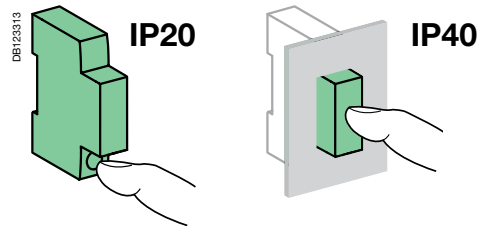
| | |
|--|--------------------------------------|
| Insulation voltage (Ui) | 1P: 250 V AC 2P, 3P, 4P: 500 V AC |
| Pollution degree | 3 |
| Power circuit | |
| Rated impulse withstand voltage (Uimp) | 6 kV |
| Operating category | AC - 22 A |
| Permissible rated short-time withstand current (Icw) | 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 | |
| Endurance (O-C) | Mechanical | 20,000 cycles | |
| | | 40 A - 63 A | 15,000 cycles |
| | | 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.

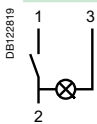
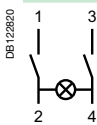
Catalogue numbers

| 20, 32 A iSW control switches | | | | |
|-------------------------------|--------|--------------|-----------------|-----------------------|
| Type | Rating | Voltage (Ue) | | Width in 9 mm modules |
| DB118898 | 20 A | 250 V AC | A9S60120 | 2 |
| | 32 A | 250 V AC | A9S60132 | |
| DB118899 | 20 A | 250 V AC | - | 2 |
| | | 415 V AC | A9S60220 | |
| | 32 A | 250 V AC | - | |
| | | 415 V AC | A9S60232 | |
| DB119000 | 20 A | 415 V AC | A9S60320 | 4 |
| | 32 A | 415 V AC | A9S60332 | |
| 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 |
| 1P  | 20 A | A9S61120 | 2 |
| | 32 A | A9S61132 | |
| 2P  | 20 A | A9S61220 | 2 |
| | 32 A | A9S61232 | |
| Operating frequency | | 50/60 Hz | |
| Accessories | | Module CA907012 | |

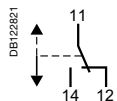
| Spare indicator lights for 20, 32 A iSW switches | | |
|--|--------------|--------------|
| Type | Voltage (Ue) | |
| Neon | | |
| Supplied with a red diffuser (Pack of 10) | 230 V AC | 15111 |
| Incandescent bulb (P=1.2 W) | | |
| Supplied with a red diffuser (Pack of 10) | 12 V DC/AC | 15112 |
| | 24 V DC/AC | 15113 |
| | 48 V DC/AC | 15114 |



OF iSW

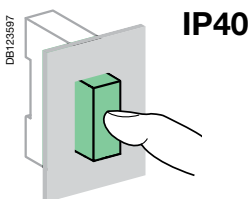
Catalogue numbers (cont.)

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

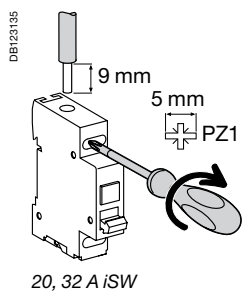


Technical data

| Main characteristics | 20, 32 A iSW | |
|--|--|---|
| Insulation voltage (Ui) | Without indicator light ■ 1P: 250 V AC ■ 2P, 3P, 4P: 500 V AC | With indicator light 250 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 (Isc) | 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) | |

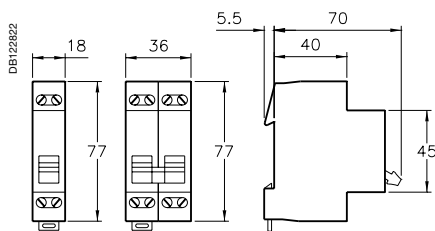


Connection

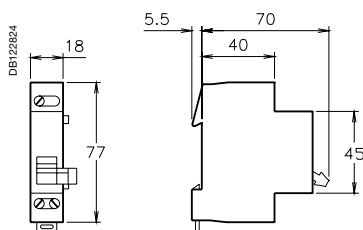


| Type | Rating | Tightening torque | Copper cables | |
|--------|-----------------|-------------------|--------------------|---------------------|
| | | | Rigid | Flexible or ferrule |
| iSW | 20, 32 A | 1.2 N.m | 10 mm ² | 10 mm ² |
| OF iSW | - | 1.2 N.m | 10 mm ² | 10 mm ² |

Dimensions (mm)



1P, 2P 3P, 4P
20, 32 A iSW



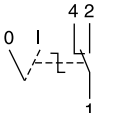
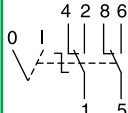
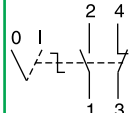
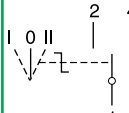
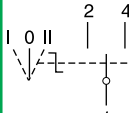


OF iSW

IEC 60669-1 and IEC 60947-5-1

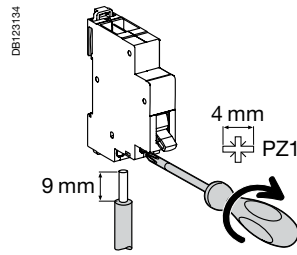
■ iSSW linear switches are used for the manual control of electric circuits.



Catalogue numbers

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

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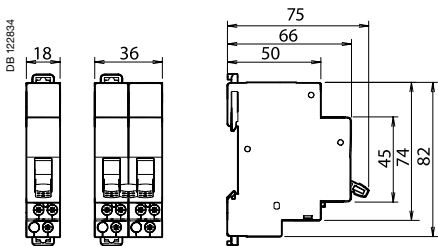
Connection



| Tightening torque | Copper cables | |
|-------------------|---|---|
| | Rigid | Flexible or ferrule |
| 1 N.m |  0.5 mm ² min. 2 x 2.5 mm ² max. |  0.5 mm ² min. 2 x 2.5 mm ² 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

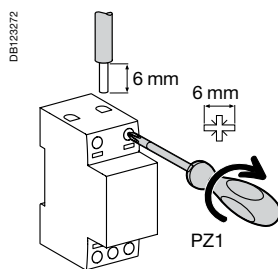
| Bell transformer | | | | | | |
|------------------|-------|-------------------|----------|-----------------------|----------|---|
| Type | Power | Secondary voltage | | Width in 9 mm modules | | |
| ESB769 | 4 VA | 8 V AC | A9A15214 | 4 | | |
| | | | | | | |
| ESB760 | 4 VA | 8-12 V AC | A9A15213 | 4 | | |
| | | | | 8 VA | A9A15216 | 4 |
| | | | | 16 VA | A9A15212 | 4 |
| ESB761 | 25 VA | 12-24 V AC | A9A15215 | 6 | | |
| | | | | | | |

| Safety transformer | | | | |
|---------------------|----------|-------------------|----------|-----------------------|
| Type | Power | Secondary voltage | | Width in 9 mm modules |
| DB124153 | 16 VA | 12-24 V AC | A9A15218 | 10 |
| | | | | 25 VA |
| DB124154 | 40 VA | 12-24 V AC | A9A15220 | 10 |
| | | | | 63 VA |
| 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 | < 2.5 mm ² | < 2.5 mm ² |

Technical data

Main characteristics

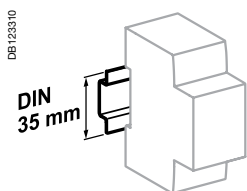
| | |
|---------------------------|---|
| Primary voltage | 230 V AC ±10 % |
| Secondary voltage on load | For bell transformers: 8-12-24 V AC ±15 % For safety transformers: 12-24 V AC ±5 % |

| 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 |

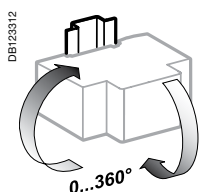
Additional characteristics

| | |
|--|---------------------------|
| 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 |

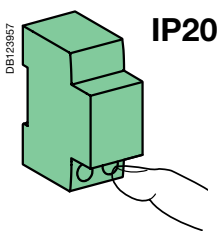
Note: Transformers have an off load operating voltage that is higher than the rated voltage. For loads that are sensitive to overloads (electro-magnetic circuits), the transformer must be made to operate at I_n . After operation of the protection device upon an overload, cut-off the power supply and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



Clip on DIN rail 35 mm.



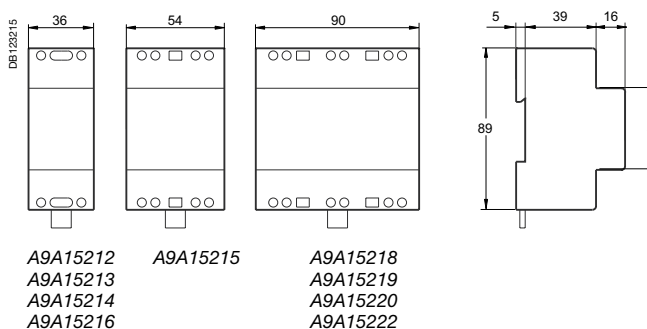
Bell transformer: indifferent position of installation.
Safety transformer: vertical position.



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)



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 | |



iSO

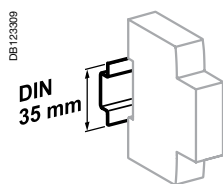
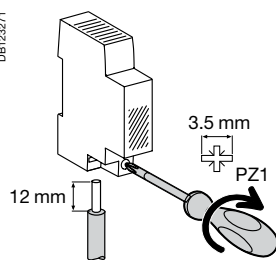


iRO

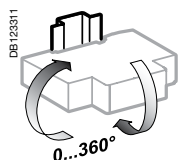
Connection

| Tightening torque | Copper cables | |
|---------------------|--|---------------------------------|
| | Rigid | Flexible or ferrule |
| DB123820 1.3 N.m | DB123845 3.5 mm PZ1 < 4 mm ² | DB123846 < 4 mm ² |

DB123271



Clip on DIN rail 35 mm.



Indifferent position of installation.

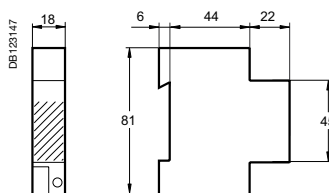
Technical data

| Main characteristics | | iSO | iRO |
|--------------------------------------|-----------------------------|----------------|--------|
| Consumption | 8...12 V AC | 3.6 VA | |
| | 220...240 V AC | 5 VA | |
| Additional characteristics | | | |
| Degree of protection (IEC 60529) | Device only | IP40 | |
| | Device in modular enclosure | 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 | Weight (g) |
| 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 mm² and flexible cables up to 6 mm²
- 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 ⁽¹⁾ | 2P | 3P | 3P+N ⁽¹⁾ |
| 8.5 x 31.5 mm | 2 A | 400 V AC | 20 kA | 20 kA | DF2BA0200 | DF2BN0200 | A9N15635 | A9N15645 | A9N15650 | A9N15655 | A9N15657 |
| | 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 | A9N15636 | A9N15646 | A9N15651 | A9N15656 | A9N15658 |
| | 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

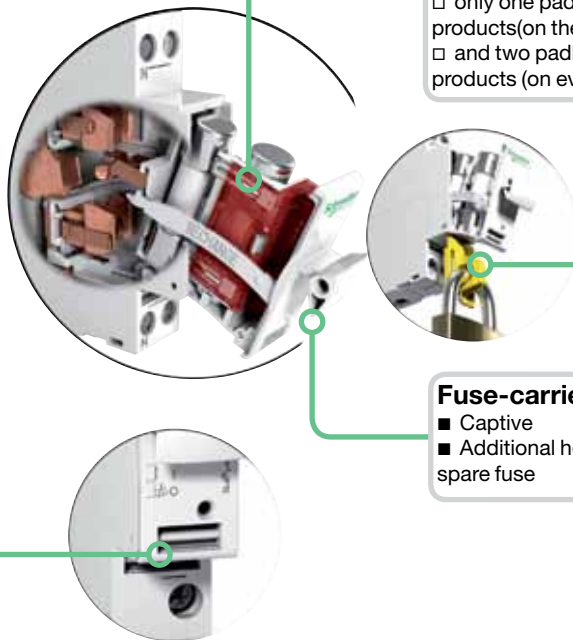
Clip-on markers

Padlocking device

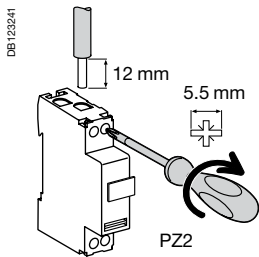
- Locks the toggle in the "open" or "closed" position. Used with an 8 mm max. diameter padlock (not supplied):
 - only one padlock for 1P, 1P+N and 2P products (on the left pole)
 - and two padlock on the 3P and 3P+N products (on every extremity)

Fuse-carrier

- Captive
- Additional housing is provided for a spare fuse

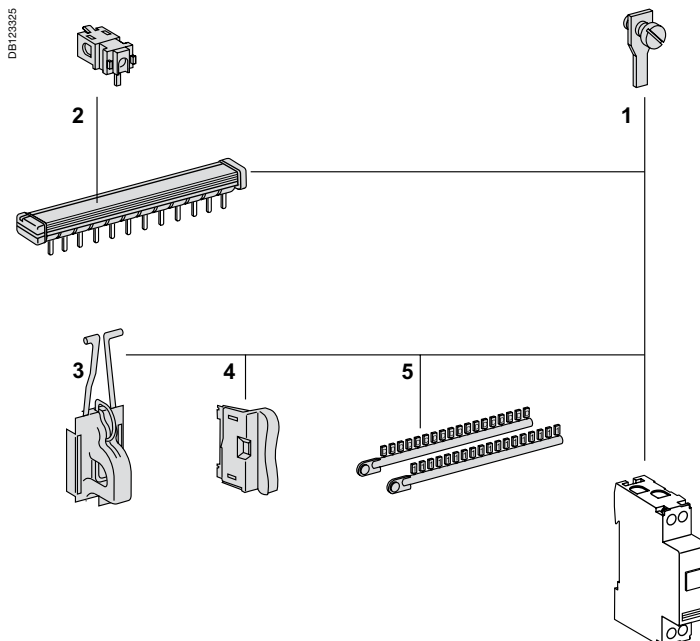


Connection



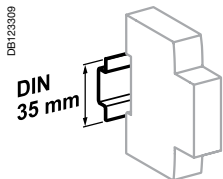
| Type | Rating | Tightening torque | Without accessory | | With accessories |
|------|--------|-------------------|--|---|---------------------------------------|
| | | | Copper cables | | Screw-on connection for ring terminal |
| | | | Rigid | Flexible or ferrule | |
| STI | All | 2 N.m | DB1122345 0.75 to 10 mm ² 2 x 0.75 mm ² to 2 x 4 mm ² | DB1122346 0.5 to 6 mm ² 2 x 0.5 mm ² to 2 x 4 mm ² | DB1118788 Ø 5 mm |

1 Screw-on connection for ring terminal **27053**

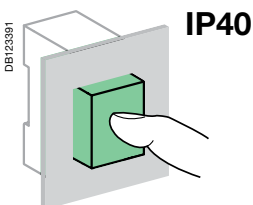


Mounting accessories

| | | |
|----------------------------|-----------------|--------------|
| 2 Comb busbar | See section 10 | |
| 3 Padlocking device | | 15669 |
| 4 Neon indicator light | 1 piece blister | 15668 |
| 5 Clip-on terminal markers | Use AB1 range | |



Clip on DIN rail 35 mm.



Technical data

Main characteristics

| | |
|---|-------|
| Insulation voltage (Ui) | 500 V |
| Breaking capacity according to IEC 60269-2 ≤ 400 V | 50 kA |
| Pollution degree | 3 |
| Operating frequency (Hz) | 50/60 |

Additional characteristics

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

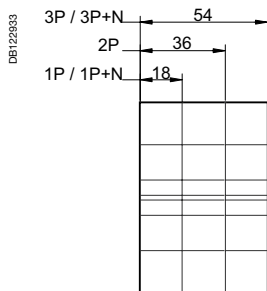
Maximum dissipated power per pole of STI isolatable fuse-carriers

| Fuse cartridge type | | I _{th} | P _{max} |
|---------------------|----|-----------------|------------------|
| 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 |

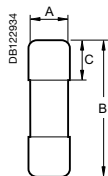
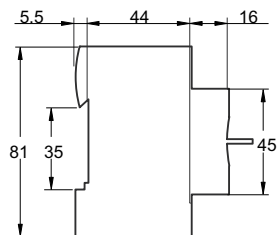
Maximum dissipated power per fuse cartridges

| Fuse cartridge type | | I _{th} | P _{max} |
|---------------------|----|-----------------|------------------|
| 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

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 |



MGN15707



MGN15712



MGN15714



MGN15718

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-gl) 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

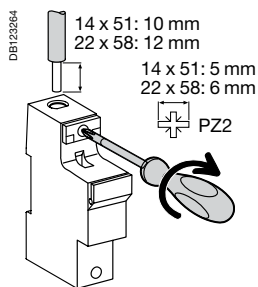
| Fuse cartridge | | | | | | SBI fuse holder | | | | | | | | | | | | |
|----------------|----------|---------------------|-----------------------------|----------|----------|-----------------|--------------|----|---------------------|----|----|---------------------|----------|----------|----------|----------|----------|----------|
| Type | Rating | Voltage rating (Ue) | Short-circuit current (Isc) | | | | Network type | | | | | | | | | | | |
| | | | aM | gG | aM | gG | N | 1P | 1P+N ⁽¹⁾ | 2P | 3P | 3P+N ⁽¹⁾ | | | | | | |
| 14 x 51 mm | 10 A | 690 V CA | 120 kA | 120 kA | DF2EA10 | DF2EN10 | | | | | | | MGN15708 | MGN15707 | MGN15709 | MGN15710 | MGN15711 | MGN15712 |
| | 12 A | 690 V CA | 120 kA | - | DF2EA12 | - | | | | | | | | | | | | |
| | 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 | | | | | | | | | | | | |
| 22 x 58 mm | 50 A | 400 V CA | 120 kA | 120 kA | DF2EA50 | DF2EN50 | | | | | | | MGN15714 | MGN15713 | MGN15715 | MGN15716 | MGN15717 | MGN15718 |
| | 32 A | 690 V CA | 80 kA | 80 kA | DF2FA32 | DF2FN32 | | | | | | | | | | | | |
| | 40 A | 690 V CA | 80 kA | 80 kA | DF2FA40 | DF2FN40 | | | | | | | | | | | | |
| | 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.

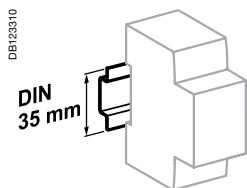
Local control selector switches

SBI fuse holder with indicator light (cont.)

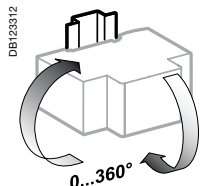
Connection



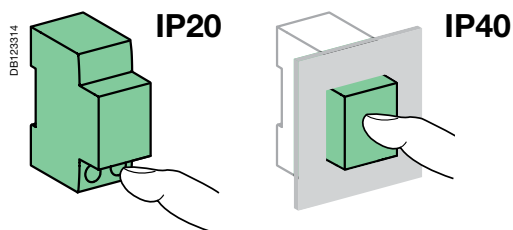
| Type of fuse cartridge | Tightening torque | Copper cables | | Multi-cables terminal | |
|------------------------|-------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | | Rigid | Flexible or ferrule | Rigid cables |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



Clip on DIN rail 35 mm.



Indifferent position of installation.



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

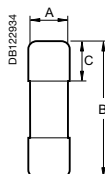
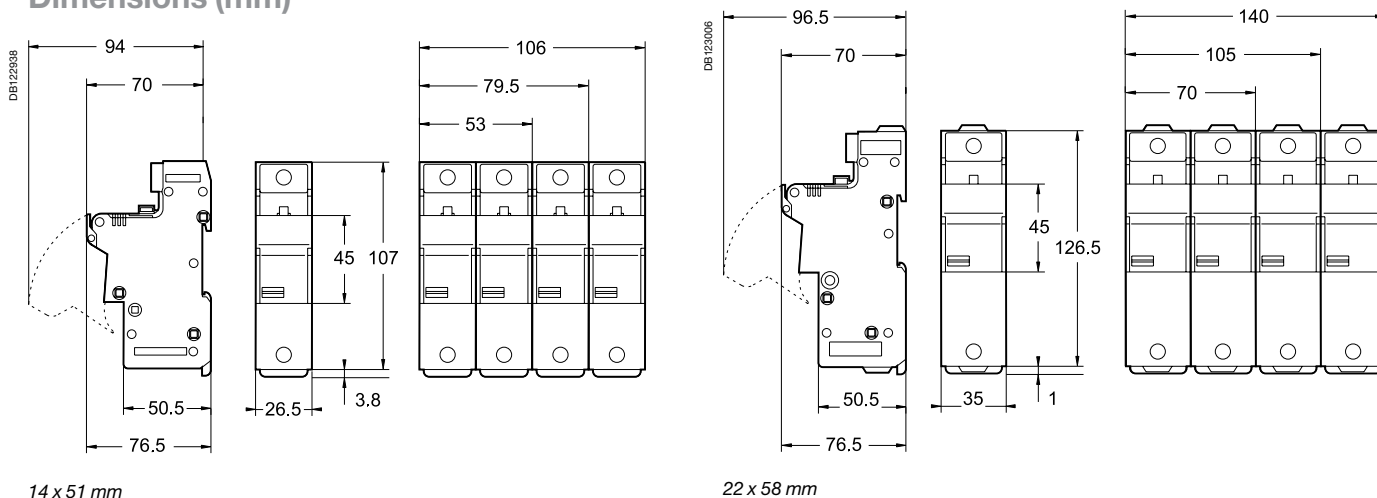
| | | |
|------------------------------|-----------------------------|------------------------------|
| Degree of protection | Device only | IP20 |
| | Device in modular enclosure | IP40 |
| Operating temperature | | -20°C to +60°C |
| Storage temperature | | -40°C to +80°C |
| Cartridge blowing signalling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

Maximum permissible characteristics of the fuse cartridges:

| Fuse cartridge type | Ith | 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.




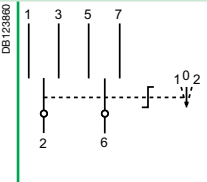
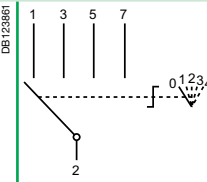
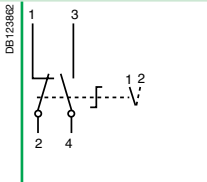
Dimensions (mm)




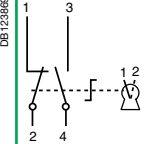
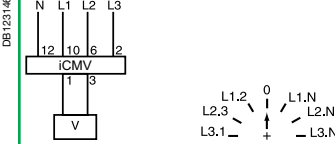
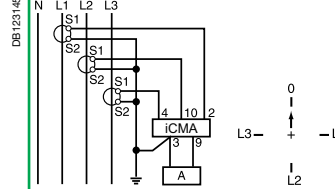


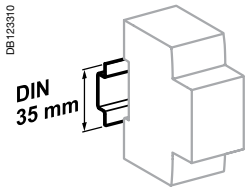
aM, gG fuse cartridge

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

aM, gG

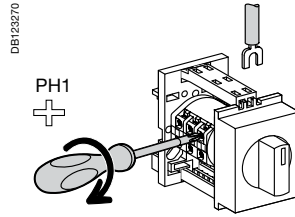
| | | Control | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|--------|---|--|--|--|------|------|-----|-----|-----|------|-------|-------|------|-------|-------|------|--------|--------|-------|--------|--------|-------|--------|--------|-------|--------|--------|-------|-------|--------|
| 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"> This two-pole selector switch with zero setting allows manual control of a circuit with 2-way operation with a stop position Key type Ronis 455 | <ul style="list-style-type: none"> This 4-way selector switch allows control of a circuit with operating priorities | <ul style="list-style-type: none"> This 2-way selector switch is used specially for the control of electronic circuits of low voltage and current level | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wiring diagrams | |  |  |  | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Use | | Example: electrically controlled metal screen: <ul style="list-style-type: none"> position 1 = raising position 0 = stop position 2 = lowering | Example: fan control: <ul style="list-style-type: none"> position 0 = stop position 1 = override operation, slow speed position 2 = override operation, high speed position 3 = remote control position 4 = automatic operation | <ul style="list-style-type: none"> Voltage range from 30 mV to 600 V AC | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Catalogue numbers | | A9E15120 | A9E15121 | A9E15122 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Technical specifications | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | |


| iCMC | iCMV | iCMA |
|---|---|--|
| 2-way key-actuated | 7-position voltmeter | 4-position ammeter |
| 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 |
|  |  |  |
| <p>■ 2-way key-actuated selector switch with locking in one or the other position</p> | <p>■ 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</p> | <p>■ 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</p> |
|  |  |  |
| - | - | - |
| A9E15123 | 15125 | 15126 |
| 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 |
|-------------------|---|
| 0.35 N.m | Flexible or rigid with ferrule |
| |  |
| | < 1.5 mm ² |

DE123245

■ Connection by jumper terminals with captive screws.

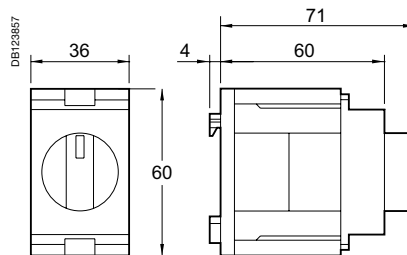
Technical data

| 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 Acti 9 range) |
|-------------------|---|

| | |
|--------------------|--------|
| Drilling diameter: | Ø 22.3 |
|--------------------|--------|

| | |
|--|--|
| Self-extinguishing insulating material | |
|--|--|

| | |
|---------|----------------|
| Colour: | White RAL 9003 |
|---------|----------------|

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 | A9A15151 |
| Universal holder | 3 | A9A15152 |

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

^ 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




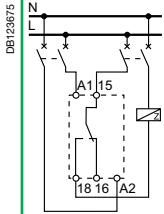
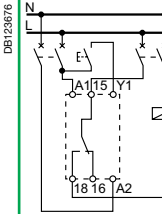
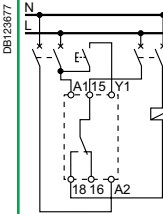
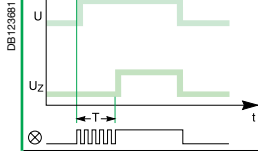
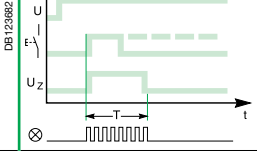
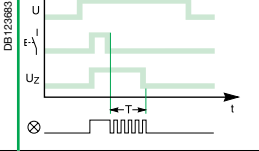
■ Monitors the potential difference of a circuit and indicates any crossing of the set threshold




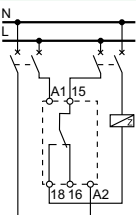
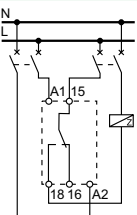
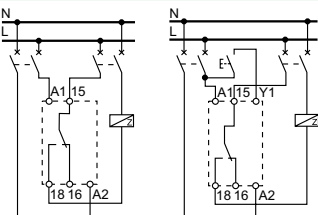
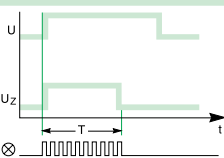
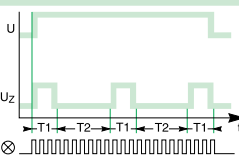




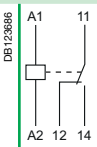
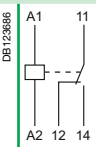
iRCC

Compressor control



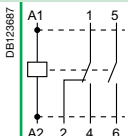
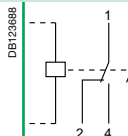
■ Monitors the compressor power supply and prevents its immediate restarting upon detection of a power cut or voltage dip



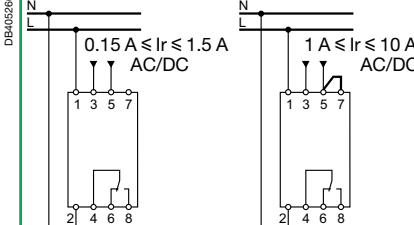
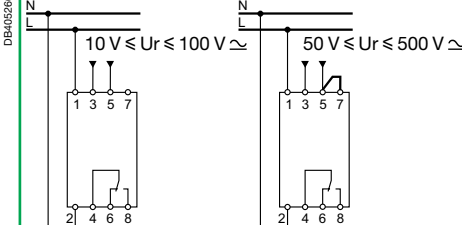



| | | Time delay relays | | |
|---|-----------------|---|---|---|
| | | iRTA | iRTB | iRTC |
| Type | |  |  |  |
| Function | | ■ Delays energizing of a load | ■ Delays de-energizing of a load upon closing of an auxiliary contact (push button) | ■ Delays de-energizing of a load upon opening of an auxiliary contact (push button) |
| Wiring diagrams | |  |  |  |
| Use | |  <ul style="list-style-type: none"> ■ 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 |  <ul style="list-style-type: none"> ■ 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 |  <ul style="list-style-type: none"> ■ 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 | | A9E16065 | A9E16066 | A9E16067 |
| Technical specifications | | | | |
| 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 x 10 ⁶ switching operations | > 5 x 10 ⁶ switching operations | > 5 x 10 ⁶ switching operations |
| | Electrical | > 10 ⁵ switching operations (utilization category AC1) | > 10 ⁵ switching operations (utilization category AC1) | > 10 ⁵ 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 x 2.5 mm ² single-strand | 2 x 2.5 mm ² single-strand | 2 x 2.5 mm ² single-strand |
| | With ferrule | 2 x 1.5 mm ² multi-strand | 2 x 1.5 mm ² multi-strand | 2 x 1.5 mm ² 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"> ■ Applies a time delay to de-energizing of a load | <ul style="list-style-type: none"> ■ Applies a time delay to energizing and de-energizing of a load during different times, repeatedly (flasher) | <ul style="list-style-type: none"> ■ Allows one of the four types of time delay to be selected: A, B, C or H |
| |  |  |  |
| |  |  | |
| | <ul style="list-style-type: none"> ■ The single time delay cycle starts at switching on of the iRTH relay power supply ■ The load is de-energized at the end of time delay T | <ul style="list-style-type: none"> ■ The time delay cycle starts at energizing ■ 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 | <ul style="list-style-type: none"> ■ Depending on the choice, the iRTMF generates time delay cycles for the iRTA, iRTB, iRTC or iRTH relays |
| | A9E16068 | A9E16069 | A9E16070 |
| | 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 ⁶ switching operations | > 5 x 10 ⁶ switching operations | > 5 x 10 ⁶ switching operations |
| | > 10 ⁵ switching operations (utilization category AC1) | > 10 ⁵ switching operations (utilization category AC1) | > 10 ⁵ 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 ² single-strand | 2 x 2.5 mm ² single-strand | 2 x 2.5 mm ² single-strand |
| | 2 x 1.5 mm ² multi-strand | 2 x 1.5 mm ² multi-strand | 2 x 1.5 mm ² 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 | |
| |  PBE107144-35 |  PBE107164-35 | |
| 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 |  DB123686 A1 11 A2 12 14 |  DB123686 A1 11 A2 12 14 | |
| 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 | A9A15393 | A9A15416 | |
| Technical specifications | | | |
| 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 ² | 0.5 x 6 mm ² |
| Width in 9-mm modules | | 2 | 2 |
| Operating temperature | °C | -5 ... +55 | -5 ... +55 |
| Storage temperature | °C | -40 ... +70 | -40 ... +70 |



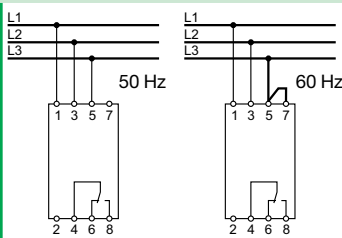
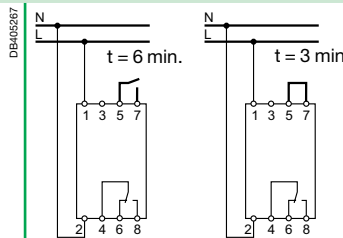






Changeover and extension relays

| | 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"> Relaying of ON or OFF information to the auxiliary circuits and actuation of low-power loads | | | | <ul style="list-style-type: none"> Extension allowing additional contacts to be added to the iRLI changeover relays | | | | |
| Wiring diagrams |  | | | |  | | | | |
| Use | <ul style="list-style-type: none"> The iRLI relay contains 1 changeover contact (O-C) and 1 normally open contact (N/O) | | | | <ul style="list-style-type: none"> The iERL extension (max. 3 iERLs for 1 iRLI) contains 1 changeover contact (O-C) and 1 normally open contact (N/O) Can be mounted without any tool and without additional cabling using a yellow clip which performs mechanical assembly and electrical connection between the coils | | | | |
| Catalogue numbers | A9E15535 | A9E15536 | A9E15537 | A9E15538 | A9E15539 | A9E15540 | A9E15541 | A9E15542 | |
| Technical specifications | | | | | | | | | |
| Control voltage (Uc) | V AC | 230...240 | 48 | 24 | 12 | 230...240 | 48 | 24 | 12 |
| Voltage rating (Ue) | V AC | 230 | | | | | | | |
| Insulation voltage (Ui) | V AC | 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 ² | | | | 0.5 x 6 mm ² | | | |
| Width in 9-mm modules | | 2 | | | | 2 | | | |
| Operating temperature | °C | -5 ... +55 | | | | -5 ... +55 | | | |
| Storage temperature | °C | -40 ... +70 | | | | -40 ... +70 | | | |

| | | Control relays | |
|-------------------------------------|---|--|--|
| | | iRCI | iRCU |
| Type | | Current control | Voltage control |
| |  |  | |
| Function | | <ul style="list-style-type: none"> Monitors the current (I_r) flowing in an AC or DC circuit and indicates any crossing of the set threshold | <ul style="list-style-type: none"> Monitors the voltage variation (U_r) of an AC or DC circuit and indicates any crossing of the set threshold |
| Wiring diagrams | |  |  |
| Catalogue numbers | | A9E21181 | A9E21182 |
| Common technical specifications | | | |
| Supply voltage (U_c) | V AC | 230, -15 % to +10 % | |
| Frequency | Hz | 50/60 | |
| Parameter setting | | <ul style="list-style-type: none"> 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 ² | |
| Width in 9-mm modules | | 4 | |
| Operating temperature | °C | -5 ... +55 | |
| Storage temperature | °C | -40 ... +80 | |
| Particular technical specifications | | | |
| | | 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 | <ul style="list-style-type: none"> Automatic recognition of AC voltage or DC voltage. 2 measuring ranges selected by cabling: <ul style="list-style-type: none"> 10 V to 50 V 50 V to 500 V |
| | | <ul style="list-style-type: none"> Automatic recognition of alternating or direct current. 2 measuring ranges selected by cabling: <ul style="list-style-type: none"> 0.15 A to 1.5 A 1 A to 10 A | |

Monitoring Control Remote control

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

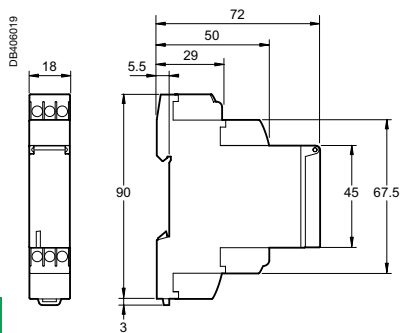
| iRCP | | iRCC | |
|---|--|--|---|
| Phase control | | Compressor control | |
| PB107124-3E |  | PB107127-3E |  |
| <p>■ Monitors phases and the presence of voltage on the 3 phases of a three-phase circuit (power supply of a motor, etc.). It indicates any phase loss or inversion</p> | | <p>■ Monitors the compressor's power supply and prevents its immediate restarting upon detection of a power cut or voltage dip</p> | |
| DB405265 |  <p>50 Hz 60 Hz</p> | DB405267 |  <p>t = 6 min. t = 3 min.</p> |
| A9E21180 | | A9E21183 | |
| 400, ±15 % | | 230, -15 % to +10 % | |
| 50/60 | | | |
| ■ On the front panel, by direct scale, using a screwdriver | | | |
| ±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 ² | | | |
| 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

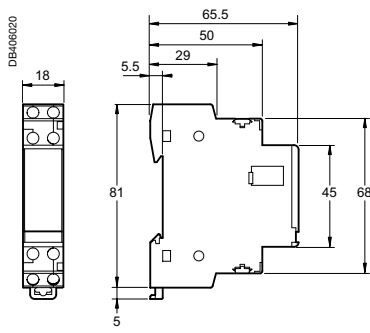
Weight (g)

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

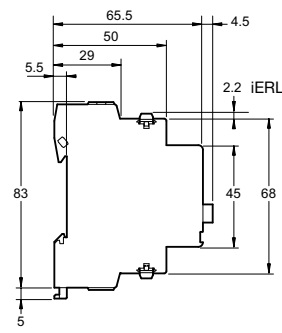
Dimensions (mm)



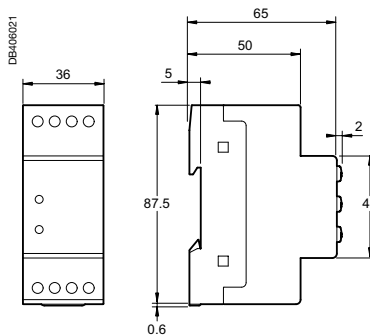
iRTA, iRTB, iRTC, iRTH, iRTL, iRTMF



iRBN, iRTBT



iRLI, iERL



iRCP, iRCI, iRCU, iRCC

> Timers

> Electromechanical timer

MIN
Adjustable time delay from 1 to 7 min.

The image shows a single Schneider MIN timer, model P111648, which is an electromechanical timer. It is a vertical, rectangular device with a white face and a green Schneider logo. It has several terminals at the top and bottom.

> Silent electronic timers



MINs
Adjustable time delay from 0.5 to 20 min.




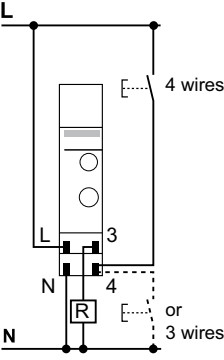
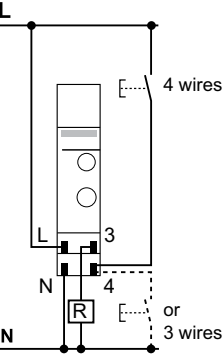
MINp
Adjustable time delay from 0.5 to 20 min. with switch-off warning.

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

The image shows three Schneider silent electronic timers: MINs (P111642), MINp (P111643), and MINT (P111644). They are vertical, rectangular devices with white faces and green Schneider logos. Each has a different set of features and terminals.

Selection table

| | MIN | MINs |
|---|---|--|
| Type | Electromechanical timer | Silent electronic timer |
| |  |  |
| Function | <p>These timers allow closing and then opening of a contact in a determined time</p> <p>Control circuit: connected standard or luminous push-buttons.</p> <p>Timer inoperative via self-protection if consumption above 50 mA maximum</p> | |
| Wiring diagrams | | |
| Mounting | <p>Two operating modes triggered by switch on front face:</p> <ul style="list-style-type: none"> ■ Automatic mode: <ul style="list-style-type: none"> □ operation in timing mode □ time delay adjustable from 1 to 7 min. □ setting in steps of 15 s using knob □ pressing a push-button renews the time delay ■ Manual override mode: constant lighting | <p>Two operating modes triggered by switch on front face:</p> <ul style="list-style-type: none"> ■ Timer mode: time delay adjustable from 0.5 to 20 min. ■ Permanent mode: constant lighting |
| Catalogue numbers | 15363 | CCT15232 |
| Technical specifications | | |
| 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 ² | ■ | ■ |
| 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 | - | - |

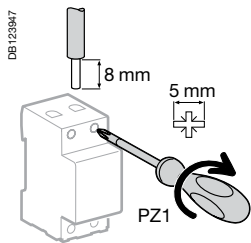
| MINp | | MINt | | Accessory | |
|--|--|---|--|---|--|
| Silent electronic timer  | |  | | Wall mount accessory  | |
| <p>The MINp timer allows closing and then opening of a contact in a determined time, and it also provides warning that the lighting is about to be switched off by flickering of the lamplight (switch-off warning)</p> | | <p>The MINt timer is the same as MINp with an "impulse relay" additional function</p> | | <p>The MIN timers can be mounted on a wall by using 15359 reference. The protection cover is sealable.</p> | |
|  | |  | | <p>The 15359 accessory can be also used to mount others 18 mm DIN rail devices (for example: time switches, circuit breakers...).</p> | |
| <ul style="list-style-type: none"> ■ Time delay adjustable from 0.5 to 20 min. ■ Three operating modes triggered by switch on front face: <ul style="list-style-type: none"> <input type="checkbox"/> 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 <input type="checkbox"/> timer mode mode without "switch-off warning" function <input type="checkbox"/> permanent mode : constant lighting ■ Timer mode operation: <ul style="list-style-type: none"> <input type="checkbox"/> 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 <input type="checkbox"/> 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 | | <ul style="list-style-type: none"> ■ Timer mode operation: <ul style="list-style-type: none"> <input type="checkbox"/> 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 <input type="checkbox"/> 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) | | | |
| CCT15233 | | CCT15234 | | 15359 | |
| 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 |
|---|---------------------------------------|---|---|
| Type of lighting | Maximum power | | |
| 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 ⁽¹⁾ |
| Fluocompact lamps with conventional ballast | 2000 VA | 1500 VA | 1500 VA ⁽¹⁾ |
| Parallel-corrected fluorescent tubes with conventional ballast | 1300 VA (70 F) | 400 VA (42 µF) | 1200 VA (120 µF) ⁽¹⁾ |
| 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 |

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

Connection

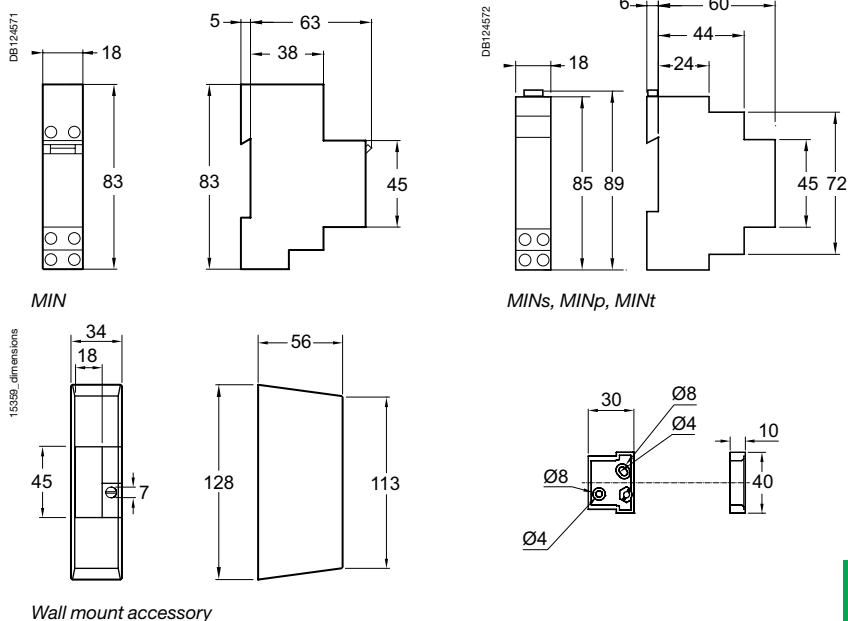


| Type | Tightening torque | Copper cables | |
|-----------------------|-------------------|--|--|
| | | Rigid | Flexible or with ferrule |
| MIN, MINs, MINp, MINt | 1.2 N.m |  ≤ 6 mm ² |  ≤ 6 mm ² |

Weight (g)


| Time switches | |
|---------------|-----|
| MIN | 84 |
| MINs | 75 |
| MINp | 103 |
| MINt | 76 |

Dimensions (mm)



> 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.

> 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 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 ψ =1) | Time changeover (summer / winter) |
|---|--------------------|-----------------------|---|--------------------------------|-------------------------|-------------------------|----------------------------|--|-----------------------------------|
| The 45 mm digital time switches | | | | | | | | | |
| 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 |
| The 18 mm digital time switches | | | | | | | | | |
| 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 |
| The 36 or 72 mm digital yearly time switches | | | | | | | | | |
| 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 |
| The 54 mm mechanical time switches | | | | | | | | | |
| 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 ⁽¹⁾ | 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 ⁽¹⁾ | 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 |
| The 18 mm mechanical time switches | | | | | | | | | |
| 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 |

⁽¹⁾ 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 ⁽⁴⁾ |
| ■ | ■ | ■ | ■ | 1 input | ■ | ■ | CCT15721 ⁽⁴⁾ |
| | ■ | ■ | ■ | | ■ | | CCT15722 ⁽⁴⁾ |
| ■ | ■ | ■ | ■ | 2 inputs | ■ | ■ | CCT15723 ⁽⁴⁾ |
| | ■ | ■ | | | | ⁽⁵⁾ | CCT15854 ⁽⁴⁾ |
| ■ + Cycle programming | ■ | ■ | | 1 input | | ■ | CCT15838 ⁽⁴⁾ |
| Back-lit display, pulse and cycle programming | ■ ⁽³⁾ | | | | | ⁽⁶⁾ | CCT15910 |
| Back-lit display, pulse and cycle programming | ■ ⁽³⁾ | | | 2 inputs | | ⁽⁶⁾ | CCT15940 |
| | | ■ | | | | | CCT15338 |
| | | ■ | | | | | CCT16364 |
| | | ■ | | | | | CCT15365 |
| | | | | | | | 15337 |
| | | ■ | | | | | CCT15367 |
| | | | | | | | 15366 |
| | | | | | | | 15331 |
| | | | | | | | 15336 |
| | | | | | | | 15335 |

⁽²⁾ French, English, Italian, Spanish, German, Portuguese languages.





⁽³⁾ Function included and can be realized through special program entry.

⁽⁴⁾ French, English, Italian, Spanish, German, Portuguese, Dutch languages.

⁽⁵⁾ 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").

⁽⁶⁾ 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").

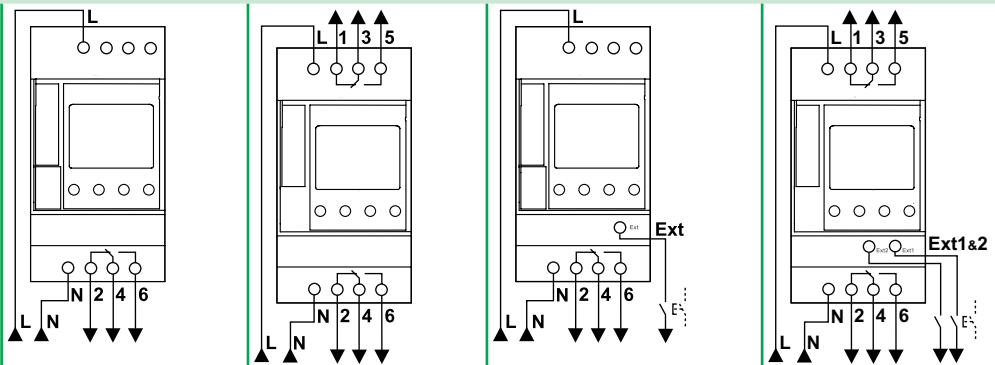
Selection table Programmable time switches

| | IHP 1c | IHP2c | IHP+1c | IHP+2c |
|---------|--|---------|---|---|
| P140826 |  | P140827 |  | P111824 |
| |  | | P111826 |  |

Function






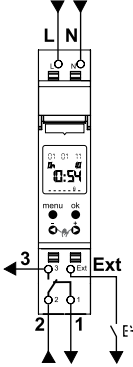
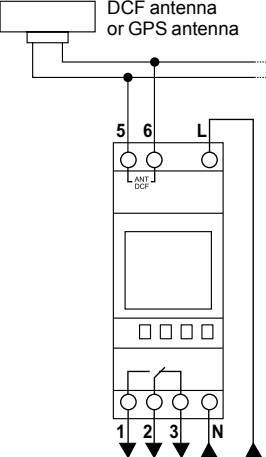
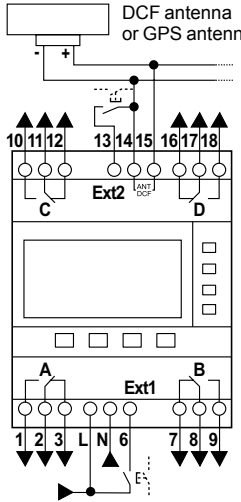
- These time switches automatically switch on and off loads according to the program entered by the user
 - They operate on weekly cycle: the same program is repeated week after week
 - They offer automatic summer/winter time change and allow to adjust it according to where you are located
 - The program 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 external inputs for IHP+ 2c)

Wiring diagrams







| Catalogue numbers | CCT15720 | CCT15722 | CCT15721 | CCT15723 |
|--|---------------------------------------|---------------------------|---------------------------|---------------------------|
| Technical specifications | | | | |
| 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"> Weekly or yearly time programming to be distributed over 1 channel | <ul style="list-style-type: none"> Weekly or yearly time programming to be distributed over 1, 2, 3 or 4 channels Override control with switch or push-button via external inputs |
| <ul style="list-style-type: none"> 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") | | <ul style="list-style-type: none"> 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"). | |
|  |  |  |  |
| CCT15854 | CCT15838 | 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 |

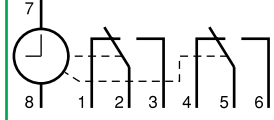
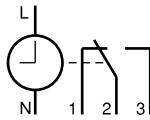
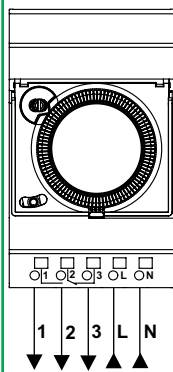
Selection table Mechanical time switches

| | IH 60mn 1c SRM | IH 24h 1c SRM | IH 24h 1c ARM | IH 24h 2c ARM | | | |
|---------|---|---------------|---|---------------|--|---------|---|
| P118680 |  | P118681 |  | P118682 |  | P118616 |  |




Function

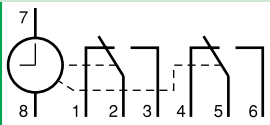
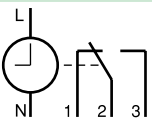
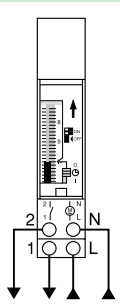
- They operate on hourly, daily or weekly cycle: the same program is repeated hour after hour (IH 60mn), day after day (IH 24h) or week after week (IH 7), (IHH 7)
- The program can be overridden On

Wiring diagrams







| | | | | |
|---|---------------------------------------|--------------------------------|--|--------------------------------|
| Catalogue numbers | CCT15338 | CCT16364 | CCT15365 | 15337 |
| Technical specifications | | | | |
| 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 |

| | IH 24h + 7j 1+1c ARM | IH 7j 1c ARM | IH24h 1c SRM 18 mm | IH 24h 1c ARM 18 mm | IHH 7j 1c ARM 18 mm |
|---------|---|--|--|---|--|
| P111619 |  | P111663  | P111614  | P111615  | P111613  |

| | | | | |
|---|---|--|--|--|
|  |  |  | | |
|---|---|--|--|--|

| | 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 |
| |  |  |  |  |
| Function | 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 | |
| Mounting | – | | Located on front face | |
| Catalogue numbers | CCT15860 | CCT15950 | CCT15861 | CCT15955 |
| Technical specifications | | | | |
| Degree of protection | – | | – | – |
| Operating temperature | – | | – | – |

Specific technical data

7

| 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 |
|--|---|--|
| GPS antenna for ITA | | IH jumpers |
| P140491 |  | |
| Antenna for ITA 1c and ITA 4c | | They are used to program a larger number of sequences for: <ul style="list-style-type: none"> ■ IH 24h 2c ARM (15337) ■ IH 24h + 7j 1+1c ARM (15366) |
| <ul style="list-style-type: none"> ■ 10 ITA maximum per antenna, maximum distance between the ITA and the antenna: 200 m ■ Outside the electrical switchboard, outdoors, under shelter | | 1 bag containing: <ul style="list-style-type: none"> ■ 5 red ■ 5 green ■ 5 white ■ 5 yellow |
| CCT15970 ⁽¹⁾ | | 15341 |
| IP54 | | – |
| -30 °C to +55 °C | | – |

⁽¹⁾ external 12-30 V DC 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 : <ul style="list-style-type: none"> ■ Ext1 input: supplied with 230 V AC, ±10%- 50/60 Hz ■ Ext2 input Ext2: potential free |
| Antennas | GPS- ITA |
| 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 ⁽¹⁾ | Tuesday | Wednesday | Thursday ⁽²⁾ | 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 |

⁽¹⁾ Closed on Mondays

⁽²⁾ 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 conditioner 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 |
|---|---------|---------|-----------|----------|---------|----------|---------|
| Channel 1: bell (20 s pulse order) | | | | | | | |
| 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 | – | – |
| Channel 2: lighting (latched order) | | | | | | | |
| 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 | – |
| Channel 3: aquarium (15 s pulse order) | | | | | | | |
| 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 |
|----------------------------|---------|---------|-----------|----------|---------|----------|--------|
| Channel 1: lighting | | | | | | | |
| 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 | – | – |
| Channel 2: heating | | | | | | | |
| 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:

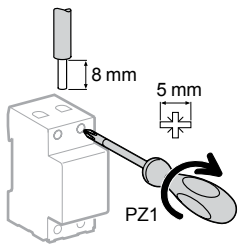
| | | Holidays | | | | |
|----------------------------|------|----------|---------|---------|---------|-------------|
| | | Winter | Spring | Summer | Autumn | End of year |
| Channel 1: lighting | | | | | | |
| Off | Date | 20 feb. | 17-apr | 07-july | 23 oct. | 18 dec. |
| | Time | 12 h 00 | 17 h 00 | 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 |
| Channel 2: heating | | | | | | |
| 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.

Lets you create special programs for dated days.

Connection



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

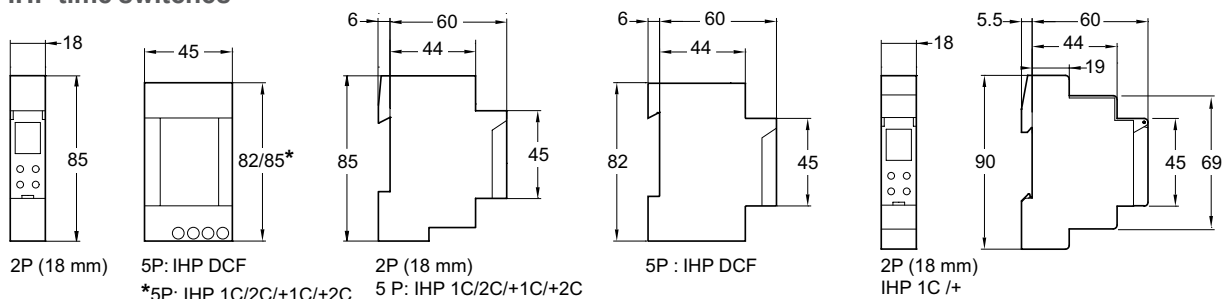
IHP 1c/2c, IHP+ 1c/2c are mechanical compatible with electrical distribution comb busbar.

Weight (g)

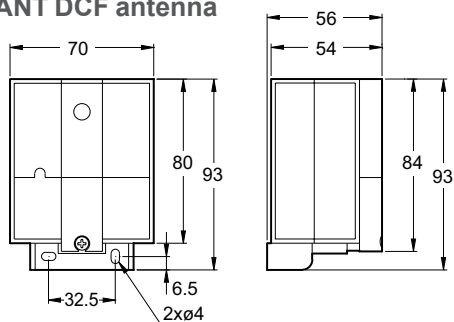
| Time switches | | |
|------------------|-------------------|-----------|
| IHP | 1c / 2c | 170/ 205 |
| IHP+ | 1c / 2c | 190/ 211 |
| IHP 18 mm | 1c / +1c | 90 |
| IHP DCF | | 244 |
| IH 54 mm | 60mn 1c SRM | 208 |
| | 24h 1c SRM/ARM | 212 / 119 |
| | 24h 2c ARM | 216 |
| | 7j 1c ARM | 119 |
| | 24h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

Dimensions (mm)

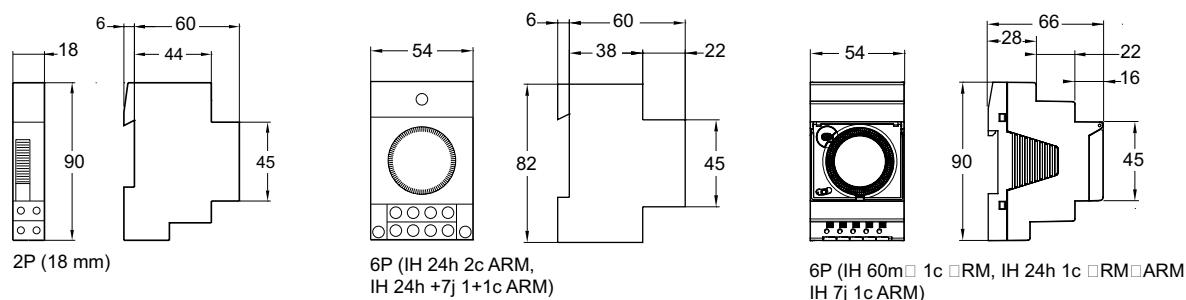
IHP time switches



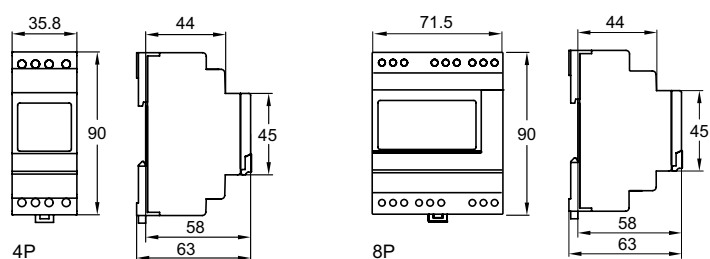
ANT DCF antenna



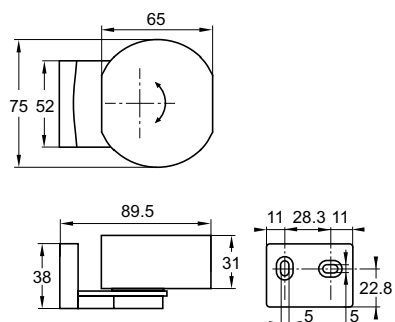
IH, IHH time switches



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.




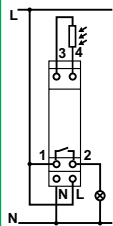
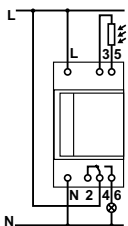
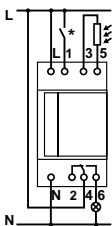


IC Astro
It operates without photoelectric cell and calculates sunrise and sunset times according to its geographic position.
It can be customised by using its programming function.



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+ |
|--|---|--|--|
| |  |  |  |
| Function | 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 |
| Wiring diagrams |  |  |  |
| Catalogue numbers | 15482 | CCT15284 | CCT15368 |
| | | | 15483 ⁽¹⁾ |
| Technical specifications | | | |
| Delivered with | Wall-mounted cell | Switchboard cell (CCT15281) | Wall-mounted cell (CCT15268) |
| Optional accessories | Wall-mounted cell (CCT15268) | Switchboard cell (CCT15281) Wall-mounted cell (CCT15268) | Wall-mounted cell (CCT15268) Switchboard cell (CCT15281) |
| 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 | - | - | $< \pm 1$ 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, italian, german, portuguese, swedish, dutch, finnish, norwegian/danish. (2) English, french, spanish, portuguese, hungarian, polish romanian,

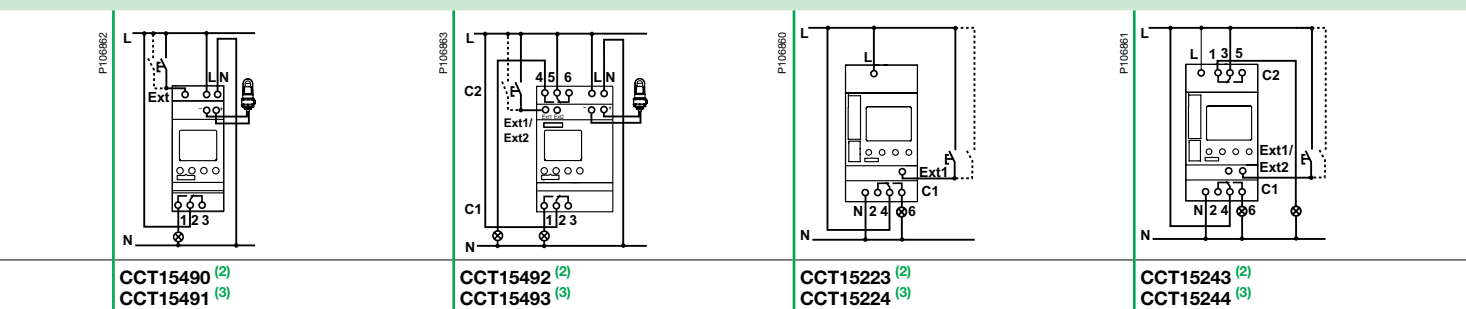
Twilight switches

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



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










| | | |
|---|--|--|
| Digital wall-mounted cell (CCT15260) Memory key (alone) (CCT15861) | - | Memory key (alone) (CCT15861) |
| Digital wall-mounted cell (CCT15260) Digital switchboard cell (CCT15261) Programming kit for PC (CCT15860) Memory key (alone) (CCT15861) | Programming kit for PC (CCT15860) Memory key (alone) (CCT15861) | |
| 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 |
| 3 VA | | 3 VA |
| -30°C to +50°C | | -25°C to +45°C |
| 4 | 6 | 5 |
| Class II | | Class II |
| IP20C | | IP20B |
| 16 A | | 16 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 |
| ■ | | ■ |
| 10 years | | 6 years |
| - | | ■ |
| - | | - |
| 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 |
| - | | ■ |

7

czech, slovak, bulgarian, greek, slovene, serbian, croatian. (3) English, french, italian, german, swedish, dutch, finnish, danish, russian, ukrainian, latvian, lituanien, estonian.

Accessories selection table

| | Wall-mounted cell | | Switchboard cell | Programming kit for PC | Memory key | Digital wall-mounted cell | Digital switchboard cell |
|----------------------|--|---|--|--|---|--|---|
| |  |  |  |  |  |  |  |
| Function | 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 |
| Mounting | <ul style="list-style-type: none"> Delivered with its fixing device for IC100 and IC200P+ Replaced by CCT15268 for spare part use Cell connection: by double insulation 2-conductor cable, not to be laid next to mains cables or water ducts, maximum length: 25 m | Delivered with 1 m cable and its fixing device | <ul style="list-style-type: none"> Delivered with its fixing device Cell connection: by double insulation 2-conductor cable, not to be laid next to mains cables or water ducts, maximum length: 100 m | – | – | <ul style="list-style-type: none"> Delivered with its fixing device. Cell connection: <ul style="list-style-type: none"> by double insulation 2-conductor cable: <ul style="list-style-type: none"> - 0.5 - 2.5 mm² for CCT15260 - 0.25 - 1.5 mm² for CCT15261 Not to be laid next to mains cables or water ducts, maximum length: <ul style="list-style-type: none"> - 100 m (2 x 1.5 mm²) - 50 m (2 x 0.75 mm²) | |
| Catalogue no. | – | CCT15268 | 15281 | CCT15860 | CCT15861 | CCT15260 | CCT15261 |

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° |

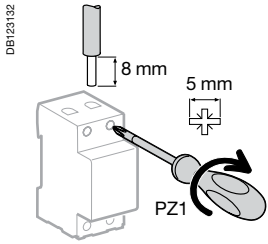
Load table

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

Connection



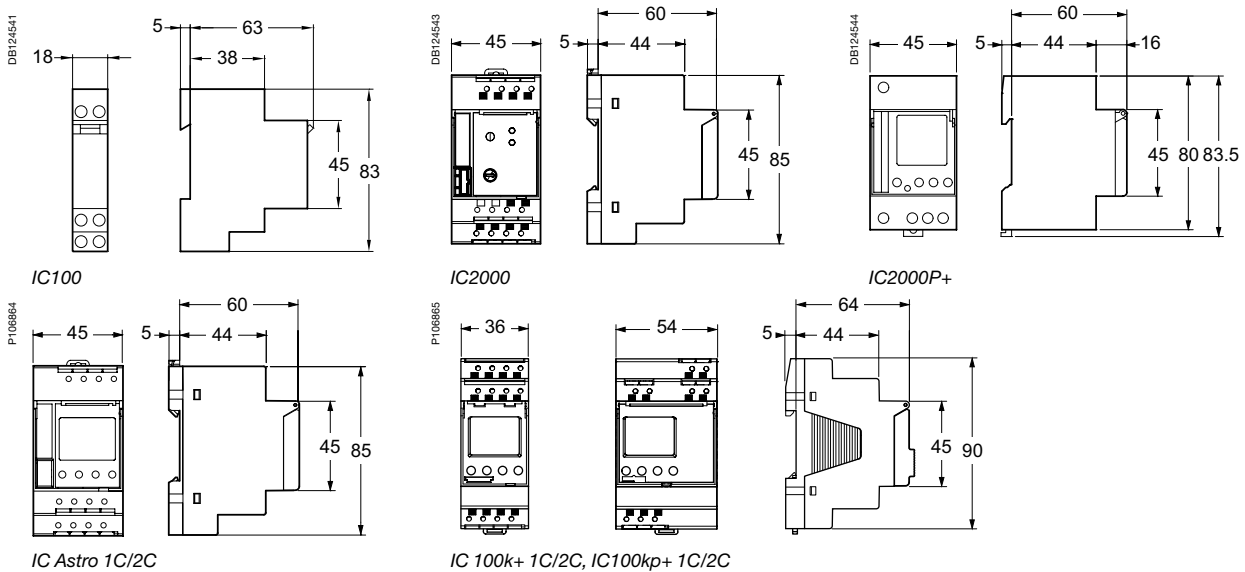
| Type | Tightening torque | Copper cables | |
|---------------------------|--------------------|-------------------------|--------------------------|
| | | Rigid | Flexible or with ferrule |
| IC100, IC2000P+ | 1.2 N.m | ≤ 6 mm ² | ≤ 6 mm ² |
| IC2000, IC Astro, IC 100k | 2 screwless / pole | 2 x 2.5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

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

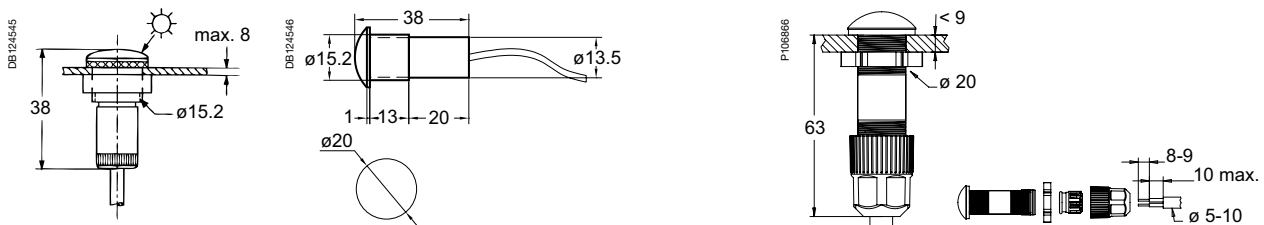
Weight (g)

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

Dimensions (mm)

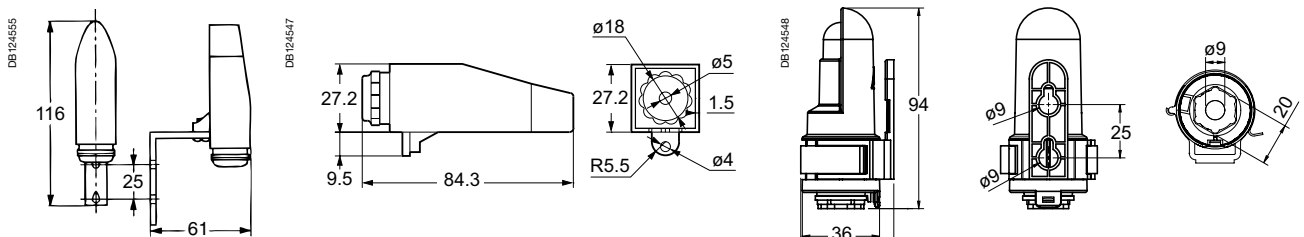


Cells



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 ² 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 |

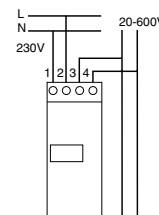
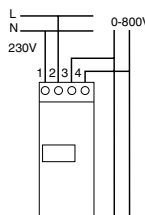
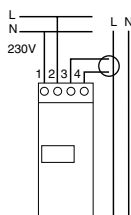
VLT

| | |
|-------------------------|--------------|
| 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 |
|-----------------------------------|------------|--------------------|--------------------|-------------|
| Amp with direct connection | | | | |
| | 0 - 10A | Direct | 2 | 15202 |
| AMP with multirating | | | | |
| | 0 - 5000A | As per rating | 2 | 15209 |
| VLT | | | | |
| | 0 - 600V | As per rating | 2 | 15201 |
| FRE | | | | |
| | 20 - 100Hz | As per rating | 2 | 15208 |





iEM2000T



iEM2000



iEM2010



iME1zr.

Function

Digital kilowatt-hour meters designed for sub-metering of active energy (rms) consumed by a single-phase or three-phase electric circuit with or without distributed neutral.

iEM2000T

40 A single-phase kilowatt-hour meter without display, with remote transfer of metering impulses (static output).

iEM2000

40 A single-phase kilowatt-hour meter.

iEM2010

40 A single-phase kilowatt-hour meter with remote transfer of metering impulses (static output).

iME1

Single-phase kilowatt-hour meter.

iME1z

Single-phase kilowatt-hour meter with partial meter.

iME1zr

Single-phase kilowatt-hour meter with partial meter and remote transfer of metering impulses (relay output).

Catalogue numbers

| Type | Rating (A) | Voltage (V AC) | Tolerance (V AC) | Width in mod. of 9 mm | Cat. no. |
|--------------------------------------|------------|----------------|------------------|-----------------------|------------|
| Single-phase circuit (1L + N) | | | | | |
| iEM2000 | 40 | 230 | ±20 | 2 | A9MEM2000 |
| iEM2010 | 40 | 230 | ±20 | 2 | A9MEM2010 |
| iEM2000T | 40 | 230 | ±20 | 2 | A9MEM2000T |
| iME1 | 63 | 230 | ±20 | 4 | A9M17065 |
| iME1z | 63 | 230 | ±20 | 4 | A9M17066 |
| iME1zr | 63 | 230 | ±20 | 4 | A9M17067 |

Main technical data

| | iEM2000T | iEM2000/iEM2010 | iME |
|---------------------------------------|--|--|--|
| Accuracy class | 1 | 1 | 1 |
| Frequency | 48/62 Hz | 48/62 Hz | 48/62 Hz |
| Consumption | <10VA | <10VA | 2.5 VA |
| Operating temp | -10°C to +55°C | -10°C to +55°C | -25°C to +55°C |
| Connection by tunnel terminals | Top terminals: 4 mm ² Bottom terminals: 10 mm ² | Top terminals: 4 mm ² Bottom terminals: 10 mm ² | Top terminals: 6 mm ² Bottom terminals: 16 mm ² |
| Compliance with standard | IEC 61557-12 : - PMD/DD/K55/1 IEC 62053-21 (accuracy) | IEC 61557-12 : - PMD/DD/K55/1 IEC 62053-21 (accuracy) | IEC 61557-12 : - PMD/DD/K55/1 IEC 62053-21 (accuracy) |
| Sealable screw shield | Yes | Yes | Yes |
| MID Compliance | No | Yes | No |

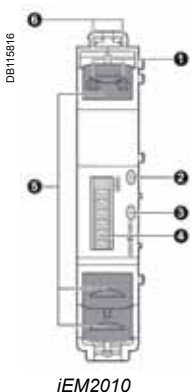
Description

iEM2000, iEM2010, iEM2000T

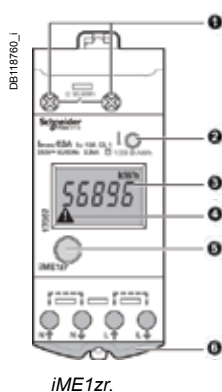
- 1 Remote transfer pulse output (iEM2000T, iEM2010).
- 2 Green power-on indicator light.
- 3 Yellow metering indicator light (flashing).
- 4 Display unit (iEM2000, iEM2010).
- 5 Seal.
- 6 Allow the comb busbar to pass.

iME1, iME1z, iME1zr

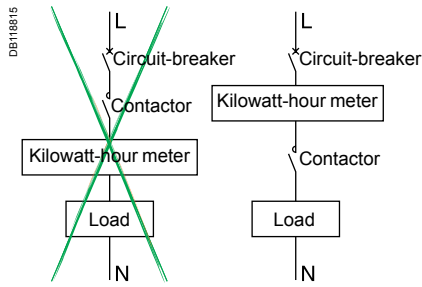
- 1 Pulse output for remote transfer (iME1zr).
- 2 Flashing meter indicator.
- 3 Total or partial meter display (iME1z, iME1zr).
- 4 Wiring error indicator.
- 5 Push-button: total or partial meter display, reset partial meter (ME1z, ME1zr).
- 6 Sealing connection.



iEM2010



iME1zr.



Example: meter on a load switching

Installation

- The front panel of the product is IP40 and its housing is IP20.
- Its installation must be appropriate to the operating conditions.
- The protection must not be less than IP65 for outdoor use.

Use with a contactor

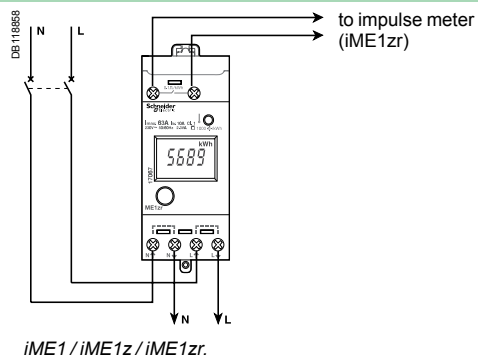
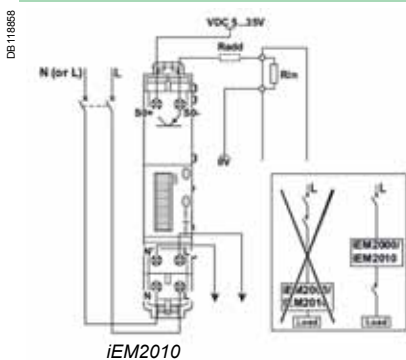
A measurement instrument is normally continually supplied. For a non-continuous supply (load switching), we recommend that you place the breaking device downstream from the measurement instrument to limit disturbances on the module inputs. These disturbances, particularly on inductive loads, may result in early ageing of the device. You must also place the measurement instrument at a distance from the breaking device to limit the risk of disturbance.

Specific technical data

| iEM2000, iEM2010, iEM2000T, iME1, iME1z and iME1zr specific technical data | | | | | | |
|--|--|---------|----------|--|-------|--------|
| | iEM2000 | iEM2010 | iEM2000T | iME1 | iME1z | iME1zr |
| Direct measurement | Up to 40 A | | | Up to 63 A | | |
| Metering and activity indicator light (yellow) | 3,200 flashes per kWh | | | 1,000 flashes per kWh | | |
| Wiring error indicator | Yes | | | | | |
| Total meter (max. capacity) on one phase | 999 999.9 kWh | | | 999.99 MWh | | |
| Total meter display | In kWh with 7 significant digits (not for iEM2000T) | | | In kWh or MWh with 5 significant digits. No decimal point in kWh; 2 digits after the decimal point in MWh | | |
| Partial meter (max. capacity) on one phase with RESET | - | | | - | | |
| Partial meter display | - | | | 99.99 MWh | | |
| Remote transfer | - | | | - | | |
| | By static output: - ELV insulation voltage: 4 kV, 50 Hz - 20 mA/35 V DC max. - 100 impulses of 120 ms per kWh | | | By NO impulse contact: - ELV insulation voltage: 4 kV, 50 Hz - 18 mA/24 V DC, 100 mA/230 V AC - 1 impulse of 200 ms (contact closing) per kWh | | |

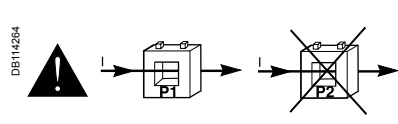
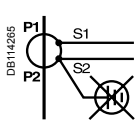
Connection

Single-phase circuit



Caution

- Do not earth the CT secondary (S2).
- You must comply with the routing direction of power cables in the current transformer primary. Cables enter in "P1" and leave in "P2" to the loads.



Kilowatt-hour meters

Energy Meter Series iEM3000 Functions and characteristics



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

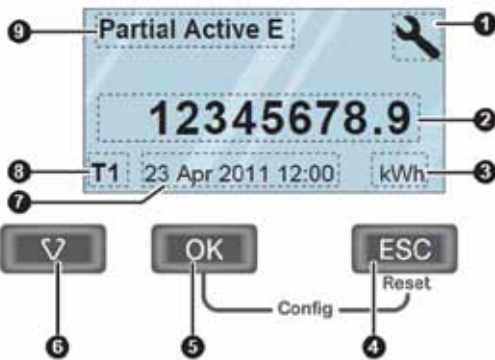
- Basic electrical parameters like current, voltage and power
- Onboard overload alarm to avoid circuit overload and trip
- Easy integration with PLC systems by input/output interface

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



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

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 |

| 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 (iEM3155/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 |
| Standards | |
| 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 |

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 ² | | | | |
| 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) ⁽¹⁾ | | | | |
| Wiring capacity | 6 mm ² for currents and 4 mm ² 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))

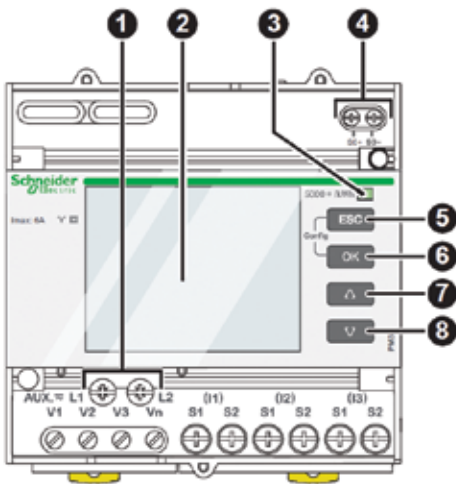
7



Power Meter Series PM3200



Power Meter Series PM3255



Front of meter parts

- 1 Control power
- 2 Display with white backlit
- 3 Flashing yellow meter indicator (to check accuracy)
- 4 Pulse output for remote transfer (PM3210)
- 5 ESC Cancellation
- 6 OK Confirmation
- 7 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 | METSEPM3200 |
| PM3210 power meter with pulse output | Power, current, THD, peak demand | METSEPM3210 |
| PM3250 power meter with RS485 port | Power, current, THD, peak demand | METSEPM3250 |
| PM3255 power meter plus 2 digital inputs, 2 digital outputs with RS485 port | Power, current, THD, peak demand, memory for load profile | METSEPM3255 |



| Function guide | PM3200 Range | | | |
|---|-----------------------|--------|--------|--------|
| | PM3200 | PM3210 | PM3250 | PM3255 |
| Performance standard | | | | |
| IEC61557-12 PMD/Sx/K55/0.5 | ■ | ■ | ■ | ■ |
| General | | | | |
| 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 | ■ | ■ | ■ | ■ |
| Instantaneous rms values | | | | |
| Current, voltage | Per phase and average | | ■ | ■ |
| Active, reactive, apparent power | Total and per phase | | ■ | ■ |
| Power factor | Total and per phase | | ■ | ■ |
| Energy values | | | | |
| Active, reactive and apparent energy; import and export | ■ | ■ | ■ | ■ |
| Demand value | | | | |
| Current, power (active, reactive, apparent) demand; present | ■ | ■ | ■ | ■ |
| Current, power (active, reactive, apparent) demand; peak | | ■ | ■ | ■ |
| Power quality measurements | | | | |
| THD Current and voltage | | ■ | ■ | ■ |
| Data recording | | | | |
| 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 |
| Communication | | | | |
| RS-485 port | | | ■ | ■ |
| Modbus protocol | | | ■ | ■ |

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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 |
|---------------------------------------|--|
| Type of measurement | True rms up to the 15th harmonic on three-phase (3P,3P+N) and single-phase AC systems. 32 samples per cycle |
| Measurement accuracy | |
| 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 |
| Data update rate | |
| Update rate | 1s |
| Input-voltage characteristics | |
| 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 |
| Input-current characteristics | |
| 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 |
| Control Power | |
| AC | 100/173 to 277/480V AC (+/-20%), 3W/5VA; 45Hz to 65Hz |
| DC | 100 to 300V DC, 3W |
| Input | |
| Digital inputs (PM3255) | 11 to 40V DC, 24V DC nominal, <=4mA maximum burden, 3.5kVrms insulation |
| Output | |
| 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 |
|---|--|
| Mechanical characteristics | |
| Weight | 0.26kg |
| IP degree of protection (IEC60529) | IP40 front panel, IP20 meter body |
| Dimension | 90 x 95 x 70mm |
| Environmental conditions | |
| 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 |
| Electromagnetic compatibility | |
| 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) |
| Safety | |
| | CE as per IEC61010-1 ⁽¹⁾ |
| Communication | |
| RS485 port | Half duplex, from 9600 up to 38400 bauds, Modbus RTU (double insulation) |
| Display characteristics | |
| Dimensions (VA) | 43mm x 34.6mm |
| Display resolution | 128 x 96 dots |
| Standard compliance | |
| | 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

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Power Meter Series PM3250

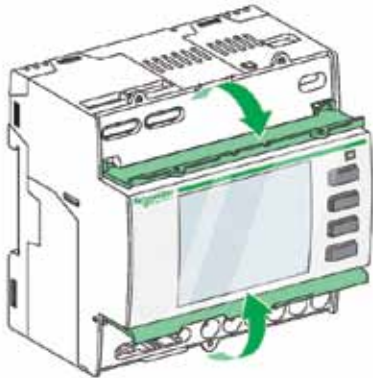
Multi-tariff capability

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

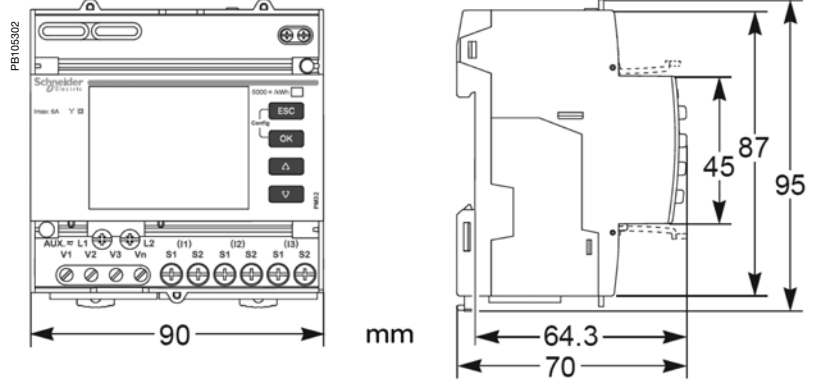
This function allows users to:

- 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

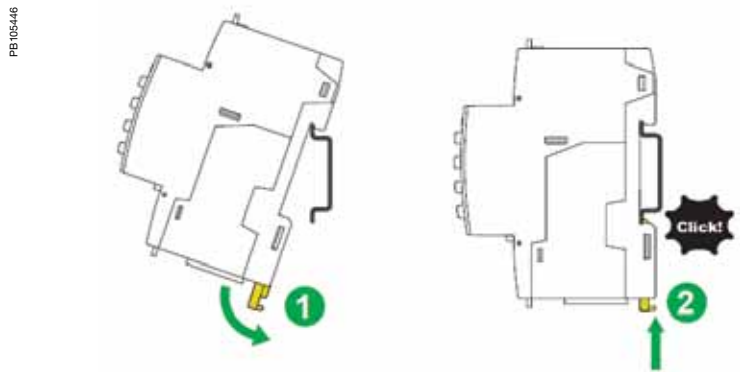


PM3200 top and lower flaps

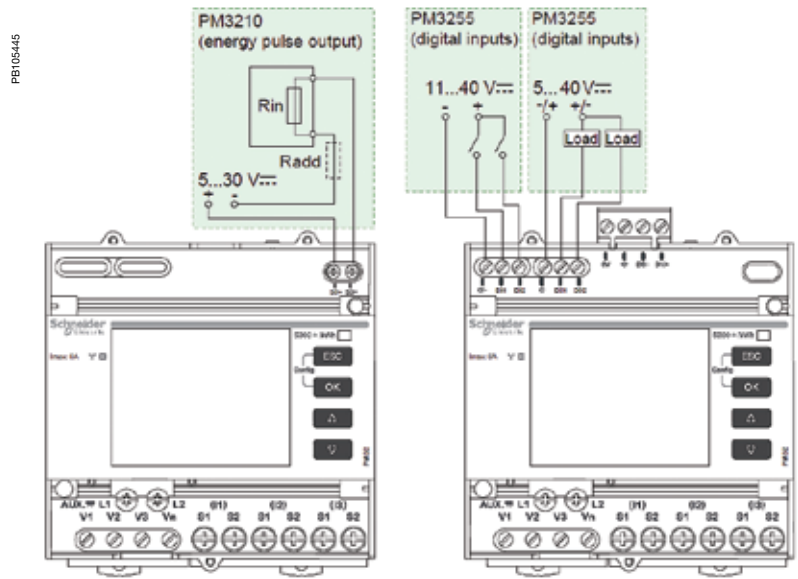
PM3200 series dimensions



PM3200 series easy installation



Digital Output and Digital Input sample wiring diagrams



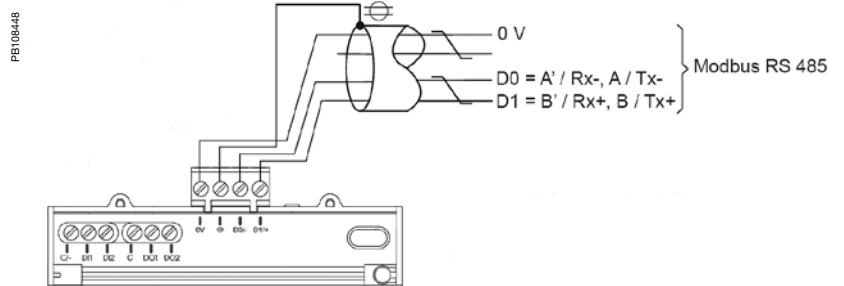
For PM3200/3210

For PM3250/3255

Note: These are sample wiring diagrams only. For further information please see the Instruction Sheet and User Guide documents for these products.

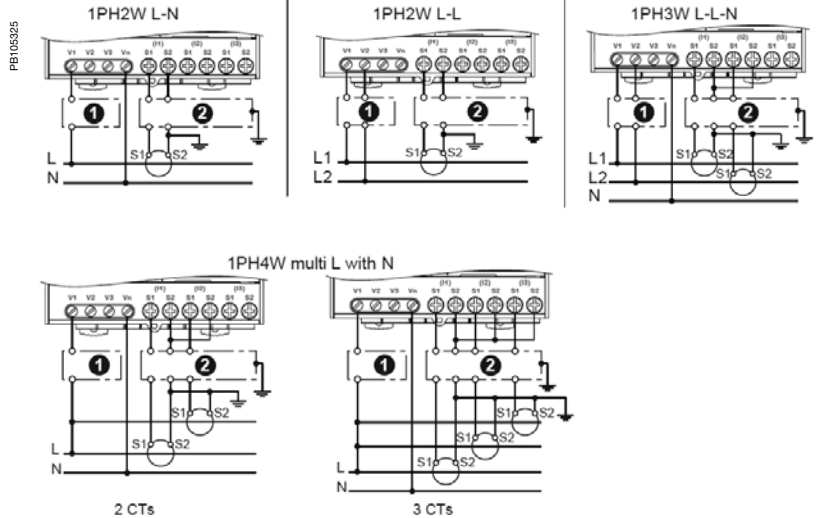
Note: These are sample wiring diagrams only. For further information please see the Instruction Sheet and User Guide documents for these products.

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

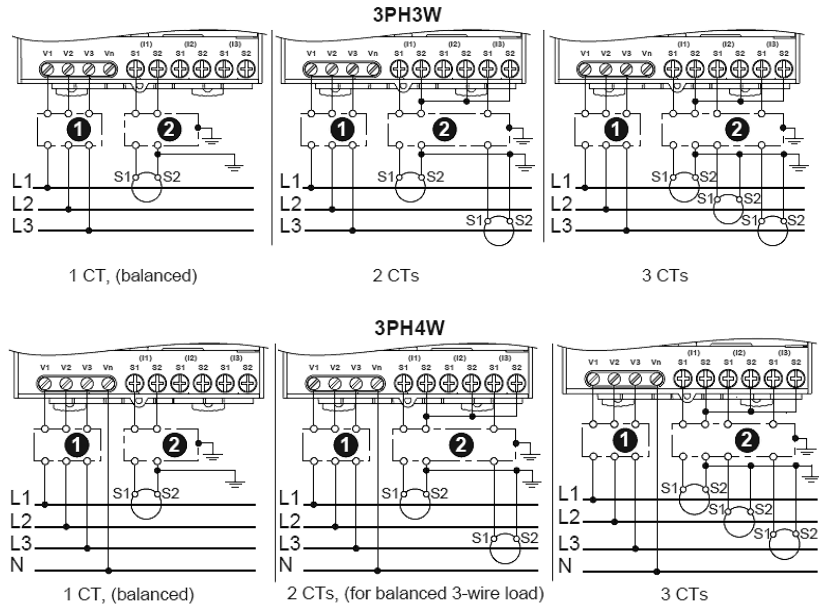


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Note: These are sample wiring diagrams only. For further information please see the Instruction Sheet and User Guide documents for these products.

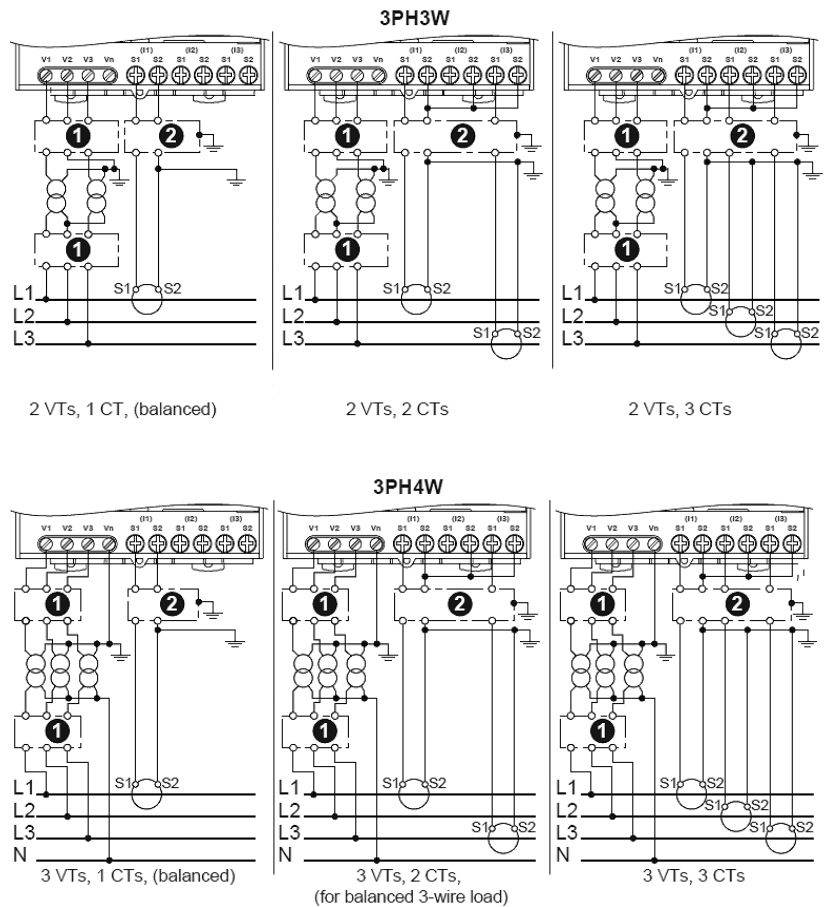
PM32xx Series sample wiring diagrams - 3 phase without VTs

- 1 Protection (to be adapted to suit the short-circuit current at the connection point)
- 2 Shorting switch unit



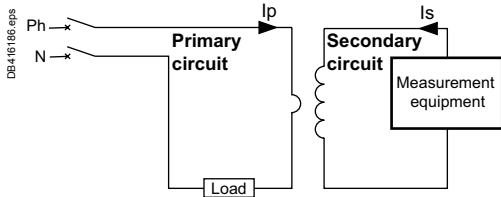
PM32xx Series sample wiring diagrams - 3 phase with VTs

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 Ip/5A ratio current transformer delivers at the secondary a current (Is) of 0 to 5 A that is proportional to the current measured at the primary (Ip).

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.

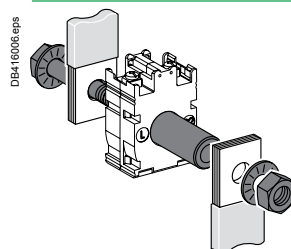
| CT with let-through primary | | | | | |
|--|-----------|-----------------------|-----------------------------|---------------|--------------|
| Conductor type | Cable | Mixed, bars or cables | Vertical or horizontal bars | Vertical bars | |
| Suggested Current Transformer and mounting | | | | | |
| 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 ⁽¹⁾ | 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.

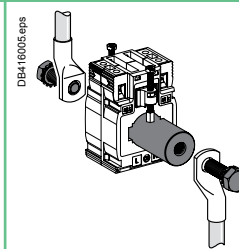
Specific mounting: use of cylinder

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 ²) | 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 |  | 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 mm², 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




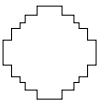


Examples:

- 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)

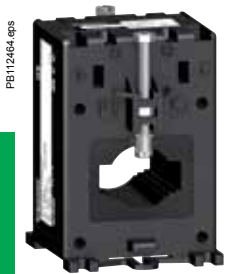
| Internal profile type | Cables (mm) | Bars (mm) | Rating Ip/5 A (A) | Cat. no. |
|---|-------------|-----------|-------------------|---------------|
|  | Ø21 | - | 40 | METSECT5CC004 |
| | | | 50 | METSECT5CC005 |
| | | | 60 | METSECT5CC006 |
| | | | 75 | METSECT5CC008 |
| | | | 100 | METSECT5CC010 |
| | | | 125 | METSECT5CC013 |
| | | | 150 | METSECT5CC015 |
| | | | 200 | METSECT5CC020 |
| | | | 250 | METSECT5CC025 |

Type M - current transformers (mixed: cable/bar profile)

| ME | | | | |
|---|-----|-------------------------------|-----|---------------|
|  | Ø22 | 10 x 30 11 x 25 12 x 20 | 150 | METSECT5ME015 |
| | | | 200 | METSECT5ME020 |
| | | | 250 | METSECT5ME025 |
| | | | 300 | METSECT5ME030 |
| | | | 400 | METSECT5ME040 |
| | | | 500 | METSECT5ME050 |
| | | | 600 | METSECT5ME060 |
| MB | | | | |
|  | Ø26 | 12 x 40 15 x 32 | 250 | METSECT5MB025 |
| | | | 300 | METSECT5MB030 |
| | | | 400 | METSECT5MB040 |
| MA | | | | |
|  | Ø27 | 10 x 32 15 x 25 | 150 | METSECT5MA015 |
| | | | 200 | METSECT5MA020 |
| | | | 250 | METSECT5MA025 |
| | | | 300 | METSECT5MA030 |
| | | | 400 | METSECT5MA040 |
| MC | | | | |
|  | Ø32 | 10 x 40 20 x 32 25 x 25 | 250 | METSECT5MC025 |
| | | | 300 | METSECT5MC030 |
| | | | 400 | METSECT5MC040 |
| | | | 500 | METSECT5MC050 |
| | | | 600 | METSECT5MC060 |
| | | | 800 | METSECT5MC080 |
| MF | | | | |
|  | Ø35 | 10 x 40 | 250 | METSECT5MF025 |
| | | | 300 | METSECT5MF030 |
| | | | 400 | METSECT5MF040 |
| | | | 500 | METSECT5MF050 |
| MD | | | | |
|  | Ø40 | 12 x 50 20 x 40 | 500 | METSECT5MD050 |
| | | | 600 | METSECT5MD060 |
| | | | 800 | METSECT5MD080 |



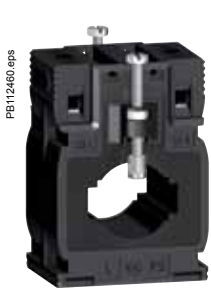
METSECT5CC●●●



METSECT5ME●●●



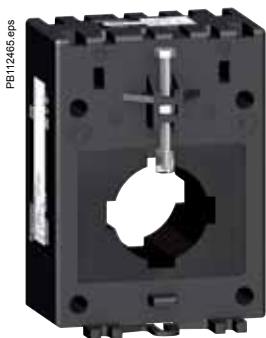
METSECT5MB●●●



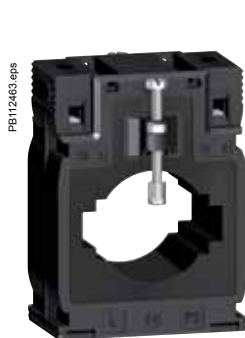
METSECT5MA●●●



METSECT5MC●●●



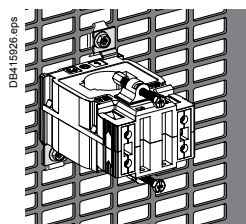
METSECT5MF●●●



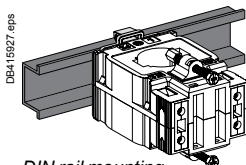
METSECT5MD●●●

Current transformers

CT, Ip/5 A ratio (cont.) Catalogue numbers



Mounting plate installation.



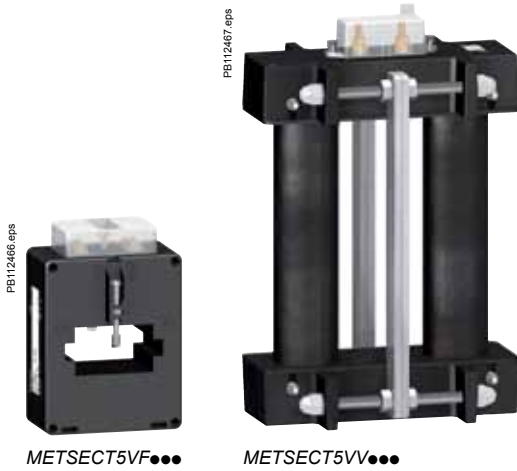
DIN rail mounting.

Common characteristics

| | |
|-------------------------------------|--|
| Secondary current Is (A) | 5 |
| Maximum voltage rating Ue (V) | 720 |
| Frequency (Hz) | 50/60 |
| Safety factor (sf) | <ul style="list-style-type: none"> ■ 40 to 4000 A: sf ≤ 5 ■ 5000 to 6000 A: sf ≤ 10 |
| Degree of protection | IP20 |
| Operating temperature | <ul style="list-style-type: none"> ■ tropicalised range ■ -25 °C to +60 °C ⁽¹⁾ ■ relative humidity > 95 % |
| Compliance with standards | <ul style="list-style-type: none"> ■ IEC 61869-2 ■ VDE 0414 |
| Secondary connection (as per model) | <ul style="list-style-type: none"> ■ by terminals for lug ■ by tunnel terminals ■ by screws |

(1) 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"> ■ Adapter for DIN rails. ■ Mounting plate. | 16550 METSECT5CYL1 | Included |
| - | 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 | 56 x 84 x 42 Option, DIN rail mounting: 60.5 x 88.5 x 46.5 | <ul style="list-style-type: none"> ■ Adapter for DIN rails. ■ Mounting plate. ■ Insulated locking screw. | 16551 | 16552 |
| 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 | - | 60 x 85 x 43 Option: 60 x 87 x 60 | <ul style="list-style-type: none"> ■ Adapter for DIN rails. ■ Mounting plate. | - | METSECT5COVER |
| 4 | 6 | - | | | | |
| 6 | 8 | - | | | | |
| 3 | 4 | - | 56 x 80 x 43 Option: 56 x 82 x 60 | <ul style="list-style-type: none"> ■ Adapter for DIN rails. ■ Mounting plate. | METSECT5CYL2 | METSECT5COVER |
| 4 | 7 | - | | | | |
| 6 | 8 | - | | | | |
| 8 | 10 | - | | | | |
| 10 | 12 | - | | | | |
| 3 | 5 | - | 70 x 95 x 45 Option: 70 x 97 x 60 | <ul style="list-style-type: none"> ■ Adapter for DIN rails. ■ Mounting plate. | - | METSECT5COVER |
| 5 | 8 | - | | | | |
| 8 | 10 | - | | | | |
| 10 | 12 | - | | | | |
| 12 | 15 | - | | | | |
| 10 | 12 | - | | | | |
| 2.5 | 5 | 8 | 77 x 107 x 46 Option, DIN rail mounting: 82 x 113 x 51 | <ul style="list-style-type: none"> ■ Adapter for DIN rails. ■ Mounting plate. ■ Insulated locking screw. | - | 16553 |
| 4 | 8 | 12 | | | | |
| 8 | 12 | 15 | | | | |
| 10 | 12 | 15 | | | | |
| 4 | 6 | - | 70 x 95 x 45 Option: 70 x 97 x 60 | <ul style="list-style-type: none"> ■ Adapter for DIN rails. ■ Mounting plate. | - | METSECT5COVER |
| 6 | 8 | - | | | | |
| 8 | 12 | - | | | | |



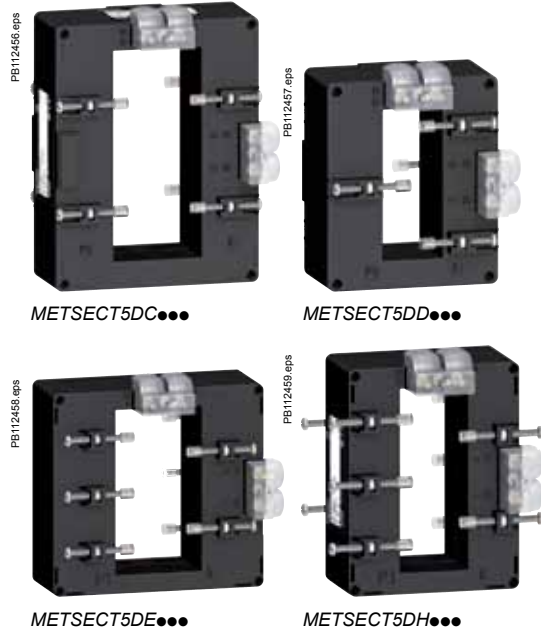
Type V current transformers (vertical bar profile)


| Internal profile type | Cables (mm) | Bars (mm) | Rating Ip/5 A (A) | Cat. no. |
|-----------------------|-------------|--------------------|-------------------|-----------------|
| VF | - | 11 x 64 31 x 51 | 500 | METSECT5VF050 |
| | | | 600 | METSECT5VF060 |
| VV | - | 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. |
|-----------------------|-------------|-----------|-------------------|-----------------|
| DA | - | 32 x 65 | 200 | METSECT5DA020 |
| | | | 250 | METSECT5DA025 |
| | | | 300 | METSECT5DA030 |
| | | | 400 | METSECT5DA040 |
| | | | 500 | METSECT5DA050 |
| | | | 600 | METSECT5DA060 |
| | | | 800 | METSECT5DA080 |
| | | | 1000 | METSECT5DA100 |
| DB | - | 38 x 127 | 1000 | METSECT5DB100 |
| | | | 1250 | METSECT5DB125 ★ |
| | | | 1500 | METSECT5DB150 ★ |
| | | | 2000 | METSECT5DB200 ★ |
| | | | 2500 | METSECT5DB250 ★ |
| DC | - | 52 x 127 | 2000 | METSECT5DC200 ★ |
| | | | 2500 | METSECT5DC250 ★ |
| | | | 3000 | METSECT5DC300 ★ |
| | | | 4000 | METSECT5DC400 ★ |
| DD | - | 34 x 84 | 1000 | METSECT5DD100 |
| | | | 1250 | METSECT5DD125 ★ |
| | | | 1500 | METSECT5DD150 ★ |
| DE | - | 54 x 102 | 1000 | METSECT5DE100 |
| | | | 1250 | METSECT5DE125 ★ |
| | | | 1500 | METSECT5DE150 ★ |
| | | | 2000 | METSECT5DE200 ★ |
| DH | - | 38 x 102 | 1250 | METSECT5DH125 ★ |
| | | | 1500 | METSECT5DH150 ★ |
| | | | 2000 | METSECT5DH200 ★ |

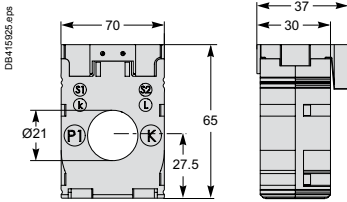
★ Operating temperature: -25 °C to +50 °C.



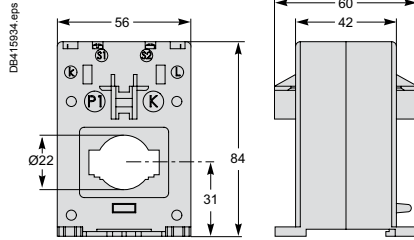
| Accuracy class | | | Dimensions W x H x D (mm) | Fastening mode | Accessories Cylinder  | Sealable cover  |
|--------------------|----|---|---------------------------------|---|--|--|
| 0.5 | 1 | 3 | | | | |
| Max. power (VA) | | | | | | |
| 2 | 4 | - | 90 x 113 x 48 | <ul style="list-style-type: none"> ■ Mounting plate. ■ Insulated locking screw. | - | Included |
| 4 | 6 | - | | | | |
| 60 | - | - | 177 x 242 x 110 | <ul style="list-style-type: none"> ■ Insulated locking screw. | - | Included |
| 70 | - | - | | | | |
| - | 2 | 5 | 90 x 94 x 90 | <ul style="list-style-type: none"> ■ Insulated locking screw. | - | 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"> ■ Insulated locking screw. | - | Included |
| 8 | 12 | - | | | | |
| 10 | 15 | - | | | | |
| 15 | 20 | - | | | | |
| 20 | 25 | - | | | | |
| 25 | 30 | - | | | | |
| 25 | 30 | - | 125 x 160 x 40 | <ul style="list-style-type: none"> ■ Insulated locking screw. | - | Included |
| 30 | 50 | - | | | | |
| 30 | 50 | - | | | | |
| 30 | 50 | - | | | | |
| 10 | 15 | - | 96 x 116 x 58 | <ul style="list-style-type: none"> ■ Insulated locking screw. | - | Included |
| 12 | 15 | - | | | | |
| 15 | 20 | - | | | | |
| 12 | 15 | - | 135 x 129 x 50 | <ul style="list-style-type: none"> ■ Insulated locking screw. | - | Included |
| 15 | 20 | - | | | | |
| 20 | 25 | - | | | | |
| 20 | 25 | - | | | | |
| 12 | 15 | - | 98 x 129 x 40 | <ul style="list-style-type: none"> ■ Insulated locking screw. | - | Included |
| 12 | 15 | - | | | | |
| 20 | 25 | - | | | | |

CT current transformers

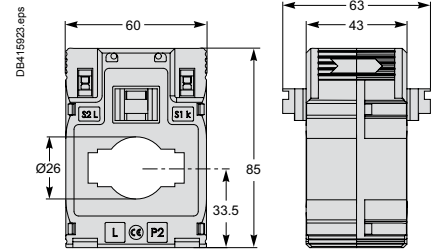
CC internal profile type



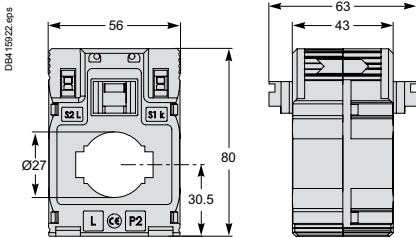
ME internal profile type



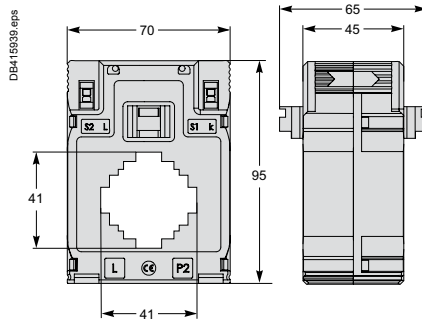
MB internal profile type



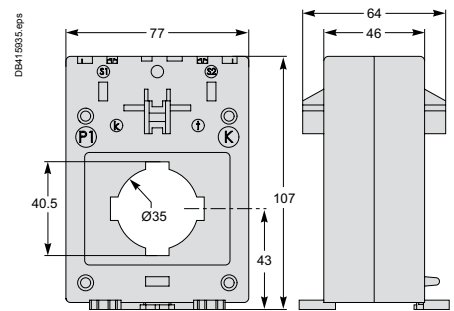
MA internal profile type



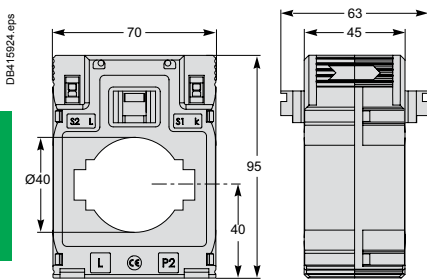
MC internal profile type



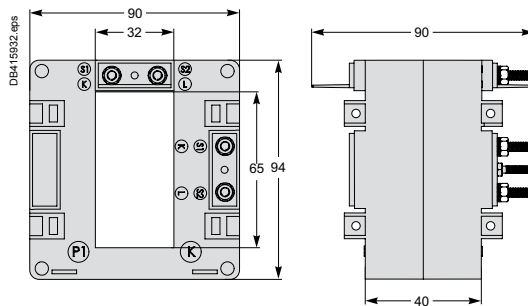
MF internal profile type



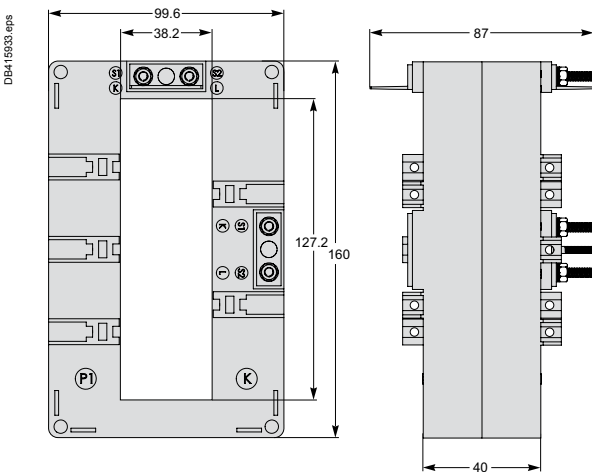
MD internal profile type



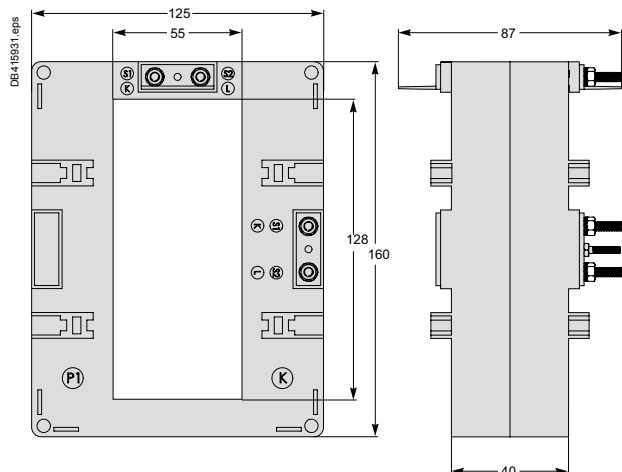
DA internal profile type



DB internal profile type

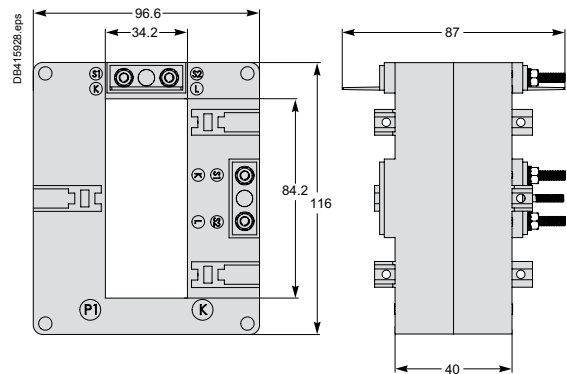


DC internal profile type

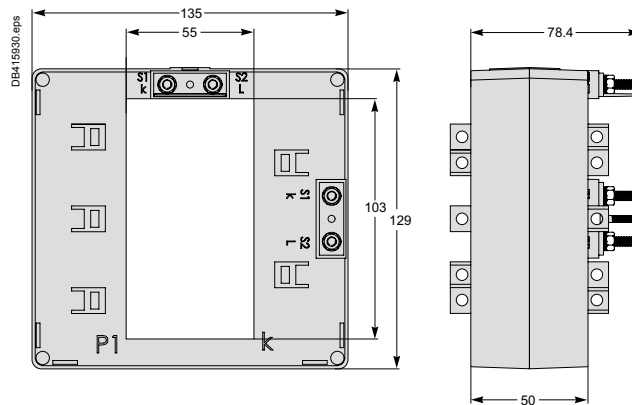


CT current transformers

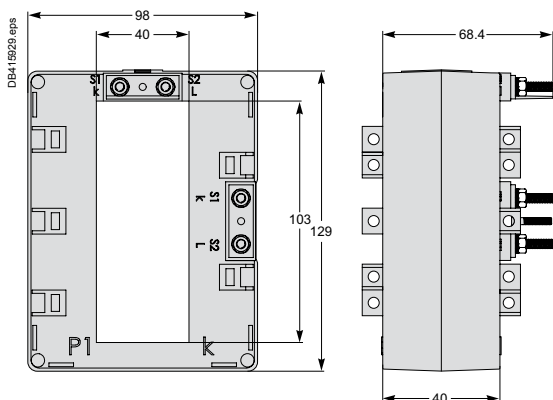
DD internal profile type



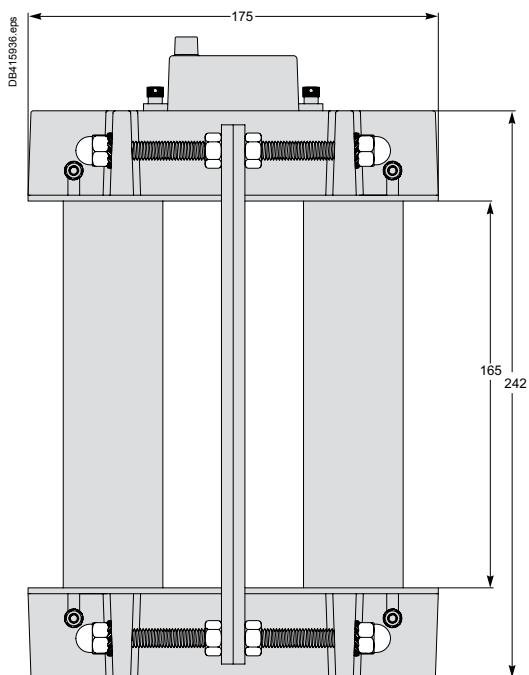
DE internal profile type



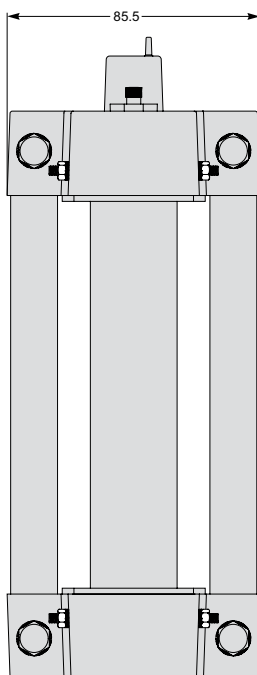
DH internal profile type



VV internal profile type

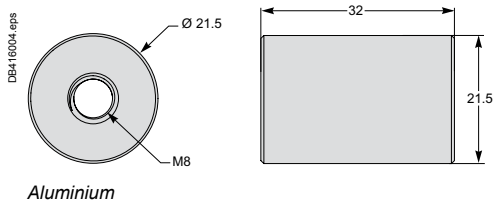


VF internal profile type

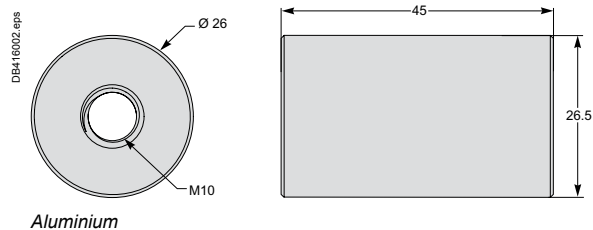


Cylinders

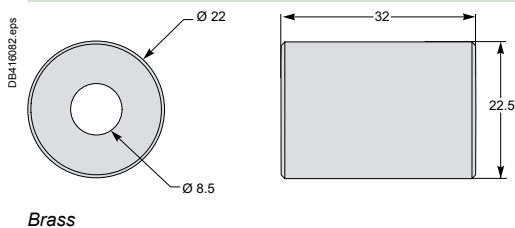
METSECT5CYL1



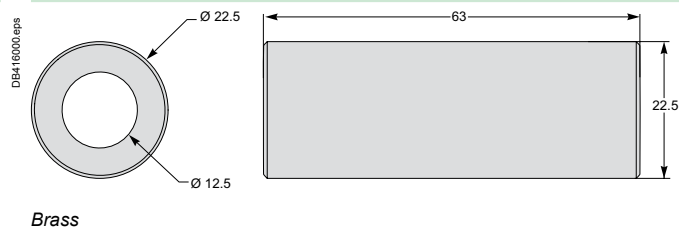
METSECT5CYL2



16550

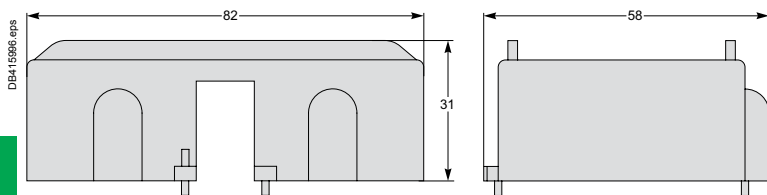


16551

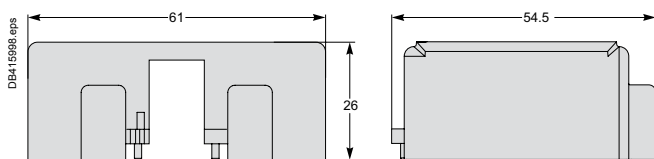


Covers

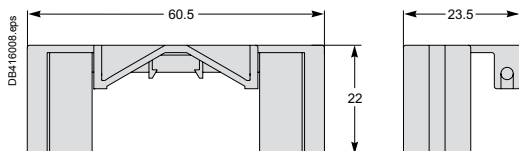
16552



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 ² cable |
| Consumption: | 0.15VA |
| Operating temperature: | -10°C to +70°C |
| Mounting on symmetrical rail | |

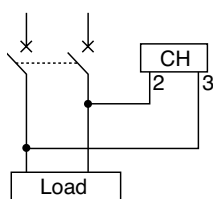
CI

| | |
|------------------------------|---|
| 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 ² cable |

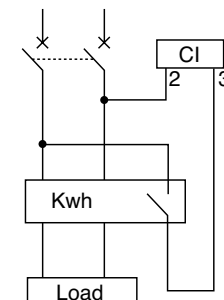
| Type | Control voltage | Width in 18mm ways | Part number |
|------|-----------------|--------------------|-------------|
| CH | 230Vac | 2 | 15440 |
| CI | 230Vac | 2 | 15443 |



CH



CI



- Introduction** *pages 8/2 to 8/3*
- Selection table** *page 8/4*
- Circuit breaker installation** *page 8/5*
- Bottom entry** *pages 8/6 to 8/7*
 - Boards *page 8/6*
 - Incoming device *page 8/7*
- Top entry** *pages 8/8 to 8/9*
 - Boards *page 8/8*
 - Incoming device *page 8/9*
- Outgoing MCCBs** *pages 8/10 to 8/11*
- Technical data** *page 8/12*
- Auxiliary function possibilities** *page 8/13*
- Accessories** *pages 8/14 to 8/18*
 - Shrouding kit *page 8/14*
 - Extension enclosure *page 8/14*
 - Integrated control and distribution systems (ICDS) *page 8/15*
 - Replacement items *page 8/15*
 - Residual current protection modules *page 8/15*
 - Ammeter *page 8/15*
 - Metering facility *page 8/16*
 - Current transformer module *page 8/16*
 - Motor operator module *page 8/16*
 - Rotary handles with inbuilt padlocking facilities *page 8/16*
 - Toggle padlocking attachments *page 8/16*
 - Connection accessories *page 8/17*
 - Spreaders *page 8/17*
 - Auxiliary switch for 3 or pole devices only *page 8/17*
 - Voltage releases to fit all MCCBs 16/630A *page 8/17*
 - Terminal shields *page 8/17*
 - Single pole shrouding plates *page 8/17*
- Metering facilities for incoming and outgoing circuits** *pages 8/19 to 8/21*
- Intelligent panelboard** *page 8/22*
- Functions and characteristics** *pages 8/23 to 8/26*
- Metering and monitoring** *pages 8/27 to 8/28*





The range of wall and floor mounted Powerpact 4 panelboards is designed, manufactured and tested to BS EN 61439-1. 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 Powerpact 4 panelboards.

To order these special breakers add the words ‘for use in Powerpact 4 panelboard’ to your ordering description of the breaker.

Application

The Powerpact 4 is the straight forward answer to all power requirements. It provides an off-the-shelf solution for most standard distribution applications.

Range

Powerpact 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 | BS EN 61349-1 |
| 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. Outgoing terminals should be shrouded with 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 PM5000 series 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 | 16 - 250A = 0.7 - 1 x In |
| (3 and 4 pole) | 400 - 630A = 0.4 - 1 x In |
| | 800 - 1600A = 0.4 x In |

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 |
|--|--------------------|--------------------|------------------------|--------------------|---------------------|
| Busbar short circuit withstand | 36kA | 36kA, 1s | 36kA, 1s | 50kA, 1s | 50kA, 1s |
| Number of outgoing ways | | | | | |
| 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) | | | | | □ |
| Incoming device | | | | | |
| 100A MCCB | □ | □ | | | |
| 160A MCCB | □ | □ | | | |
| 250A MCCB | □ | □ | □ | | |
| 400A MCCB | | | □ | | |
| 630A MCCB | | | □ | | |
| 800A MCCB | | | | ■ | |
| 1250A MCCB | | | | | □ |
| 1600A MCCB | | | | | □ |
| 250A fuse switch | | □ | | | |
| Incomer - field installable | ■ | ■ | ■ | ■ | ■ |
| Two incomers, mechanically interlocked | □ | | | | |
| Main incoming cable entry | | | | | |
| Top | | □ | □ | □ | □ |
| Bottom | ■ | □ | □ | □ | □ |
| Incoming metering | □ | | □ | □ | ■ |
| Outgoing metering | □ | | □ | □ | □ |
| Top/bottom extension boxes | | □ | □ | □ | |
| Side extension boxes | □ | | □ | □ | □ |
| Integrated control and distribution unit | | | □ | □ | |
| Earth leakage protection on outgoing circuits | | | □ | □ | □ |

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")

Selection table

Powerpact 4 panelboards Bottom entry boards



Main cable entry at bottom

| Busbar short circuit withstand | Number of incomer outgoing ways | | Part number |
|--------------------------------|---------------------------------|-------------|----------------|
| | Single pole | Triple pole | |
| 250A Powerboard | | | |
| Style A | 13 | 3 | MG25C2 |
| 36kA, 1s | 17 | 4 | MG25C4 |
| | 13 | 4 meters | MG25C2M |
| | 17 | 4 meters | MG25C4M |



| | | | |
|----------|----|----|---------------|
| Style C | 15 | 5 | MG2C5 |
| 36kA, 1s | 21 | 7 | MG2C7 |
| | 27 | 9 | MG2C9 |
| | 39 | 13 | MG2C13 |



400/630A Panelboard

| | | | |
|----------|----|----|---------------|
| Style D | 18 | 6 | MG6C6 |
| 36kA, 1s | 36 | 12 | MG6C12 |
| | 54 | 18 | MG6C18 |

8



800A Panelboard

| | | | |
|----------|----|----|---------------|
| Style E | 18 | 6 | MG8C6 |
| 50kA, 1s | 36 | 12 | MG8C12 |
| | 54 | 18 | MG8C18 |



1600A Panelboard

| | | | |
|----------|----|----------------------|-----------------|
| Style G | 42 | 14 | MG16C14 |
| 50kA, 1s | 42 | 14 Extension cubicle | MG16CE14 |

Above supplied with 3 SP 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 | 33552 + LV433638 + 33646 |
| 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 | 33555 + LV433639 + 33646 |
| 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 | 33487 + LV433638 + 33646 |
| 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 | 33492 + LV433639 + 33646 |
| 1250 | 4 | G | 33494 |
| 1600 | 4 | G | 33495 |

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 |



Main cable entry at top

| Busbar short circuit withstand | Number of outgoing ways | | Part number |
|--------------------------------|-------------------------|-------------|---------------|
| | Single pole | Triple pole | |
| 250A Panelboard | | | |
| Style C | 15 | 5 | MG2C5 |
| 36kA, 1s | 21 | 7 | MG2C7 |
| | 27 | 9 | MG2C9 |
| | 39 | 13 | MG2C13 |



400/630A Panelboard

| | | | |
|----------|----|----|---------------|
| Style D | 18 | 6 | MG6C6 |
| 36kA, 1s | 36 | 12 | MG6C12 |
| | 54 | 18 | MG6C18 |



800A Panelboard

| | | | |
|----------|----|----|----------------|
| Style E | 18 | 6 | MG8C6T |
| 50kA, 1s | 36 | 12 | MG8C12T |
| | 54 | 18 | MG8C18T |

8



1600A Panelboard

| | | | |
|----------|----|----------------------|------------------|
| Style G | 42 | 14 | MG16C14T |
| 50kA, 1s | 42 | 14 Extension cubicle | MG16CE14T |

Powerpact 4 panelboards

Top entry moulded case circuit breakers

| Incoming devices | | | |
|--|-----------------|----------------|--------------------------|
| Current rating | Number of poles | Style of board | Part number |
| Circuit breaker | | | |
| 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 | 33552 + LV433638 + 33646 |
| 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 | 33555 + LV433639 + 33646 |
| 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 | 33487 + LV433638 + 33646 |
| 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 | 33492 + LV433639 + 33646 |
| 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 | | |
|--------|---------------------|-------------|--|--|
|--------|---------------------|-------------|--|--|

Single pole

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 |



Two pole phase to neutral

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 |



Two pole phase to phase

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 |
|---------------------------------------|----------------------|----------------|
| Three pole | | |
| Breaking capacity 36kA at 415V | | 3 phase |
| 16 | 3 | MGP0163X |
| 25 | 3 | MGP0253X |
| 32 | 3 | MGP0323X |
| 40 | 3 | MGP0403X |
| 50 | 3 | MGP0503X |
| 63 | 3 | MGP0633X |
| 80 | 3 | MGP0803X |
| 100 | 3 | MGP1003X |
| 125 | 3 | MGP1253X |
| 160 | 3 | MGP1603X |
| 200 | 3 | MGP2003X |
| 250 | 3 | MGP2503X |
| 400 | 4 ^{(1) (2)} | MGP4003X |
| 630 | 4 ^{(1) (2)} | MGP6303X |

| | | |
|---------------------------------------|----------------------|------------------------------------|
| Four pole | | |
| Breaking capacity 36kA at 415V | | 3 phase + neutral |
| 16 | 4 | MGP0164X |
| 25 | 4 | MGP0254X |
| 32 | 4 | MGP0324X |
| 40 | 4 | MGP0404X |
| 50 | 4 | MGP0504X |
| 63 | 4 | MGP0634X |
| 80 | 4 | MGP0804X |
| 100 | 4 | MGP1004X |
| 125 | 4 | MGP1254X |
| 160 | 4 | MGP1604X |
| 200 | 4 | MGP2004X |
| 250 | 4 | MGP2504X |
| 400 | 6 ^{(1) (2)} | MGP4004X One MGPBB25 also required |
| 630 | 6 ^{(1) (2)} | MGP6303X One MGPBB25 also required |

| | | |
|-------------------------------------|---|------------------------------------|
| Disconnectable neutral links | | |
| 250 | 1 | MGP250NL |
| 630 | 2 | MGP630NL One MGPBB25 also required |

(1) If fitted in 630 or 800A board a shrouding kit is required.

(2) Breaking capacity 50kA at 415V.

| Description | Part Number |
|-----------------------|------------------|
| Three pole | |
| PP4 MCCB 3P 16A 50kA | MGP0163XN |
| PP4 MCCB 3P 25A 50kA | MGP0253XN |
| PP4 MCCB 3P 32A 50kA | MGP0323XN |
| PP4 MCCB 3P 40A 50kA | MGP0403XN |
| PP4 MCCB 3P 50A 50kA | MGP0503XN |
| PP4 MCCB 3P 63A 50kA | MGP0633XN |
| PP4 MCCB 3P 80A 50kA | MGP0803XN |
| PP4 MCCB 3P 100A 50kA | MGP1003XN |
| PP4 MCCB 3P 125A 50kA | MGP1253XN |
| PP4 MCCB 3P 160A 50kA | MGP1603XN |
| PP4 MCCB 3P 200A 50kA | MGP2003XN |
| PP4 MCCB 3P 250A 50kA | MGP2503XN |

| | |
|-----------------------|------------------|
| Four pole | |
| PP4 MCCB 4P 16A 50kA | MGP0164XN |
| PP4 MCCB 4P 25A 50kA | MGP0254XN |
| PP4 MCCB 4P 32A 50kA | MGP0324XN |
| PP4 MCCB 4P 40A 50kA | MGP0404XN |
| PP4 MCCB 4P 50A 50kA | MGP0504XN |
| PP4 MCCB 4P 63A 50kA | MGP0634XN |
| PP4 MCCB 4P 80A 50kA | MGP0804XN |
| PP4 MCCB 4P 100A 50kA | MGP1004XN |
| PP4 MCCB 4P 125A 50kA | MGP1254XN |
| PP4 MCCB 4P 160A 50kA | MGP1604XN |
| PP4 MCCB 4P 200A 50kA | MGP2004XN |
| PP4 MCCB 4P 250A 50kA | MGP2504XN |

| | |
|-------------------------------|--------------------|
| Three pole (ML2.2) | |
| PP4 MCCB 3P 40A (ML2.2) | MGP0403XE2 |
| PP4 MCCB 3P 100A (ML2.2) | MGP1003XE2 |
| PP4 MCCB 3P 160A (ML2.2) | MGP1603XE2 |
| PP4 MCCB 3P 250A (ML2.2) | MGP2503XE2 |
| PP4 MCCB 3P 40A (ML2.2) 50kA | MGP0403XE2N |
| PP4 MCCB 3P 100A (ML2.2) 50kA | MGP1003XE2N |
| PP4 MCCB 3P 160A (ML2.2) 50kA | MGP1603XE2N |
| PP4 MCCB 3P 250A (ML2.2) 50kA | MGP2503XE2N |

| | |
|-------------------------------|--------------------|
| Four pole (ML2.2) | |
| PP4 MCCB 4P 40A (ML2.2) | MGP0404XE2 |
| PP4 MCCB 4P 100A (ML2.2) | MGP1004XE2 |
| PP4 MCCB 4P 160A (ML2.2) | MGP1604XE2 |
| PP4 MCCB 4P 250A (ML2.2) | MGP2504XE2 |
| PP4 MCCB 4P 40A (ML2.2) 50kA | MGP0404XE2N |
| PP4 MCCB 4P 100A (ML2.2) 50kA | MGP1004XE2N |
| PP4 MCCB 4P 160A (ML2.2) 50kA | MGP1604XE2N |
| PP4 MCCB 4P 250A (ML2.2) 50kA | MGP2504XE2N |

| | |
|----------------------------|-------------------|
| Three pole (ML5.3E) | |
| PP4 MCCB 3P 400A (ML5.3E) | MGP4003X5E |
| PP4 MCCB 3P 630A (ML5.3E) | MGP6303X5E |

| | |
|---------------------------|-------------------|
| Four pole (ML5.3E) | |
| PP4 MCCB 4P 400A (ML5.3E) | MGP4004X5E |
| PP4 MCCB 4P 630A (ML5.3E) | MGP6304X5E |

Dimensions

| Type | Height mm | Width mm | Depth mm | (1) | Weight kg |
|----------------------------------|-----------|----------|----------|-----|-----------|
| Style A - 250A powerboard | | | | | |
| 3 way | 650 | 600 | 268 | | 32 |
| 4 way | 650 | 778 | 268 | | 57 |

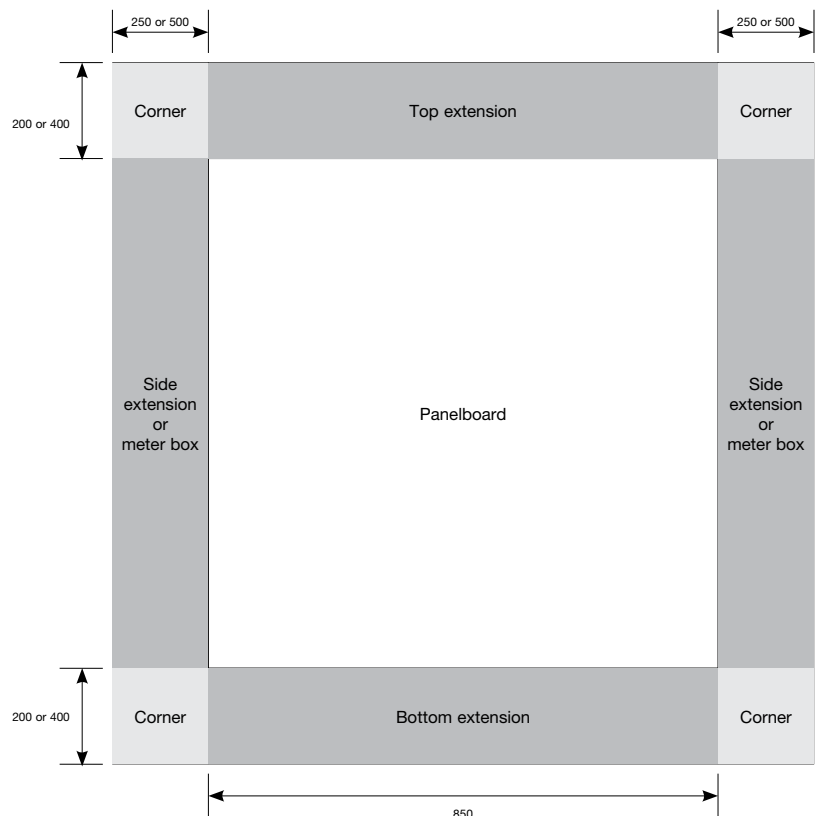
| | | | | | |
|----------------------------------|------|-----|-----|-----|----|
| Style C - 250A panelboard | | | | | |
| 5 way | 680 | 853 | 260 | 198 | 40 |
| 7 way | 785 | 853 | 260 | 198 | 44 |
| 9 way | 890 | 853 | 260 | 198 | 50 |
| 13 way | 1075 | 853 | 260 | 198 | 60 |

| | | | | | |
|--------------------------------------|------|-----|-----|-----|----|
| Style D - 400/620A panelboard | | | | | |
| 6 way | 1178 | 850 | 260 | 290 | 66 |
| 12 way | 1493 | 850 | 260 | 290 | 89 |
| 18 way | 1808 | 850 | 260 | 290 | 98 |

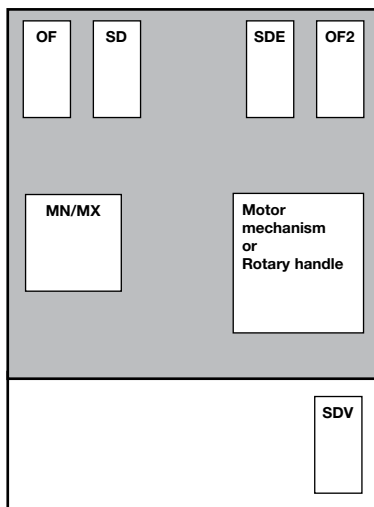
| | | | | | |
|----------------------------------|------|-----|-----|--------------------|-----|
| Style E - 800A panelboard | | | | | |
| 6 way | 1580 | 850 | 260 | 490 ⁽³⁾ | 86 |
| 12 way | 1896 | 850 | 260 | 490 ⁽³⁾ | 104 |
| 18 way | 2210 | 850 | 260 | 490 ⁽³⁾ | 122 |

| | | | | | |
|-----------------------------------|------|------|-----|--------------------|-----|
| Style G - 1600A panelboard | | | | | |
| 14 way | 2106 | 1256 | 450 | 708 ⁽²⁾ | 375 |
| 14 way extension | 2106 | 850 | 450 | | 200 |

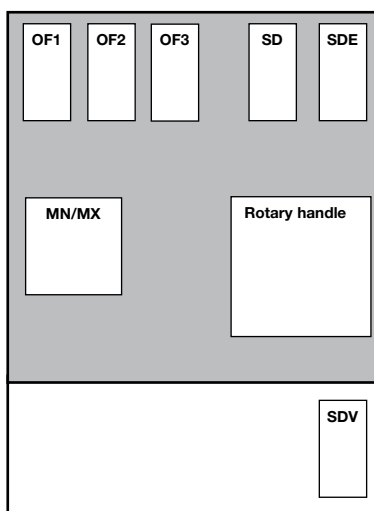
- (1) Distance from gland plate to incoming terminals
- (2) Terminals will accept up to 3 lugs 400mm² per phase
- (3) Main connection M12 bolt



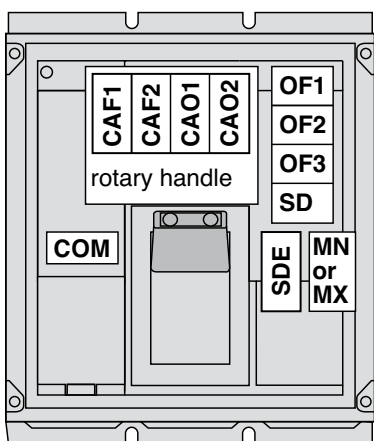
Note: Side extensions and corner units cannot be fitted to 250A panelboards



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 | MGPCH6 |
| 36 | 12 | MGPCH12 |
| 54 | 18 | MGPCH18 |

Extension enclosure

250A powerboard style A side extension

| TP ways | Mounting arrangement | Part number |
|---------|----------------------|----------------|
| Side | Top/bottom | |
| 3 | W600 | MG25EXC |
| 4 | W600 | MG25EXC |

250A panelboard style C top or bottom extension

| | | |
|----------|------|---------------|
| 5,7,9,13 | H200 | MG6CEX |
|----------|------|---------------|

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 | MG6CEX |
|-----------------|---------|------|---------------|

Side extensions

| | | |
|--------------|------|-----------------|
| Side ext. 6 | W250 | MGPXC206 |
| Side ext. 12 | W250 | MGPXC212 |
| Side ext. 18 | W250 | MGPXC218 |
| Side ext. 6 | W500 | MGPXC506 |
| Side ext. 12 | W500 | MGPXC512 |
| Side ext. 18 | W500 | MGPXC518 |

For side extensions with metering facility see page 8/20.

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 | MGPC2025 |
| W500 | H200 | MGPC2050 |
| W250 | H400 | MGPC4025 |
| W500 | H400 | MGPC4050 |

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 | MG16CEX4 |
|----|------|-----------------|

More than one extension can be added if required.

Metering MG16CEM4

Replacement items

Door and cover assembly

| | | |
|---|-------------------|------------------|
| 250A powerboard | 9 way | MG25FCC2 |
| | 13 way | MG25FCC4 |
| | 9 way + metering | MG25FCC2M |
| | 13 way + metering | MG25FCC4M |
| 400/630A panelboard | 18 way | MG6FCC6 |
| | 36 way | MG6FCC12 |
| | 54 way | MG6FCC18 |
| 800A panelboard | 18 way | MG8FCC6 |
| | 36 way | MG8FCC12 |
| | 56 way | MG8FCC18 |
| Gland plate for 400/630/800A panelboard | | MGPGPC8 |
| Door lock kit up to 800A | | MGPP4S007 |
| 2 spare door keys | | MGK33 |
| Touch up paint RAL9001 | Spray | 08962 |
| | Brush | 08961 |
| Adhesive drawing pocket | RAL9001 | 08963 |

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 | LV429211 |
| 200 - 250A | 0.03 - 0.3 - 1 - 3 - 10* | NSX250 | LV431536 |
| 400 - 630A | 0.3 - 1 - 3 - 10 - 30* | NSX400/630 | LV432456 |

* 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 nt 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 ² | 160 | LV429242 | LV429243 |
| 10 - 185mm ² | 250 | LV429259 | LV429260 |
| 35 - 300mm ² | 630 | LV432479 | LV432480 |
| 2 x 95 - 240mm ² | 630 | LV432481 | LV432482 |

Crimp cable lugs supplied with phase barriers

| | | | |
|------------------------------|-----|----------|----------|
| 120mm ² copper | 250 | LV429252 | LV429256 |
| 150mm ² copper | 250 | LV429253 | LV429257 |
| 185mm ² copper | 250 | LV429254 | LV429258 |
| 240mm ² copper | 630 | LV432500 | LV432501 |
| 300mm ² copper | 630 | LV432502 | LV432503 |
| 150mm ² aluminium | 250 | LV429504 | LV429505 |
| 185mm ² aluminium | 250 | LV429506 | LV429507 |
| 240mm ² aluminium | 630 | LV432504 | LV432505 |
| 300mm ² 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 | 29450 |
| SDE adaptor | 29451 |

Voltage releases to fit all MCCBs 16/630A for 3 or pole devices only

| AC 50/60Hz Voltage (V) | Part number Shunt trip (MX) | Undervoltage release (MN) |
|------------------------|-----------------------------|---------------------------|
| 200/240 | LV429387 | LV429407 |
| 380/415 | LV429388 | LV429408 |

Other voltages available - refer to Compact NSX catalogue.

Terminal shields

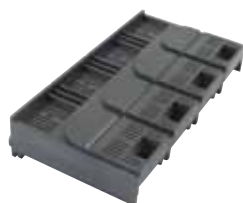
| Current rating (A) | Part number |
|--|--------------|
| Up to 160A single pole and 250A neutral link | LV429320 |
| Up to 160A 2 pole | LV429320 x 2 |
| Up to 250A 3 pole (single) long | LV429517 |
| Up to 250A 4 pole (single) long | LV429518 |
| Up to 400/630A 3 pole (single) | LV432593 |
| Up to 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 PM5000 series power meter offers all the measurement capabilities required to monitor an electrical installation in a single 96 x 96 mm unit extending only 72 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 PM5000 series meters are available in 12 versions:

- PM5100, basic metering with up to 15th individual harmonic measurement and one pulse output for energy metering
- PM5110, same function as PM5100, plus RS485 port for Modbus communication
- PM5111, same function as PM5110, plus MID certified
- PM5310, basic metering with up to 31st individual harmonic measurement, 256KB data logging, two digital inputs, two digital output and one RS485 port for Modbus communication
- PM5320, basic metering with up to 31st individual harmonic measurement, 256KB data logging, two digital inputs, two digital output and one Ethernet port for Modbus TCP/IP communication
- PM5330, same function as PM5310, plus two relay outputs
- PM5331, same function as PM5330, plus MID certified
- PM5340, same function as PM5320, plus two relay outputs
- PM5341, same function as PM5340, plus MID certified
- PM5560, basic metering with up to 63rd individual harmonic measurement, 1.1MB data logging, four digital inputs, two digital outputs, one RS485 port for Modbus and two Ethernet port for Modbus TCP/IP communications, embedded webpages
- PM5561, same function as PM5560, plus MID certified
- PM5563, same function as PM5560, but DIN rail mounted without display

Applications

Sub billing/tenant metering
Cost allocation
Basic Power Quality monitoring
Min/Max monitoring with timestamp
Programmed alarming
WAGES monitoring

Characteristics

Requires only 72 mm behind mounting surface

The Power Meter Series 5000 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 ,TDD, individual harmonics 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 (PM5100 and PM5300 models) and class 0.2S (PM5500 models)

Suitable for cost-allocation applications.

Legal billing compliance

Meets EN50470-1/3-Class C that specifies requirements for billing applications.

Performance measuring and monitoring devices

Meet IEC 61557-12 PMD/S/K55/0.5 (PM5100 and PM5300 models) and IEC61557-12 PMD/S/K55/0.2 (PM5500 model) 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 (PM5310).

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 | MG25C2M |
| 17 SP positions | MG25C4M |

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 incoming cables, 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

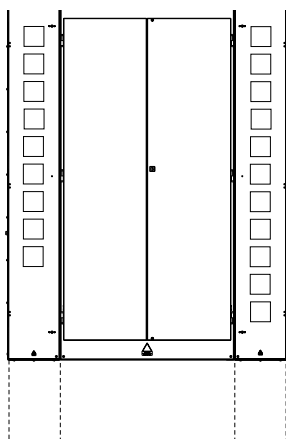
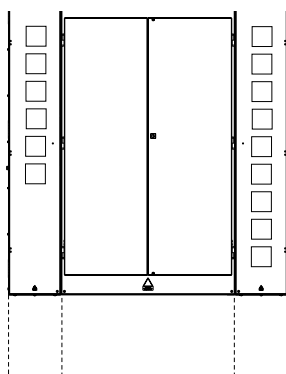
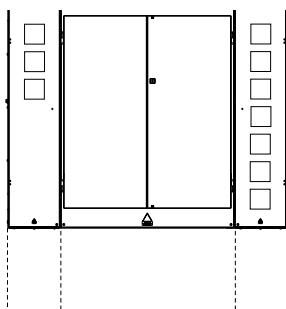
Incoming and outgoing metering for boards up to 630A

(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 | MG6CEXM |
|----------------------------|----------------|

MG6Cxx 630A board

| | |
|----------------------------|--------------|
| Incoming metering kit 400A | MG64M |
| 630A | MG66M |

MG8Cxx 800A board

| | |
|----------------------------|--------------|
| Incoming metering kit 800A | MG88M |
| MG88MX - less meter | |

630A & 800A outgoing metering side extension boxes

| | | | |
|--------------|---------------------|--------------------|-----------------|
| 6 way board | Left hand side (*) | 3 meter positions | MGPCM6L |
| | Right hand side (*) | 7 meter positions | MGPCM6R |
| 12 way board | Left hand side (*) | 6 meter positions | MGPCM12L |
| | Right hand side (*) | 9 meter positions | MGPCM12R |
| 18 way board | Left hand side (*) | 9 meter positions | MGPCM18L |
| | Right hand side (*) | 11 meter positions | MGPCM18R |

(*) When the board is inverted for top entry main cables these side extensions fit on the other side of the board.

Accessories

| | |
|--------------|---------------|
| Cable loom | MGPCML |
| Meter blanks | 03908 |

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 | LV429461 |
| NS100X | 4 | 125/5 | LV429462 |
| NS160X | 3 | 150/5 | LV430561 |
| NS160X | 4 | 150/5 | LV430562 |
| NS250X | 3 | 250/5 | LV431569 |
| NS250X | 4 | 250/5 | LV431570 |
| NS400X | 3 | 400/5 | LV432653 |
| NS400X | 4 | 400/5 | LV432654 |
| NS630X | 3 | 600/5 | LV432861 |
| NS630X | 4 | 600/5 | LV432862 |

Unused 92 x 92 metering apertures can be blanked off using Part number **03908**
All these CT modules have voltage connections.



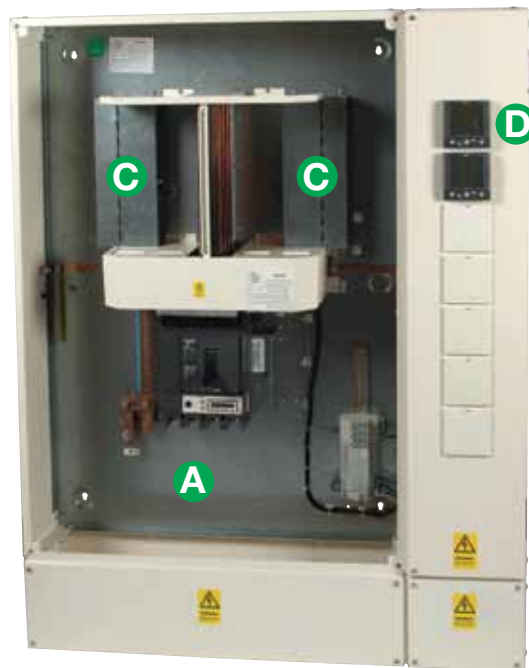
The intelligent panelboard system utilises the advanced features of the Compact NSX range with Micrologic 5 trip units for integrated protection, metering, measuring and monitoring.

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.

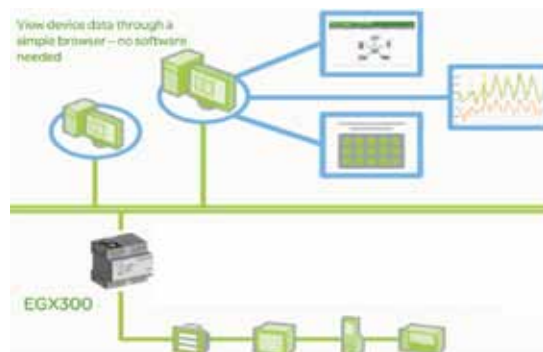
This system is available in 4 levels for incoming and outgoing devices.

- 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

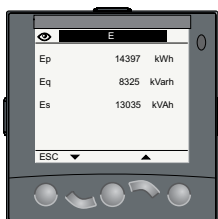
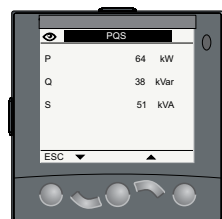
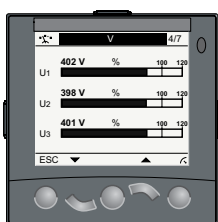
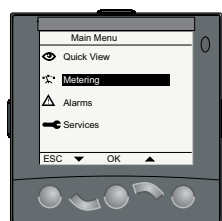


Make your panel board smarter simply by using the Powerlogic EGX300. The integrated gateway-server Powerlogic EGX300 is used to optimise energy usage, and identify opportunities to save energy. The user friendly tool uses only the web browser and network to display the energy consumption on panel boards, 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 FDM121 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 |
| Display of protection settings | | | | | | |
| Pick-ups (A) and delays | All settings can be displayed | I _r , t _r , I _{sd} , t _{sd} , I _i , I _g , t _g | ■ | ■ | | |
| Measurements | | | | | | |
| Instantaneous rms measurements | | | | | | |
| Currents (A) | Phases and neutral | I ₁ , I ₂ , I ₃ , I _N | ■ | ■ | | ■ |
| | Average of phases | I _{avg} = (I ₁ + I ₂ + I ₃) / 3 | ■ | - | | ■ |
| | Highest current of the 3 phases and neutral | I _{max} of I ₁ , I ₂ , I ₃ , I _N | ■ | ■ | | ■ |
| | Ground fault (Micrologic 6) | % I _g (pick-up setting) | ■ | ■ | | ■ |
| | Current unbalance between phases | % I _{avg} | ■ | - | | ■ |
| Voltages (V) | Phase-to-phase | U ₁₂ , U ₂₃ , U ₃₁ | ■ | ■ | | ■ |
| | Phase-to-neutral | V _{1N} , V _{2N} , V _{3N} | ■ | ■ | | ■ |
| | Average of phase-to-phase voltages | U _{avg} = (U ₁₂ + U ₂₁ + U ₂₃) / 3 | ■ | - | | ■ |
| | Average of phase-to-neutral voltages | V _{avg} = (V _{1N} + V _{2N} + V _{3N}) / 3 | ■ | - | | ■ |
| | Ph-Ph and Ph-N voltage unbalance | % U _{avg} and % V _{avg} | ■ | - | | ■ |
| | 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 | ■ | - | | ■ |
| Maximeters / minimeters | | | | | | |
| | Associated with instantaneous rms measurements | Reset via Micrologic or FDM121 display unit | ■ | - | | ■ |
| Energy metering | | | | | | |
| Energy | Active (kW), reactive (kVARh), apparent (kVAh) | Total since last reset Absolute or signed mode ⁽¹⁾ | ■ | ■ | | ■ |
| Demand and maximum demand values | | | | | | |
| 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) |
| Power quality | | | | | | |
| 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°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

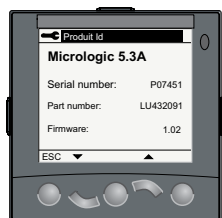
The FDM121 is equipped with:

- 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

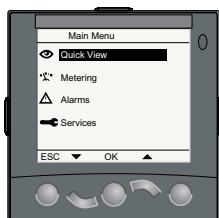
The Micrologic connects to the internal communication terminal block on the Compact NSX via the pre-wired NSX cord. Connection to one of the RJ45 connectors on the FDM121 automatically establishes communication between the Micrologic and the FDM121 and supplies power to the Micrologic measurement functions. When the second connector is not used, it must be fitted with a line terminator.



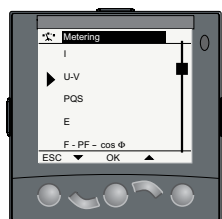
- 1 Escape
- 2 Down
- 3 OK
- 4 Up
- 5 Context
- 6 Alarm LED



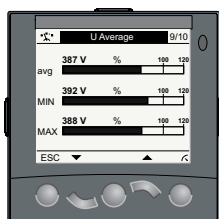
Product identification



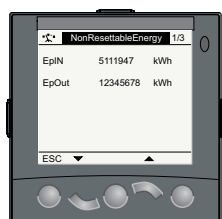
Quick view



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 |
| 400A/630A Panelboard | | |
| 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"/> |
| 800A Panelboard | | |
| 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"/> |
| 1600A Panelboard | | |
| MG16C14 | 42 single pole ways (9 x 4 pole + 2 x 3 pole) | <input type="checkbox"/> |
| Incomer | | |
| Order Code | Description | Selection |
| 400A/630A Panelboard 4 pole | | |
| 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"/> |
| 800A Panelboard | | |
| MGP8004B5 | 800A 4 Pole incomer | <input type="checkbox"/> |
| 1600A Panelboard | | |
| 33566 | 1250A 4 pole Incomer | <input type="checkbox"/> |
| 33570 | 1600A 4 pole incomer | <input type="checkbox"/> |
| SEPINTP1 | Power and interface kit | <input type="checkbox"/> |
| Outgoing ways 4 pole (only) with Micrologic 5 (Integrated U,I,E,P,f*,THD* Measuring and Monitoring**) | | |
| 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 |
|---|--|--------------------------|
| 630A & 800A | | |
| MGPCM6LX | 6 Way board Left Hand Side 3 remote display positions | <input type="checkbox"/> |
| MGPCM6RX | 6 Way board Right Hand Side 6 remote display positions | <input type="checkbox"/> |
| MGPCM12LX | 12 Way board Left Hand Side 6 remote display positions | <input type="checkbox"/> |
| MGPCM12RX | 12 Way board Right Hand Side 9 remote display positions | <input type="checkbox"/> |
| MGPCM18LX | 18 Way board Left Hand Side 9 remote display positions | <input type="checkbox"/> |
| MGPCM18RX | 18 Way board Right Hand Side 11 remote display positions | <input type="checkbox"/> |
| 1600A | | |
| MG16CEM4X | Side Extension Cubicle | <input type="checkbox"/> |
| Display | | |
| TRV00121 | FDM121 Metering Display module | <input type="checkbox"/> |
| Cable accessories | | |
| TRV00870 | 5 RJ45 female/ female connector | <input type="checkbox"/> |
| TRV00810 | 5 RJ45/RJ45 1M interconnector | <input type="checkbox"/> |
| TRV00820 | 5 RJ45/RJ45 2M interconnector | <input type="checkbox"/> |
| TRV00880 | 10 ULP Line terminators | <input type="checkbox"/> |
| Modbus Communication accessories | | |
| TRV00210 | Modbus interface | <input type="checkbox"/> |
| TRV00217 | Stacking Connector for TRV00210 | <input type="checkbox"/> |

Standard Outgoing way MCCB (3pole) order codes

| Order Code | Description |
|-----------------|------------------|
| MGP0163X | PP4 MCCB 3P 16A |
| MGP0253X | PP4 MCCB 3P 25A |
| MGP0323X | PP4 MCCB 3P 32A |
| MGP0403X | PP4 MCCB 3P 40A |
| MGP0633X | PP4 MCCB 3P 63A |
| MGP0803X | PP4 MCCB 3P 80A |
| MGP1003X | PP4 MCCB 3P 100A |
| MGP1253X | PP4 MCCB 3P 125A |
| MGP1603X | PP4 MCCB 3P 160A |
| MGP2003X | PP4 MCCB 3P 200A |
| MGP2503X | PP4 MCCB 3P 250A |
| MGP4003X | PP4 MCCB 3P 400A |
| MGP6303X | PP4 MCCB 3P 630A |

Other options

| Order Code | Description | |
|-----------------|--|------------------------|
| | On site Engineer Support 1 Day | |
| LV434205 | 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 | MG6C | x1 |
| Step 2 | Select Incommer device | SEP630M5M | x1 |
| 2a | Select Power & Interface Kit | SEPINTP1 | x1 |
| Step 3 | Select appropriate outgoing device | SEP1004M5 | x1 |
| Step 4 | Add Metering accessories | | |
| 4a | If you require the display module for each outgoing way then select a side extension box | MGPCM6L | x1 |
| 4b | Select required Number of Display Modules (include Incommer) | TRV00121 | x3 |
| 4c | If data is required over Modbus protocol select the required number of Modbus interfaces (include incomer) | TRV00210 | x3 |
| 4d | Select modbus stacking connectors (pack of 10) include incomer | TRV00217 | x1 |
| 4e | Select Required number of RJ45 interconnectors (Pack of 5) | TRV00810 | x1 |
| 4f | Select ULP terminator (pack of 10) | TRV00880 | 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.

Safepact 2 **pages 9/2 to 9/3**
Enclosed MCCBs 63 to 630A page 9/2
Enclosed switch disconnectors 100 to 630A page 9/3
Earth leakage page 9/4
Auxiliaries and accessories page 9/5

Enclosed Interpact **page 9/6**

MGF Fusegear **pages 9/7 to 9/9**
Switch disconnector fuse and switch disconnector page 9/7
Fuse switch disconnector and switch disconnector page 9/8
Busbar chambers page 9/9
Accessories page 9/9

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 _{su} = 100% I _{cu} |
| 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 ² 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 _n /2 | 50 | 40 | 20 | 12 | 8 |
| | I _n | 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 ² 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 | MGE1003XS | MGE1004XS |
| 160A | MGE1603XS | MGE1604XS |
| 250A | MGE2503XS | MGE2504XS |
| 400A | MGE4003XS | MGE4004XS |
| 630A | MGE6303XS | MGE6304XS |

Switch disconnector + earth leakage (RCCB)

| Rating | Sensitivity | 4 pole |
|--------|-------------|-------------------|
| 100A | 30mA - 10A | MGE1004XSE |
| 160A | 30mA - 10A | MGE1604XSE |
| 250A | 30mA - 10A | MGE2504XSE |
| 400A | 300mA - 30A | MGE4004XSE |
| 630A | 300mA - 30A | MGE6304XSE |

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 | MGEX160C |
| 200mm | 63 - 250A | MGEX250C |
| 120mm | 400 - 630A | MGEX630C |

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

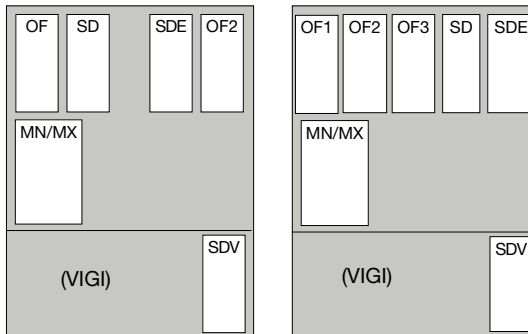
| | |
|--|------|
| Ingress protection | IP42 |
| Operational Voltage | 415V |
| Ultimate breaking capacity | 70kA |
| Rated service breaking capacity | 100% |
| FDM module fitted and wired | |
| Modbus interface, power supply and protection fitted and wired | |

| Range Reference | Part number |
|--|------------------|
| Safepact 4 pole 40A mccb Micrologic 5 | MGE0404M5 |
| Safepact 4 pole 100A mccb Micrologic 5 | MGE1004M5 |
| Safepact 4 pole 160A mccb Micrologic 5 | MGE1604M5 |
| Safepact 4 pole 250A mccb Micrologic 5 | MGE2504M5 |
| Safepact 4 pole 400A mccb Micrologic 5 | MGE4004M5 |
| Safepact 4 pole 630A mccb Micrologic 5 | MGE6304M5 |



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 | 29450 |
| SDE adaptor for MGE 100/160/250 | 29451 |



Shunt trip (MX)

- Enables remote tripping on application of voltage from coil
- Coil permanently rated

| Aux. supply voltage (V) | Part number |
|-------------------------|-----------------|
| 220/240 | LV429387 |
| 380/415 | LV429388 |



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 | LV429407 |
| 380/415 | LV429408 |



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 | LV429337 |
| For MGE 400/630 | LV432597 |



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 ² (set of 4) | LV429243 |
| 120 to 185mm ² (set of 4) | LV429260 |
| For MGE 250 25 to 95mm ² (set of 4) | LV429228 |
| 120 to 185mm ² (set of 4) | LV429260 |
| For MGE 400/630 up to 2x240mm ² (set of 4) | LV432482 |



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 ² 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 ² | LV428952 | | |
| | 120mm ² | LV429256 | | |
| | 150mm ² | LV429257 | | |
| | 185mm ² | LV429258 | | |
| | 240mm ² | LV432501 | | |
| | 300mm ² | 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 _{cw} , A | 416 | 416 | 756 | 1300 |
| Rated short circuit making capacity I _{cm} | 1.35kA | 1.35kA | 1.35kA | 3.5kA |
| Rated short circuit breaking capacity I _{cn} | 50kA | 50kA | 50kA | 50kA |
| Utilisation category at rated current | AC-20A/ 21A/ 22A/ 23B | | | |
| Kilowatt rating | 11kW | 15kW | 30kW | 55kW |
| Cable size, maximum mm ² (tunnel lug) | 10mm ² | 10mm ² | 25mm ² | 50mm ² |

References

| Rating (A) | Switch disconnecter fuse Part number | Switch disconnecter Part number |
|---|--------------------------------------|---------------------------------|
| Single pole and switched neutral | | |
| 20 | MGFA0201C | MGFL0201C |
| 32 | MGFA0321C | MGFL0321C |
| 63 | MGFA0631C | MGFL0631C |
| 100 | MGFA1001C | MGFL1001C |
| Three pole and neutral | | |
| 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 _{cw} , A | 3.4kA | 3.4kA | 5.23kA | 5.23kA | 12kA | 12kA | 12kA | 12kA |
| Rated short circuit making capacity I _{cm} | 5kA | 5kA | 8kA | 8kA | 24kA | 24kA | 24kA | 24kA |
| Rated short circuit breaking capacity I _{cn} | 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 ² | 50mm ² | 120mm ² | 120mm ² | 400mm ² | 400mm ² | 400mm ² | 400mm ² |

References

| Rating (A) | Fuse switch disconnecter Part number | Switch disconnecter Part number | Cable box Part number |
|-------------------------------|--------------------------------------|---------------------------------|-----------------------|
| Three pole and neutral | | | |
| 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 |



Wall mounted switchgear Busbar chambers and accessories

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 Part number | 1200 Part number | 1800 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.

Linergy FH **pages 10/5 to 10/7**
Horizontal comb busbar for 18 mm pitch
for Acti 9 / Multi 9 pages 10/2 to 10/3
Horizontal comb busbar for 9 mm pitch
for Acti 9, C60 page 10/4
Horizontal comb busbar for 27 mm pitch
for C120, NG125 page 10/5

Linergy distribution blocks **pages 10/6 to 10/8**

Terminals and installation accessories **pages 10/9 to 10/10**

Powerpact 4 pan assemblies **page 10/11**

Enclosures **pages 10/12 to 10/17**
Mini Opale IP30page 10/12
G9 IP30page 10/12
A-Series IP30page 10/12
B-Series IP31page 12/13
Pragma pages 10/14 to 10/15
Mini Pragma pages 10/16 to 10/17

Kaedra weatherproof IP65 **pages 10/18 to 10/33**
Offer overview page 10/18
Enclosures for sockets page 10/21
Enclosures for modular switchgear page 10/22
Mini enclosures page 10/25
Universal enclosures page 10/27
Interface enclosures page 10/30
Enclosure accessories page 10/32

PB502379-30



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

| 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) | | | | | | | | | |
| Use | | | | | | | | | | | |
| 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 |
| References | | | | | | | | | | | |
| 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 |

Installation

PB110290-20



PB110795-20



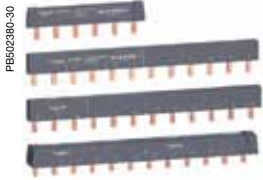
Accessories

| Number of poles | 1P | 2P | 3P | 4P | - | - | |
|-----------------|--|----------|----------|----------|---|----------|--|
| | | | | | | | |
| | End-pieces | | | | Tooth covers | | Connectors |
| | Lateral end-pieces providing IP20 protection | | | | Insulate teeth that have been left free | | Monoconnect |
| | | | | | | | Comb busbar power supply. Horizontal in-come on each side. For 35 mm ² cable. Tightening torque 4 N.m |
| Set of | 10 | 10 | 10 | 10 | 20 | 4 | |
| References | A9XPE110 | A9XPE210 | A9XPE310 | A9XPE410 | A9XPT920 | A9XPCM04 | |

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) |
| | PB110231-15 | | | | | |
| 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) | | | | |
| Use | | | | | | |
| Type | | Power supply by connector recommended | | | | |
| Set of | | L1 | L1L2 | L1L2L3 | NL1L2L3 | NL1NL2NL3 |
| References | | | | | | |
| 12 modules of 18 mm | | A9XPM112 | A9XPM212 | A9XPM312 | A9XPM412 | A9XPM512 |

Installation



Accessories

| | | | | |
|---------------------|-------------|---|--|--------------------------|
| | PB110257-10 | | PB110259-7 | |
| | | Tooth covers | | Connectors |
| | | Insulate teeth that have been left free | | Monoconnect |
| | | | | Comb busbar power supply |
| Use | | | | |
| | | | Horizontal incomer on each side For 35 mm ² cable Tightening torque 4 N.m | |
| Set of | | 20 | 4 | |
| References | | A9XPT920 | A9XPCM04 | |
| Installation | | | | |





IEC 61439-2




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 iDPN in 9 mm modules

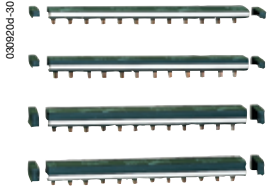
| Acti 9 Ph+N | | 9 mm poles, cuttable | | | | | |
|--|-------------|---|--------------|--------------|--|--------------|--------------|
| Number of poles | | 1P+N | | | 3P+N | | |
| | |  | | |  | | |
| | | 21501 | | | 21505 | | |
| | | Complete comb busbars (supplied with 4 side plates and 1 tooth cover) | | | | | |
| 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 |
| References | | 21501 | 19512 | 21503 | 21505 | 19516 | 21507 |
| Comb busbars alone | | | | | | | |
| Number of 18 mm modules | Comb busbar | 48 | | | 48 | | |
| References | | 21089 | | | 21093 | | |

C60/ID Group Feeder comb busbars alone

| Number of poles | | 3P+N | | |
|--|--|---|-------------------|--------------------|
| | |  | | |
| 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 | | 12 | 48 | 48 |
| Power supply | | Through left-hand | Through left-hand | Through right-hand |
| References | | 10545 | 10546 | 10547 |

Accessories

| Number of poles | 1P+N | 3P+N | | |
|-------------------|---|---|---|--------------------------|
| |  |  |  | |
| | End-pieces | Tooth covers (3 x 18-mm modules) | Tooth covers (1 x 18-mm module) | Connectors (grey) |
| Set of | 40 | 12 | 10 | 4 |
| References | | 21094 | 21095 | 21096 |
| | | | 10405 | 21098 |



IEC 60664-1

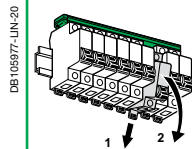
Description

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 |
| | 030920d-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) | | | |
| Use | | | | | |
| | | Power supply by connector recommended | | | |
| Number of 27 mm modules | | 16 | 16 | 15 | 16 |
| Set of | | 1 | | | |
| References | | 14811 | 14812 | 14813 | 14814 |

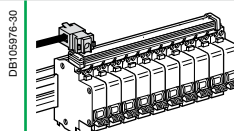
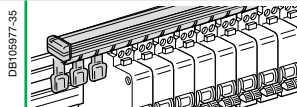
Installation



Comb busbars allow dismantability (1-2)

Accessories

| Number of poles | 1P, 2P, 3P, 4P | |
|---------------------|---------------------|--|
| PG134071 | | |
| | 030921c-15 | |
| | Tooth covers | Insulated connector |
| | | 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 |
| Use | | |
| | | For 25 mm ² semi-rigid cable |
| Set of | 20 | 4 |
| References | 14818 | 14885 |
| Installation | | |





IEC/EN 60947-7-1, IEC/EN 61439-1 & 2

Description

- Single-pole or four-pole distribution block that can be installed on a standard DIN rail or on a mounting plate.
- Compatible with Prisma G and P, Pragma, Mini Pragma and Resbo series switchboards.
- Incomers and feeders are connected to screw terminals that accept rigid or flexible cables with ferrule.
- Optional: additional neutral terminal strip for four-pole distribution block.

Advantages

- Simplified power supply for main incomers.
- Easy phase balancing.
- Easy, effortless cabling due to excellent accessibility.
- Visible cabling.
- Insulation between phases.
- The single-pole distribution blocks are adjacent and bridgeable via the second incoming hole for parallel connection.

Screw distribution blocks

| Number of poles | 1P | | | 4P |
|--|--|--|---|--|
| |  |  |  |  |
| Rated operational current | 125 A | 160 A | 250 A | 100 A |
| Total connections capacity | 10 | 13 | 14 | 4 x 7 |
| Terminal capacity | | | | |
| Diameter | 2 x Ø9.5 mm | 2 x Ø12 mm | 1 x Ø15.3 mm | 2 x Ø7.5 mm |
| | 2 x Ø7.5 mm | 3 x Ø7.5 mm | 1 x Ø10 mm | 5 x Ø5.5 mm |
| | 6 x Ø5.8 mm | 8 x Ø5.8 mm | 4 x Ø6 mm | - |
| | - | - | 8 x Ø7.5 mm | - |
| Rated peak withstand current (I _{pk} /60 ms) | 25 kA | 36 kA | 60 kA | 14 kA |
| | - | - | - | 24 kA |
| Rated short-time withstand current (I _{cw}) (IEC/EN 60947-7-1) | 4.2 kA rms/1 s | 8.4 kA rms/1 s | 14.4 kA rms/1 s | 3 kA rms/1 s |
| Width (number of 9 mm pitches) | 3 | 4 | 5 | 8 |
| Dimension (H x W x D) | 85 x 27 x 50.5 | 85 x 36 x 50.5 | 85 x 45 x 50.5 | 100 x 71 x 50.5 |
| Weight (g) | 125 | 163 | 239 | 210 |
| Neutral terminal strip (optional) | - | - | - | LGYN1007 |
| References | LGY112510 | LGY116013 | LGY125014 | LGY410028 |

Technical data

Common characteristics

To IEC/EN 60947-7-1 and IEC/EN 61439-1 & 2

| | |
|--|--|
| Rated insulation voltage (Ui) | 500 V AC |
| Rated operational voltage (Ue) | 230 V AC (L/N) 440 V AC (L/L) |
| Rated impulse withstand voltage (Uimp) | 8 kV |
| Rated conditional short-circuit current of an assembly | Up to the breaking capacity of Schneider Electric feeder circuit breakers, even in cascading configuration |
| Network frequency | 50/60 Hz |
| Pollution degree | 3 |
| Overvoltage category | III |

Additional technical characteristics

| | |
|---------------------------------------|-----------------|
| Reference temperature | 40 °C |
| Operating temperature | -25 °C to 55 °C |
| Dielectric withstand (IEC/EN 60947-1) | 2500 V AC |

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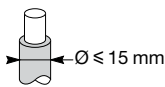


On LGY412560 and LGY416048 references.
Input cabling facilitated by side terminals.

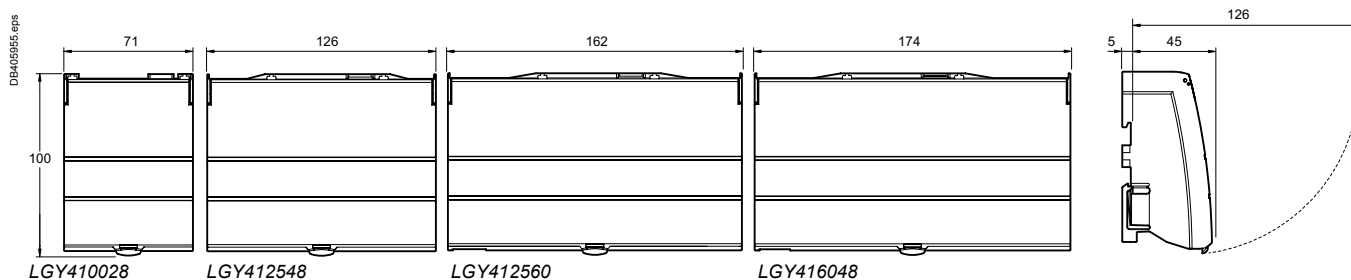
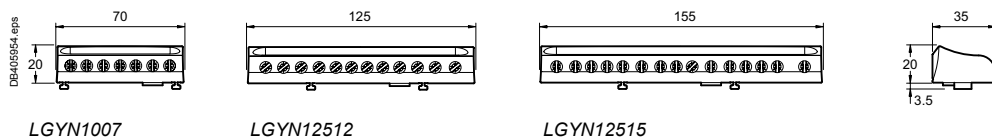
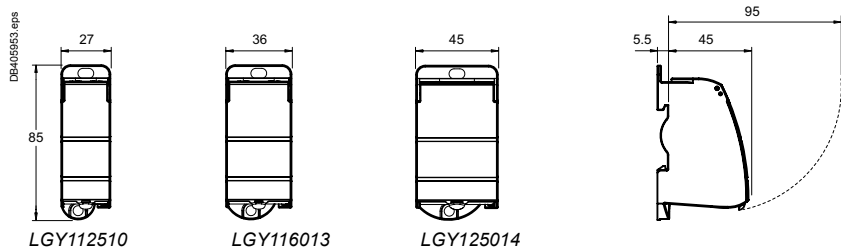
| 125 A | | | 160 A | | | 100 A | | | 125 A | | |
|------------------|------------------|------------------|-----------------|------------------|------------------|------------------|------------------|------------------|--------------|---------------|---------------|
| 4 x 12 | | | 4 x 15 | | | 7 | | | 15 | | |
| 1 x Ø9 mm | 1 x Ø9.5 mm | 1 x Ø12 mm | 2 x Ø7.5 mm | 1 x Ø9 mm | 1 x Ø9.5 mm | 7 x Ø7.5 mm | 3 x Ø8.5 mm | 3 x Ø9 mm | 5 x Ø5.5 mm | 7 x Ø7.5 mm | 3 x Ø8.5 mm |
| 4 x Ø6.5 mm | 11 x Ø6.5 mm | 8 x Ø7.5 mm | - | 4 x Ø6.5 mm | 11 x Ø6.5 mm | - | - | 8 x Ø7.5 mm | - | 4 x Ø6.5 mm | 11 x Ø6.5 mm |
| - | - | - | - | - | - | - | - | - | - | - | - |
| 18 kA | 18 kA | 22 kA | - | - | - | - | - | - | - | - | - |
| 26 kA | 28 kA | 36 kA | - | - | - | - | - | - | - | - | - |
| 4.2 kA rms/1 s | 4.2 kA rms/1 s | 8.4 kA rms/1 s | - | - | - | - | - | - | - | - | - |
| 14 | 20 | 18 | 7 | 14 | 17 | 100 x 126 x 50.5 | 100 x 162 x 50.5 | 100 x 174 x 50.5 | 20 x 70 x 35 | 20 x 125 x 35 | 20 x 155 x 35 |
| 390 | 559 | 567 | 63 | 111 | 149 | LGYN12512 | LGYN12515 | LGYN12512 | - | - | - |
| LGY412548 | LGY412560 | LGY416048 | LGYN1007 | LGYN12512 | LGYN12515 | | | | | | |

Terminal technical data

| Type | PZ2 screw | | | | | | | |
|--|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------------------------|--------------------------|--------------------------|
| | Ø5.5 mm | Ø5.8 mm | Ø6 mm | Ø6.5 mm | Ø7.5 mm | Ø8.5 mm | Ø9 mm | Ø9.5 mm |
| Diameter | Ø5.5 mm | Ø5.8 mm | Ø6 mm | Ø6.5 mm | Ø7.5 mm | Ø8.5 mm | Ø9 mm | Ø9.5 mm |
| Section rigid cable | 1.5 to 16 mm ² | 1.5 to 16 mm ² | 1.5 to 16 mm ² | 1.5 to 16 mm ² | 2.5 to 25 mm ² | 6 to 35 mm ² | 10 to 35 mm ² | 10 to 35 mm ² |
| Section flexible cable or with ferrule | 1.5 to 10 mm ² | 1.5 to 10 mm ² | 1.5 to 10 mm ² | 1.5 to 10 mm ² | 1.5 to 16 mm ² | 4 to 25 mm ² | 4 to 25 mm ² | 6 to 35 mm ² |
| Tightening torque | 2 N.m | 2 N.m | 2 N.m | 2 N.m | 2 N.m | 2 N.m | 2.5 N.m | 2.5 N.m |
| Type | Hc screw | | | | | | | |
| | Ø9.5 mm | Ø10 mm | Ø12 mm | Ø15.3 mm | | | | |
| Diameter | Ø9.5 mm | Ø10 mm | Ø12 mm | Ø15.3 mm | | | | |
| Section rigid cable | 10 to 35 mm ² | 1.5 to 50 mm ² | 25 to 70 mm ² | 35 to 120 mm ² | | | | |
| Section flexible cable or with ferrule | 6 to 35 mm ² | 1.5 to 35 mm ² | 16 to 50 mm ² | 25 to 95 mm ² | | | | |
| Tightening torque | 8 N.m | 4 N.m | 1P: 9 N.m 4P: 5 N.m | 14 N.m | | | | |



Dimensions (mm)





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 |
|--|--------------|
| 80A connection strip | |
| 4 holes (2 x 10mm ² + 2 x 16mm ²) length 32mm | 14962 |
| 6 holes (3 x 10mm ² + 2 x 16mm ² + 1 x 35mm ²) length 50mm | 14963 |
| 10 holes (5 x 10mm ² + 4 x 16mm ² + 1 x 35mm ²) length 74mm | 14964 |
| 125A connection strip | |
| 14 holes (7 x 10mm ² + 6 x 16 mm ² + 1 x 35mm ²) 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

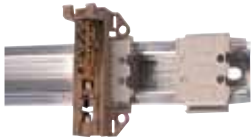
| | Part number |
|---|--------------|
| 80A terminal block | |
| 4 holes (2 x 10mm ² + 2 x 16mm ²) length 68mm | 14975 |
| 6 holes (3 x 10mm ² + 2 x 16mm ² + 1 x 35mm ²) length 68mm | 14976 |
| 10 holes (5 x 10mm ² + 4 x 16mm ² + 1 x 35mm ²) length 115mm | 14977 |
| 125A terminal block | |
| 14 holes (7 x 10mm ² + 6 x 16mm ² + 1 x 35 mm ²) length 115mm | 14979 |



Terminal bar for earth/neutral connections

- For panel mounting
- Including support
- Current rating 200A

| Type | Part number |
|---|--------------|
| For panel mounting | |
| 1 x 20 holes, length 183mm (19 x 16 ² + 1 x 120 ²) | 99217 |
| 1 x 25 holes, length 222mm (24 x 16 ² + 1 x 120 ²) | 99219 |
| 1 x 38 holes, length 332mm (37 x 16 ² + 1 x 120 ²) | 99221 |
| 1 x 49 holes, length 419mm (48 x 16 ² + 1 x 120 ²) | 99223 |
| 1 x 73 holes, length 624mm (72 x 16+1 x 120 ²) | 99225 |

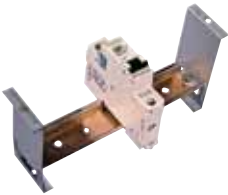


Universal terminal support

This unit can be installed on:

- Symmetrical DIN rail
- Slotted mounting plate
- Asymmetrical DIN rail width: 3 modules of 9mm

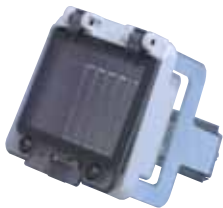
| Type | Part number |
|--|-------------|
| Universal terminal support (pack of 5) | 4224 |



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) | 20267 |



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.

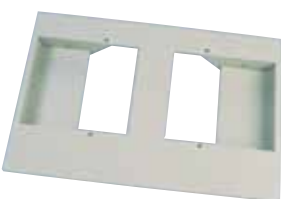
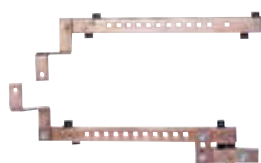
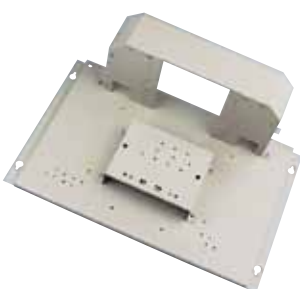
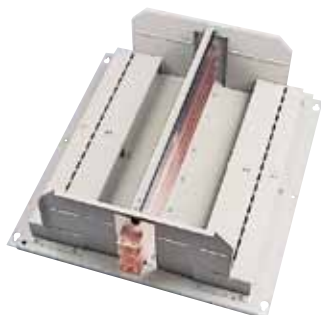
Degree of protection IP55.

- 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) | 14210 |
| DIN rail support (and fixing) | 14211 |
| Transparent hinged cover (4 x 18mm ways) | 99246A |
| Transparent hinged cover complete with DIN support bracket (4 x 18mm ways) | 99246B |



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 | MG6PAC6 | MG8PAC6 |
| 36 | MG6PAC12 | MG8PAC12 |
| 54 | MG6PAC18 | MG8PAC18 |
| 72 | MG6PAC24 | MG8PAC24 |
| 90 | MG6PAC30 | MG8PAC30 |

See Section 8 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 | MG6PACN | MG8PACN |
| 800 | MG8PACN3 | MG8PACN4 |

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 | MG6PANKIT |
| 800A | MG8PANKIT |

Front cover (up to 18TP ways only)

| Number of outgoing ways | TP | Part number | |
|-------------------------|----|---------------|---------------|
| | | 630A interior | 800A interior |
| SP | | | |
| 18 | 6 | MG6PAFC6 | MG8PAFC6 |
| 36 | 12 | MG6PAFC12 | MG8PAFC12 |
| 54 | 18 | MG6PAFC18 | MG8PAFC18 |

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 TP | Part number |
|-------------------------|------------------|-------------|
| | | |
| SP | | |
| 18 | 6 | MGPCH6 |
| 36 | 12 | MGPCH12 |
| 54 | 18 | MGPCH18 |

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 16mm² + 3 X 10mm²)

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 | 13392 |
| 4 | 130 x 80 x 57 | 13394 |
| 6 | 160 x 119 x 65 | 13396 |
| 8 | 160 x 155 x 65 | 13398 |

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 | 99560 |
| 4 | 250 x 122.5 x 63 | 14599 |
| 5 | 250 x 122.5 x 63 | 14603 |

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: IP3X.

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 | SEA9DE16 |
| 12 | SEA9AN10 | SEA9DE24 |
| 16 | SEA9AN14 | SEA9DE32 |
| 20 | SEA9AN18 | SEA9DE40 |
| 32 | SEA9AN27 | SEA9DE64* |

* 2 row

Accessories

| | |
|----------|--------|
| Key lock | SEA9BL |
|----------|--------|



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 ² |
| 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

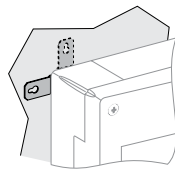
| | |
|--|---|
| 13 module enclosures technoplastic ⁽¹⁾ , metal grey and titanium white | |
| 24 module enclosures: metal and technoplastic ⁽¹⁾ , metal grey and titanium white | |
| Transparent doors: | For 13 module enclosures: technoplastic ⁽¹⁾ , crystal For 24 module enclosures: metal and glass, titanium white and crystal |
| Opaque doors: | For 13 module enclosures: technoplastic ⁽¹⁾ , 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 | | | | Earth terminal block | | | | Without door |
| | | | | Number of connections | | | | Number of connections | | | | |
| | | | | Total | 50° | 25° | 6° | Total | 50° | 25° | 6° | |
| 13 modules | 1 | 13 | 63 A | 11 | - | 3 | 2 x 4 | 13 | - | 1 | 3 x 4 | PRA20113 |
| | 2 | 26 | 63 A | 19 | - | 3 | 4 x 4 | 17 | - | 1 | 4 x 4 | PRA20213 |
| | 3 | 39 | 90 A | 23 | - | 3 | 5 x 4 | 22 | - | 2 | 5 x 4 | PRA20313 |
| | 4 | 52 | 90 A | 27 | - | 3 | 6 x 4 | 26 | - | 2 | 6 x 4 | PRA20413 |
| 24 modules | 1 | 24 | 125 A | 23 | 1 | 2 | 5 x 4 | 22 | 1 | 1 | 5 x 4 | PRA20124 |
| | 2 | 48 | 125 A | 29 | 1 | 4 | 6 x 4 | 27 | 1 | 2 | 6 x 4 | PRA20224 |
| | 3 | 72 | 160 A | 29 | 1 | 4 | 6 x 4 | 27 | 1 | 2 | 6 x 4 | PRA20324 |
| | 4 | 96 | 160 A | 35 | 1 | 6 | 7 x 4 | 32 | 1 | 3 | 7 x 4 | PRA20424 |



External wall mounting lugs

| Accessories | |
|-----------------------------|-------------|
| Mounting in interfaces | Part Number |
| External wall mounting lugs | PRA90009 |
| Door lock - key 405 | PRA90039 |
| 13 module blank | PRA91020 |

| Door for enclosures | | | |
|------------------------|--------|--------------------------|-------------|
| Mounting in interfaces | | Customisable transparent | Opaque |
| | | Part Number | Part Number |
| 13 modules | 1 row | PRA15113 | PRA16113 |
| | 2 rows | PRA15213 | PRA16213 |
| | 3 rows | PRA15313 | PRA16313 |
| | 4 rows | PRA15413 | PRA16413 |
| 24 modules | 1 row | PRA15124 | PRA16124 |
| | 2 rows | PRA15224 | PRA16224 |
| | 3 rows | PRA15324 | PRA16324 |
| | 4 rows | PRA15424 | PRA16424 |

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

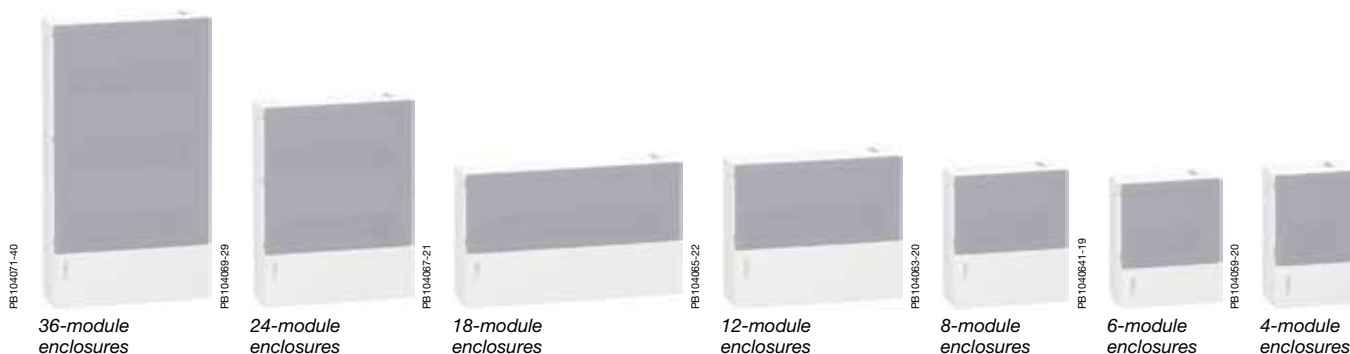
This distribution or sub-distribution enclosure, up to 63 A, is designed for installing electrical switchboards in new or renovated installations in the housing sector.

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.

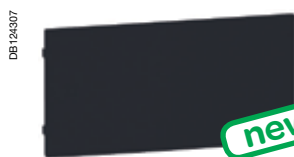
This enclosure can be equipped with a marker light, available in accessories. It allows locating the enclosure in the dark during a power failure.



Smoked translucent door.



White door.



Smoked transparent door.

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 ⁽¹⁾ : 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 | MIP12104 |
| | 6 | 6 | 63 | MIP12106 |
| | 8 | 8 | 63 | MIP12108 |
| | 12 | 12 | 63 | MIP12112 |
| | 18 | 18 | 63 | MIP12118 |
| 2 | 12 | 24 | 63 | MIP12212 |
| 3 | 12 | 36 | 63 | MIP12312 |

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 | $2 \times (1 \times 16^{\square} + 2 \times 10^{\square} + 1 \times 6^{\square})$ |
| | Supplied with the 8 or 12-module enclosure | $2 \times (1 \times 16^{\square} + 4 \times 10^{\square} + 3 \times 6^{\square})$ |
| | Supplied with the 18 or 24-module enclosure | $2 \times (2 \times 16^{\square} + 8 \times 10^{\square} + 6 \times 6^{\square})$ |
| | Supplied with the 36-module enclosure | $2 \times (2 \times 16^{\square} + 9 \times 10^{\square} + 9 \times 6^{\square})$ |

Accessories

| Type | | Cat. no. |
|---|--|----------|
| Removable plate (pack of 2) | 4 modules | MIP99029 |
| | 6 modules | MIP99030 |
| | 8 modules | MIP99031 |
| | 12 modules | MIP99032 |
| | 18 modules | MIP99033 |
| Surface mounting IP41 kit | | MIP99034 |
| Terminal block support (pack of 2) | 18 modules | MIP99036 |
| Terminal block | $1 \times 16^{\square} + 2 \times 10^{\square} + 1 \times 6^{\square}$ | MIP99037 |
| | $1 \times 16^{\square} + 4 \times 10^{\square} + 3 \times 6^{\square}$ | MIP99038 |
| | $2 \times 16^{\square} + 8 \times 10^{\square} + 6 \times 6^{\square}$ | MIP99039 |
| | $2 \times 16^{\square} + 9 \times 10^{\square} + 9 \times 6^{\square}$ | MIP99040 |
| Earth terminal block | $3 \times 16^{\square} + 12 \times 2.5^{\square}$ | 13409 |
| | $4 \times 16^{\square} + 20 \times 2.5^{\square}$ | 13410 |
| Ph+N insulated terminal block (pack of 2) | $2 \times (1 \times 35^{\square} + 5 \times 16^{\square})$ | 13411 |
| | $2 \times (1 \times 35^{\square} + 7 \times 16^{\square})$ | 13412 |
| Blanking plate | 5 modules | 13387 |
| Symbol plate | Standard | 13735 |
| | Special | 13736 |
| Keylock | | MIP99046 |

PB104650-30



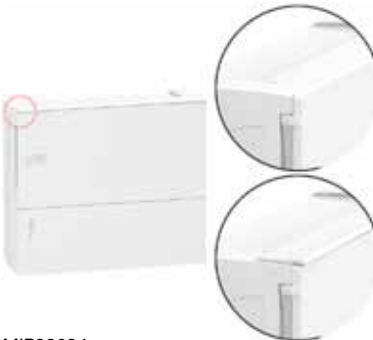
Insulating plug

PB104657-37



MIP99030

PB104637-45



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







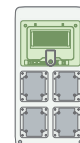
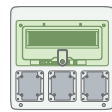
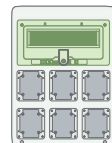
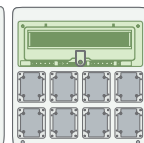

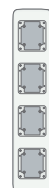
| | | | | | | | | |
|--------------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Part number | 13175 | 13176 | 13177 | 13975 | 13441 | 13442 | 13443 | 13444 |
| Number of modules | 4 | 4 | 4 | 3 | 4 | 6 | 8 | 12 |
| 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 | 13179 | 13983 | 13181 13195 | 13984 | 13182 13197 |
| | 13185 13189 | 13186 13190 | | 13187 13192 | 13991 | 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 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 atmospheric agents | |

Enclosures part numbers

| Data | | Pre-cutout (top and bottom) ⁽¹⁾ | | | | | | Dimensions (mm) | | | Accessories delivered with an enclosure part number ⁽²⁾ | | | | Part No. | | | | | |
|--|------|--|----|----|----|----|-------|-----------------|-----|------|--|------------------------|--------------------------------|---|----------|--------------------|-------|-------|-------|-------|
| Total mod. | open | M | 16 | 20 | 25 | 32 | 50 | W | H | D | Wiring strap | Terminal block support | Terminal block number of holes | | | Plates Part number | | | | |
| | | PG | | 11 | 16 | 21 | 29/36 | | | | | | 4 | 8 | 16 | 13135 | 13136 | 13138 | 13143 | |
| Mini enclosures for power outlets (65 x 85 mm openings) | | | | | | | | | | | | | | | | | | | | |
| 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 |

| | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|---|----|---|---|---|-----|-----|-----|---|---|--|---|--|---|--|---|---|--|-------|
| Enclosures for power outlets (90 x 100 mm openings) | | | | | | | | | | | | | | | | | | | | | |
| 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 |

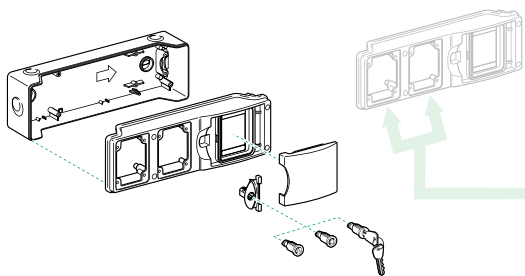
| | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|---|----|---|---|---|-----|-----|-----|---|---|--|---|--|--|--|--|--|---|-------|
| Enclosures for interlocked power outlets (103 x 225 mm openings) | | | | | | | | | | | | | | | | | | | | | |
| 5 | 1 | | | 1 | 1 | 1 | | 138 | 460 | 160 | | | | 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:

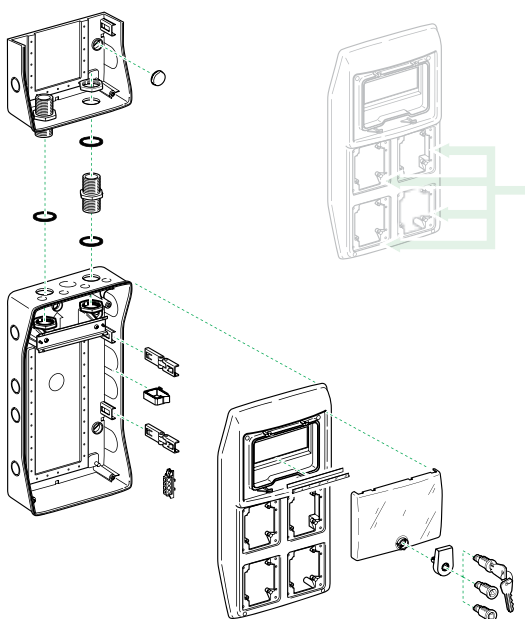
- Mini enclosures: class II plugs
- Enclosures: class II plugs, blanking plates (5 modules of 18 mm per row) and a marking kit

Mini enclosures with 65 x 85 mm openings



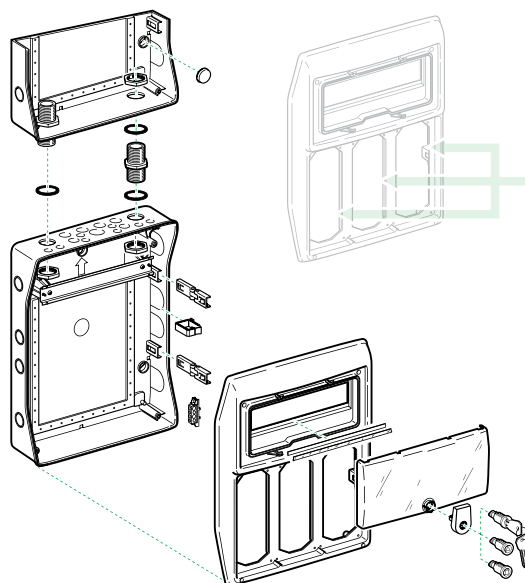
| | | | |
|--|-------------------------------------|----------|---|
| | Direct mounting | A | Domestic and LV power outlets (65 x 85 mm). |
| | With plate Part no. 13135 | B | Power outlets (50 x 50 mm). |

Enclosures with 90 x 100 mm openings



| | | | |
|--|-------------------------------------|----------|---|
| | Direct mounting | C | 16/32 A slanting power outlets (90 x 100 mm). |
| | With plate Part no. 13136 | D | Domestic and LV power outlets (65 x 85 mm). |
| | With plate Part no. 13137 | E | LV and ELV power outlets (65 x 65 mm and 75 x 75 mm). |
| | With plate Part no. 13138 | F | Buttons, indicator lights and switches 16 and 22 mm diameter. |
| | With plate Part no. 13141 | G | Identification label. |

Enclosures with 103 x 225 mm openings



| | | | |
|--|-------------------------------------|----------|--|
| | Direct mounting | H | Power outlet interlocked or with safety transformer. |
| | With plate Part no. 13143 | I | Blanking and adaptation plate to be drilled for 65 x 65 mm or 75 x 75 mm power outlet. |
| | With plate Part no. 13142 | J | Plate with 2 openings: ■ 65 x 85 mm ■ 90 x 100 mm. |
| | With plate Part no. 13144 | K | 63 A LV power outlet (100 x 107 mm). |

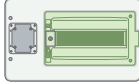
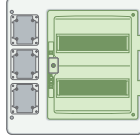
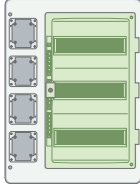
Enclosures for modular switchgear with interface

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 |
| |  |  |  |
| | 13990 | 13991 | 13992 |

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 for modular switchgear with interface Kaedra

Enclosures part numbers

| Data | | | | | | | | | | Accessories delivered with an enclosure part number ⁽²⁾ | | | | | | | | | | | | | | |
|------|------------|----------------|--|-------|-------|-------|----------|-----------------|-----|--|-------------|--------------|------------------------|--------------------------------|---|----|----|----|--|----------------------------|-------------|---|---|-------|
| Row | Total mod. | Slot for plate | Pre-cutout (top and bottom) ⁽¹⁾ | | | | | 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 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13990 |
| 2 | 24 | 3 | | 10 | 4 | 2 | 1 | 448 | 460 | 160 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 13991 |
| 3 | 36 | 4 | | 10 | 4 | 2 | 1 | 448 | 610 | 160 | 3 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 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

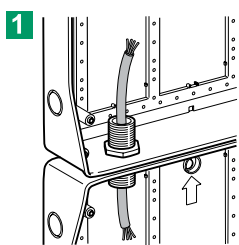
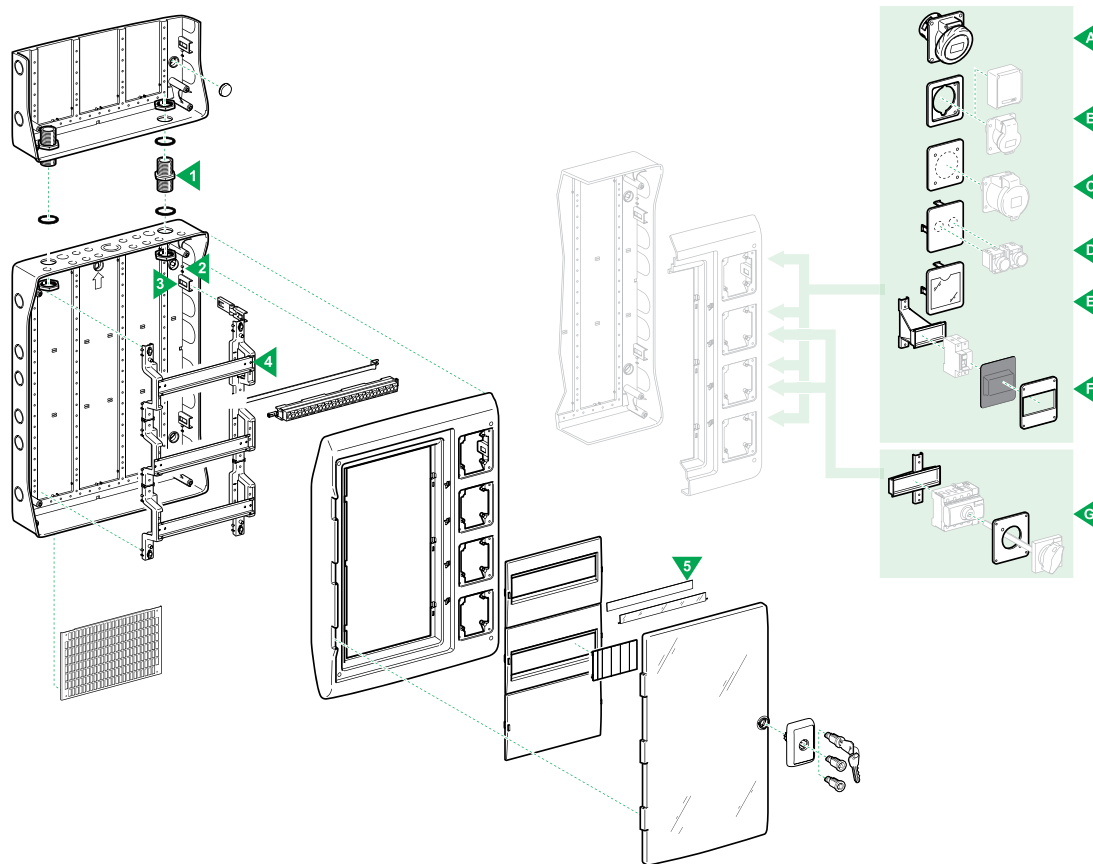
| Name | Description | Part number |
|------------------------|--|-------------|
| Association kit | 2 sleeves + 4 nuts | 13934 |
| Wall mounting lugs | | 13935 |
| Slotted mounting plate | | 13941 |
| Plain front plate | 12 modules | 13944 |
| Interface plate for | 65 x 85 power outlets | 13136 |
| | 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:

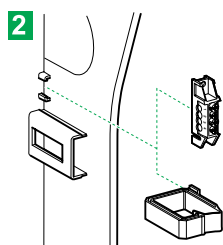
Row separator, jack-up block, junction for trunking, blanking plate, terminal block support, insulated terminal blocks, IP2 covers, cable support sleeves, cable gland, self-adhesive symbols, self-adhesive sheets.

Enclosures for modular switchgear with interface

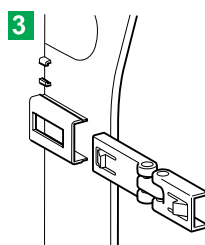
Kaedra



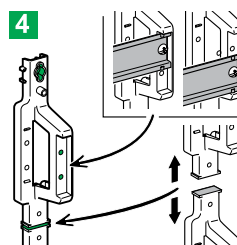
1 Add-on possibility
Enclosures can be horizontally or vertically associated keeping the IP65 and allowing cable insertion.



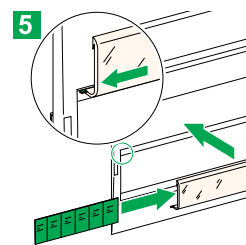
2 Dovetails
Arranged on the back and on the chassis, they can accommodate:
■ 4-hole terminal blocks
■ Wiring straps



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

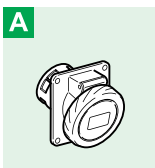
With plate
Part no 13137

With plate
Part no. 13138

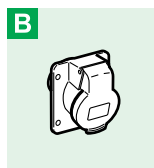
With plate
Part no 13141

With kit
Part no 13140

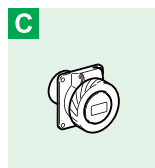
With kit
Part no 13139



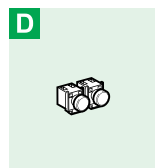
A
16/32 A slanting power outlets (90 x 100 mm).



B
LV power outlets (65 x 85 mm).



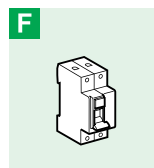
C
LV and ELV power outlets (65 x 65 mm and 75 x 75 mm).



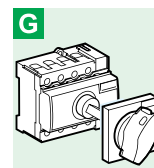
D
Buttons, indicator lights and switches 16 and 22 mm diameter.



E
Identification label



F
Modular switchgear up to 4 modules (e.g. residual current circuit breaker).



G
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 ⁽²⁾ | | | | | | | Part No. | | | |
|------------------------|------------|--|----|----|-------|-------|-------|----------|-----------------|---|---|-------------|--------------|------------------------|--------------------------------|---|----------|----|----|-------|
| Row | Total mod. | Pré-cutout (top and bottom) ⁽¹⁾ | | | | | | | Dimensions (mm) | | | Marking kit | Wiring strap | Terminal block support | Terminal block number of holes | | | | | |
| | | M PG | 16 | 20 | 20 11 | 25 16 | 32 21 | 50 29/36 | W | H | D | | | | 4 | 8 | 16 | 22 | 32 | |
| Mini enclosures | | | | | | | | | | | | | | | | | | | | |
| 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 |
| Enclosures | | | | | | | | | | | | | | | | | | | | |
| 1 | 12 | 6 | | 6 | 2 | 3 | | 340 | 280 | 160 | 1 | 1 | 1 | 1 | 1 | | | | | 13981 |
| | 18 | | | 10 | 4 | 2 | 1 | 448 | 280 | 160 | 1 | 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

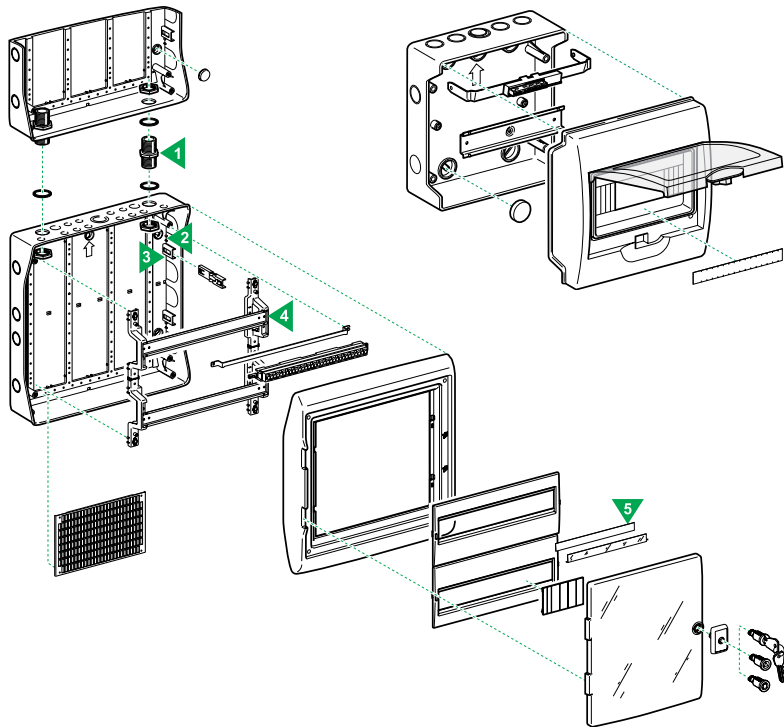
| Name | Description | Mini-enclosures | Enclosures | Part No. |
|-------------------------|--------------------|-----------------|------------|----------|
| Association kit | 2 sleeves + 4 nuts | ■ | ■ | 13934 |
| Wall mounting lugs | | ■ | ■ | 13935 |
| Slotted mounting plate | | ■ | ■ | 13941 |
| Paint 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 ⁽¹⁾:

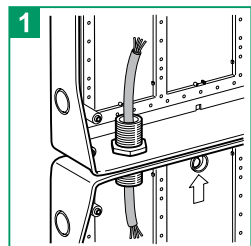
Row separator, jack-up block, junction for trunking, blanking plate, terminal block support, insulated terminal blocks, IP2 covers, cable support sleeves, cable gland, self-adhesive symbols, self-adhesive sheets.

Enclosures and mini enclosures for modular switchgear

Kaedra

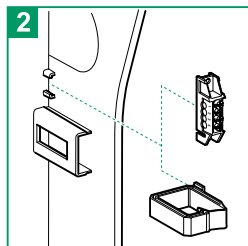


A few tricks



Add-on possibility

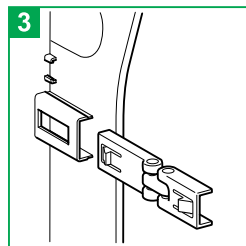
Enclosures can be horizontally or vertically associated keeping the IP65 and allowing cable insertion.



Dovetails

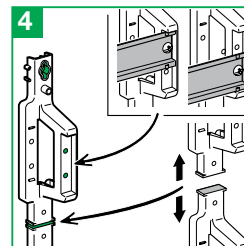
Arranged on the back and on the chassis, they can accommodate:

- 4-hole terminal blocks
- wiring straps.



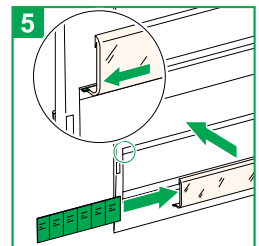
Back/front face hinges

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 atmospherics 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) ⁽¹⁾ | | | | | Part number | | |
|---|-----|-----|---------------|--|----|----|----|----|-------------|----|-------|
| W | H | D | | M PG | 16 | 20 | 25 | 32 | | 50 | |
| | | | | | | 11 | 16 | 21 | 29/36 | | |
| Opaque door universal enclosures | | | | | | | | | | | |
| 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 |
| Universal enclosures for power outlets | | | | | | | | | | | |
| 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 |

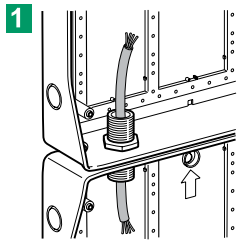
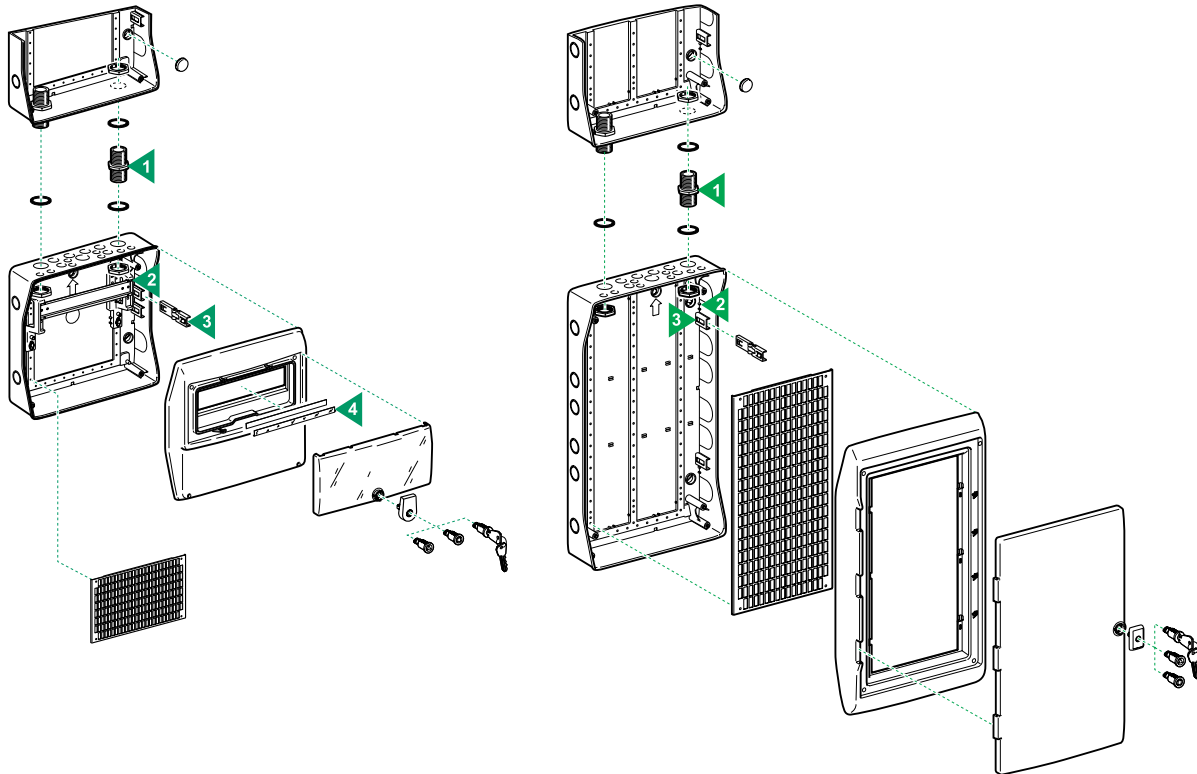
1) Concentric pre-cutouts of the PG and ISO/metric type (EN 50262).

(2) Accessories also delivered:

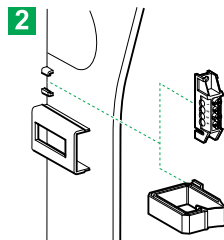
- Opaque door universal enclosures: class II plugs, mounting plate
- Universal enclosures for power outlets: class II plugs, blanking plates (5 modules of 18 mm) and marking kit

Part numbers of the main accessories

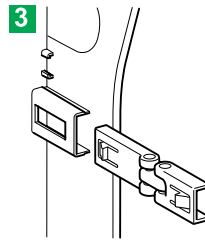
| Name | Part number |
|----------------------------------|-------------|
| Association kit | 13934 |
| Wall mounting lug | 13935 |
| Jack-up block | 13938 |
| Junction for trunking | 13939 |
| Wiring strap | 13946 |
| Slotted mounting plate 150 x 250 | 13941 |



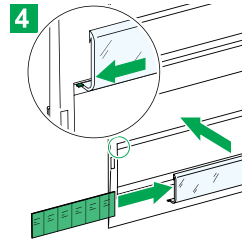
1 Add-on possibility
Enclosures can be horizontally or vertically associated keeping the IP65 and allowing cable insertion.



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 |
|--|--------------|--------------|
| | | |
| | 13993 | 13994 |

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

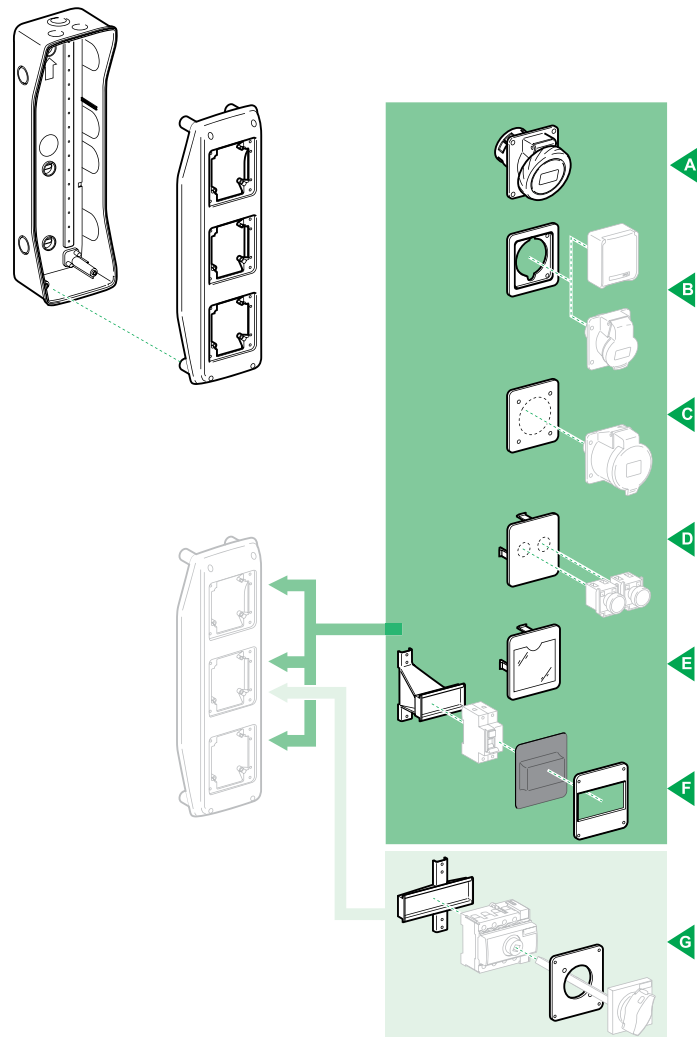
Resistance to chemicals and atmospheric agents

Part numbers of the main accessories

| Name | Description | Part number |
|------------------------|--|--------------|
| Association kit | 2 sleeves + 4 nuts | 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 |

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

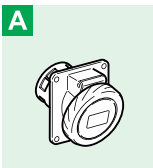
With plate
Part no 13137

With plate
Part no. 13138

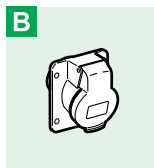
With plate
Part no 13141

With kit
Part no 13140

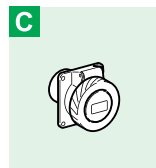
With kit
Part no 13139



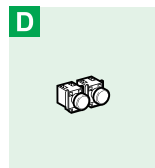
16/32 A slanting power outlets (90 x 100 mm).



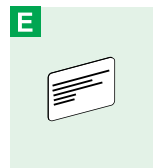
LV power outlets (65 x 85 mm).



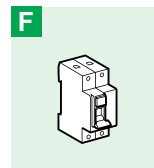
LV and ELV power outlets (65 x 65 mm and 75 x 75 mm).



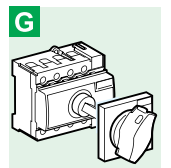
Buttons, indicator lights and switches 16 and 22 mm diameter.



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



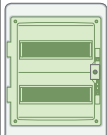






- Sealing kit: used to seal the front face on the back (2 screws) and the front plates on the front face (4 kits)
- Keylock: Eurolocks combination no. 850. Installed in the door
- Insert (male square or triangle, female key supplied): installed in the door

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 ² | | 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 | | | | | | | | |
| | |  |  |  |  |  |  |  |  |  | |
| For enclosure implementation | | | | | | | | | | | |
| 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 |
| For switchgear implementation | | | | | | | | | | | |
| Plate for 85 x 65 slot for 50 x 50 power outlets | | ■ | | | | | | | | | 13135 |
| Plate for 90 x 100 slot for 65 x 65 and 75 x 75 power outlets | | | ■ | ■ | ■ | | | | | | 13136 |
| | ø 16 & 22mm pushbutton controls | | ■ | ■ | ■ | | | | | | 13137 |
| | blanking and identification | | ■ | ■ | ■ | | | | | | 13138 |
| | | | ■ | ■ | ■ | | | | | | 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 |
| For electrical connection | | | | | | | | | | | |
| 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 |
| For marking | | | | | | | | | | | |
| Self-adhesive symbols | standard | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 13735 |
| | special | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 13736 |
| Self-adhesive sheets for SISmarker printing | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 13260 |
| For enclosure protection | | | | | | | | | | | |
| Sealing kit | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 13947 |
| Keylock | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 13948 |
| Insert | triangle | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 13949 |
| | square | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 13950 |
| For enclosure maintenance | | | | | | | | | | | |
| Front plate | 12 modules | | ■ | ■ | | | | | | ■ | 10200 |
| | 18 modules | | ■ | ■ | | | | | | ■ | 10209 |
| Chassis 1 row | 12 modules | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 10210 |
| | 18 modules | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 10220 |

Dissipated power, impedance and voltage drop page 11/2
Tripping curves page 11/4
Influence of ambient temperature..... page 11/11
Short-circuit current limiting page 11/18
Direct current applications..... page 11/36
400 Hz network page 11/50
Motor and transformer protection..... page 11/52
Safepact 2 page 11/56
Powerpact 4..... page 11/57
Degrees of protection provided by enclosures page 11/58
Earth loop impedance values..... page 11/59

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 | |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|--|
| Circuit breakers | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | |
| RCCB | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | |
| Add-on residual current devices | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | | | |
| Contactors | | | | | | | | | | | | | | | | | | | | | | | |
| iCT/iCT+ Power circuit | | | | | | | | | | | | | 0.6 | 0.9 | 1.4 | | 1.5 | | 3.4 | | 4 | | |
| Impulse relays | | | | | | | | | | | | | | | | | | | | | | | |
| iTL/iTL+ Power circuit | | | | | | | | | | | | | 0.6 | | | 1.5 | | | | | | | |
| Push-buttons | | | | | | | | | | | | | | | | | | | | | | | |
| iPB | | | | | | | | | | | | | | 0.6 | | | | | | | | | |
| Selector switches | | | | | | | | | | | | | | | | | | | | | | | |
| iSSW | | | | | | | | | | | | | | 0.8 | | | | | | | | | |
| iCMA/iCMB/iCMC/ iCMD/iCMV | | | | | | | | | 0.4 | | | | | | | | | | | | | | |
| Switch-disconnectors | | | | | | | | | | | | | | | | | | | | | | | |
| 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 | |
| Indicator lights | | | | | | | | | | | | | | | | | | | | | | | |
| 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 |
|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Circuit breakers | | | | | | | | | | | | | | | | | | | | | | |
| 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 | | |
| RCCB | | | | | | | | | | | | | | | | | | | | | | |
| 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 |
| Contactors | | | | | | | | | | | | | | | | | | | | | | |
| CT/CT+ Power circuit | | | | | | | | | | | | | 0.9 | | | | 1.4 | | | | | |
| Impulse relays | | | | | | | | | | | | | | | | | | | | | | |
| TL/TL+ Power circuit | | | | | | | | | | | | | 0.9 | | | 1.4 | | | | | | |
| Push-buttons | | | | | | | | | | | | | | | | | | | | | | |
| PB | | | | | | | | | | | | | | 0.6 | | | | | | | | |
| Selector switches | | | | | | | | | | | | | | | | | | | | | | |
| CM | | | | | | | | | | | | | | 0.8 | | | | | | | | |
| CMA/CMB/CMC/CMD/CMV | | | | | | | | | 0.4 | | | | | | | | | | | | | |
| Switch-disconnectors | | | | | | | | | | | | | | | | | | | | | | |
| 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 |
| Indicator lights | | | | | | | | | | | | | | | | | | | | | | |
| 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

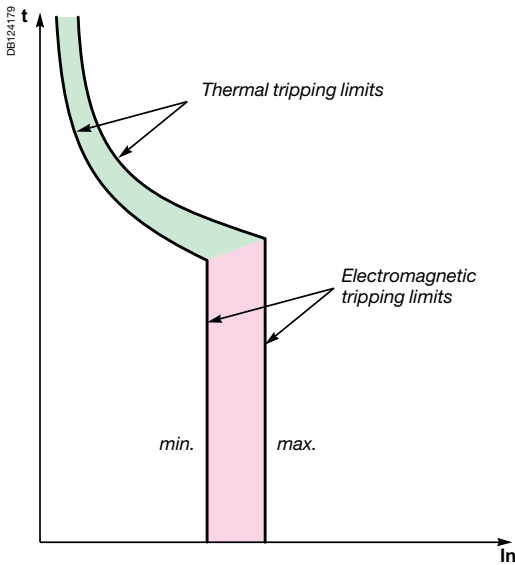
Voltage drop calculation:

$$U = P / I$$

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 $(I^2t)/(I)^2$.

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.

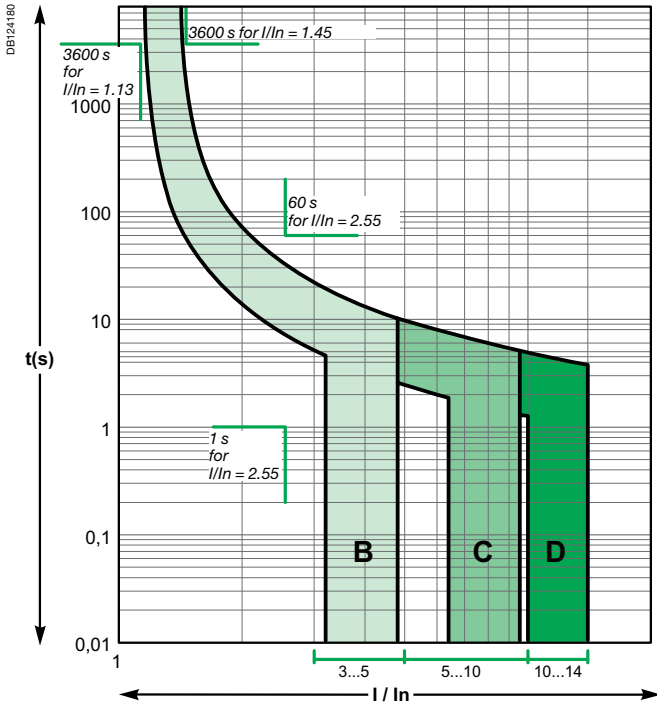
To check discrimination on short circuit, the energy characteristics of the two devices must be compared.

Alternative current 50/60 Hz

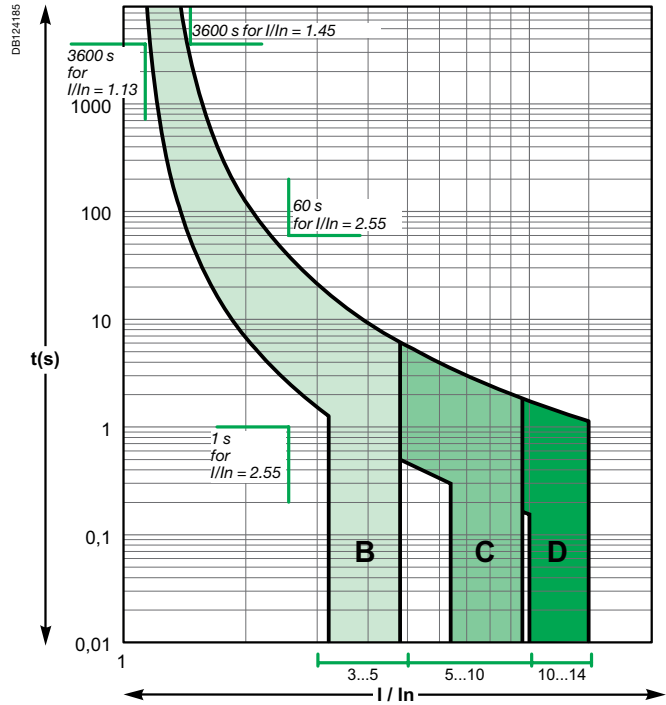
iC60

According to IEC/EN 60898-1 (reference temperature 30°C)

Curves B, C, D rating up to 4 A



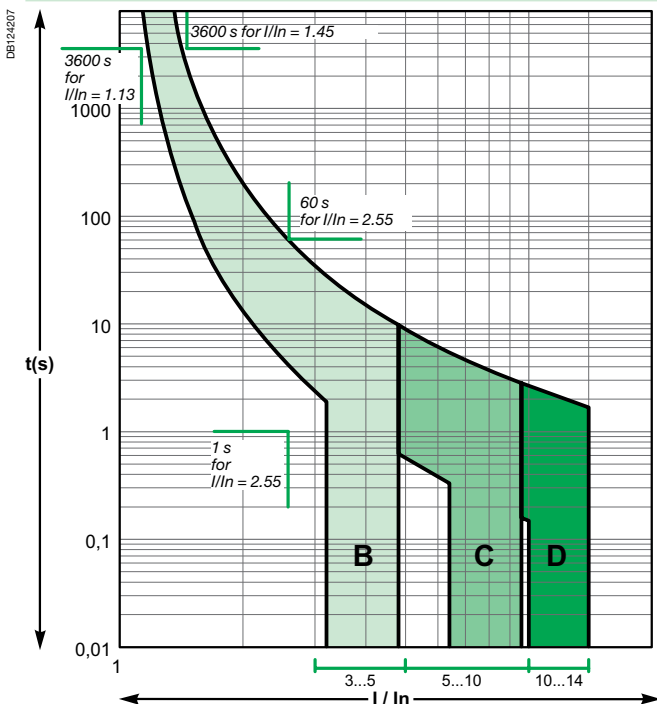
Curves B, C, D rating 6 A to 63 A



C120N/H

According to IEC/EN 60898-1 (reference temperature 30°C)

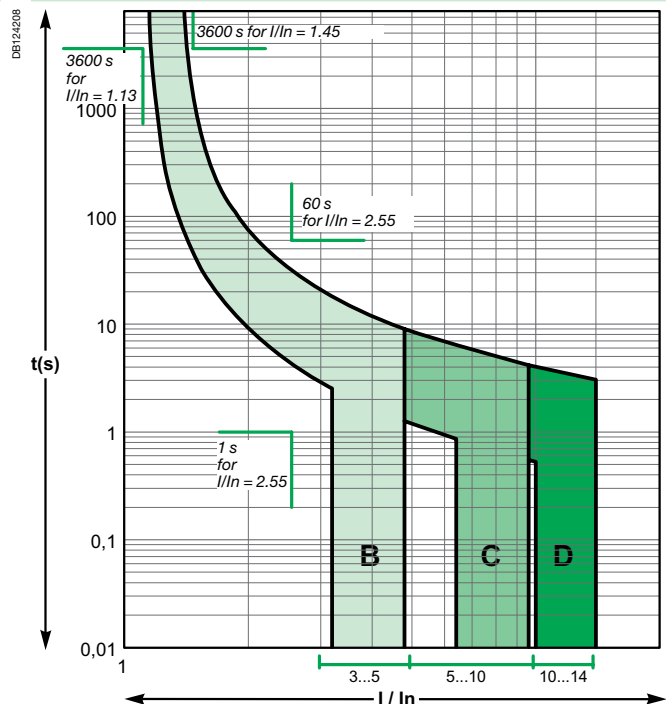
Curves B, C, D



iDPN, DPN N (circuit-breaker and residual current device)

According to IEC/EN 60898-1 (reference temperature 30°C)

Curves B, C, D

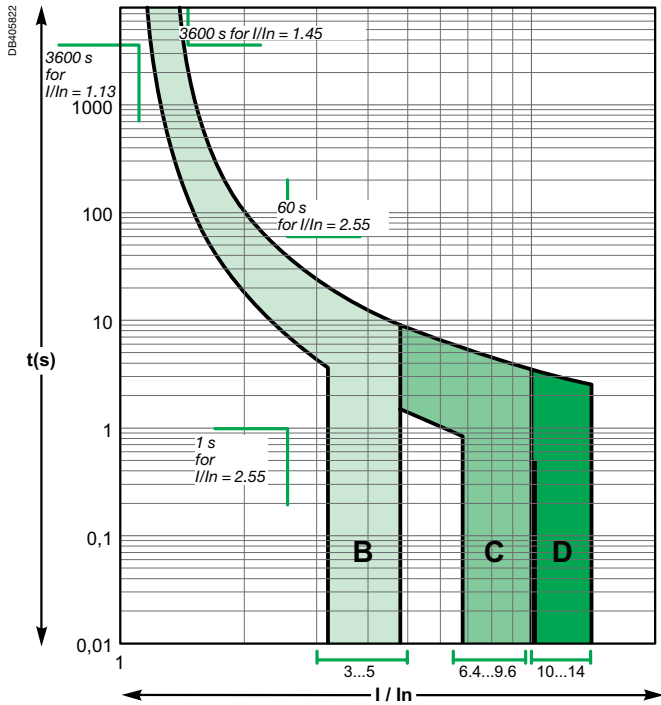


Alternative current 50/60 Hz

C60

According to IEC/EN 60898-1 (reference temperature 30°C)

Curves B, C, D

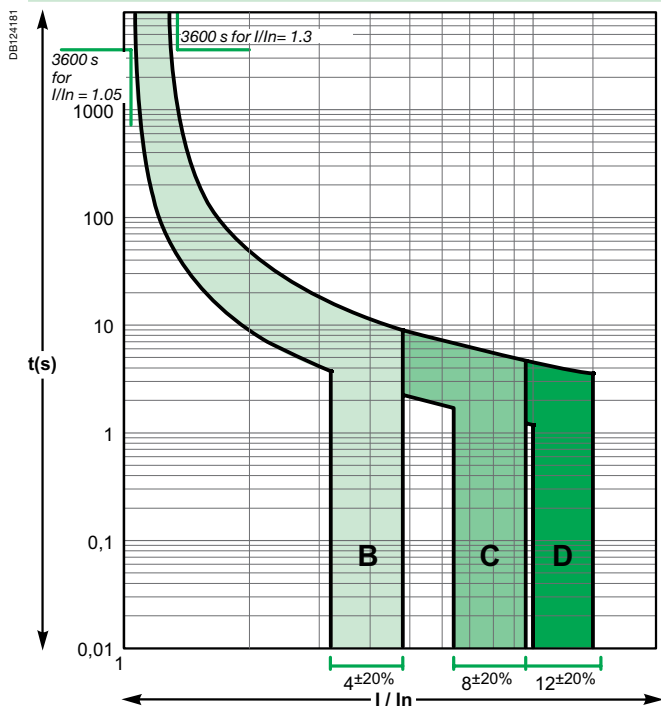


Alternative current 50/60 Hz

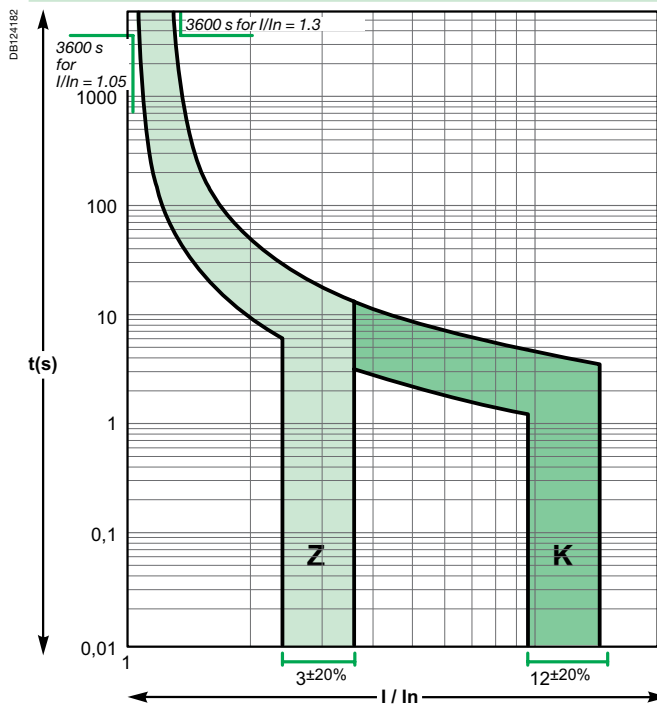
iC60

According to IEC/EN 60947-2 (reference temperature 50°C)

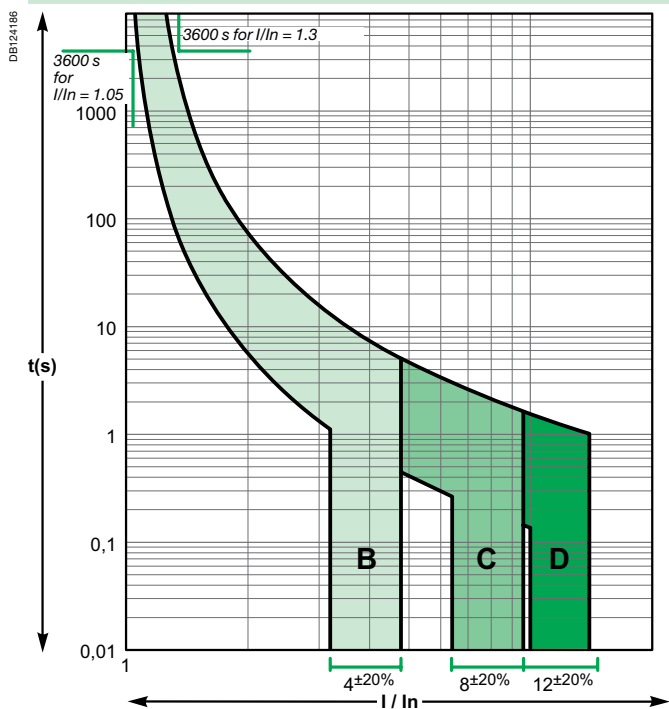
Curves B, C, D rating up to 4 A



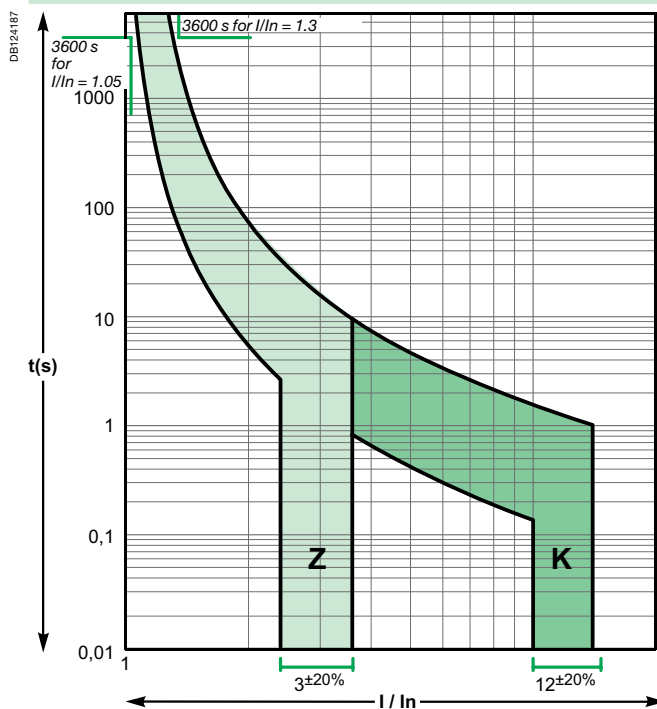
Curves Z, K rating up to 4 A



Curves B, C, D rating 6 A to 63 A



Curves Z, K rating 6 A to 63 A

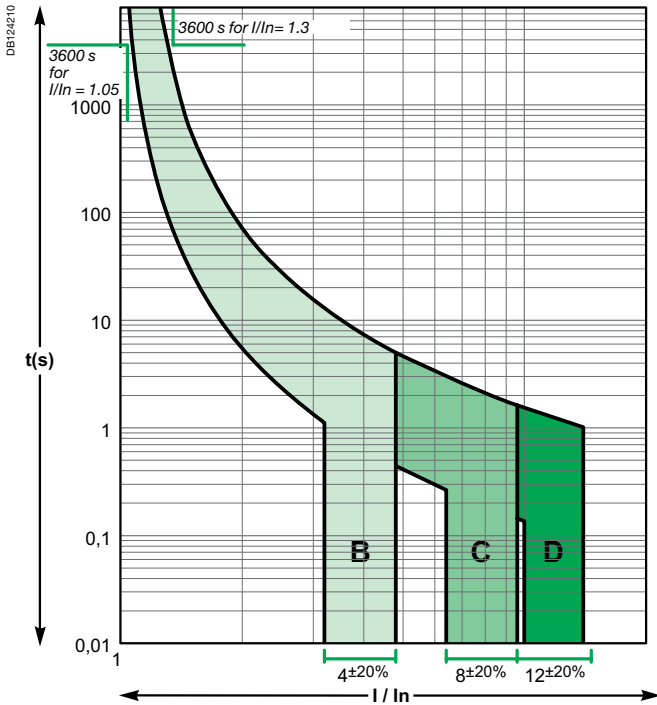


Alternative current 50/60 Hz

Reflex iC60N/H

According to IEC/EN 60947-2 (reference temperature 50°C)

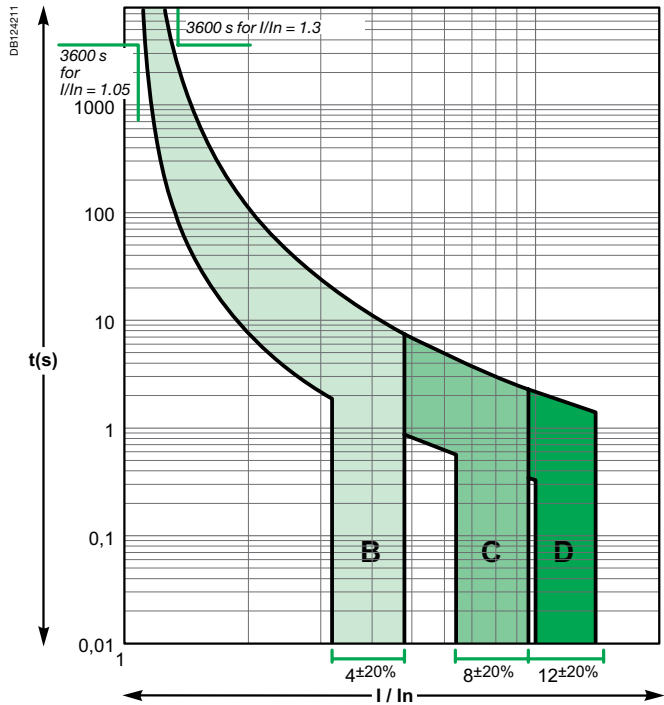
Curves B, C, D



NG125a/N/H/L

According to IEC/EN 60947-2 (reference temperature 40°C)

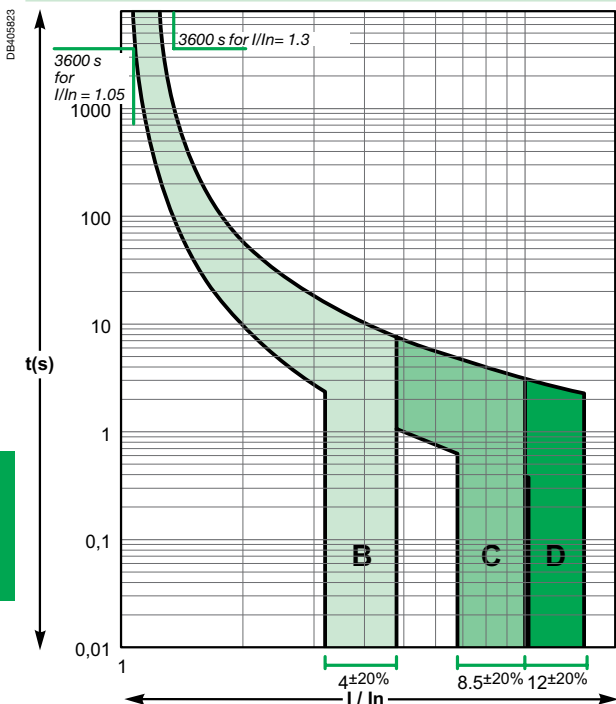
Curves B, C, D



C60

According to IEC/EN 60947-2 (reference temperature 50°C)

Curves B, C, D

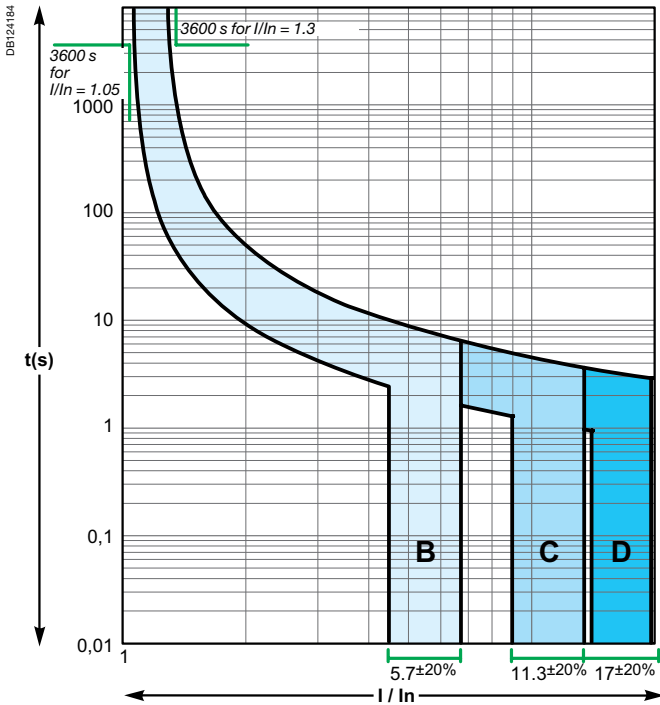


Direct current

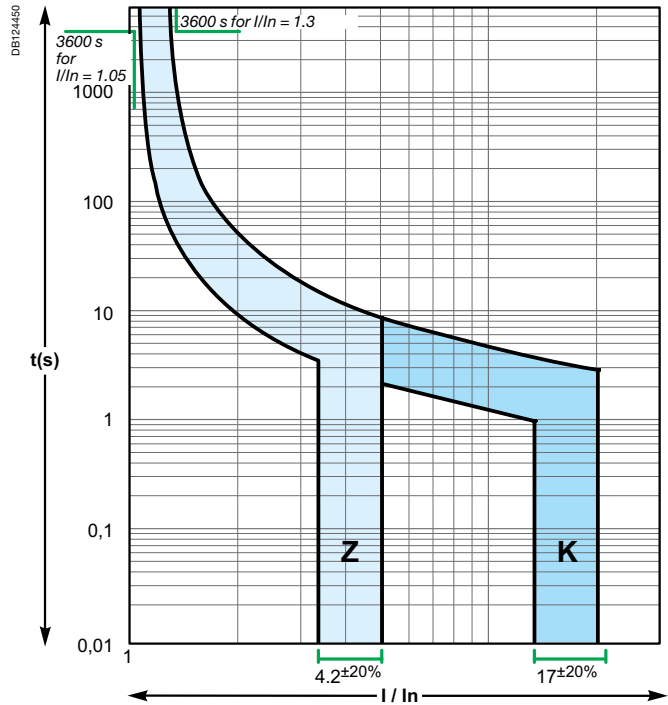
iC60N/H/L

According to IEC/EN 60947-2 (reference temperature 50°C)

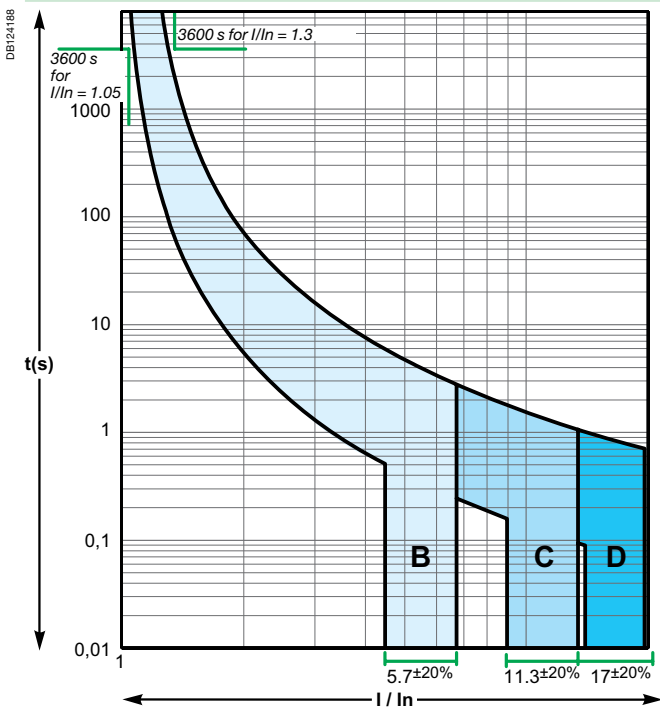
Curves B, C, D rating up to 4 A



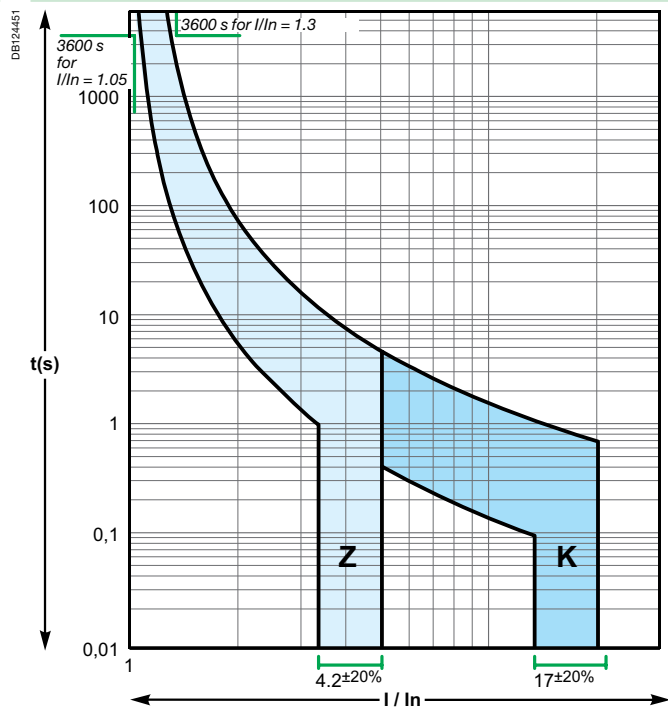
Curves Z, K rating up to 4 A



Curves B, C, D rating 6 A to 63 A



Curves Z, K rating 6 A to 63 A

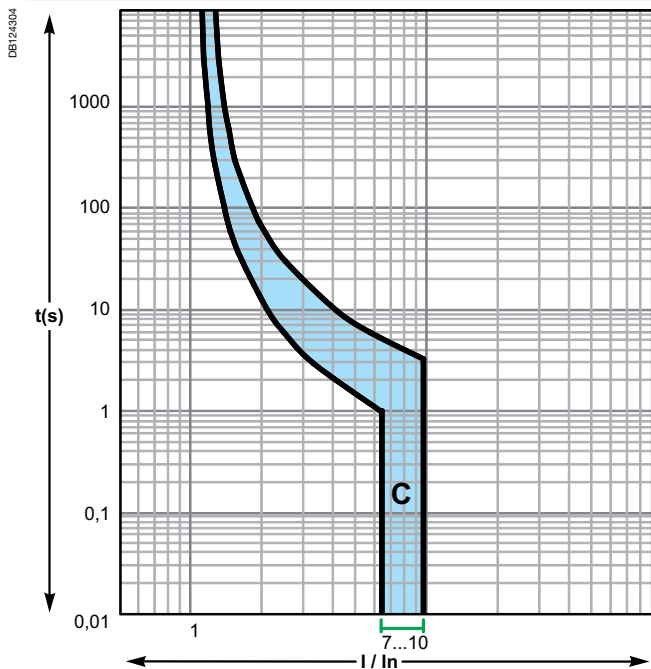


Direct current

C60H-DC

According to IEC/EN 60947-2 (reference temperature 25°C)

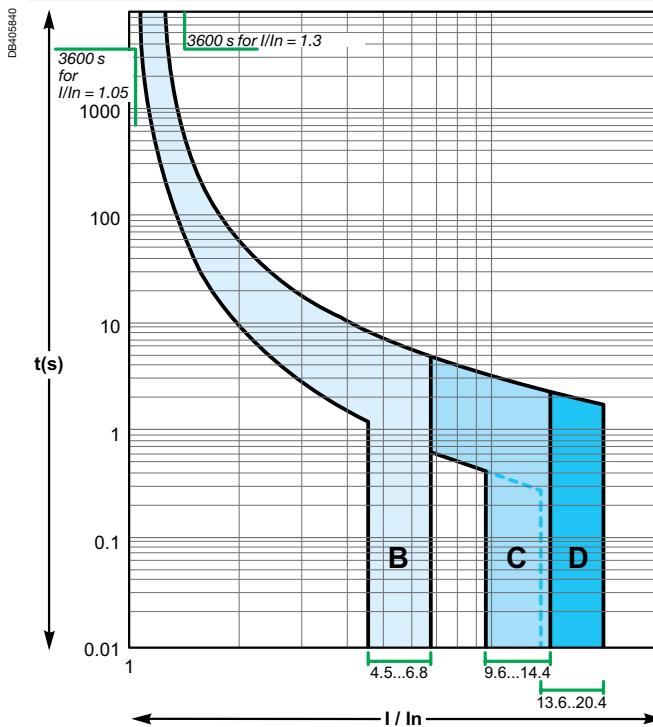
Curve C



C60

According to IEC/EN 60947-2 (reference temperature 50°C)

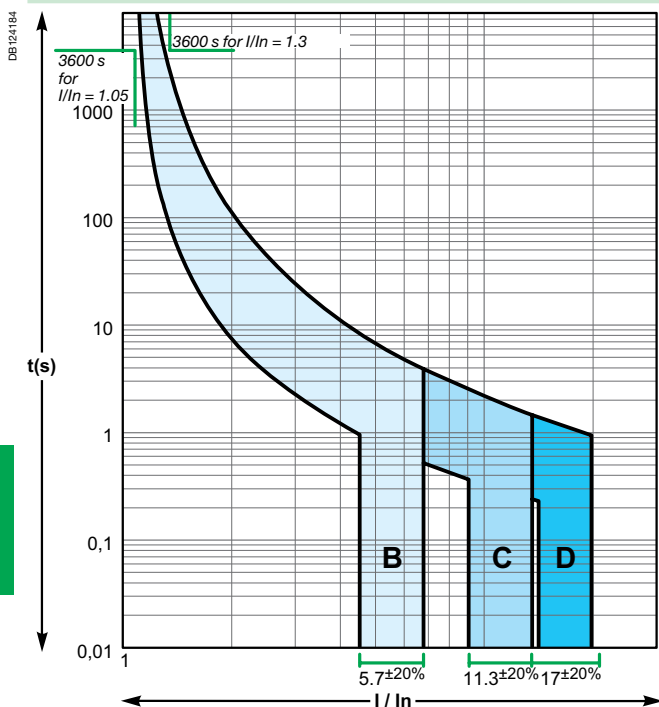
Curves B, C, D



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 |
| iC60N circuit breakers | Tripping on overload | -25°C | +60°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 | -5°C | +60°C |
| | A, SI | -25°C | +60°C |
| Switches | iSW | -20°C | +50°C |
| | iSW-NA | -35°C | +70°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 | 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 | 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 | 11.8 | 10.5 | 10.3 | 10 | 9.7 | 9.4 | 9.2 | 9.9 | 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 | 16.7 | 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)

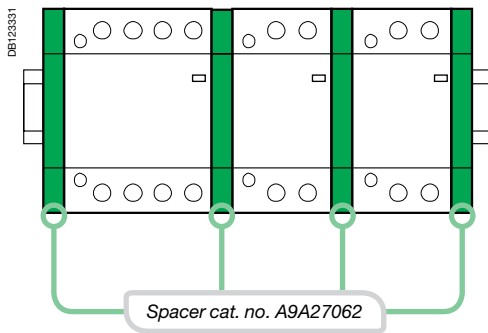
| iC60H RCBO | Ambient temperature (°C) | | | | | | | | | | | | | | | |
|------------|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-----|------|------|
| Rating | -15 | -10 | -5 | 0 | +5 | +10 | +15 | +20 | +25 | +30 | +35 | +40 | +45 | +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

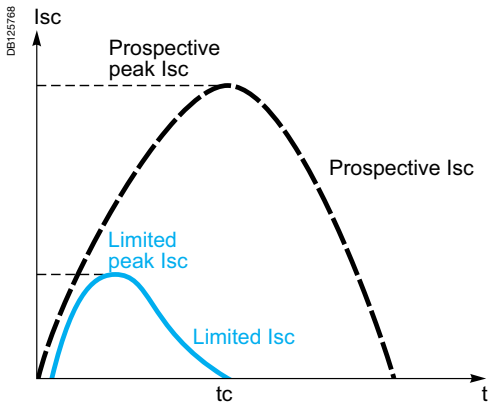
In the case of contactor mounting in an enclosure for which the interior temperature is in a range between 50°C and 60°C, it is necessary to use a spacer, cat. no. A9A27062, between each contactor.



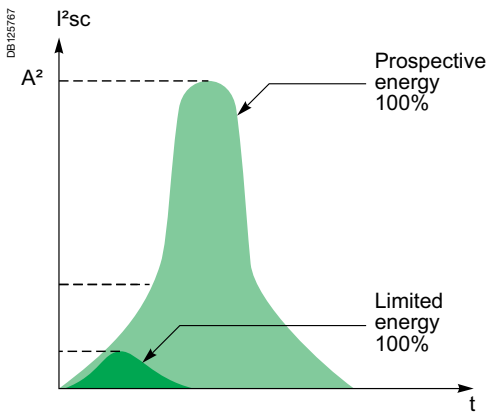
Splitter blocks

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.

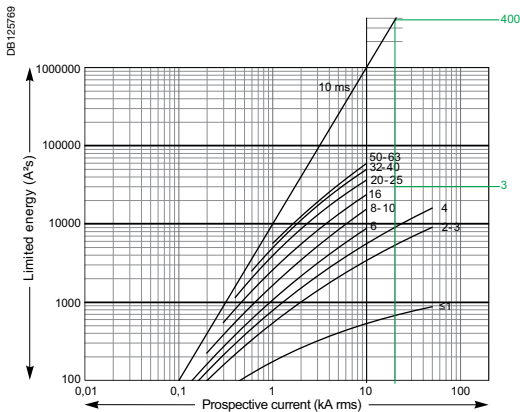
This assures them of optimal protection of the entire power distribution system.

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 A²s), 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 A²s 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 kA²s
- the iC60N circuit breaker reduces this thermal stress to: 35 kA²s, 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 mm² and stresses in A²s.

| S (mm ²) | | 1.5 | 2.5 | 4 | 6 | 10 |
|----------------------|----|------------------------|------------------------|------------------------|------------------------|------------------------|
| PVC | Cu | 2.97 x 10 ⁴ | 8.26 x 10 ⁴ | 2.12 x 10 ⁵ | 4.76 x 10 ⁵ | 1.32 x 10 ⁶ |
| | Al | | | | | 5.41 x 10 ⁵ |
| PRC | Cu | 4.10 x 10 ⁴ | 1.39 x 10 ⁵ | 2.92 x 10 ⁵ | 6.56 x 10 ⁵ | 1.82 x 10 ⁶ |
| | Al | | | | | 7.52 x 10 ⁵ |
| S (mm ²) | | 16 | 25 | 35 | 50 | |
| PVC | Cu | 3.4 x 10 ⁶ | 8.26 x 10 ⁶ | 1.62 x 10 ⁷ | 3.21 x 10 ⁷ | |
| | Al | 1.39 x 10 ⁶ | 3.38 x 10 ⁶ | 6.64 x 10 ⁶ | 1.35 x 10 ⁷ | |
| PRC | Cu | 4.69 x 10 ⁶ | 1.39 x 10 ⁷ | 2.23 x 10 ⁷ | 4.56 x 10 ⁷ | |
| | Al | 1.93 x 10 ⁶ | 4.70 x 10 ⁶ | 9.23 x 10 ⁶ | 1.88 x 10 ⁷ | |

Example

Is a Cu/PVC cable of cross section 10 mm² protected by a NG125L device?

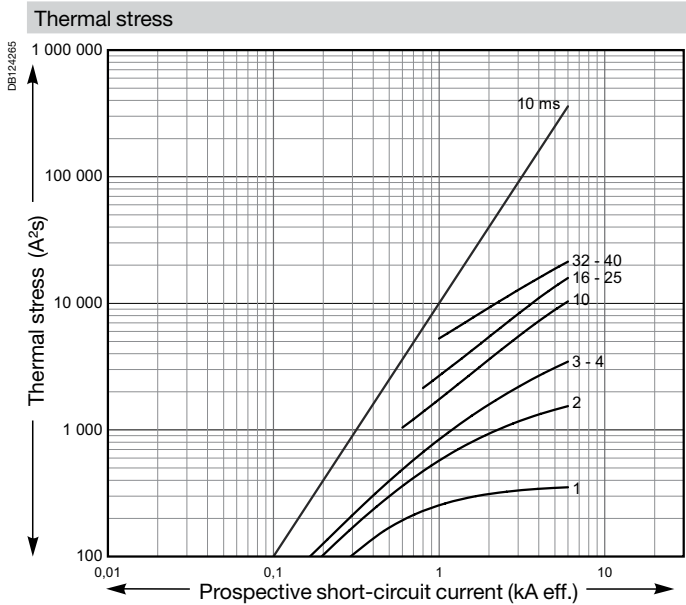
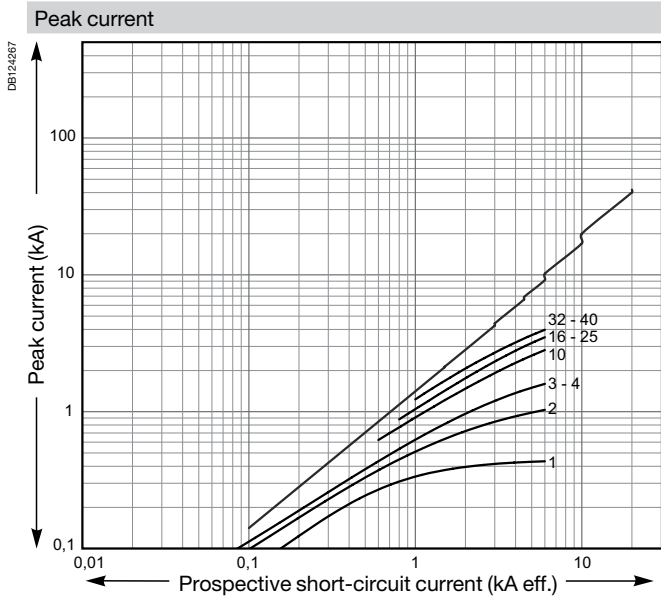
The above table shows that the acceptable stress is 1.32 x 10⁶ A²s. Any short-circuit current at the point where a NG125L device (I_{cu} = 25 kA) is installed will be limited, with a thermal stress of less than 2.2 x 10⁵ A²s. (Curve on page 11/26).

The cable is therefore always protected up to the breaking capacity of the circuit breaker.

Limitation curves for network
 U_e: 380-415 V AC (Ph/N 220-240 V AC)

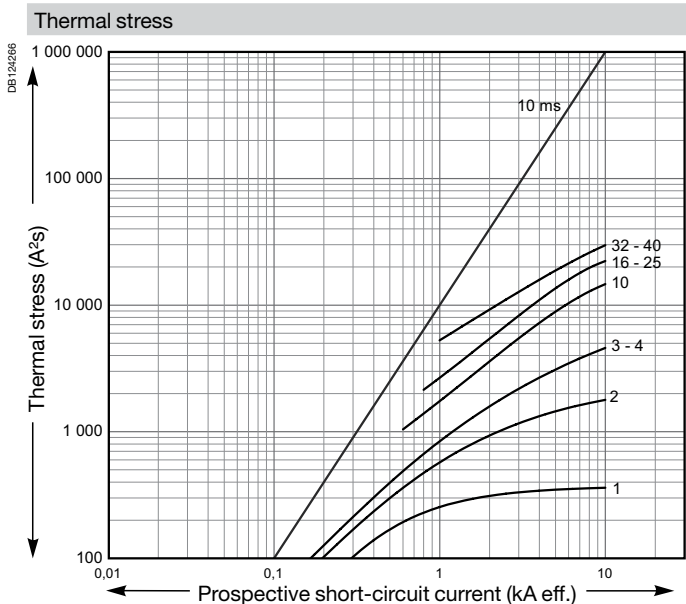
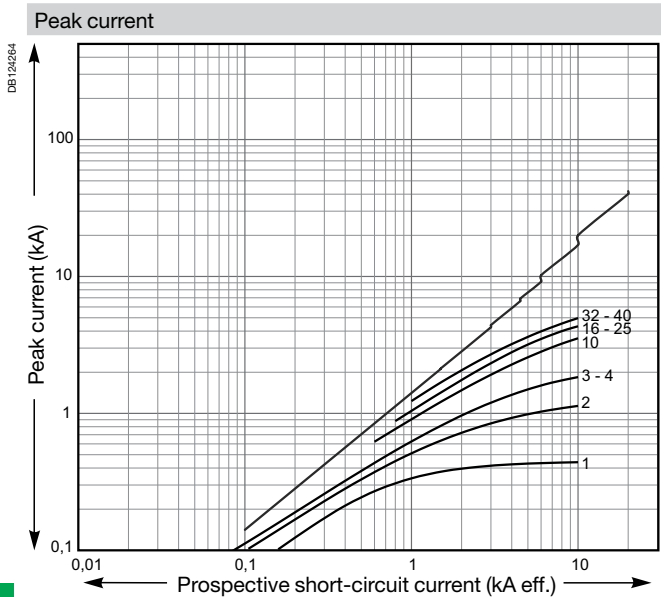
iDPN (MCB and RCBO)

1P+N / 3P / 3P+N



DPN N (MCB and RCBO)

1P+N / 3P / 3P+N

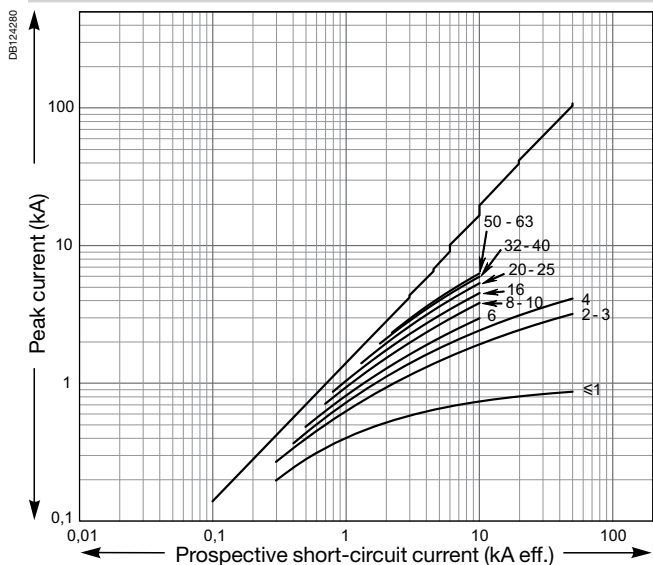


Limitation curves for network
 U_e: 380-415 V AC (Ph/N 220-240 V AC)

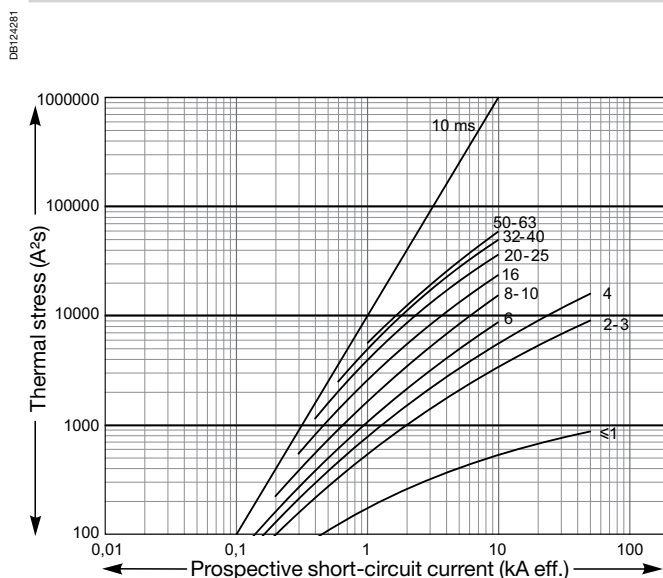
iC60N

1P / 1P+N / 2P / 3P / 4P

Peak current



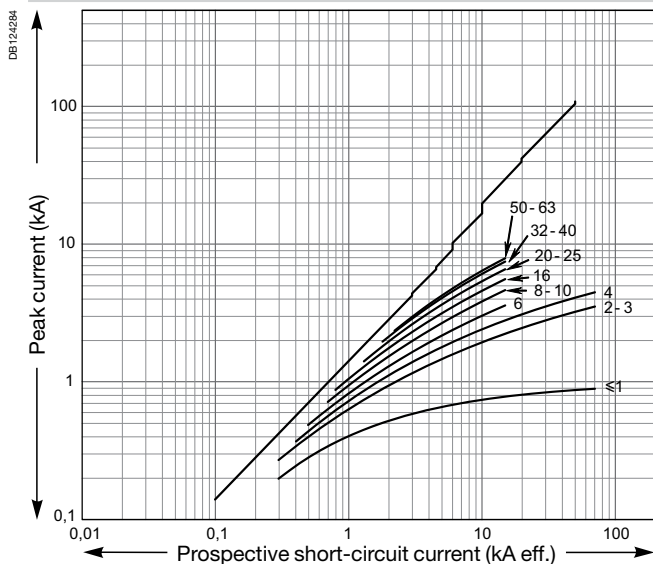
Thermal stress



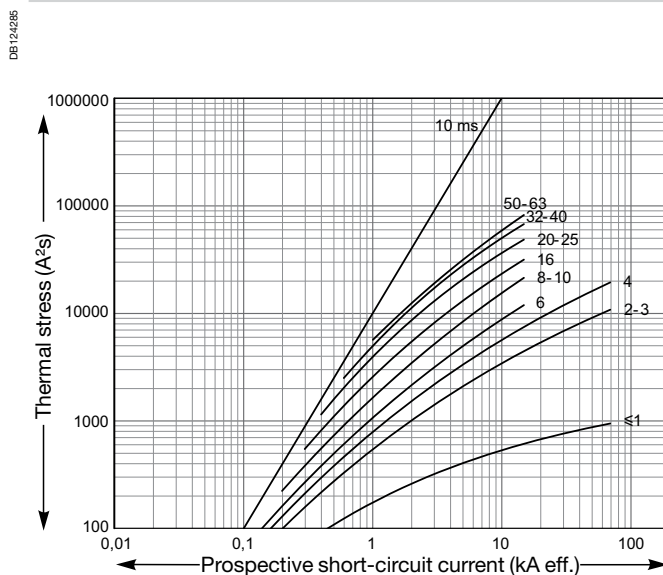
iC60H

1P / 1P+N / 2P / 3P / 4P

Peak current



Thermal stress



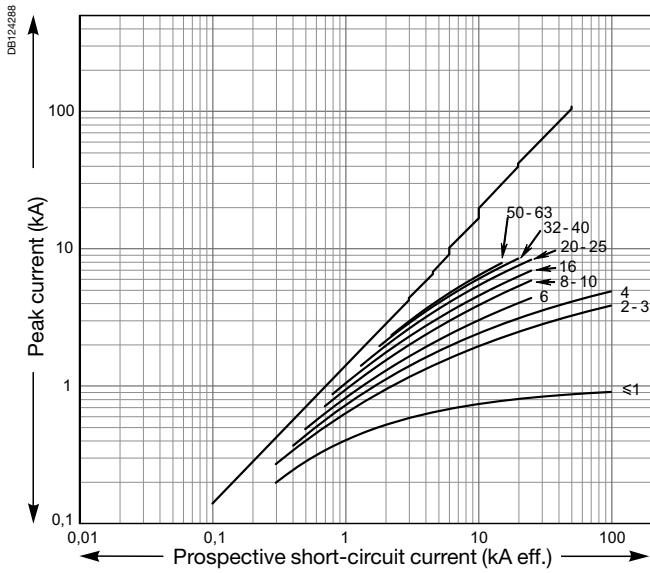
Limitation curves for network

U_e: 380-415 V AC (Ph/N 220-240 V AC)

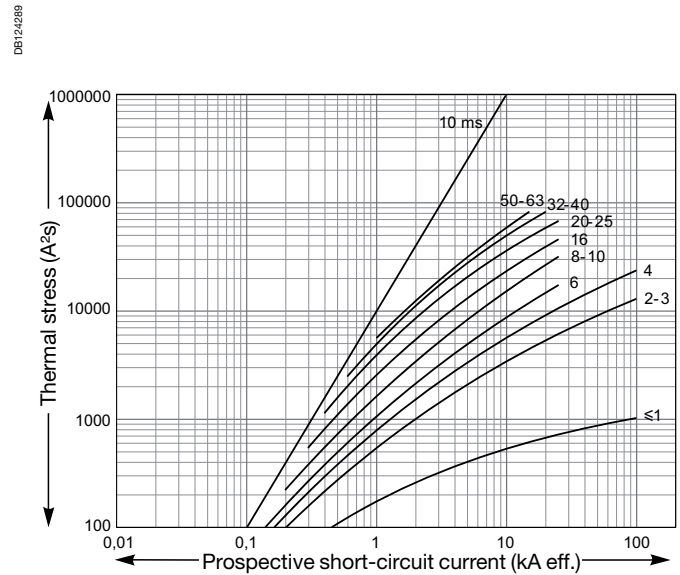
iC60L

1P / 2P / 3P / 4P

Peak current



Thermal stress

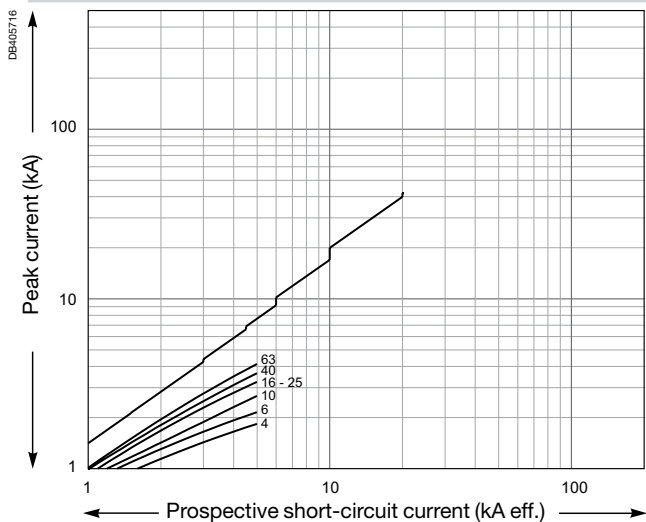


Limitation curves for network
 Ue: 380-415 V AC (Ph/N 220-240 V AC)

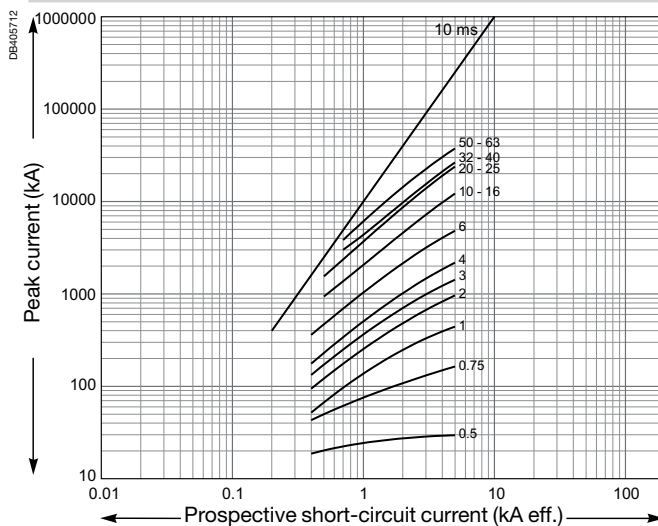
C60a

1P / 2P / 3P / 3P+N / 4P

Peak current



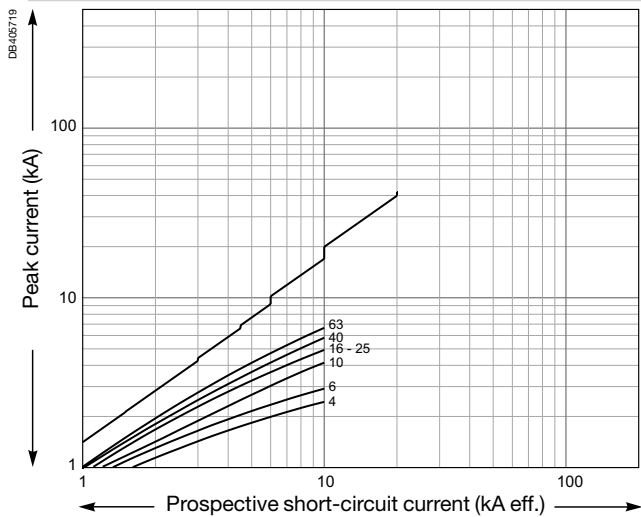
Thermal stress



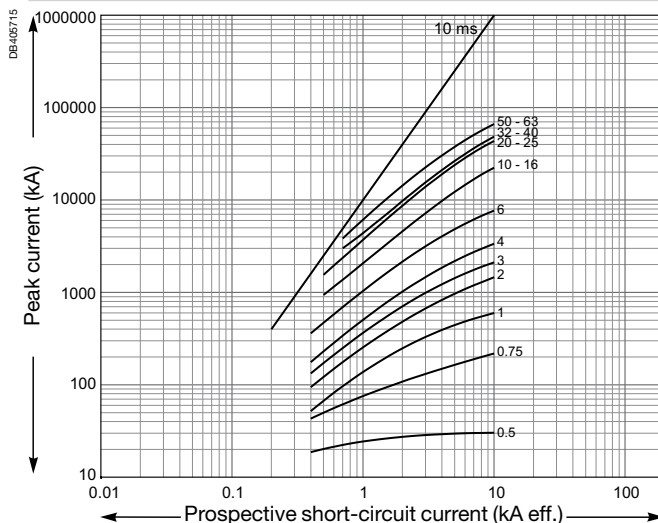
C60N

1P / 1P+N / 2P / 3P / 3P+N / 4P

Peak current



Thermal stress

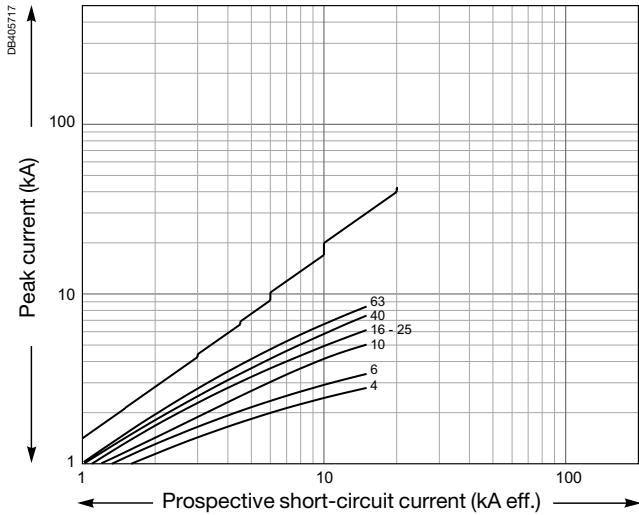


Limitation curves for network
 Ue: 380-415 V AC (Ph/N 220-240 V AC)

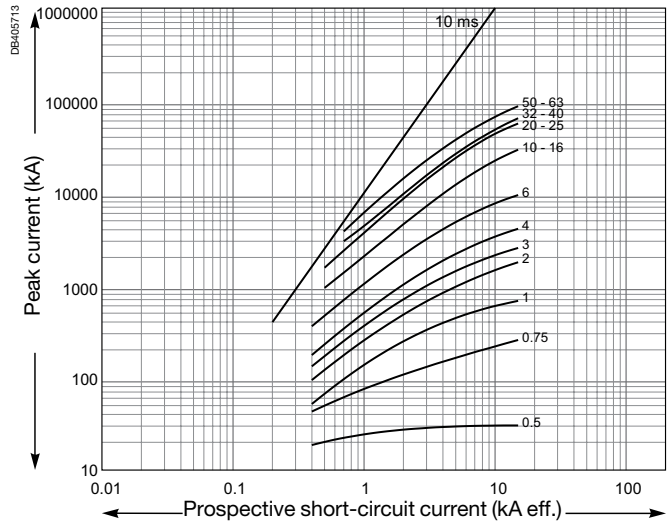
iC60H

1P / 1P+N / 2P / 3P / 3P+N / 4P

Peak current



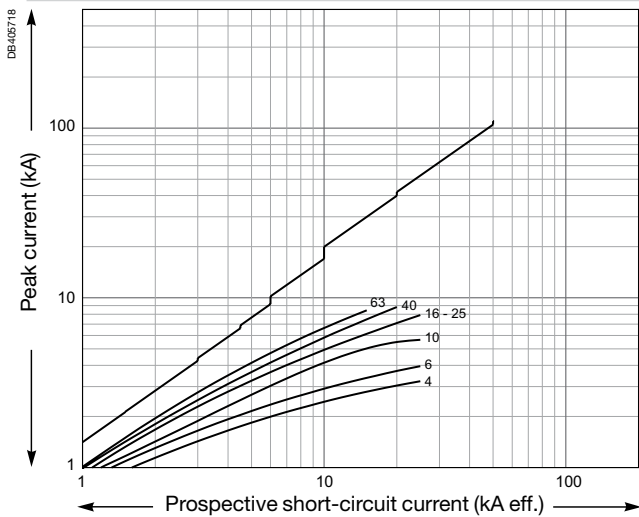
Thermal stress



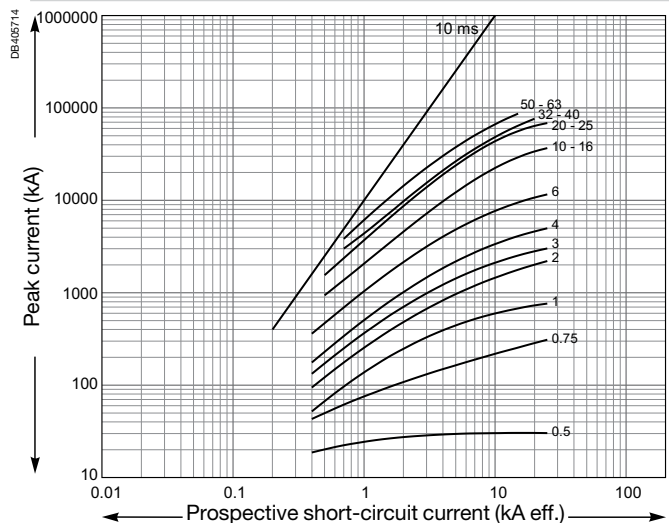
C60L

1P / 2P / 3P / 4P

Peak current



Thermal stress

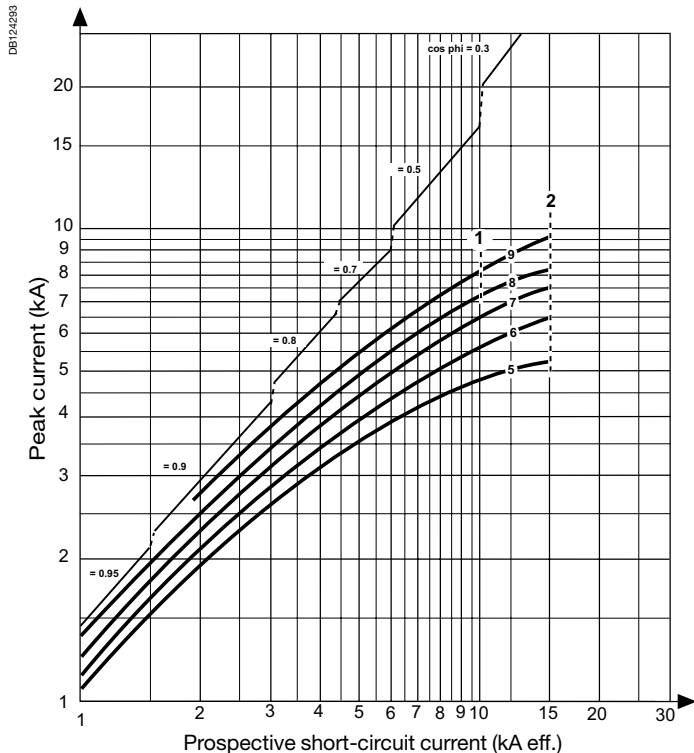


Limitation curves for network
 U_e: 380-415 V AC (Ph/N 220-240 V AC)

C120N, H

1P / 2P / 3P / 4P

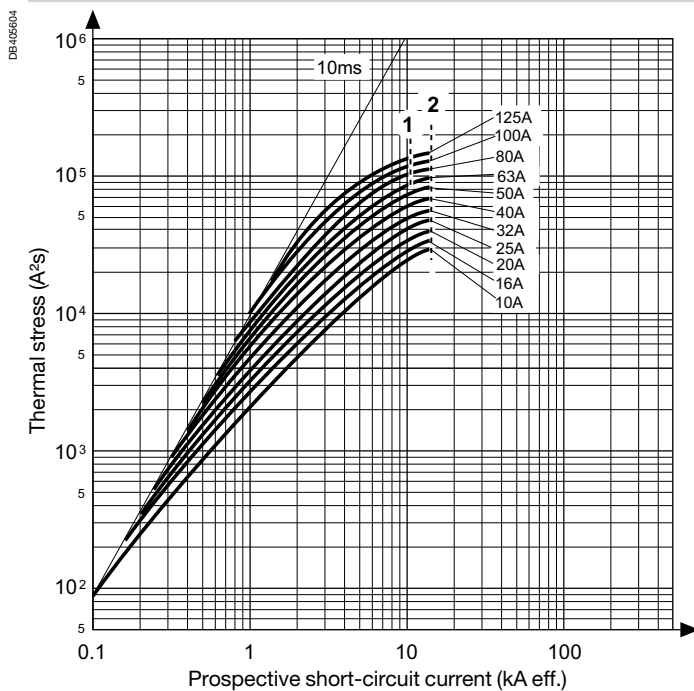
Peak current



■ 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:

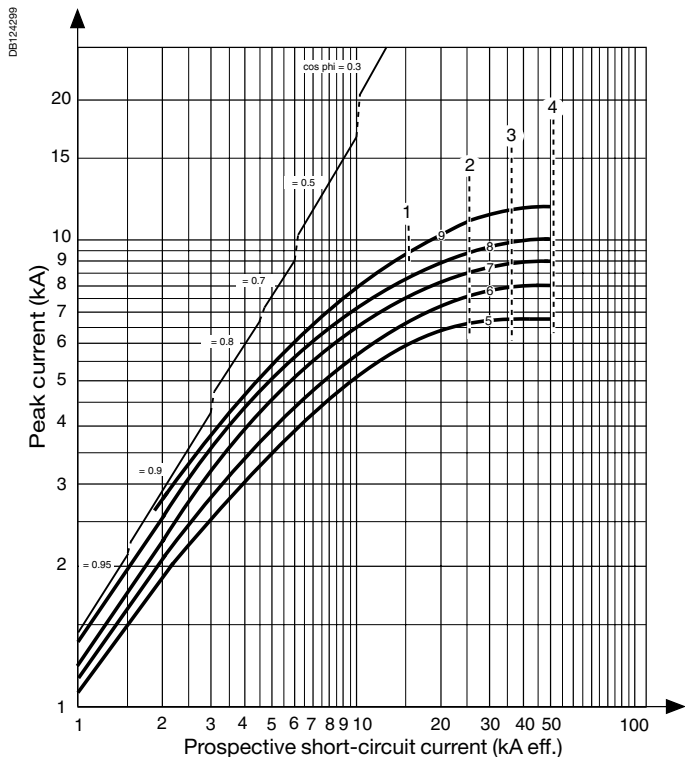
- 1: C120N
- 2: iC120H

Limitation curves for network
 U_e: 380-415 V AC (Ph/N 220-240 V AC)

NG125a, N, H, L

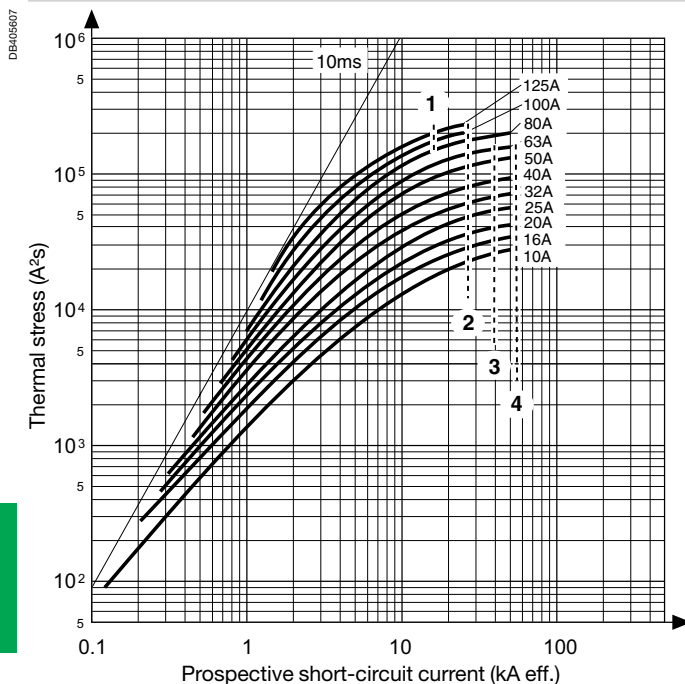
1P / 2P / 3P / 4P

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



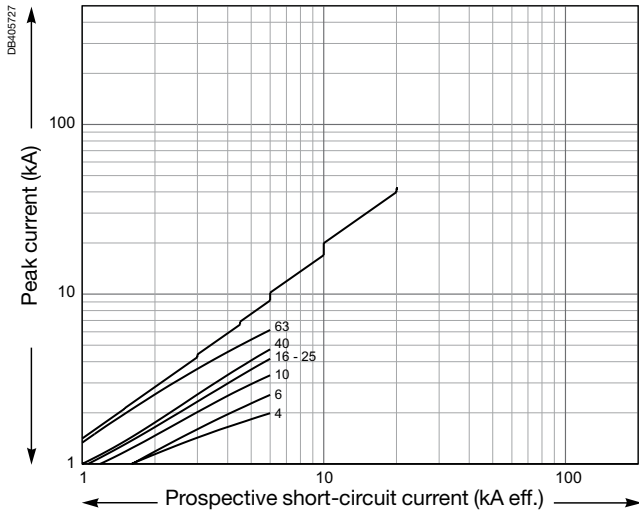
- Circuit breaker type in accordance with the mark:
- 1: NG125a 80-100-125 A
- 2: NG125N
- 3: NG125H
- 4: NG125L

Limitation curves for network
U_e: 440 V AC

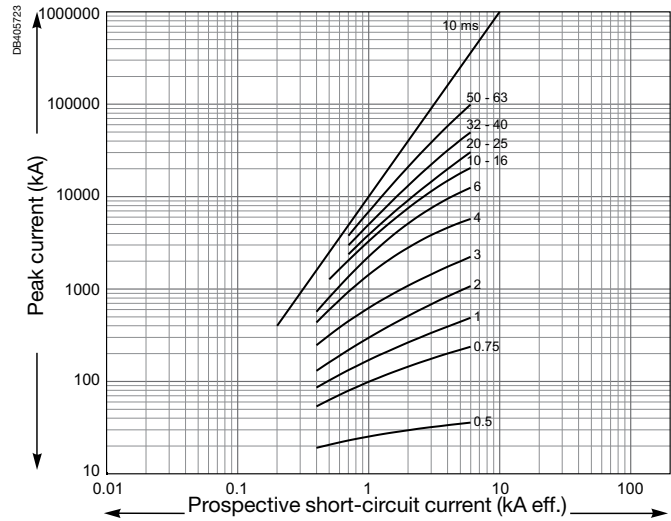
C60N

2P / 3P / 4P

Peak current



Thermal stress

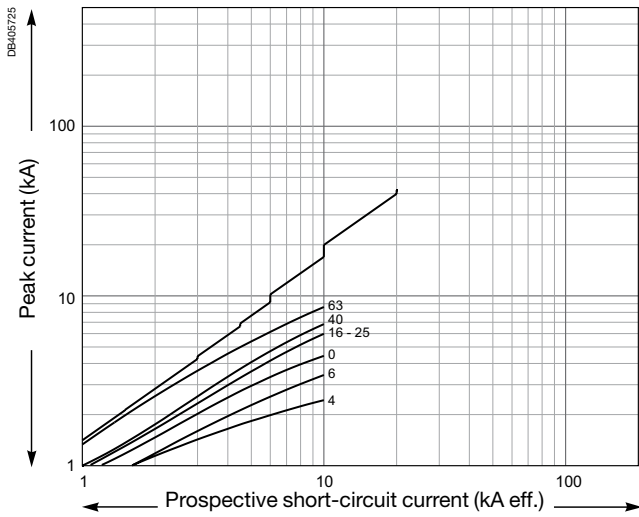


Limitation curves for network
U_e: 440 V AC

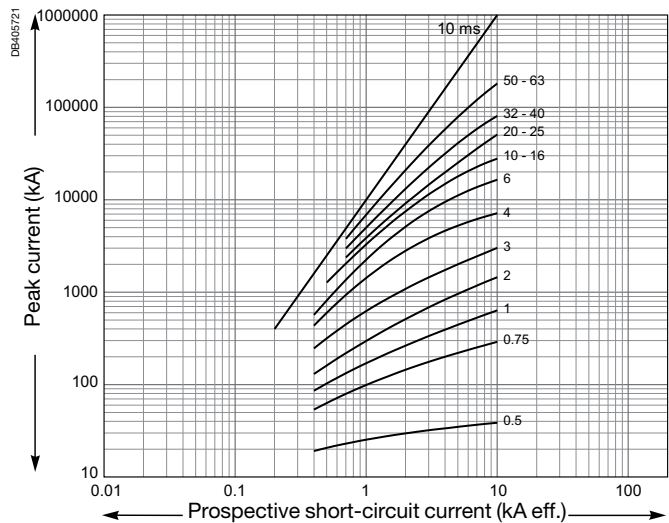
iC60H

2P / 3P / 4P

Peak current



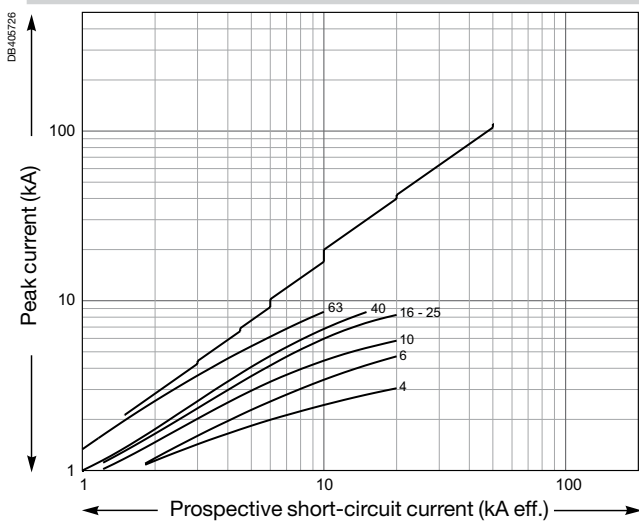
Thermal stress



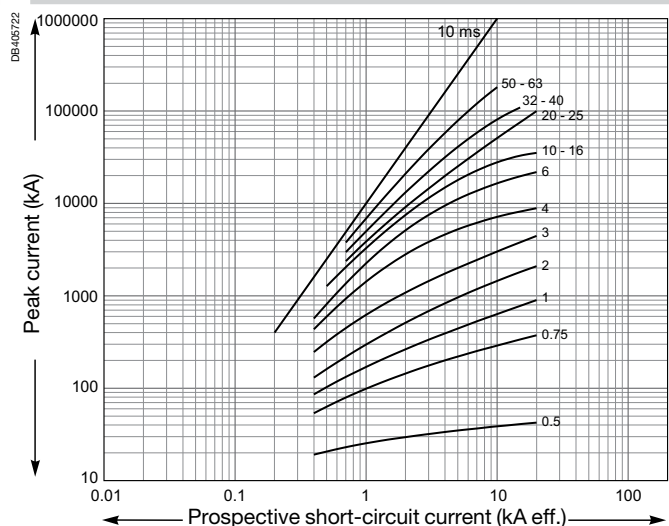
C60L

2P / 3P / 4P

Peak current



Thermal stress

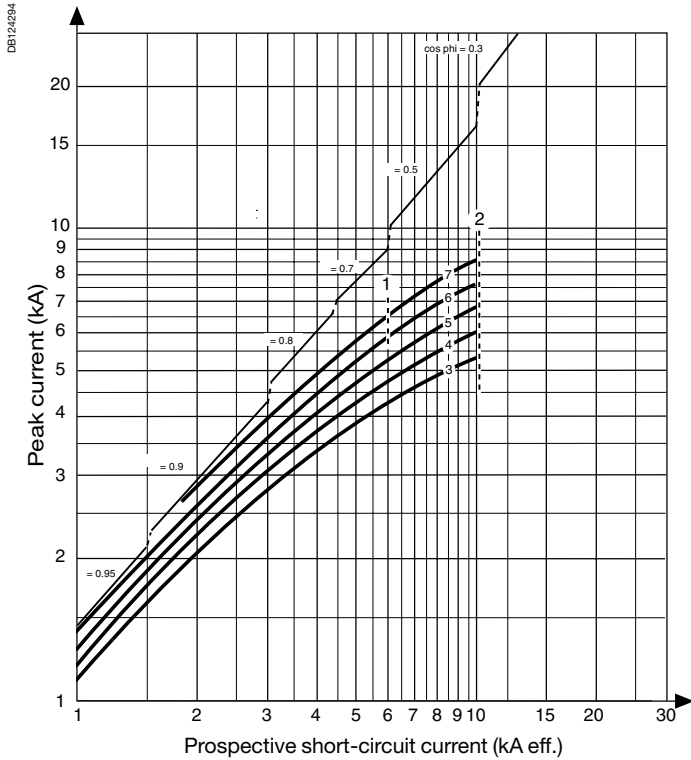


Limitation curves for network
Ue: 440 V AC

C120N, H

2P / 3P / 4P

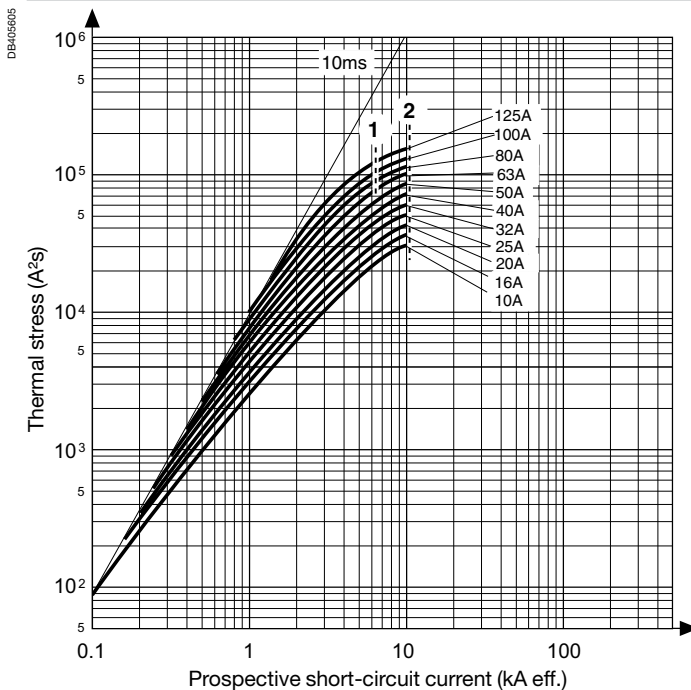
Peak current



■ 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

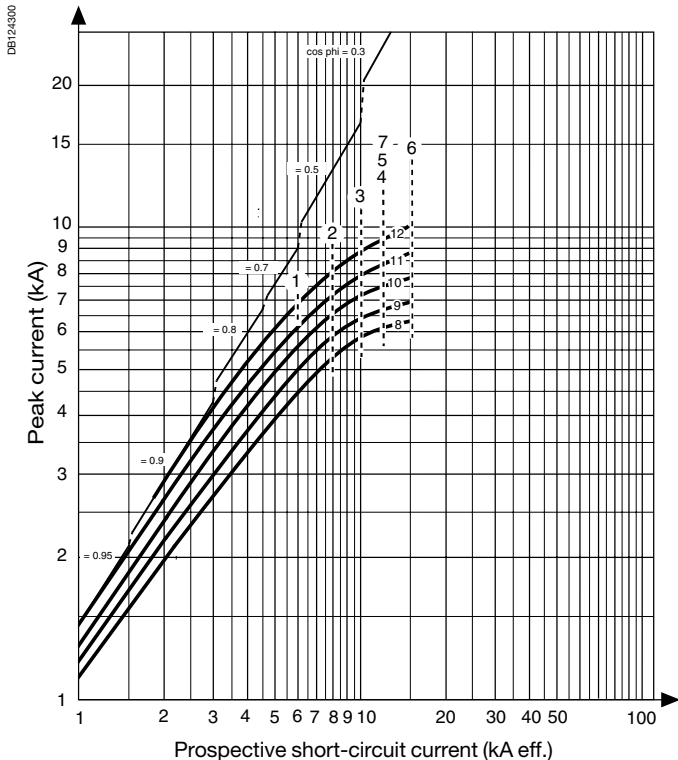
Limitation curves for network

U_e: 550 V AC

NG125a, N, H, L

2P / 3P / 4P

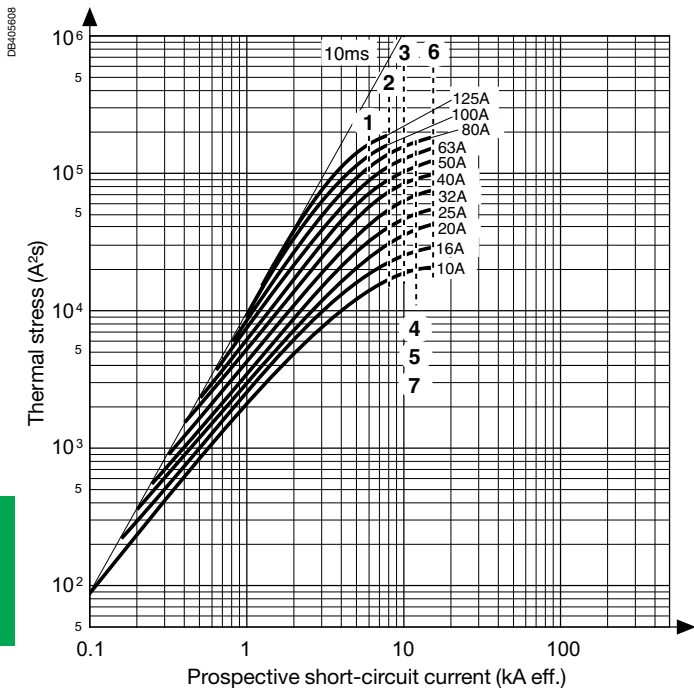
Peak current



■ 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:

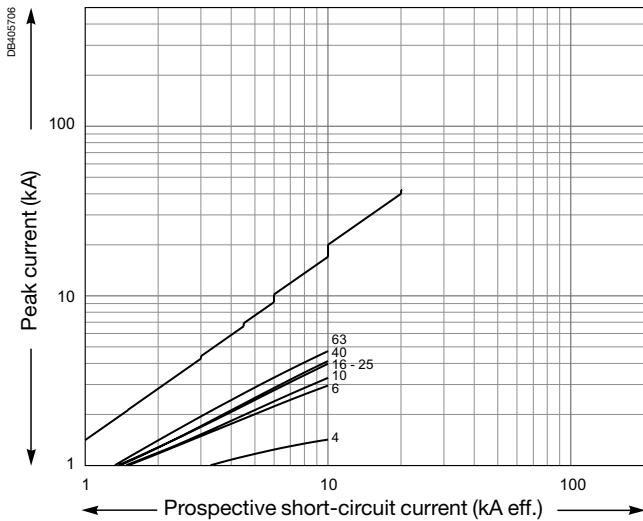
- 1: NG125a 3, 4P
- 2: NG125N 2, 3, 4P
- 3: NG125H 3, 4P
- 4-5: NG125H 2P/NG125L 3, 4P
- 6: NG125L 2P
- 7: NG125LMA 2, 3, 4P

Limitation curves for network
 U_e: 220-240 V AC (Ph/N 110-130 V AC)

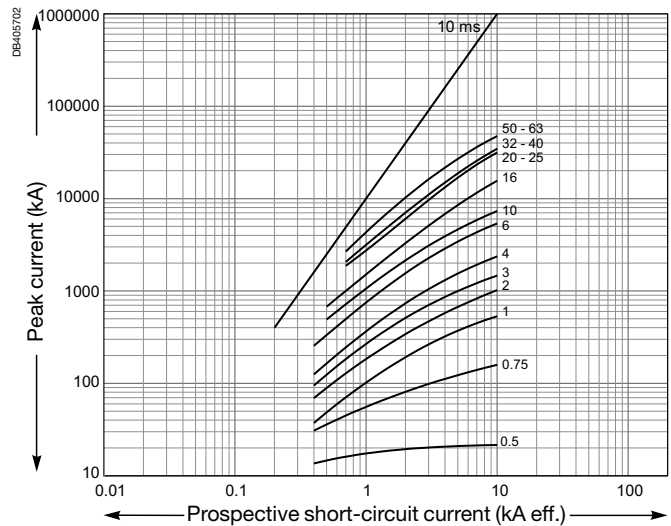
C60a

1P / 2P / 3P / 3P+N / 4P

Peak current



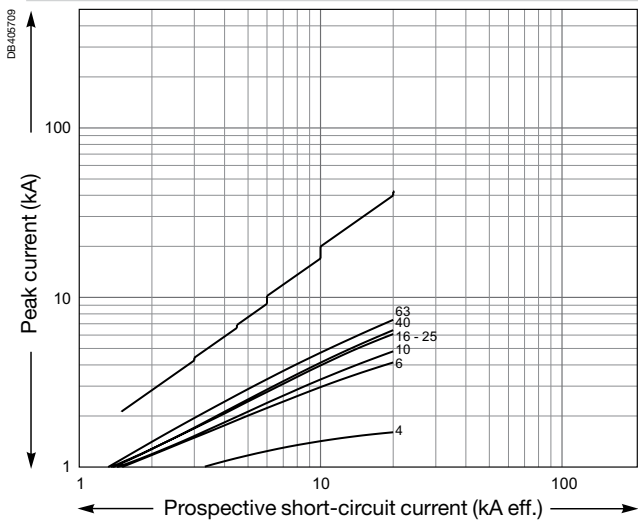
Thermal stress



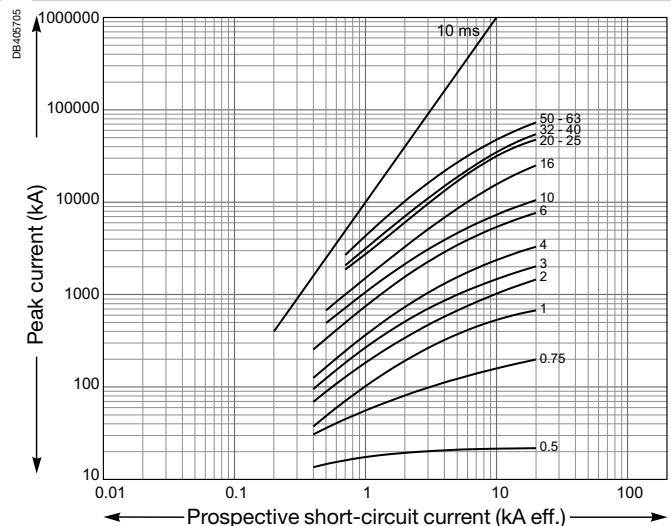
C60N

1P / 1P+N / 2P / 3P / 3P+N / 4P

Peak current



Thermal stress

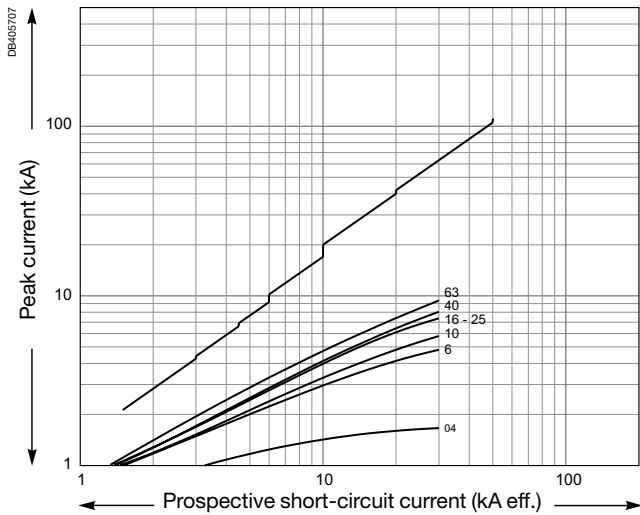


Limitation curves for network
 U_e: 220-240 V AC (Ph/N 110-130 V AC)

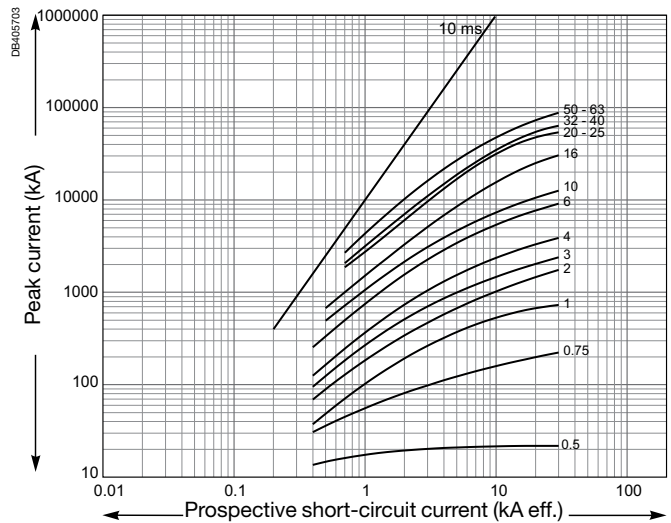
iC60H

1P / 1P+N / 2P / 3P / 3P+N / 4P

Peak current



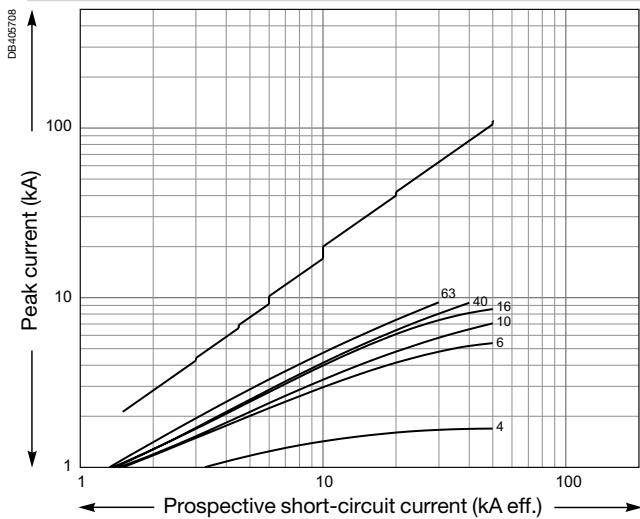
Thermal stress



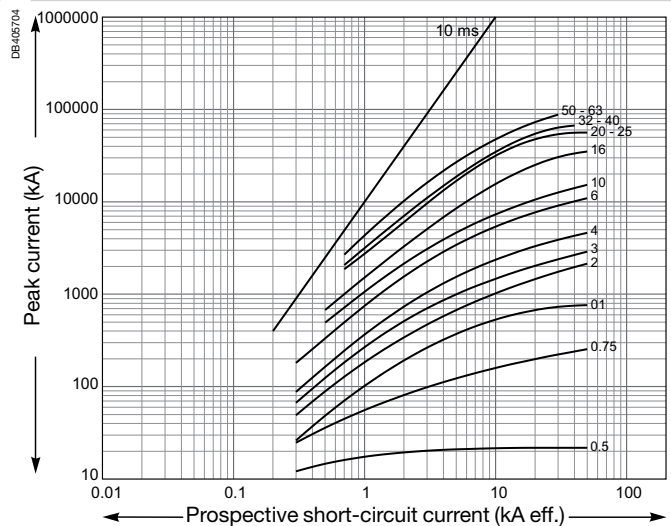
C60L

1P / 2P / 3P / 4P

Peak current



Thermal stress



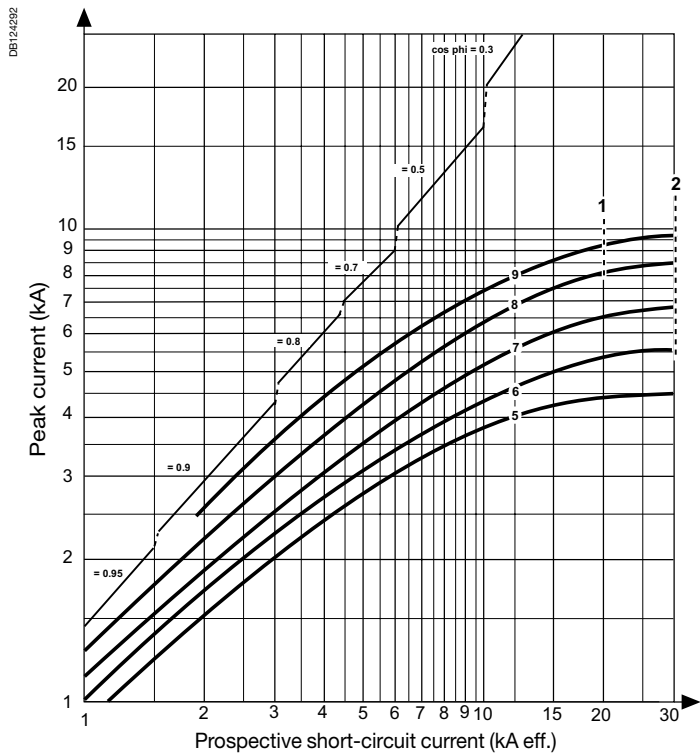
Limitation curves for network

U_e: 220-240 V AC (Ph/N 110-130 V AC)

C120N, H

1P / 2P / 3P / 4P

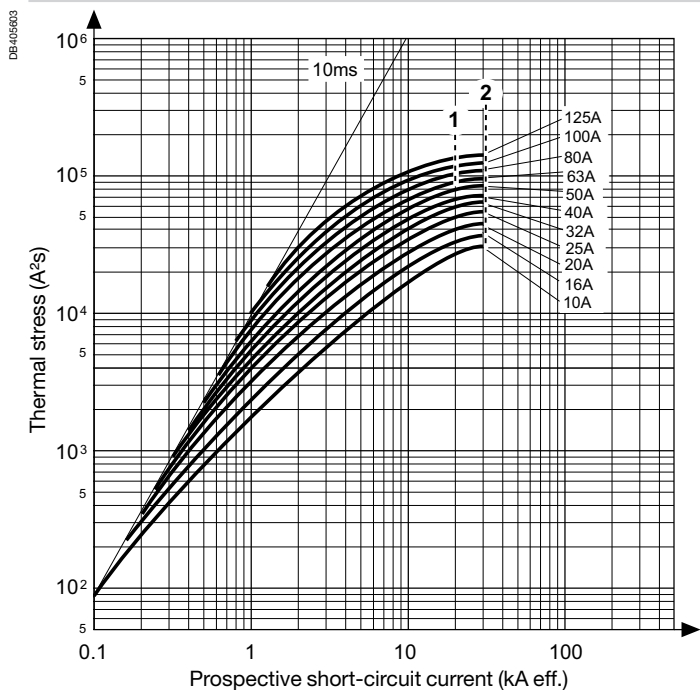
Peak current



■ 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:

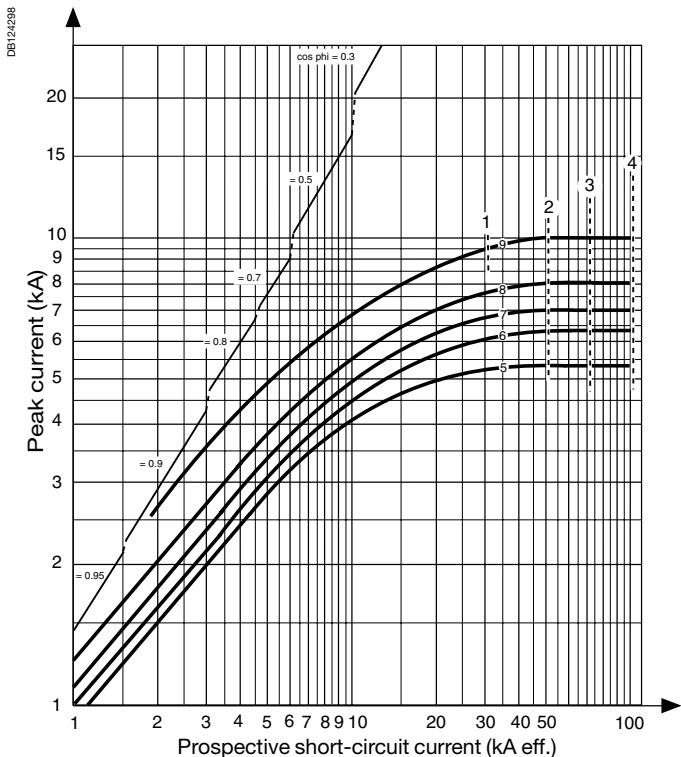
- 1: C120N
- 2: iC120H

Limitation curves for network
 Ue: 220-240 V AC (Ph/N 110-130 V AC)

NG125a, N, H, L

1P / 2P / 3P / 4P

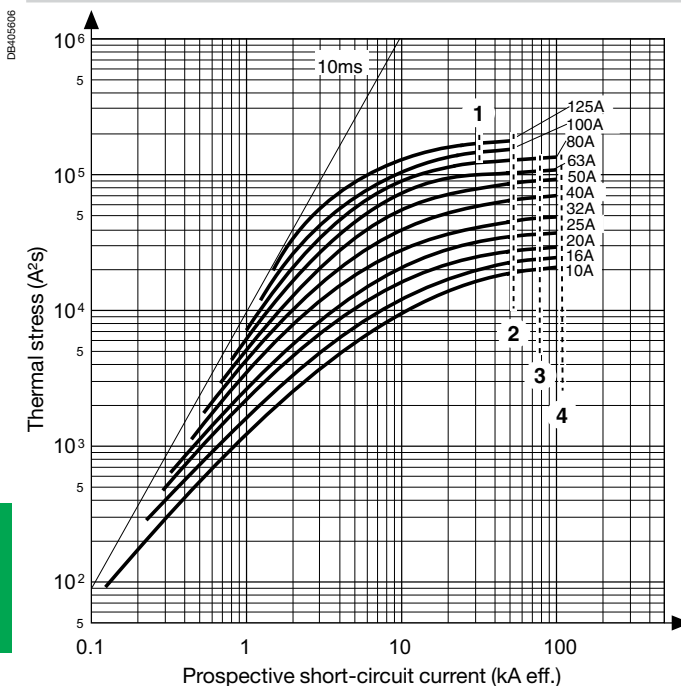
Peak current



■ 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:

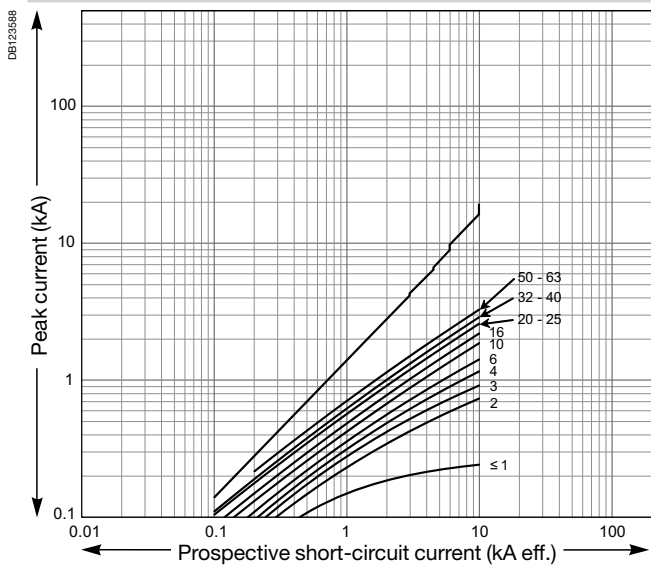
- 1: NG125a 80-100-125 A
- 2: NG125N
- 3: NG125H
- 4: NG125L

Limitation curves for direct current network

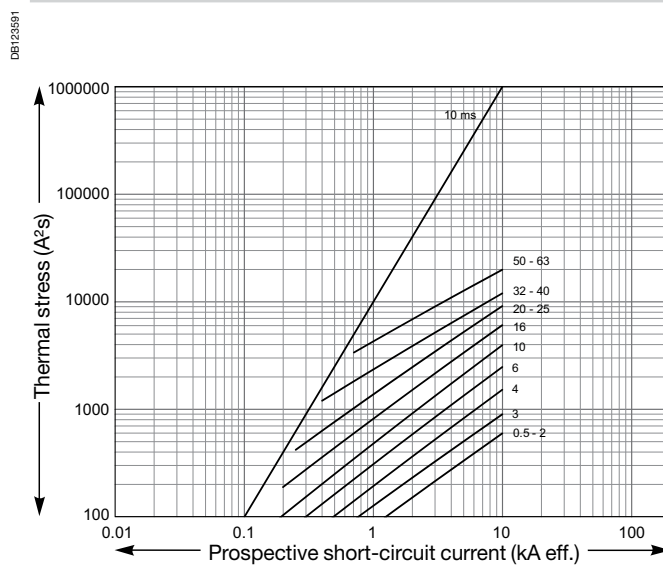
C60H-DC curve C

1P (220 V) - 2P (440 V)

Peak current



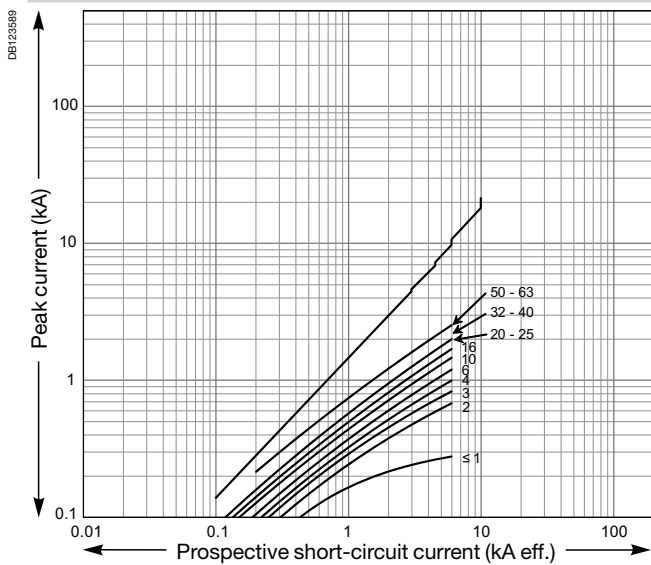
Thermal stress



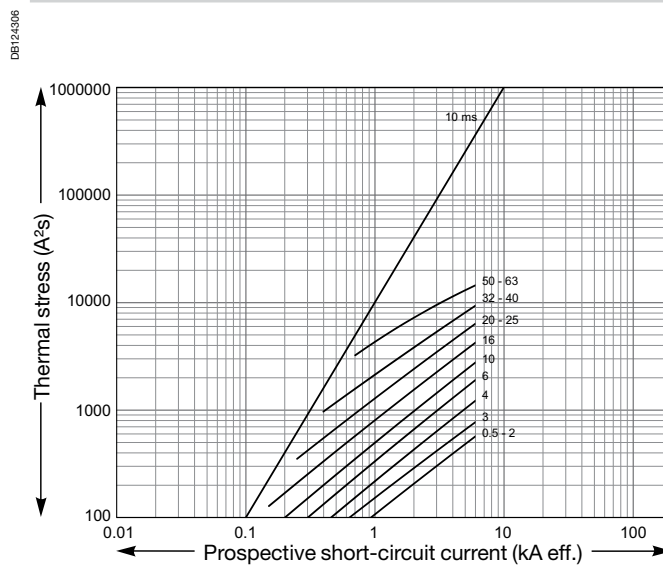
C60H-DC curve C

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.

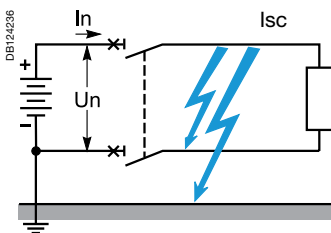
- Communication or measurement network:
 - 48 V DC switched telephone network,
 - 4-20 mA current loop.
- Electrical supply for industrial PLCs:
 - PLCs and peripheral devices (24 or 48 V DC).
- Auxiliary uninterruptible direct current power supply:
 - relays or electronic protection units for MV cubicles,
 - 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 |
| | | | |
| | | | |
| 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 |

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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

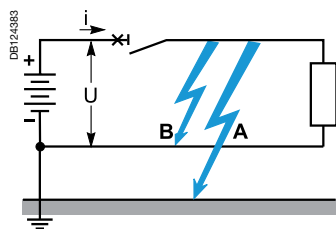
The performance levels shown in the tables below correspond to the most critical faults according to the network configuration.

- Breaking on one pole.
- Fault between polarity and earth (Fault A).

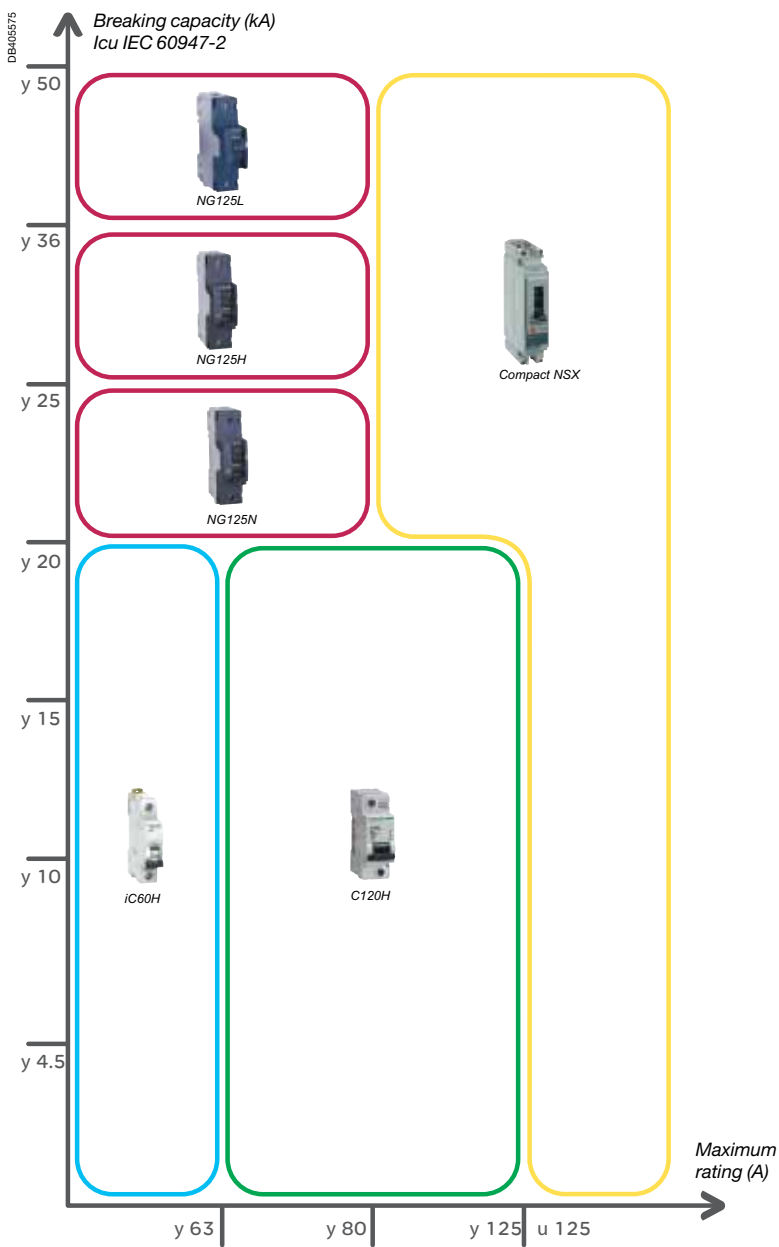
Standard solution depending on the network and the requirements of the installation (In / Isc)

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.



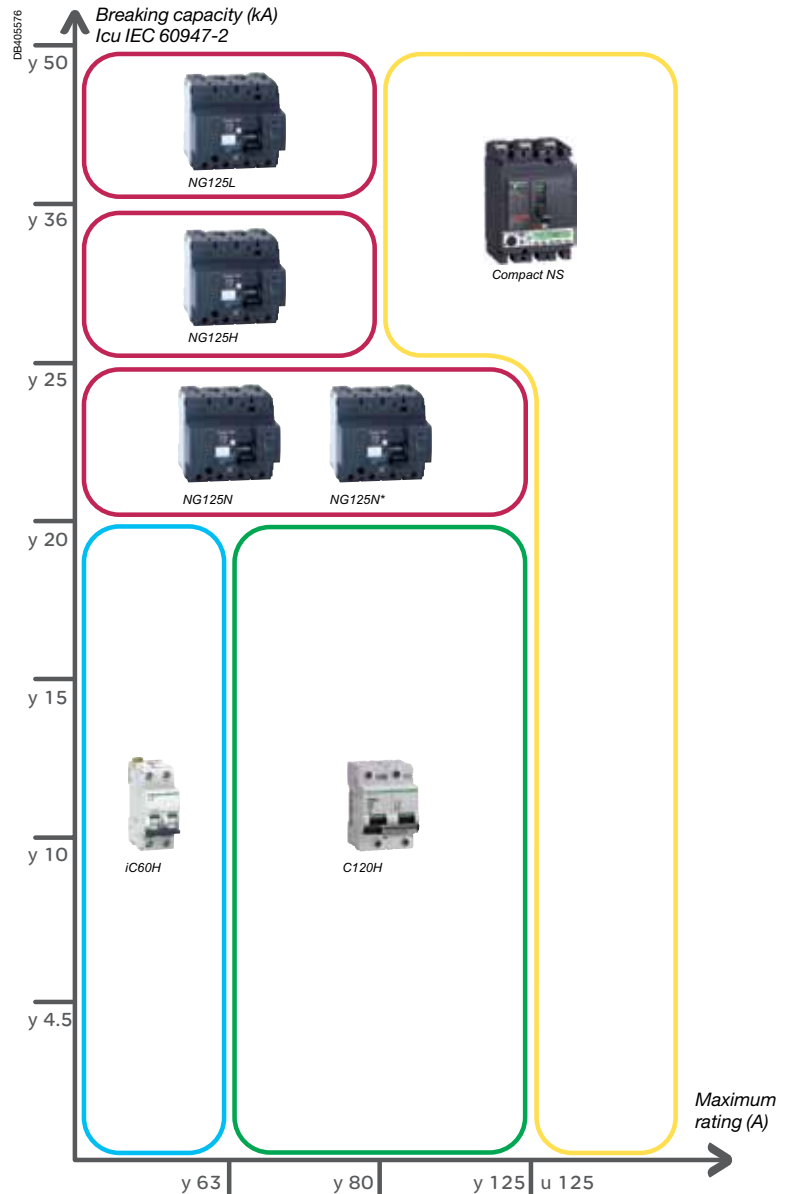
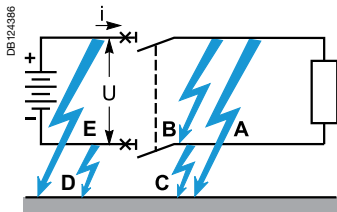
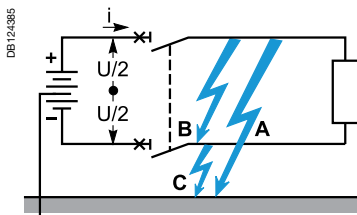
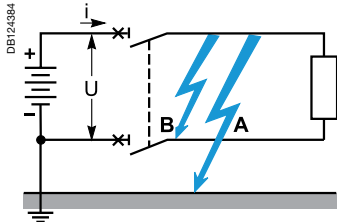
1 pole isolation solution (1P)



Circuit breakers for direct current applications (cont.)

24 V - 48 V direct current applications

2 poles isolation solution (2P)

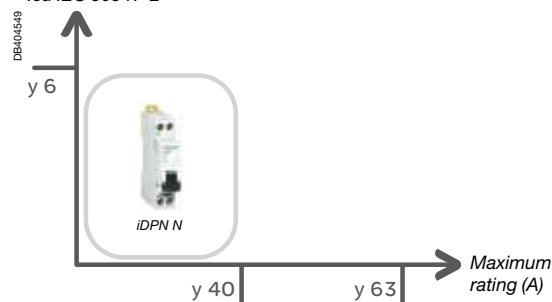
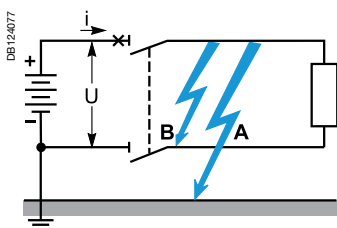


(*) 3P NG125N connected in a two-pole configuration to reach 125 A (1P / 2P NG125 has a maximum rating of 80 A).

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)
Icu IEC 60947-2



(*) iC60a breaking capacity Icu = 10 kA.

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

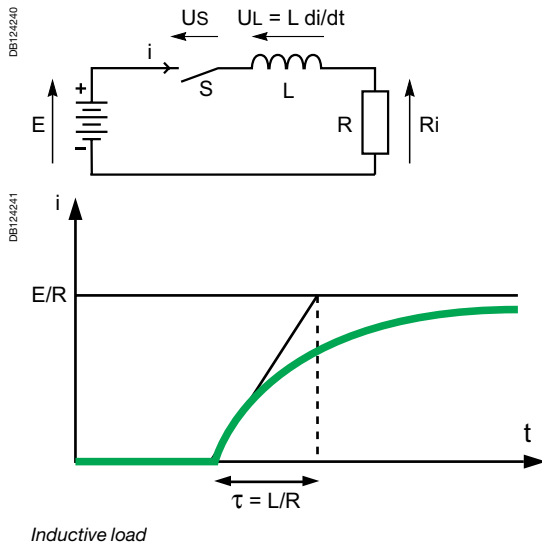
Inductive load

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.

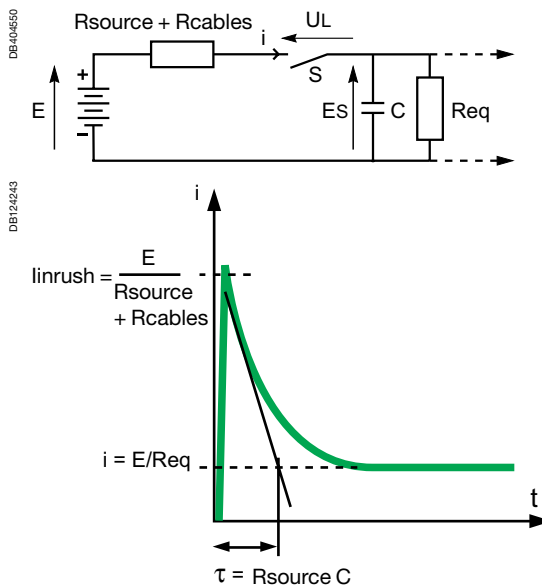


Inductive load

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.

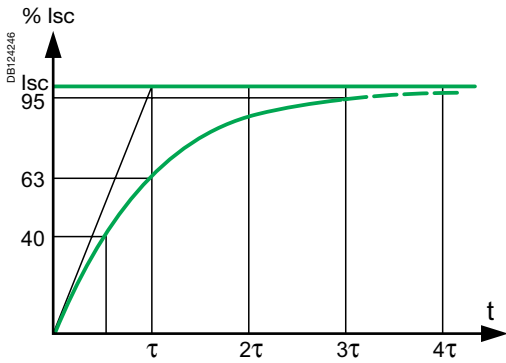
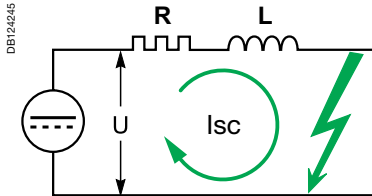
The equation that governs the current in this loop is: $U = Ri + Ldi/dt$.

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"> ■ Photovoltaic applications |
| 5 ms | Fast short-circuit established | <ul style="list-style-type: none"> ■ Resistive or slightly inductive circuits: <ul style="list-style-type: none"> <input type="checkbox"/> indicator light <input type="checkbox"/> trip units (MN, MX) <input type="checkbox"/> motor armatures <input type="checkbox"/> battery charger/uninterruptible power supply (UPS) ■ Capacitive circuits: electronic controller |
| 15 ms | Standardised value used in standard IEC 60947-2 | <ul style="list-style-type: none"> ■ Inductive circuits: <ul style="list-style-type: none"> <input type="checkbox"/> electromagnetic coil <input type="checkbox"/> contactor coil <input type="checkbox"/> motor inductor |
| 30 ms | Slower short-circuit established | <ul style="list-style-type: none"> ■ Highly inductive circuits: <ul style="list-style-type: none"> <input type="checkbox"/> electromagnetic coil <input type="checkbox"/> contactor coil <input type="checkbox"/> motor inductor |

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.)

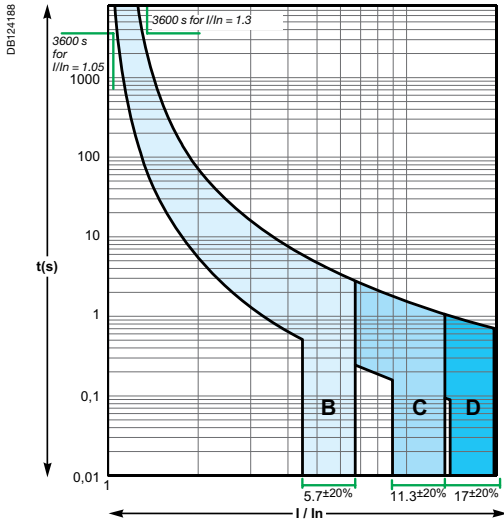
24 V - 48 V direct current applications

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"> Resistive loads Loads with electronic circuits |
| B | 3.2 to 4.8 In | 4.5 to 6.8 In | <ul style="list-style-type: none"> Motor inductor: starting current 2 to 4 In Battery charger/Uninterruptible power supply (UPS) |
| C | 6.4 to 9.6 In | 9.05 to 13.6 In | <ul style="list-style-type: none"> Electronic controller |
| D et K | 9.6 to 14.4 In | 13.6 to 20.4 In | <ul style="list-style-type: none"> Electromagnetic coil: inrush overvoltage 10 to 20 Un LV relay Trip units (MN, MX) Indicator light PLCs (industrial programmable logic controllers) |

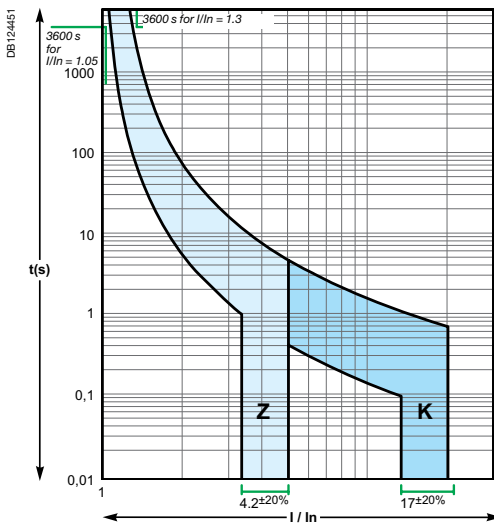


Curves B, C, D, ratings 6 A to 63 A

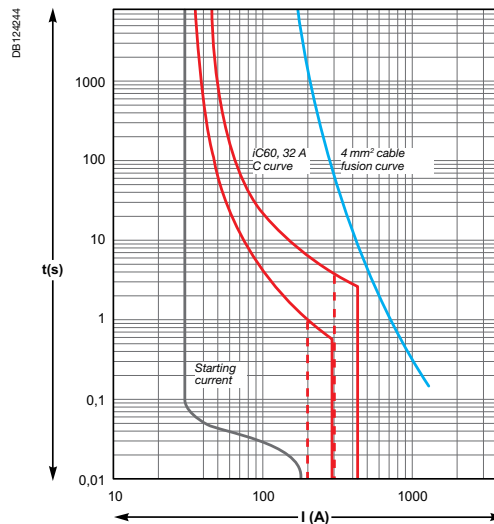
The figures opposite are iC60 tripping curves showing DC magnetic thresholds and normative limits

Example

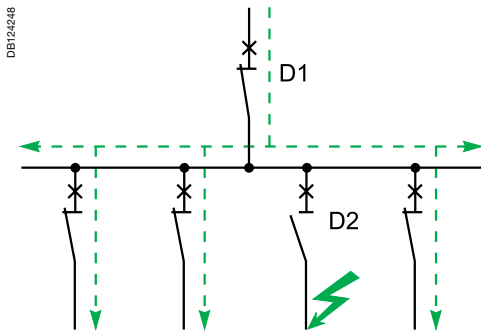
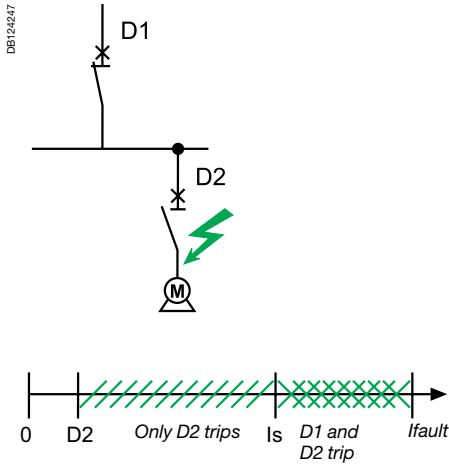
Protection of the 4 mm² cable supplying a load at In = 30 A with a 32 A rating and a tripping curve that allows the starting current for this load to be absorbed.



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 | | | 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 | | | 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

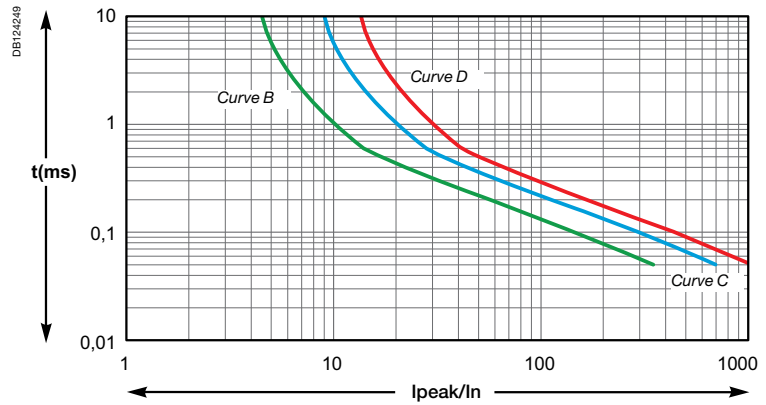
As seen above, the circuit-breaker characteristics chosen depend on the type of load downstream of the installation.

The rating depends on the size of the cables to be protected and the curves depend on the load inrush current.

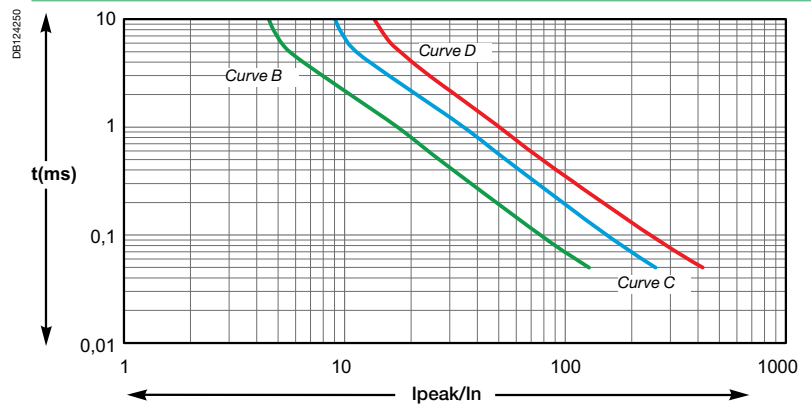
Product selection according to the load inrush current

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 μ s to 10 ms).

iC60



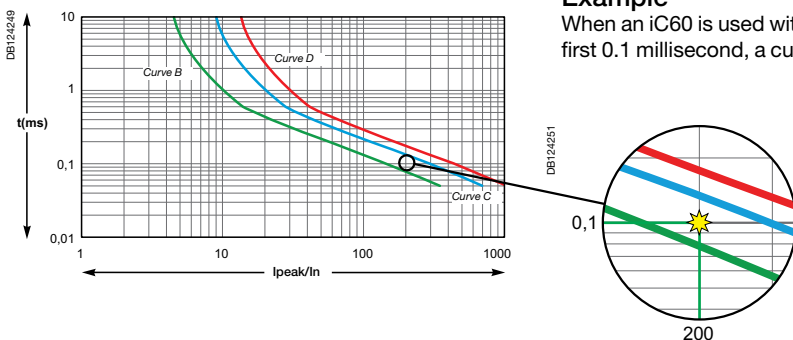
NG125 / C120



This information allows us to select the most appropriate product, according to the load specifications: curve and rating.

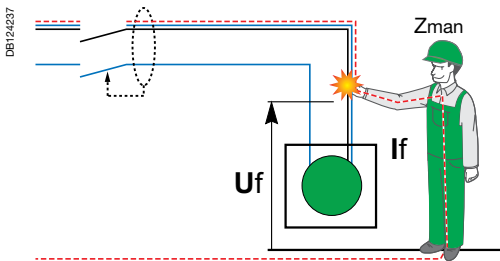
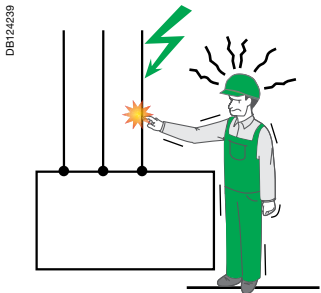
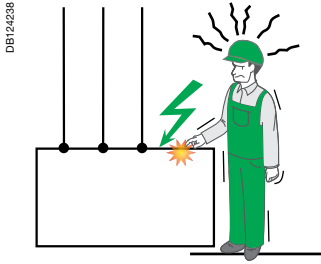
Example

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 |
| | | | |
| | | | |

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.

Examples of applications

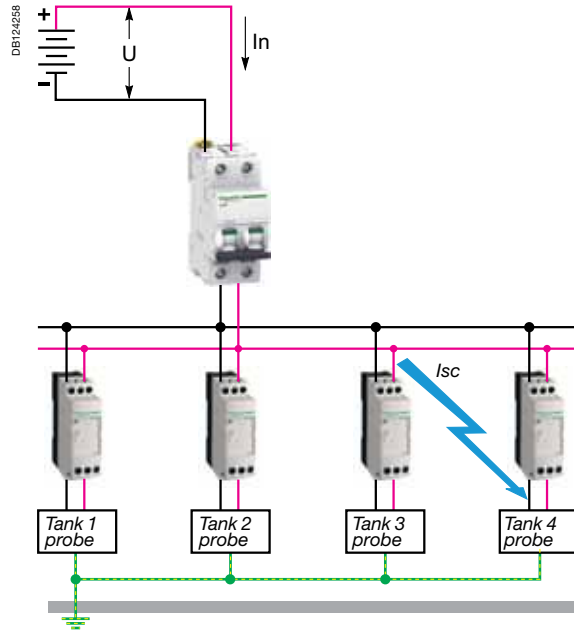
Industrial applications

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

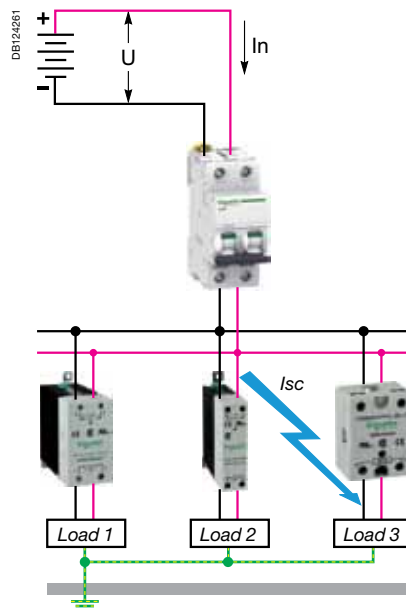


Control of industrial process measurement by 12/24/48 V DC control

- 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.)

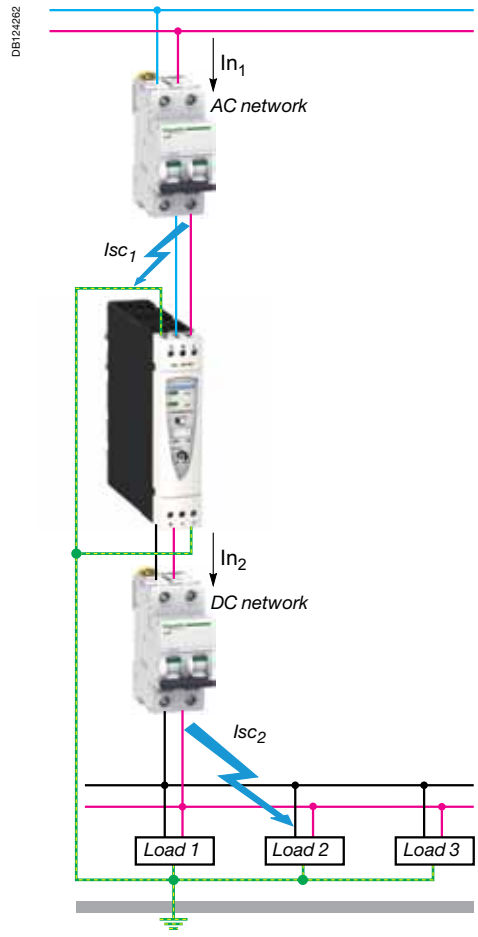
24 V - 48 V direct current applications

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

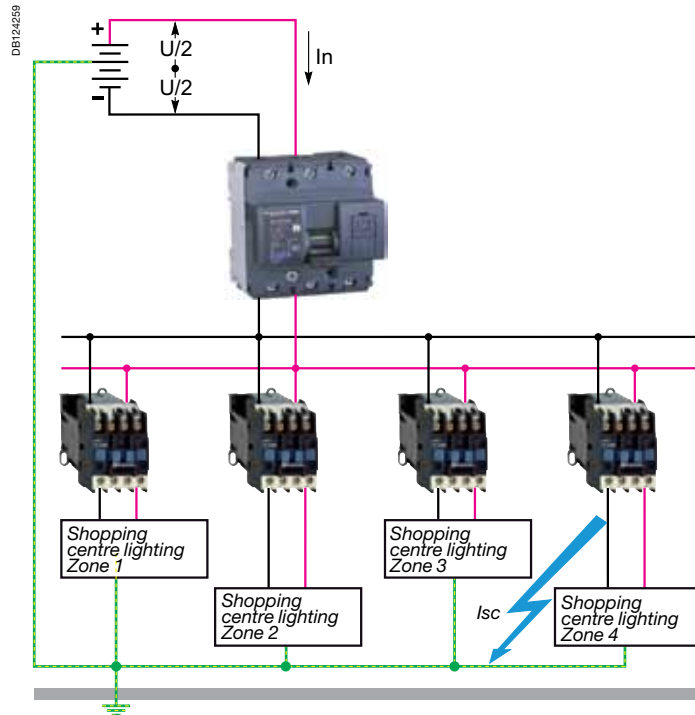
Tertiary applications

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

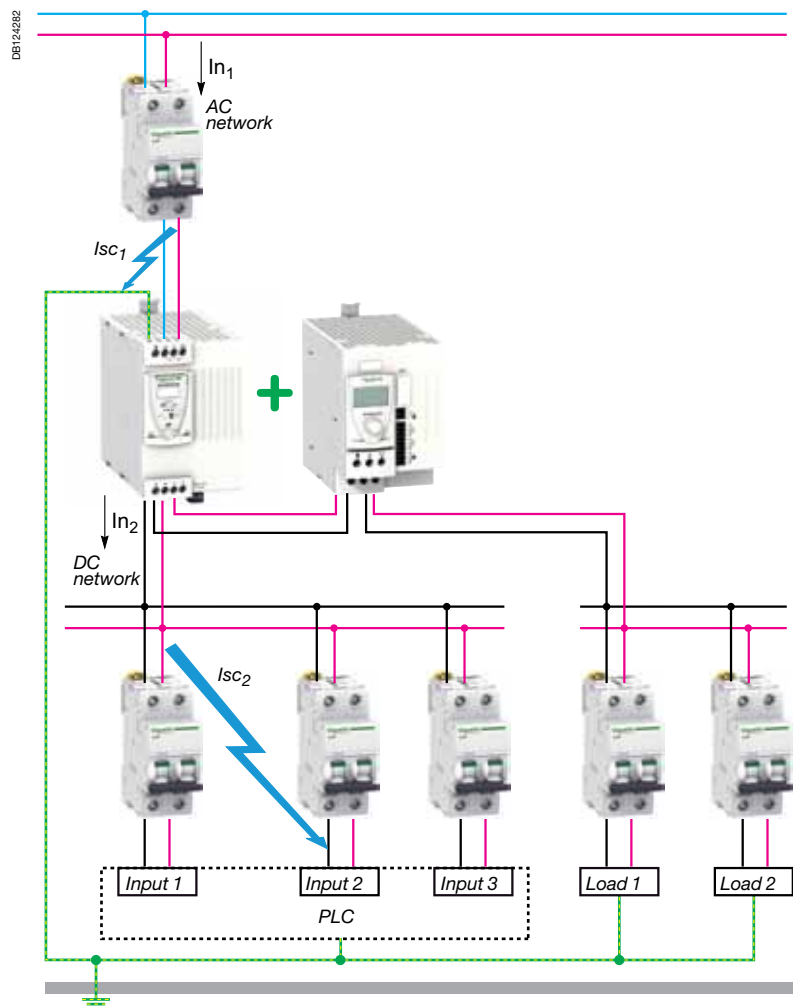
- Earthed network:
- $I_{sc1} = 10 \text{ kA} / I_n = 40 \text{ A}$,
- $I_{sc2} = 10 \text{ kA} / I_n = 2/4/6 \text{ A}$.

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:

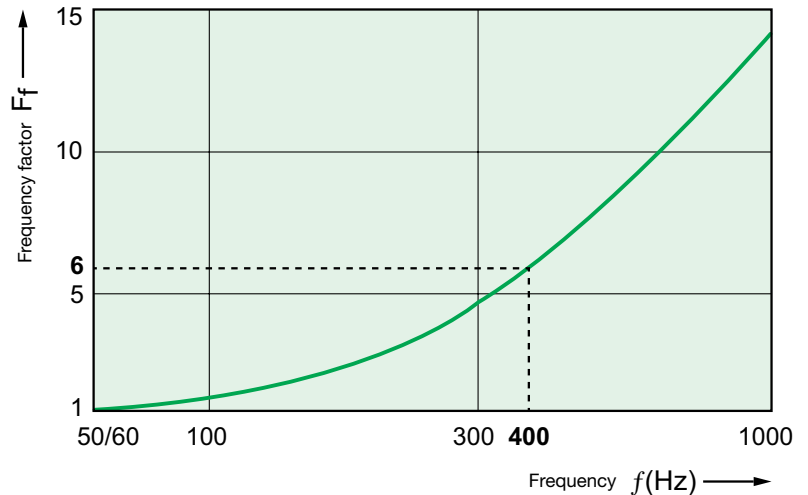
- do not take any thermal derating into account (In at 400 Hz is equivalent to In at 50 Hz).
- increase the magnetic tripping threshold, according to the table below.
- check that the short-circuit current on the installation is less than the breaking capacity of the circuit breaker. The breaking capacity 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_{sc} does not exceed four times the rated current.

| Circuit breaker | Curve | Magnetic trip thresholds | | Tolerance |
|-----------------|--|--------------------------|---------------------|-----------|
| | | 50 Hz | 400 Hz | |
| iDPN | B | 4 I _n | 6 I _n | ± 20 % |
| | C | 8 I _n | 12 I _n | |
| | D | 12 I _n | 18 I _n | |
| iC60 | B | 4 I _n | 5.6 I _n | |
| | C | 8 I _n | 11.2 I _n | |
| | D | 12 I _n | 16.8 I _n | |
| C60 | B | 4 I _n | 5.1 I _n | |
| | C | 8.5 I _n | 10.9 I _n | |
| | D | 12 I _n | 15.4 I _n | |
| C120 | The NG125 and C120 circuit breakers are not suitable for networks of 400 Hz frequency. Refer to the Compact NSX offer. | | | |
| NG125 | | | | |

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 |

Motor starters

In general miniature circuit breakers can give only short circuit protection to motor loads due to the high starting currents which may be encountered; typically 3 - 12 times full load current (FLC).

Assumptions

The tables give recommended MCB ratings for motors up to 37kW based on the following assumptions:

■ Direct-on-line starting

- Starting current = 7 x FLC
- Run up time = 6seconds, motors <3kW
- 10 seconds, motors < 22kW
- Running currents = average values only (individual manufacturer's figures will vary), four pole motors, i.e. speed approx. 1500rpm

For higher inertia loads, i.e. hoists or fans, run up times may be considerably longer than those assumed above. The rating of the MCB must take account of the greater run up time and starting current. The required MCB rating can be determined by reference to time/current curves (consult us).

■ Star/delta starting

Since, during the changeover from star to delta, a high current surge in the order of DOL values may be met, the MCB rating selected should be the same as that recommended for DOL starting.

Table 1 - 3 phase 415Vac D.O.L. starting

| kW | hHp | Running I | Recommended MCB | | |
|------|-------|-----------|-----------------|-------|-------|
| | | | C60HB | C60HC | C60HD |
| 0.12 | 0.166 | 0.65 | 2 | 2 | 1 |
| 0.18 | 0.25 | 0.7 | 2 | 2 | 1 |
| 0.25 | 0.33 | 0.87 | 4 | 2 | 1 |
| 0.37 | 0.5 | 1.35 | 4 | 4 | 2 |
| 0.55 | 0.75 | 1.55 | 4 | 4 | 2 |
| 0.75 | 1.0 | 1.93 | 6 | 4 | 4 |
| 1.1 | 1.5 | 2.5 | 6 | 6 | 4 |
| 1.5 | 2 | 3.5 | 10 | 10 | 6 |
| 2.2 | 3 | 4.8 | 16 | 10 | 10 |
| 3 | 4 | 6.4 | 20 | 20 | 10 |
| 3.75 | 5 | 7.8 | 25 | 25 | 16 |
| 4 | 5.5 | 8.1 | 25 | 25 | 16 |
| 5.5 | 7.5 | 11 | 32 | 32 | 16 |
| 7.5 | 10 | 14.4 | 50 | 50 | 20 |
| 9.33 | 12.5 | 17.3 | 63 | 50 | 20 |
| 11 | 15 | 21 | 63 | 63 | 25 |
| 13 | 17.5 | 25 | - | - | 32 |
| 15 | 20 | 28 | - | - | 40 |
| 18.5 | 25 | 35 | - | - | 50 |
| 22 | 30 | 40 | - | - | 50 |
| 30 | 40 | 54 | - | - | 63 |
| 37 | 50 | 65.5 | - | - | - |

Table 2 - 1 phase 240Vac D.O.L. starting

| kW | Hp | Running I | C60HB | C60HC | C60HD |
|------|-------|-----------|-------|-------|-------|
| 0.12 | 0.166 | 0.95 | 4 | 2 | 1 |
| 0.18 | 0.25 | 1.5 | 4 | 4 | 2 |
| 0.25 | 0.33 | 1.7 | 6 | 4 | 2 |
| 0.37 | 0.5 | 3 | 10 | 6 | 4 |
| 0.55 | 0.75 | 4.5 | 16 | 10 | 6 |
| 0.75 | 1 | 5.5 | 16 | 16 | 10 |
| 1.1 | 1.5 | 8.5 | 25 | 25 | 16 |
| 1.5 | 2 | 10.5 | 32 | 32 | 20 |
| 2.2 | 3 | 15.5 | 40 | 40 | 25 |
| 3 | 4 | 20 | 63 | 63 | 32 |
| 3.75 | 5 | 24 | - | 63 | 40 |
| 5.5 | 7.5 | 34 | - | - | 50 |
| 6.3 | 8.5 | 36.5 | - | - | 63 |
| 7.5 | 10 | 45 | - | - | 63 |
| 11 | 15 | 66.5 | - | - | - |

Transformers

High inrush currents are also produced when transformers are switched on, typically 10 - 15 times full load current.

Assumptions

The tables give recommended MCB ratings for single phase transformers up to 12500VA and three phase transformers up to 30000VA based on the following formula.

Table 3 - 3 phase transformers 415Vac supply

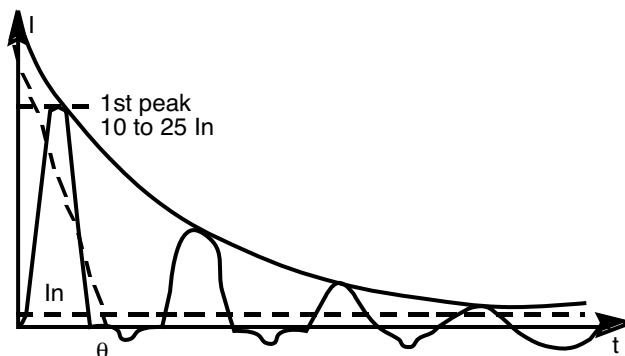
| VA | Primary In (A) | C60HB | C60HC | C60HD |
|-------|----------------|-------|-------|-------|
| 500 | 0.7 | 4 | 2 | 1 |
| 750 | 1.04 | 6 | 4 | 2 |
| 1000 | 1.39 | 10 | 6 | 4 |
| 2000 | 2.78 | 16 | 10 | 6 |
| 5000 | 6.95 | 40 | 25 | 16 |
| 10000 | 13.89 | - | 50 | 25 |
| 15000 | 20.84 | - | 63 | 32 |
| 20000 | 27.78 | - | - | 50 |
| 25000 | 34.73 | - | - | 63 |
| 30000 | 41.67 | - | - | 63 |

Table 4 - 1 phase transformers 240Vac supply

| VA | Primary In (A) | C60HB | C60HC | C60HD |
|-------|----------------|-------|-------|-------|
| 50 | 0.21 | 2 | - | - |
| 100 | 0.42 | 4 | 2 | 1 |
| 250 | 1.04 | 6 | 4 | 2 |
| 500 | 2.08 | 16 | 10 | 4 |
| 1000 | 4.17 | 25 | 16 | 10 |
| 2500 | 10.42 | 63 | 32 | 16 |
| 5000 | 20.84 | - | 63 | 32 |
| 10000 | 41.66 | - | - | 63 |
| 12500 | 52.08 | - | - | - |

Inrush currents

When LV/LV transformers are switched on, very high inrush currents are produced which must be taken into account when choosing overcurrent protection devices. The peak value of the first current wave often reaches 10 - 15 times the rated rms current of the transformer and may reach values of 20 - 25 times the rated current even for transformers rated less than 50kVA. This transient inrush current decays very quickly (in a few milliseconds).



Choice of motor supply cable size

When selecting the cable size the starting current of the motor and the permissible voltage drop must be taken into account. The cable must be capable of carrying a permanent service current at least equal to the sum of $I_n + I_s/3$ where:

I_n = rated current

I_s = starting current (4 - 8 I_n) depending on the motor.

Voltage drop

The permissible voltage drop from the start of the installation to the motor in question is 6% for public distribution systems. If the torque of the machine to be driven is low during starting it is only necessary to check the voltage drop for the rated current of the motor. If the starting torque is high (grinding mills, goods lifts, etc.) the voltage drop should be checked for the starting current.

P25M motor circuit breaker

This protects motors against overloads and short circuits. P25M type circuit breaker has on each pole a thermal release for protection against overloads and a magnetic release for protection against short circuits. For high short circuit currents use the limiter block, Ref. 21115. For ratings from 0.16A - 10A, 415V or from 0.16 - 18A, 240V; in this case the breaking capacity of the P25M circuit breaker is unlimited.

Applications

The P25M circuit breaker is particularly suitable for protecting **small machine tools** and similar machines, with **local control**.

Thermal release settings

The thermal releases are supplied set to the bottom value of the setting range. Simultaneous setting of the thermal releases can be carried out by opening the cover and adjusting the dial on the front face of the P25M. It is recommended that the thermal releases be set to the current that the motor absorbs in normal service and not to its rated current so as to provide effective close protection.

Ambient temperature compensation

Close protection against thermal overload is enhanced by thermal releases which are ambient temperature compensated over the range - 20°C - +60°C. During overload conditions, tripping is delayed at lower ambient temperatures, from - 20°C - +20°C, and is accelerated at higher ambient temperatures, from 20°C - +60°C.

Protection of the line supplying the motor

Every circuit and every motor must be protected against overloads and short circuits.

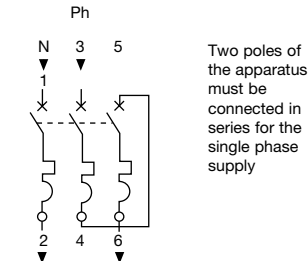
Phase failure protection

The P25M protects each phase separately and interrupts all three phases in the event of a loss of phase. Single phasing sensitivity is achieved by means of a differential trip which accelerates tripping should phase failure occur.

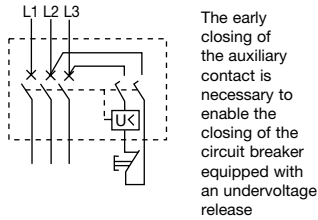
Auxiliaries:

- Alarm switch.
- ON/OFF switch.
- Shunt trip release or undervoltage release (emergency stop).

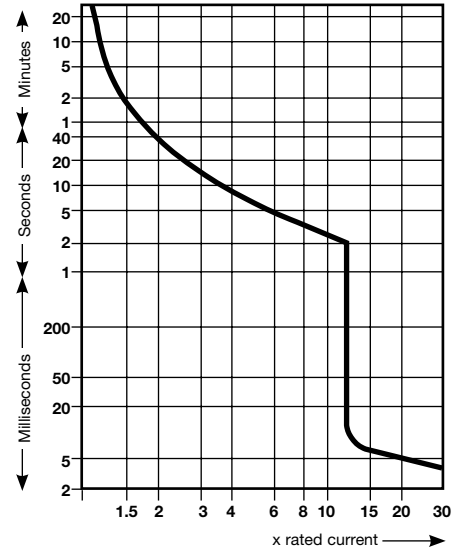
Single phase connection



Emergency switch wiring



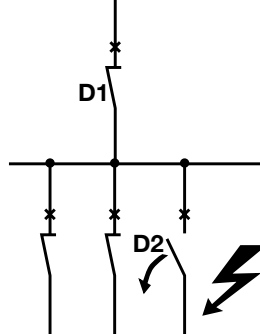
Time/current characteristics



| Rating In (A) | Settings | Part number | Standard power ratings kW: of 3-phase motors 50 - 60Hz AC-3 category | | | | | |
|------------------|-------------|--------------|---|------|-----|------|------|------|
| | | | 230 | 400 | 415 | 440 | 500 | 690 |
| 0.16 | 0.1 - 0.16 | 21100 | - | - | - | - | - | - |
| 0.25 | 0.16 - 0.25 | 21101 | - | - | - | - | - | - |
| 0.40 | 0.25 - 0.40 | 21102 | - | - | - | - | - | - |
| 0.63 | 0.40 - 0.63 | 21103 | - | - | - | - | - | 0.37 |
| 1.0 | 0.63 - 1 | 21104 | - | - | - | 0.37 | 0.37 | 0.55 |
| 1.6 | 1 - 1.6 | 21105 | - | 0.37 | - | 0.55 | 0.75 | 1.1 |
| 2.5 | 1.6 - 2.5 | 21106 | 0.37 | 0.75 | 1.1 | 1.1 | 1.1 | 1.5 |
| 4.0 | 2.5 - 4 | 21107 | 0.75 | 1.5 | 1.5 | 1.5 | 2.2 | 3 |
| 6.3 | 4 - 6.3 | 21108 | 1.1 | 2.2 | 2.2 | 3 | 3.7 | 4 |
| 10 | 6 - 10 | 21109 | 2.2 | 4 | 4 | 4 | 5.5 | 7.5 |
| 14 | 9 - 14 | 21110 | 3 | 5.5 | 5.5 | 7.5 | 9 | 11 |
| 18 | 13 - 18 | 21111 | 4 | 7.5 | 9 | 9 | 10 | 15 |
| 23 | 17 - 23 | 21112 | 5.5 | 9 | 11 | 11 | 11 | 18.5 |
| 25 | 20 - 25 | 21113 | 5.5 | 11 | 11 | 11 | 15 | 22 |

Discrimination

The table below indicates where total discrimination exists between devices.



| Upstream Compact | | MGE1003X | MGE1253X | MGE1603X | MGE2003X | MGE2503X | MGE4003X | MGE6303X |
|------------------|-------|------------|----------|----------|----------|----------|----------|----------|
| multi 9 | iC60H | Rating (A) | | | | | | |
| | | 10 - 16 | ■ | ■ | ■ | ■ | ■ | ■ |
| | | 20 - 25 | | ■ | ■ | ■ | ■ | ■ |
| | | 32 - 40 | | ■ | ■ | ■ | ■ | ■ |
| | | 50 - 63 | | ■ | ■ | ■ | ■ | |

Note: For further information on this product range: consult us.

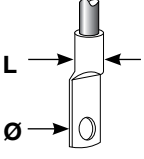
Guidance for motor loads

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

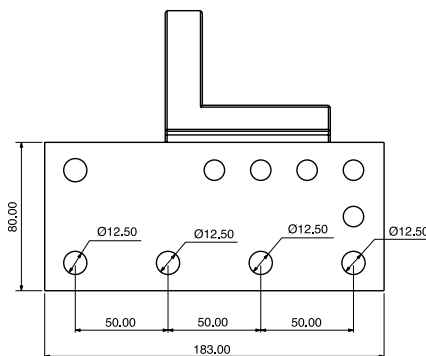


| Current | Device | | Possible terminal capacity for crimped lug | | Breaking capacity 415V |
|---------|----------|--------------------|--|-------------|------------------------|
| | | | (mm) Ø | @ L | |
| 100A | MGP100 | MCCB SP | 6 | 25 | 25,000A @ 240V |
| 100A | MGP100X | MCCB TP | 6 | 25 | 36,000A |
| 160A | MGP160X | MCCB TP | 6 | 25 | 36,000A |
| 250A | MGP250X | MCCB | 8 | 25 | 36,000A |
| | MGP250NA | Switch disconnect | 8 | 25 | - |
| 400A | MGP400X | MCCB | 10 | 32 | 50,000A |
| | MGP400A | Switch disconnect | 10 | 32 | - |
| 630A | MGP630X | MCCB | 10 | 32 | 50,000A |
| | MGP630NA | Switch disconnect | 10 | 32 | - |
| 800A | NS800 | | 12 | 44 | 50,000A |
| | NS800NA | Switch disconnect | 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



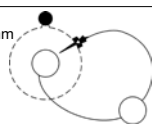




European standard EN60529 gives a protection code (IP) which characterises the ability of equipment to withstand the following external influences:

- Presence of solid bodies
- Presence of water




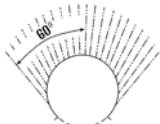

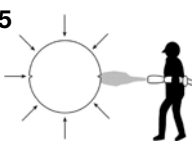
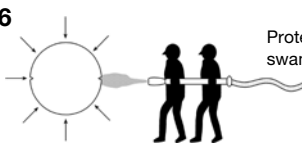
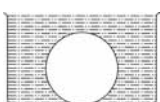
This code comprises two digits, depending on these external influences. The protection index is assigned to the equipment following a series of tests laid down in the respective standards.

Test according to EN60529

1st digit Protection against solid bodies

| | | |
|----------|---|---|
| 0 |  | No protection Protection against solid bodies greater than 50 mm |
| 1 |  | Protection against solid bodies greater than 50 mm |
| 2 |  | Protection against solid bodies greater than 12.5mm |
| 3 |  | Protection against solid bodies greater than 2.5 mm |
| 4 |  | Protection against solid bodies greater than 1 mm |
| 5 |  | Protection against dust (no harmful deposits) |
| 6 |  | Total protection against dust |

2nd digit Protection against liquids

| | | |
|----------|---|---|
| 0 |  | No protection |
| 1 |  | Protection against vertical drops of water (condensation) |
| 2 |  | Protection against drops of water falling up to 15° from vertical |
| 3 |  | Protection against rainwater up to 60° from vertical |
| 4 |  | Protection against water projected from all directions |
| 5 |  | protection against hosing with water from all directions |
| 6 |  | Protection against swamping with water |
| 7 |  | Protection against immersion |

Example IP 55

- Protection against dust (no harmful deposits)
- Protection against hosing with water from all directions

Earth Loop Impedance Values for Miniature Circuit Breakers

| Type iC60H | | |
|------------|---------|-------|
| Type B | | |
| Rating | 0.4 Sec | 5 Sec |
| 1A | 43.70 | 43.70 |
| 2A | 21.85 | 21.85 |
| 4A | 10.93 | 10.93 |
| 6A | 7.22 | 7.22 |
| 10A | 4.37 | 4.37 |
| 16A | 2.74 | 2.74 |
| 20A | 2.19 | 2.19 |
| 25A | 1.75 | 1.75 |
| 32A | 1.37 | 1.37 |
| 40A | 1.09 | 1.09 |
| 50A | 0.87 | 0.87 |
| 63A | 0.69 | 0.69 |

| Type iC60H | | |
|------------|---------|-------|
| Type C | | |
| Rating | 0.4 Sec | 5 Sec |
| 1A | 21.85 | 28.02 |
| 2A | 10.93 | 13.66 |
| 4A | 5.46 | 7.05 |
| 6A | 3.69 | 4.65 |
| 10A | 2.19 | 2.80 |
| 16A | 1.37 | 1.75 |
| 20A | 1.09 | 1.40 |
| 25A | 0.87 | 1.12 |
| 32A | 0.68 | 0.87 |
| 40A | 0.55 | 0.70 |
| 50A | 0.44 | 0.56 |
| 63A | 0.35 | 0.45 |

| Type iC60H | | |
|------------|---------|-------|
| Type D | | |
| Rating | 0.4 Sec | 5 Sec |
| 1A | 15.61 | 28.02 |
| 2A | 7.80 | 13.66 |
| 4A | 3.90 | 7.05 |
| 6A | 2.60 | 4.65 |
| 10A | 1.56 | 2.80 |
| 16A | 0.98 | 1.75 |
| 20A | 0.78 | 1.40 |
| 25A | 0.63 | 1.12 |
| 32A | 0.48 | 0.87 |
| 40A | 0.39 | 0.70 |
| 50A | 0.31 | 0.56 |
| 63A | 0.25 | 0.45 |

| Type iC120H | | |
|-------------|---------|-------|
| Type B | | |
| Rating | 0.4 Sec | 5 Sec |
| 63A | 0.69 | 0.69 |
| 80A | 0.54 | 0.54 |
| 100A | 0.44 | 0.44 |
| 125A | 0.34 | 0.34 |

| Type iC120H | | |
|-------------|---------|-------|
| Type C | | |
| Rating | 0.4 Sec | 5 Sec |
| 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 |
| 63A | 0.247 | 0.4275 |
| 80A | 0.1995 | 0.3325 |
| 100A | 0.152 | 0.266 |
| 125A | 0.1235 | 0.2185 |

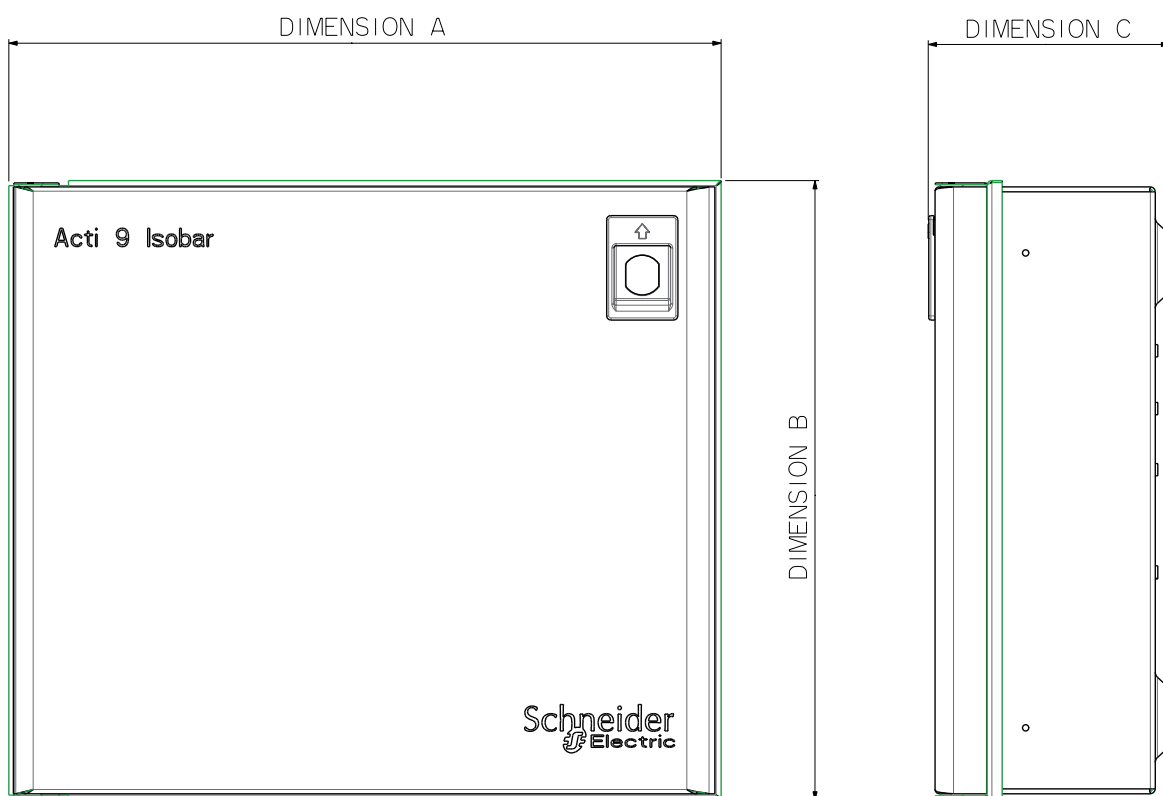
Type NSX

| | |
|---|-----------------------------|
| Acti 9 isobar distribution boards | pages 12/2 to 12/4 |
| A type | page 12/2 |
| B type | pages 12/3 to 12/4 |
| Heavy duty distribution board 100A | page 12/5 |
| Powerpact 4 | pages 12/6 to 12/9 |
| 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 |
| Panelboards 1600A | page 12/10 |
| Safepact 2 | page 12/11 |
| MGF fusegear | page 12/12 |
| Busbar chamber | page 12/13 |
| Powerpact 4 pan assembly and incoming MCCB | page 12/14 |
| Outgoing pan assembly 630A only | page 12/15 |
| Outgoing pan assembly 800A only | page 12/16 |
| Enclosures - Mini Opale, G9 | page 12/17 |
| Pragma surface mounted enclosures and interfaces | page 12/18 |
| Kaedra | pages 12/19 to 12/22 |

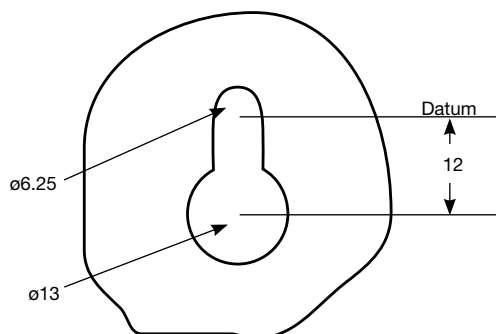
BIM models are available on the Schneider Electric website
www.schneider-electric.co.uk

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 |

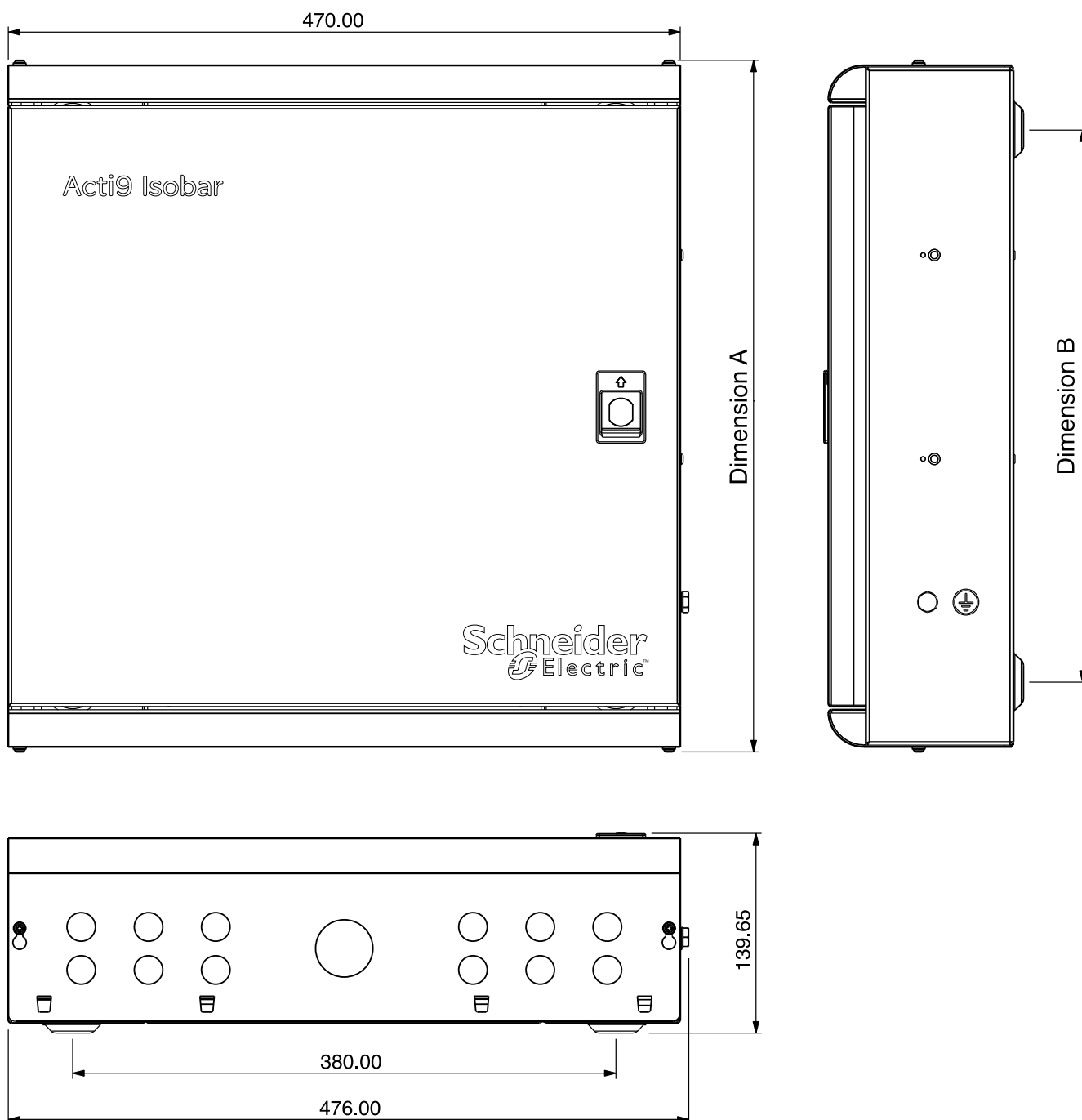


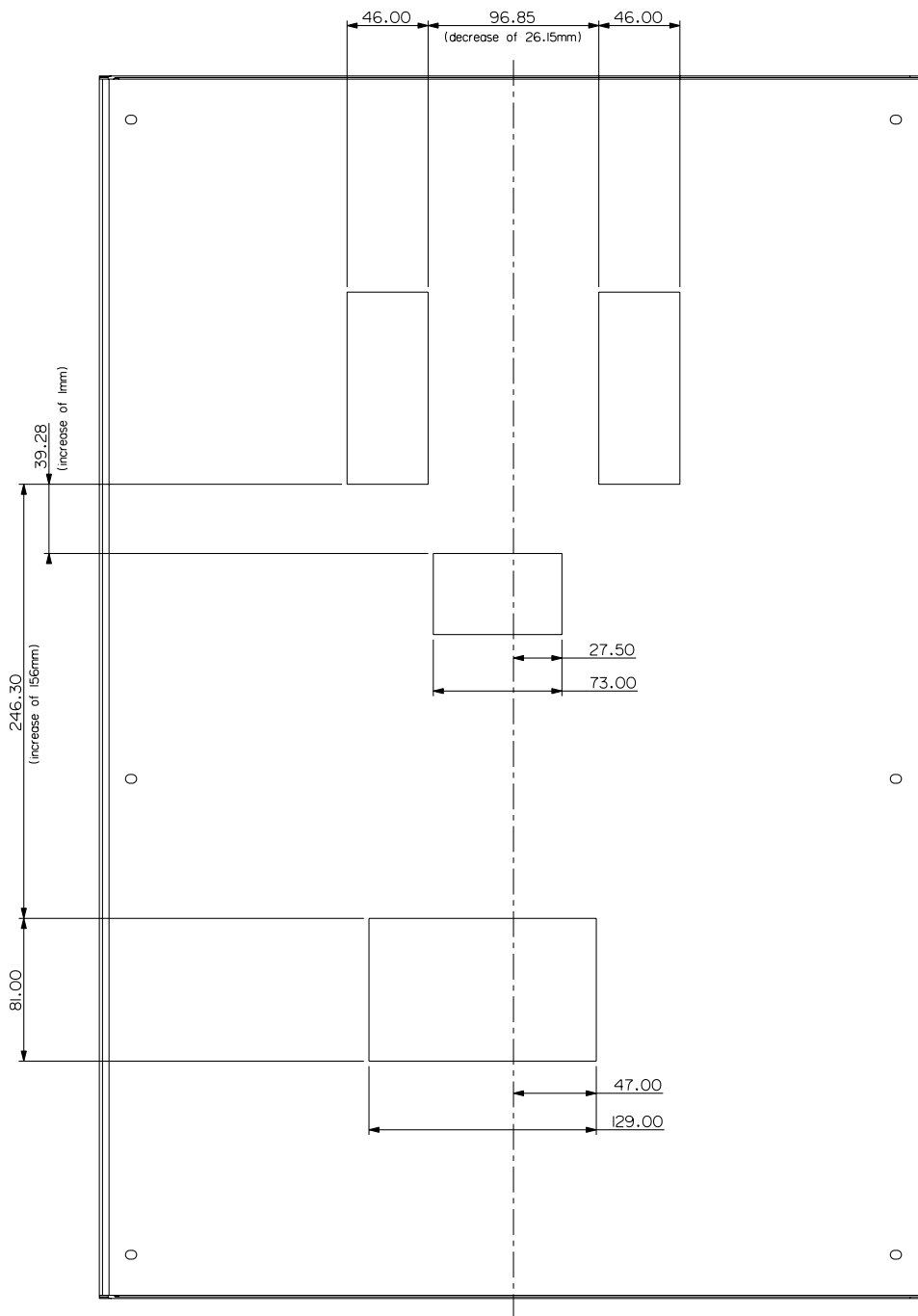
Key hole slot dimensions



Acti 9 Isobar B type distribution boards

| Part number | A | B |
|----------------------------|------|-----|
| SEA9BN4, SEA9BN6, SEA9BN6M | 484 | 386 |
| SEA9BN8, SEA9BN8M | 538 | 440 |
| SEA9BN12, SEA9BN12M | 700 | 602 |
| SEA9BN16, SEA9BN16M | 808 | 710 |
| SEA9BN18, SEA9BN18M | 862 | 764 |
| SEA9BN24, SEA9BN24M | 1024 | 926 |

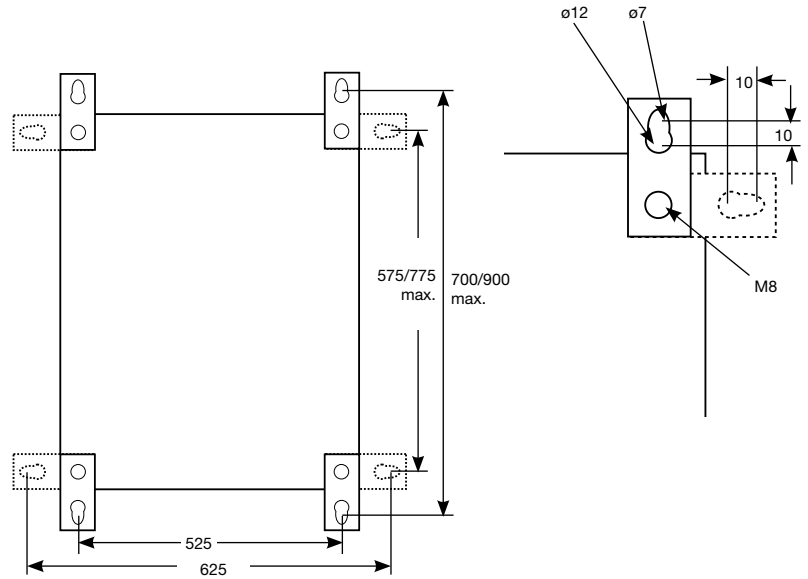




Heavy duty distribution board (100A) IP55 weatherproof

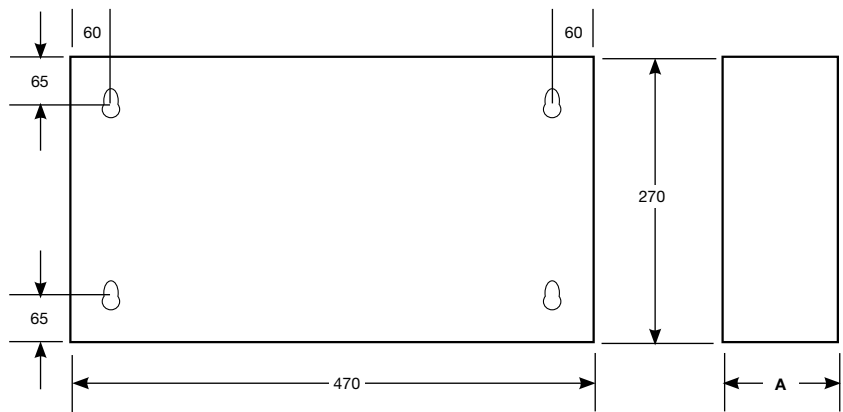
| Part number | Number of | Dimensions (mm) | | |
|------------------|-----------|-----------------|-------|-------|
| | | Height | Width | Depth |
| SEA9BN6HDGK/G-R | 6 | 650 | 600 | 290* |
| SEA9BN8HDGK/G-R | 8 | 650 | 600 | 290* |
| SEA9BN12HDGK/G-R | 12 | 850 | 600 | 290* |
| SEA9BN16HDGK/G-R | 16 | 850 | 600 | 290* |

* Denotes the maximum depth dimensions with key fitted.



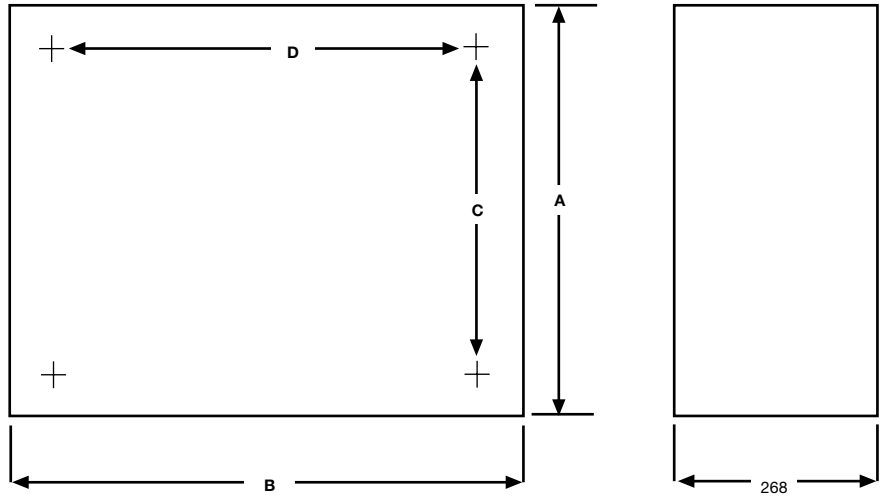
B board extension box enclosures

| Part number | A |
|--------------|-----|
| SEA9BNEXN | 124 |
| SEA9BNEX034N | 140 |
| SEA9BNKWH | 124 |
| SEA9BNEXA14N | 140 |
| SEA9BN100CCI | 140 |
| SEA9BNDSI | 124 |



Powerpact 4 powerboards and panelboards 250A and 400/630A

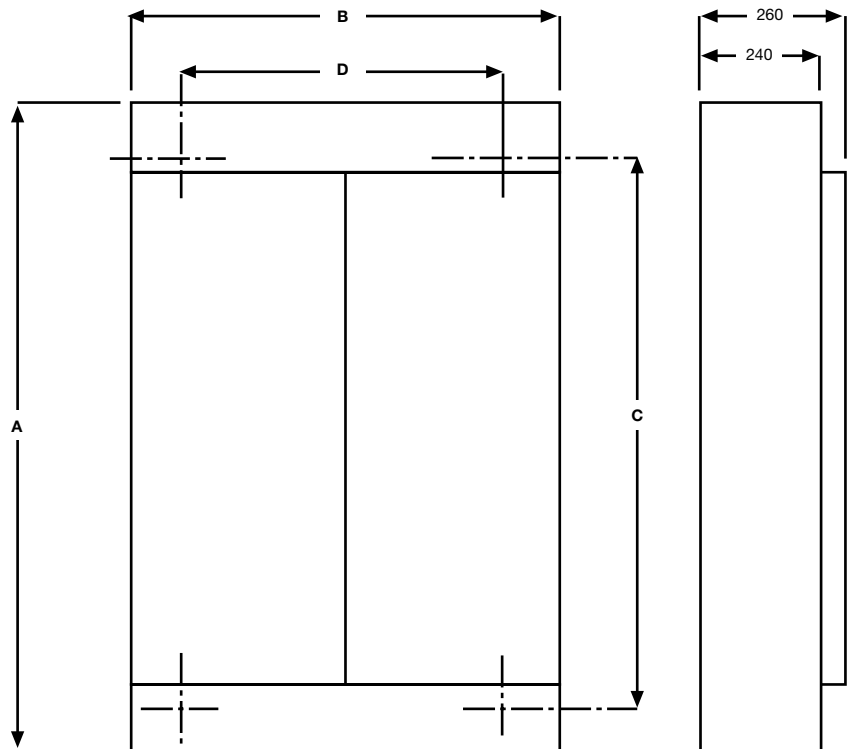
250A powerboard



| 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

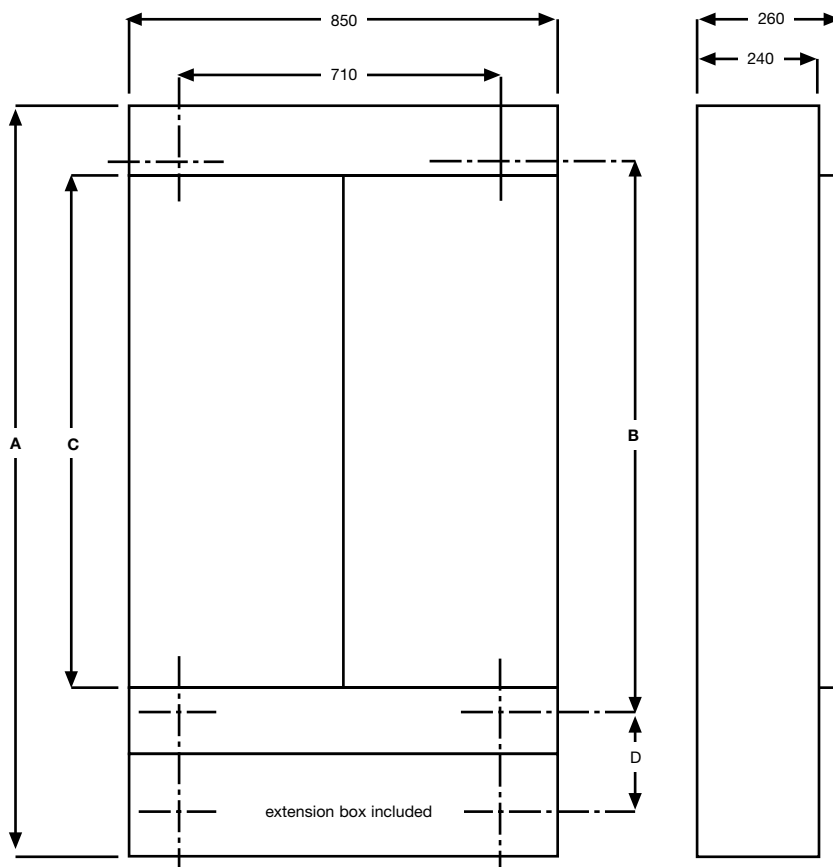
1.2mm cover

1.6mm enclosure

Powerpact 4 powerboards and panelboards

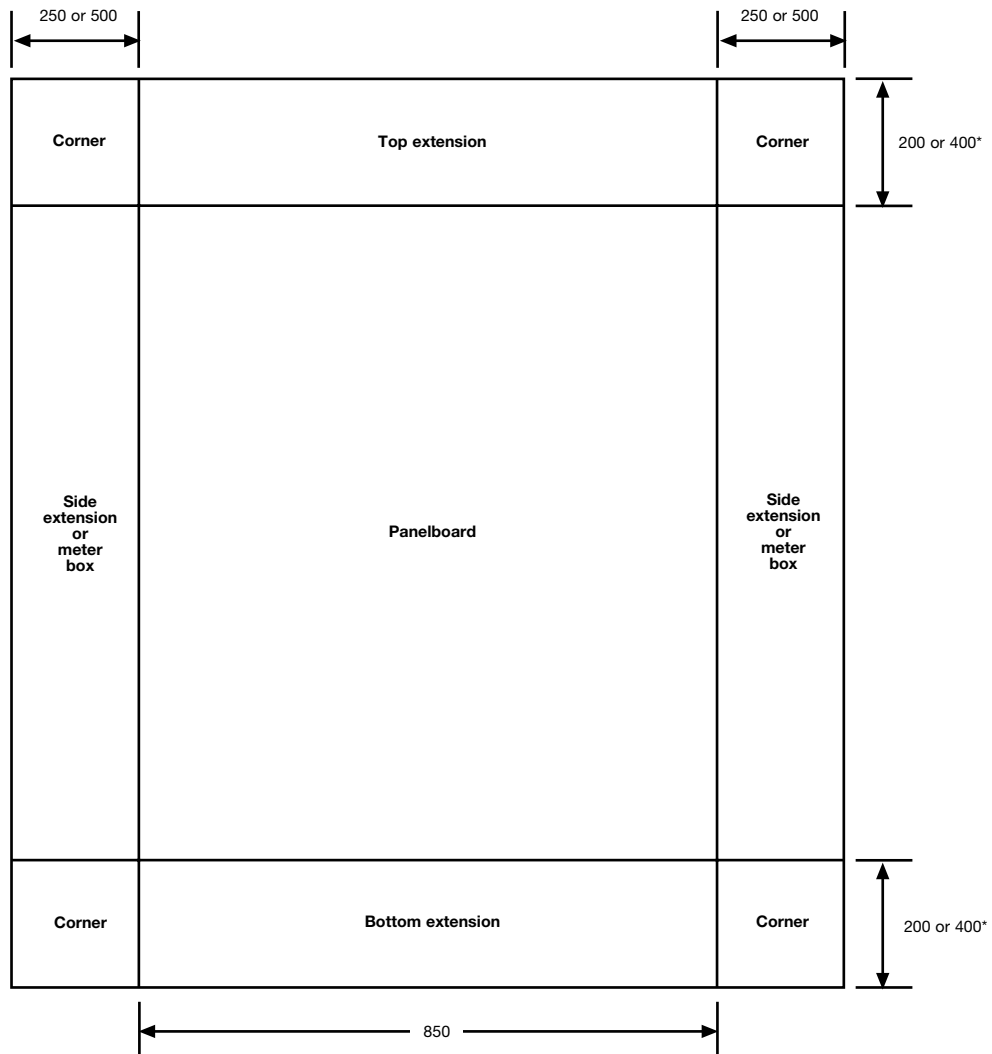
250A, 400/630A and 800A

800A panelboard



| Board ref. | A | B | C | D |
|---------------|------|------|------|-----|
| MG8C6 | 1578 | 1035 | 991 | 172 |
| MG8C12 | 1893 | 1350 | 1306 | 172 |
| MG8C18 | 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.

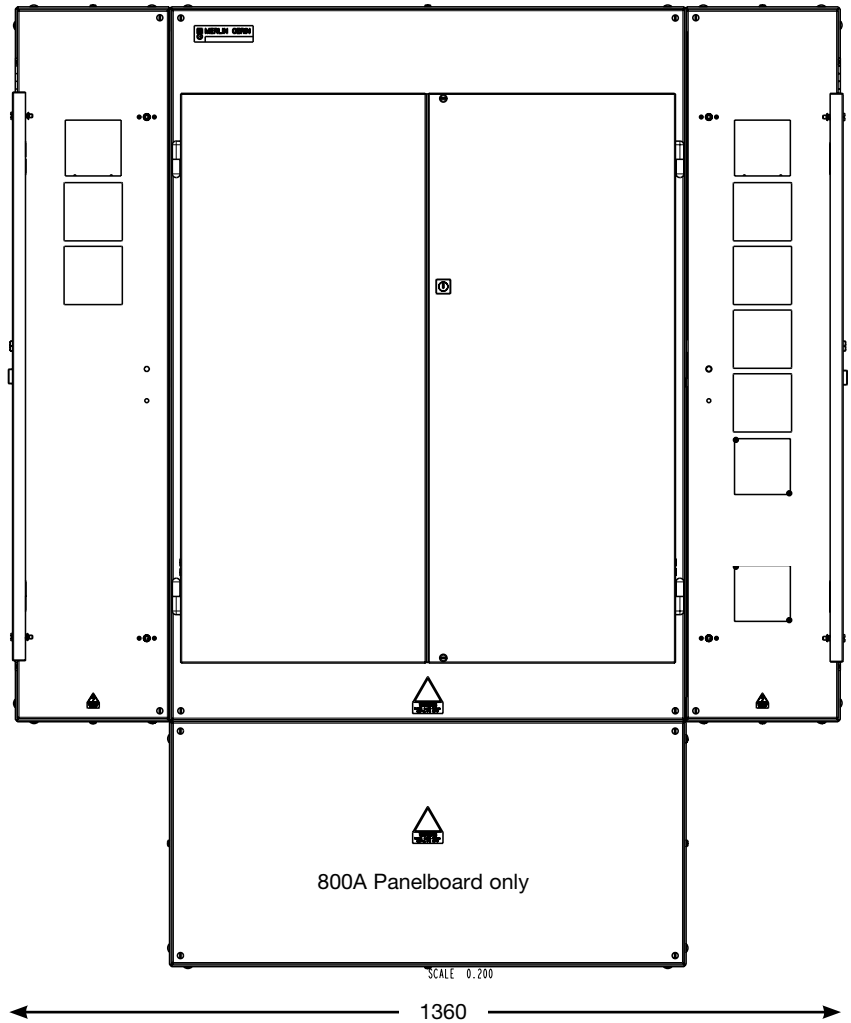
Corner units are available to suit all combinations of top/bottom and side extension boxes.

Overall dimension table

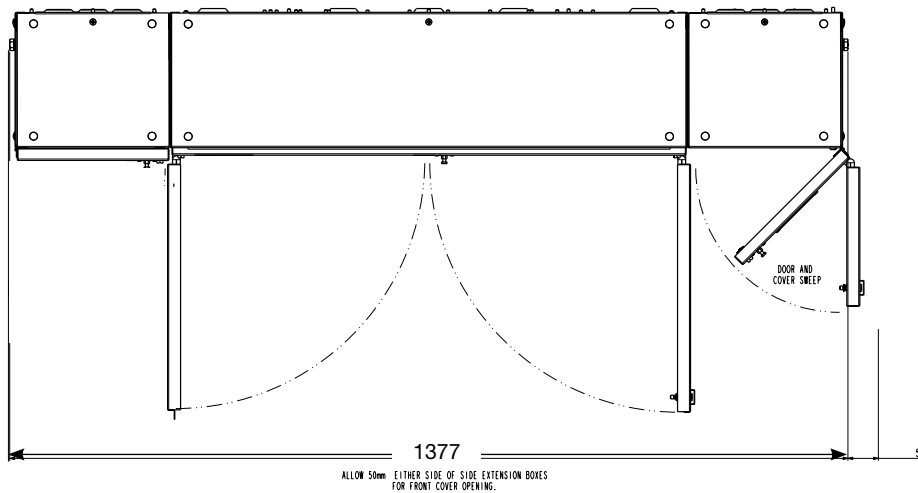
| Panelboard Part number | MG25C2 | MG25C2M | MG25C4 | MG25C4M | MG2C5 | MG2C7 | MG2C9 | MG2C13 | MG6C6 | MG6C12 | MG6C18 | MG8C6 | MG8C12 | MG8C18 |
|-----------------------------------|--------|---------|--------|---------|-------|-------|-------|--------|-------|--------|--------|-------|--------|--------|
| Height Standard | 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 |
| Width Standard | 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 | 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 |
| Depth | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 | 263 |

Dimensions (mm)

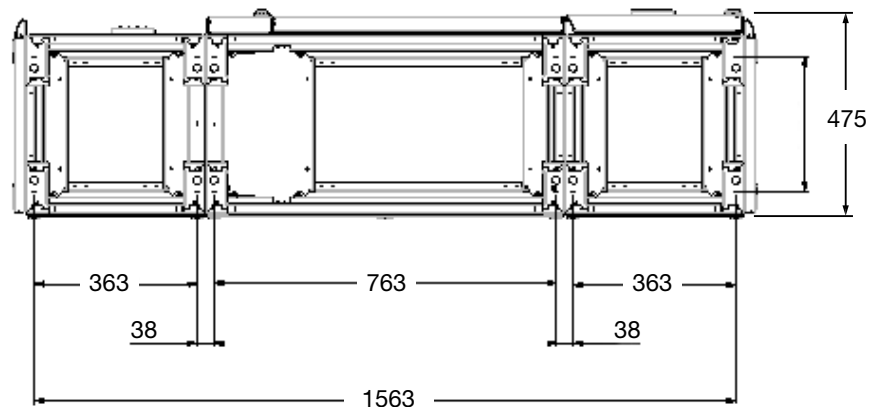
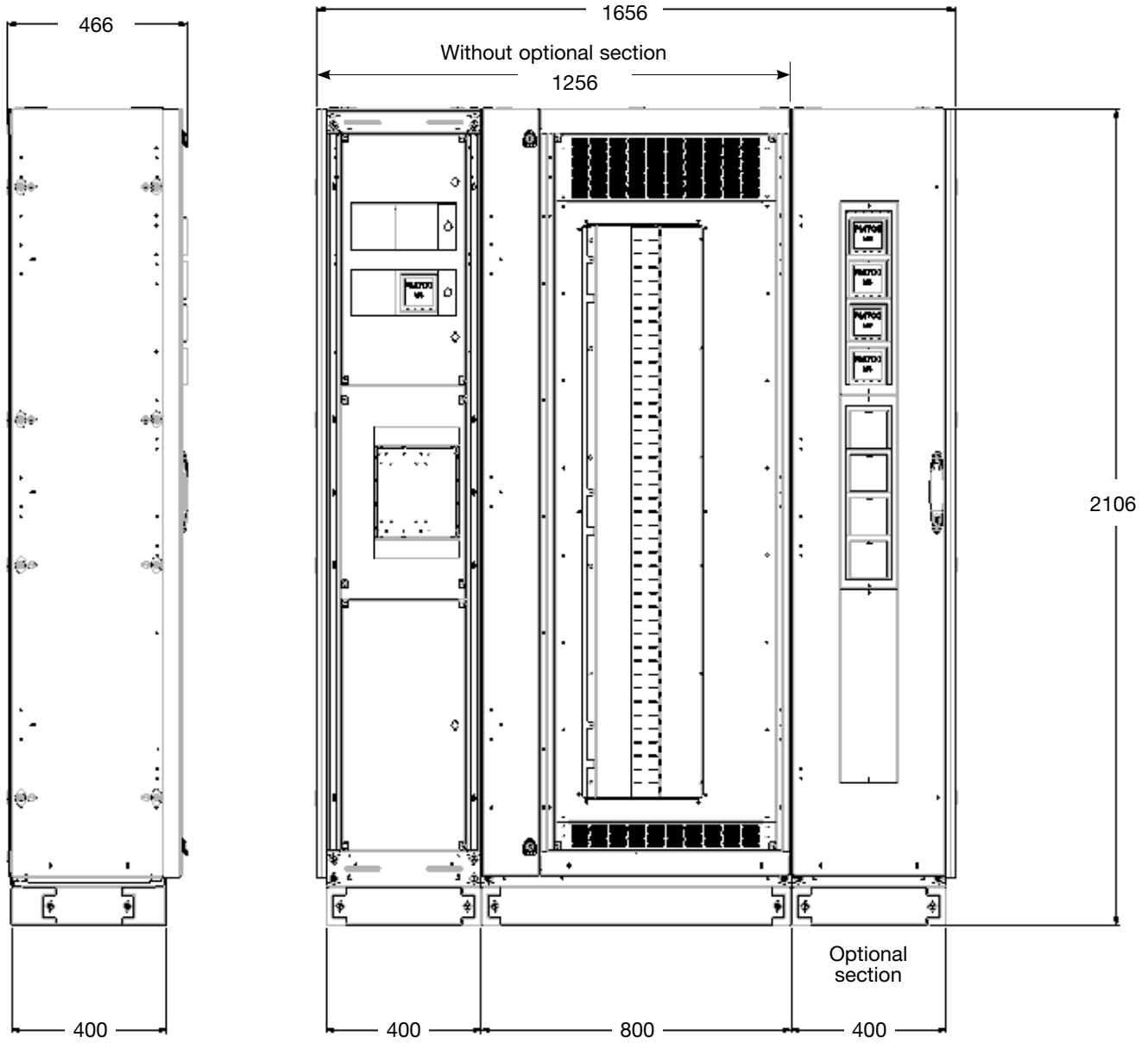
Powerpact 4 metering extensions 630, 800A panelboard with side extension metering boxes

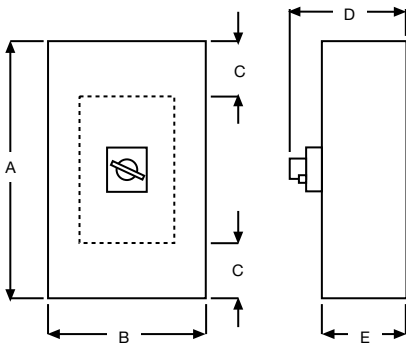


The side extensions with metering are dimensionally the same as standard 250mm side extensions



All apertures are 92mmsq. to accept standard DIN 96 meters.

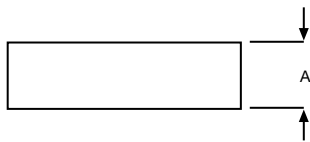




Safepact 2 MCCB or switch disconnecter general purpose enclosure IP40

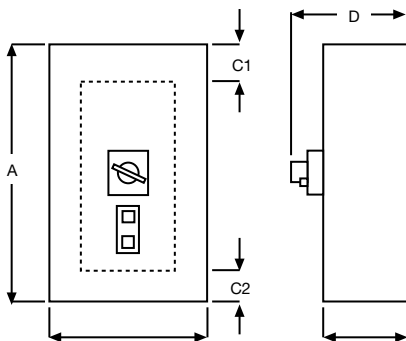
| Rating | Height | Width | Cable space | Overall depth | Enclosure depth |
|------------|--------|-------|-------------|---------------|-----------------|
| | A | B | C | D | E |
| Up to 250A | 420 | 230 | 140 | 211 | 145 |
| 630A | 700 | 356 | 236 | 235 | 169 |

Note: C* - we recommend fitting cable extension boxes on each end of the 160, 250 and 630A ratings, unless utilising trunking



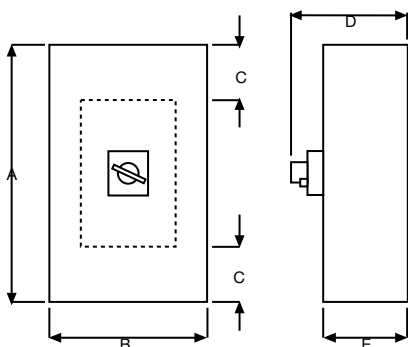
Extension boxes for Safepact 2 MCCB enclosures

| Height (A) | Part number |
|------------|-------------|
| 100 | MGEX 160C |
| 200 | MGEX 250C |
| 120 | MGEX 630C |



Safepact 2 MCCB or switch disconnecter general purpose enclosure IP40 including earth leakage

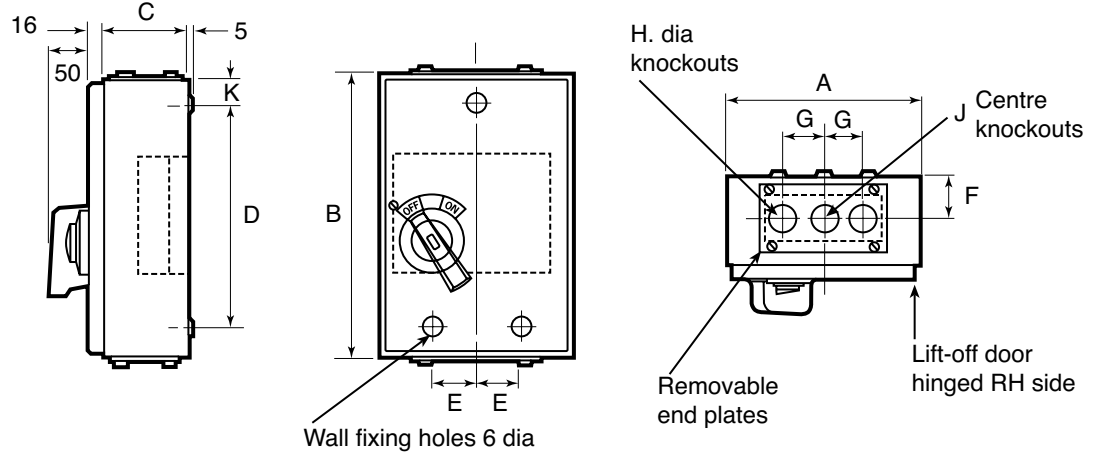
| Rating | Height | Width | Cable space | | Overall depth | Enclosure depth | |
|------------|--------|-------|-------------|-----|---------------|-----------------|-----|
| | A | B | C1 | C2 | D | E | |
| Up to 100A | 100A | 420 | 230 | 140 | 65 | 211 | 145 |
| | 160A | 520 | 230 | 140 | 165 | | |
| | 250A | 620 | 230 | 140 | 265 | | |
| 400A | 820 | 356 | 236 | 256 | 235 | 169 | |
| 630A | | | | | | | |



Enclosed Interpack

| Rating | Height | Width | Cable space | Overall depth | Enclosure depth |
|--------|--------|-------|-------------|---------------|-----------------|
| | A | B | C | D | 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 |

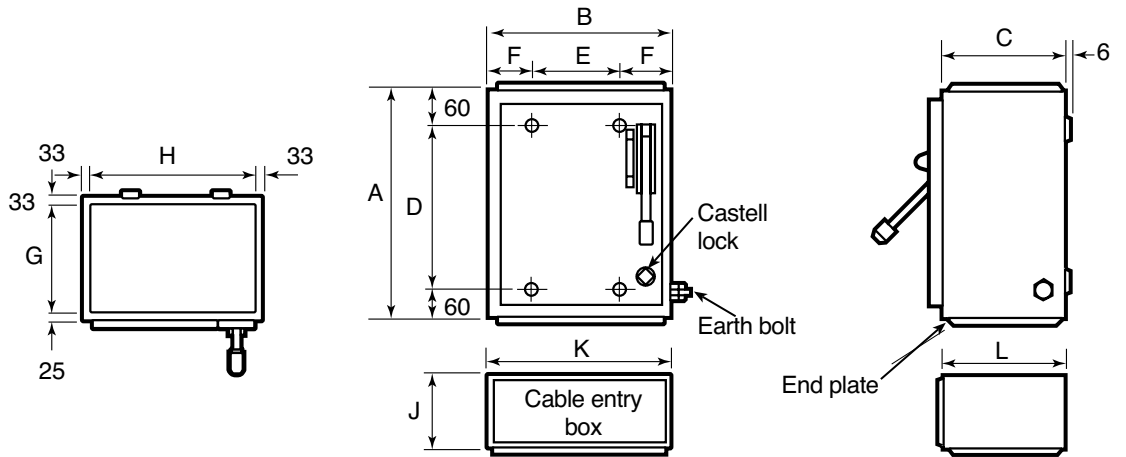
Switch disconnecter fuse MGFA
Switch disconnecter MGFL



| 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 |

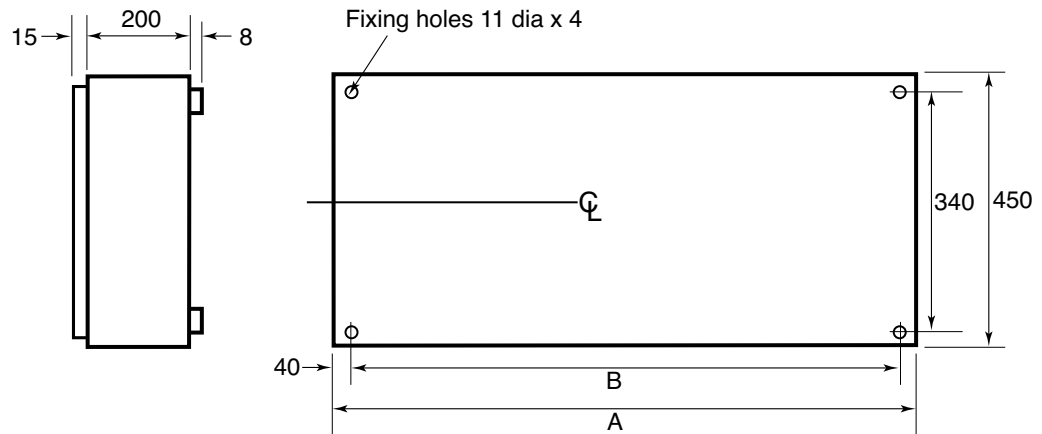
* Weights do not include the fuse links

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

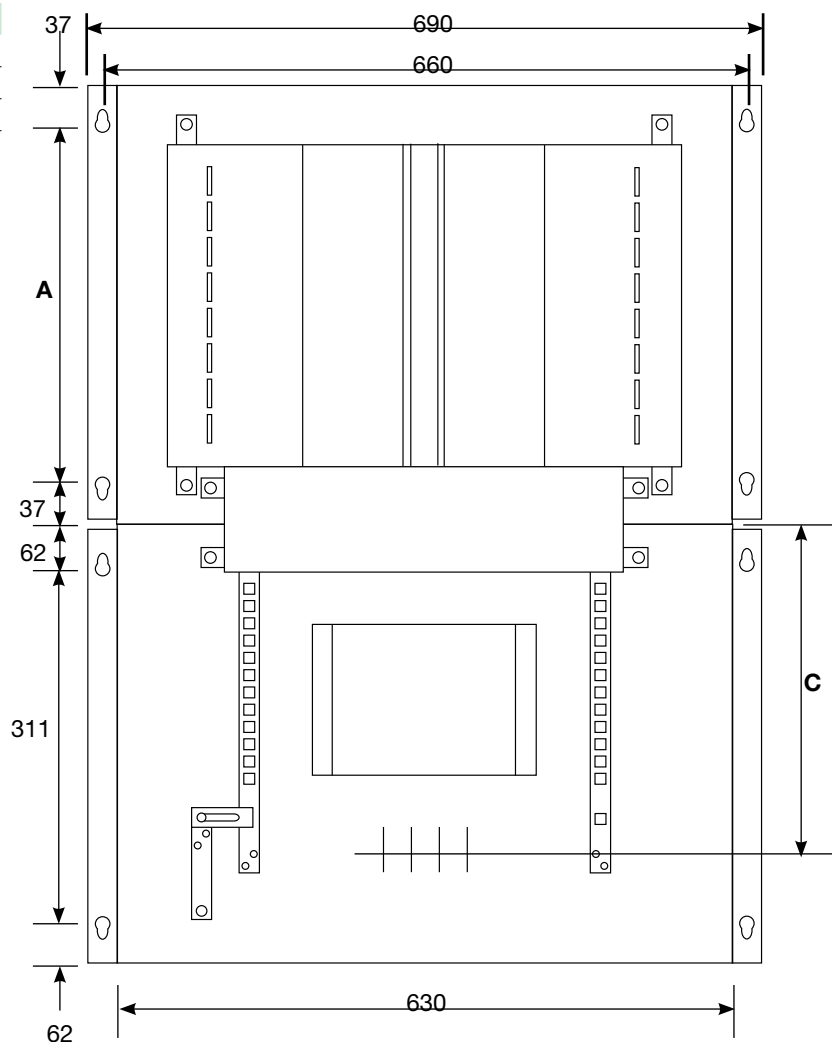


| Type | A | B |
|--------------------|------|------|
| MBFB...07TN | 750 | 670 |
| MBFB...12TN | 1200 | 1120 |
| MBFB...18TN | 1800 | 1720 |

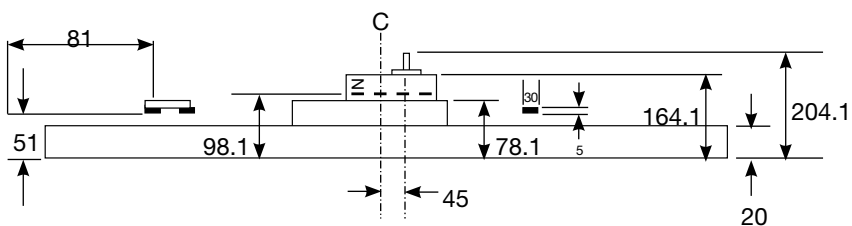
| Reference | A |
|-----------|------|
| 6 way | 346 |
| 12 way | 661 |
| 18 way | 976 |
| 24 way | 1291 |
| 30 way | 1606 |

| Reference | C |
|-----------|-----|
| NS800 | 475 |
| NS630 | 330 |
| NS250 | 228 |

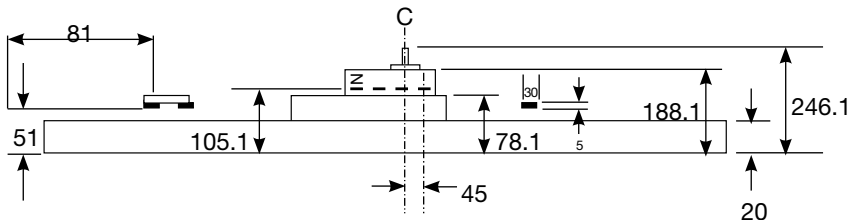
Dimension C = centre line of incoming breaker terminals (plan view).



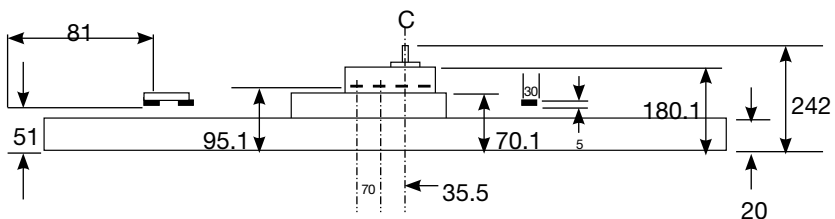
NS250 incoming MCCB connections



NS630 incoming MCCB connections



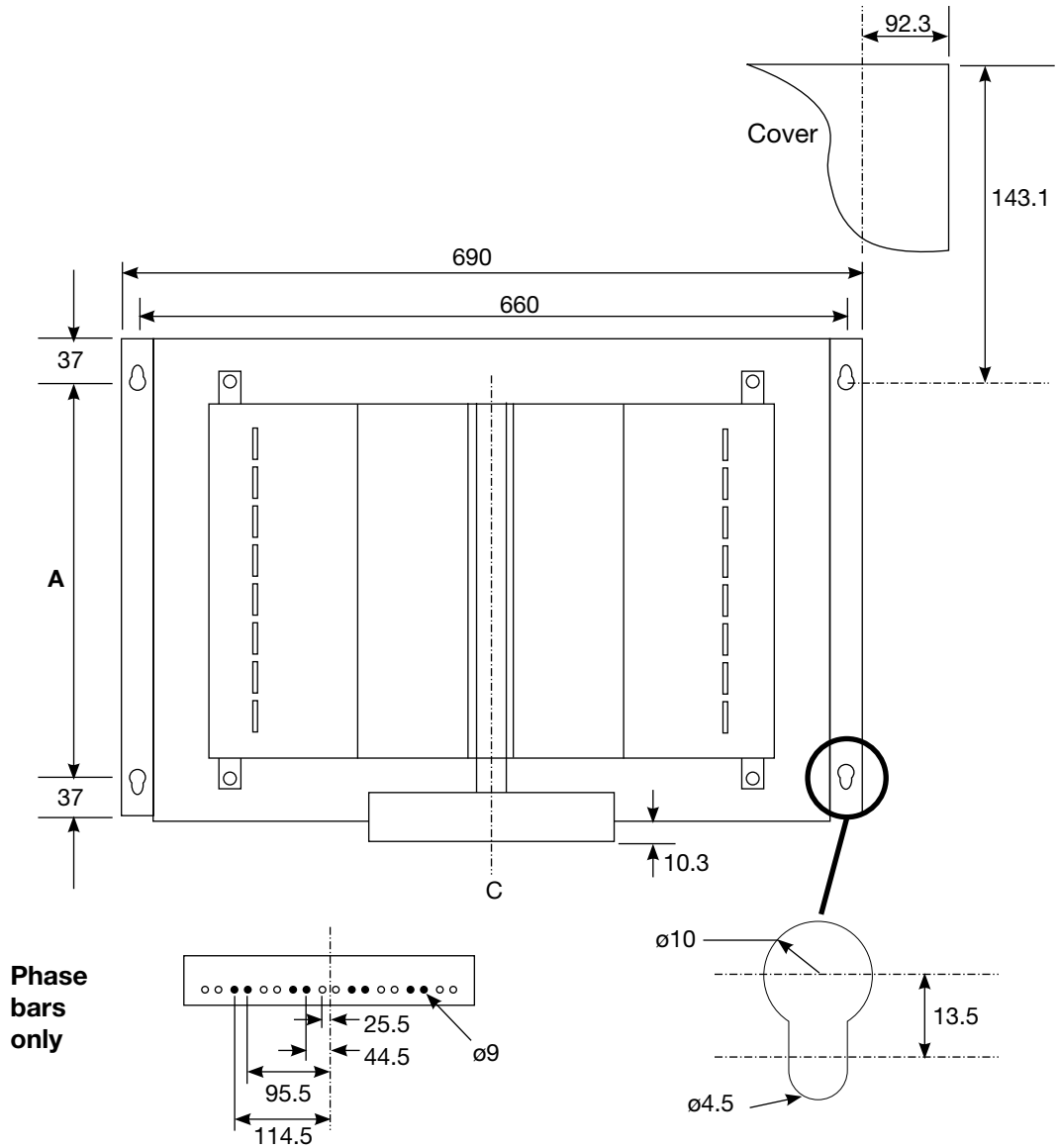
NS800 incoming MCCB connections



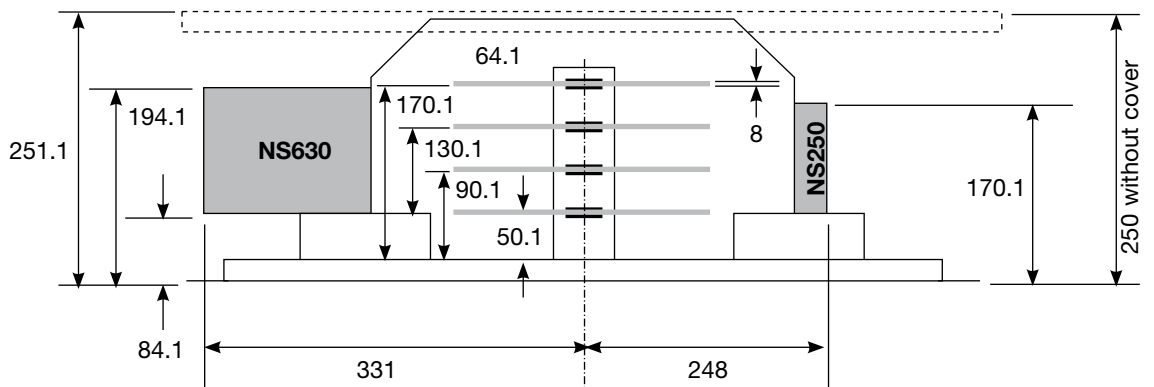
Dimensions (mm)

Outgoing pan assembly 800A only

| Reference | A |
|-----------|------|
| 6 way | 346 |
| 12 way | 661 |
| 18 way | 976 |
| 24 way | 1291 |
| 30 way | 1606 |

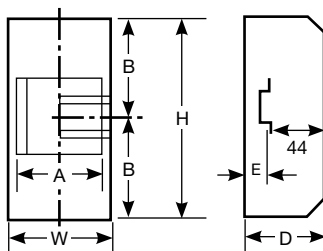


Incoming busbar connections direct to outgoing pan assembly



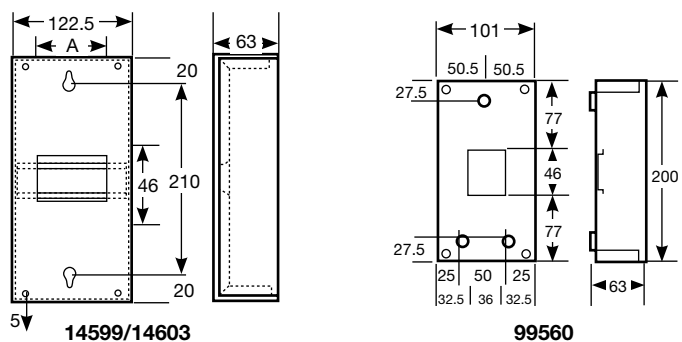
Mini Opale enclosures

| 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 |



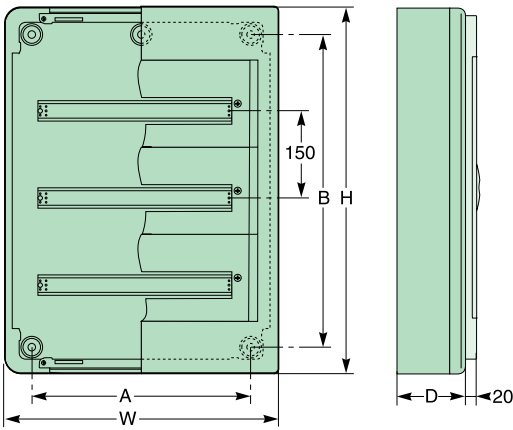
G9 enclosures

| Part number | A |
|-------------|----|
| 14599 | 72 |
| 14603 | 99 |



Dimensions (mm)

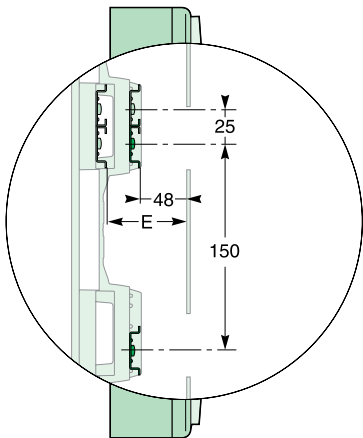
Enclosures Pragma surface mounted enclosures and interfaces



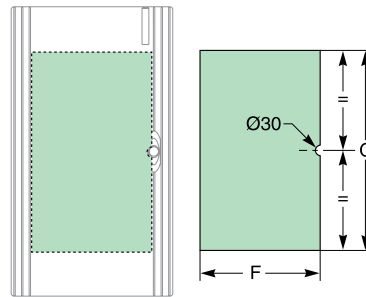
Surface mounted enclosures

| Enclosure | | Dimensions (mm) | | | | | | | | |
|------------|----|-----------------|-----|--------------|-----|-----|----|-----|-----|-----|
| | | H | W | D | A | B | E | F | G | J |
| 13 modules | 1R | 300 | 336 | 123 (115) | 160 | 200 | 73 | 253 | 149 | |
| | 2R | 450 | | | | 350 | | | | |
| | 3R | 600 | | | | 500 | | | | |
| | 4R | 750 | | | | 650 | | | | |
| 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

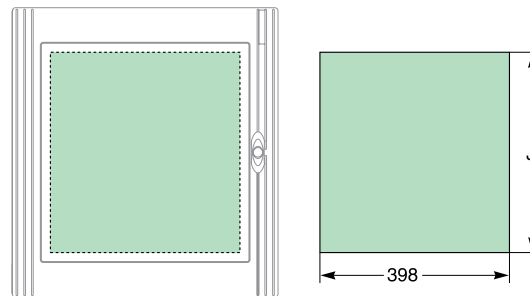


The different positions of the DIN rail in height and depth.



Panel thickness: 0.5 mm max.

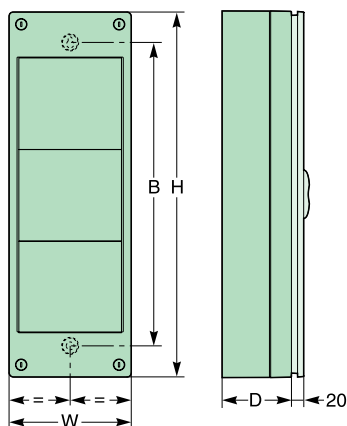
24 module enclosures



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:



■ Double pre-cutout:

□ External: pre-cutout adapted to the metric cable gland/ISO

□ Internal: pre-cutout adapted to the PG cable gland



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

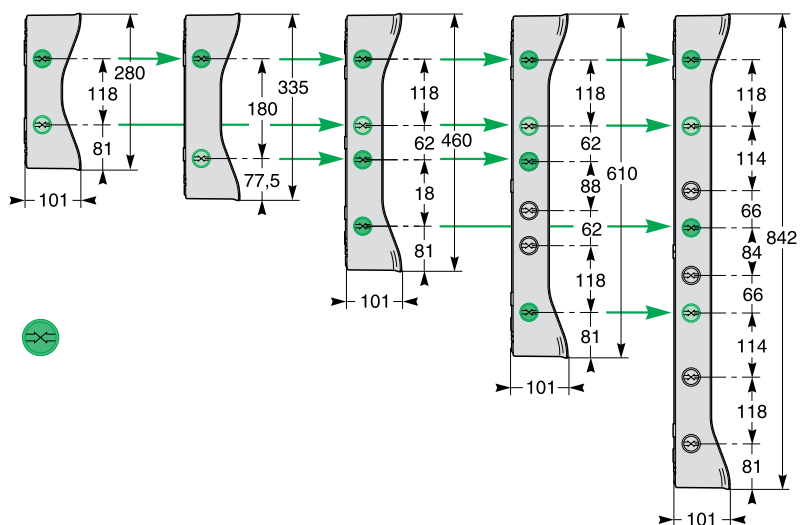
The enclosures can be associated:

■ Horizontally, regardless of their height (see diagram below)

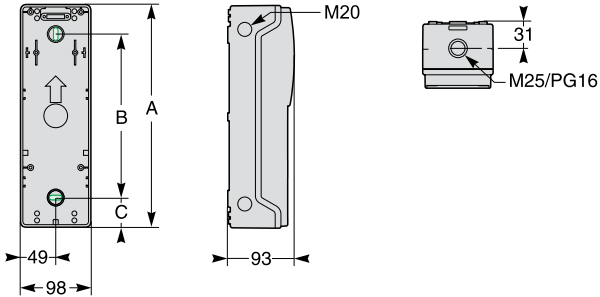
■ Vertically, if their width is identical.

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.



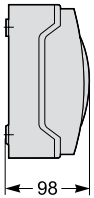
Weatherproof mini enclosures
Weatherproof mini enclosures for power outlets



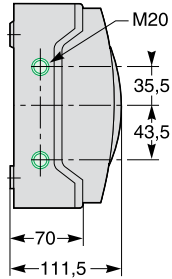
| A | B | C | Weight (g) |
|-----|-----|----|------------|
| 248 | 166 | 41 | 550 |
| 310 | 228 | 41 | 600 |
| 392 | 310 | 41 | 700 |

Weatherproof mini enclosures for modular switchgear

3 modules

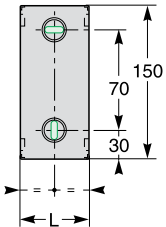


4, 6, 8 and 12 modules

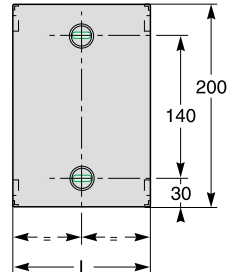


| Number of modules | A | L | Weight (g) |
|-------------------|-----|-----|------------|
| 3 | - | 80 | 300 |
| 4 | - | 123 | 500 |
| 6 | - | 159 | 650 |
| 8 | 88 | 195 | 850 |
| 12 | 160 | 267 | 1050 |

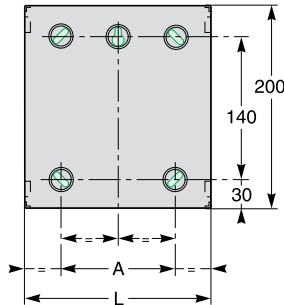
3 modules



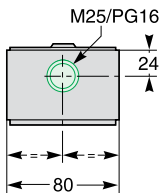
4 and 6 modules



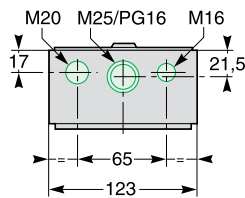
8 and 12 modules



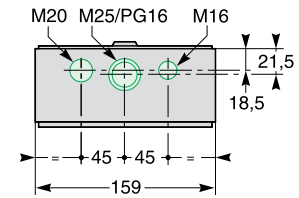
3 modules



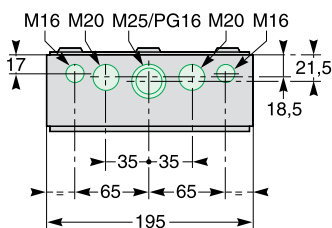
4 modules



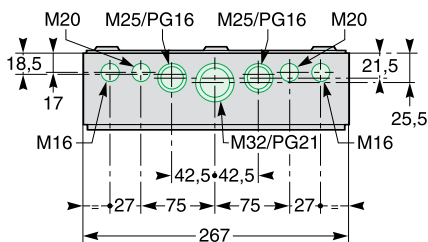
6 modules



8 modules



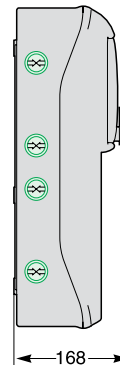
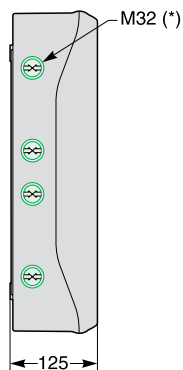
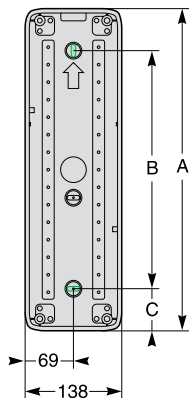
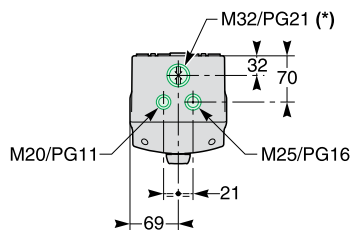
12 modules



| 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

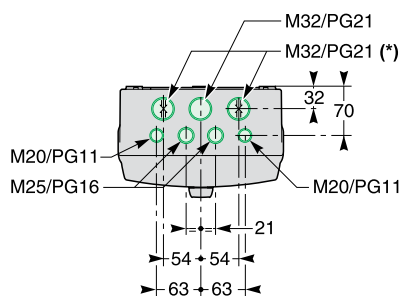
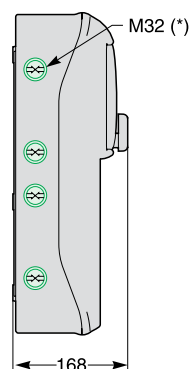
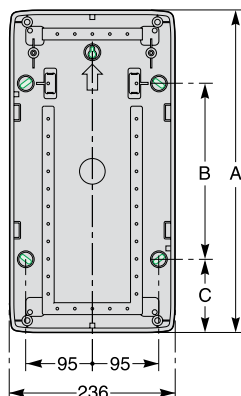
5 modules



(*) 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



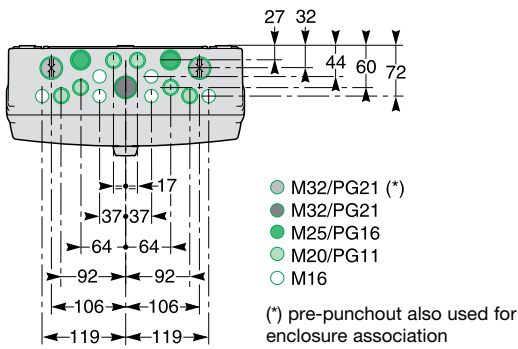
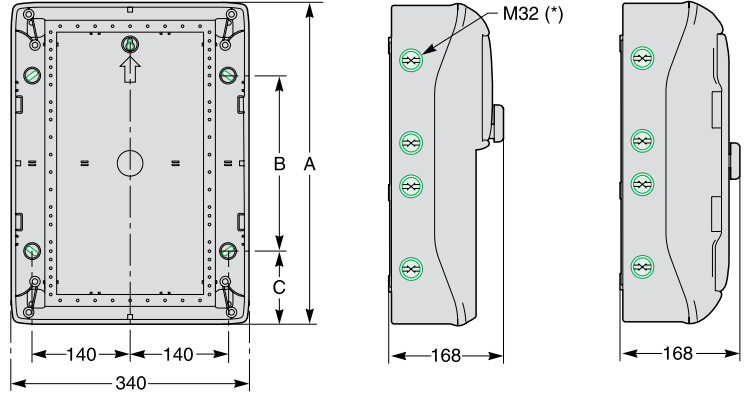
(*) pre-punchout also used for enclosure association

Dimensions (mm)

Kaedra (cont.)

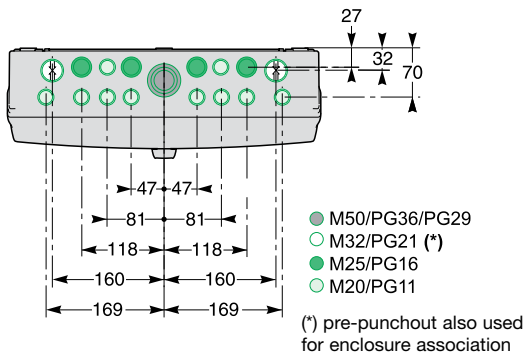
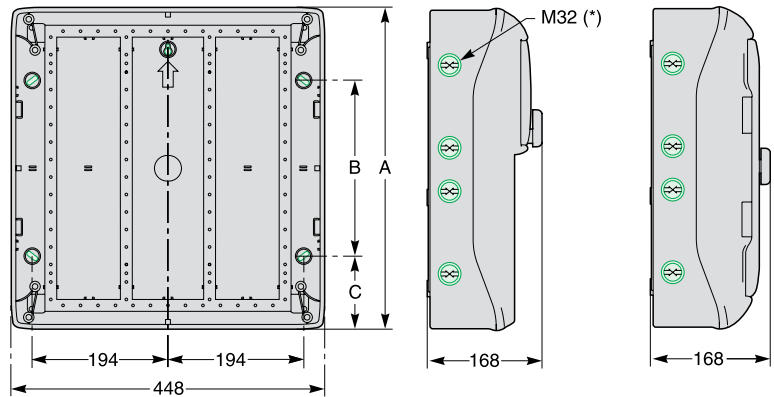
| A | B | C | Weight (g) |
|-----|-----|-------|------------|
| 280 | 118 | 81 | 1900 |
| 335 | 170 | 82.5 | 2200 |
| 335 | 170 | 82.5 | 2150 |
| 460 | 251 | 104.5 | 3100 |
| 460 | 251 | 104.5 | 2850 |
| 460 | 251 | 104.5 | 3300 |
| 460 | 251 | 104.5 | 2650 |
| 460 | 251 | 104.5 | 2700 |
| 610 | 401 | 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



Product list

| Reference | Page | Reference | Page | Reference | Page | Reference | Page |
|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
| 3908 | 8/21 | 13410 | 10/17 | 14813 | 10/5 | 16361 | 4/4 |
| 04224 | 10/10 | 13411 | 10/17 | 14814 | 10/5 | 16363 | 4/2 |
| 8908 | 8/20 | 13412 | 10/17 | 14818 | 10/5 | 16363 | 4/4 |
| 8961 | 8/16 | 13441 | 10/25 | 14885 | 10/5 | 16550 | 7/101 |
| 8962 | 8/16 | 13442 | 10/25 | 14915 | 10/10 | 16552 | 7/101 |
| 8963 | 8/16 | 13443 | 10/25 | 14962 | 10/9 | 16553 | 7/101 |
| 10209 | 10/33 | 13444 | 10/25 | 14963 | 10/9 | 16643 | 4/4 |
| 10210 | 10/33 | 13445 | 10/33 | 14964 | 10/9 | 16644 | 4/4 |
| 10220 | 10/33 | 13446 | 10/33 | 14965 | 10/9 | 16645 | 4/4 |
| 10405 | 10/4 | 13448 | 10/33 | 14975 | 10/9 | 16646 | 4/4 |
| 10545 | 10/4 | 13450 | 10/33 | 14976 | 10/9 | 17400 | 3/18 |
| 10546 | 10/4 | 13595 | 10/33 | 14977 | 10/9 | 18264 | 5/2 |
| 10547 | 10/4 | 13599 | 10/33 | 14979 | 10/9 | 18265 | 5/2 |
| 13135 | 10/33 | 13735 | 10/33 | 15111 | 7/35 | 18266 | 5/2 |
| 13136 | 10/33 | 13735 | 10/17 | 15112 | 7/35 | 18267 | 5/2 |
| 13137 | 10/33 | 13736 | 10/33 | 15113 | 7/35 | 18268 | 5/2 |
| 13138 | 10/33 | 13736 | 10/17 | 15114 | 7/36 | 18269 | 5/2 |
| 13139 | 10/33 | 13929 | 10/33 | 15125 | 7/49 | 18280 | 5/2 |
| 13140 | 10/33 | 13934 | 10/33 | 15125 | 7/49 | 18281 | 5/2 |
| 13141 | 10/33 | 13935 | 10/33 | 15126 | 7/49 | 18526 | 3/17 |
| 13142 | 10/33 | 13936 | 10/33 | 15126 | 7/49 | 18527 | 3/17 |
| 13143 | 10/33 | 13937 | 10/33 | 15151 | 7/51 | 18528 | 3/18 |
| 13144 | 10/33 | 13938 | 10/33 | 15201 | 7/87 | 18687 | 5/2 |
| 13175 | 10/19 | 13939 | 10/33 | 15202 | 7/87 | 18688 | 5/2 |
| 13175 | 10/19 | 13940 | 10/33 | 15208 | 7/87 | 18689 | 5/2 |
| 13176 | 10/19 | 13941 | 10/33 | 15209 | 7/87 | 18690 | 5/2 |
| 13176 | 10/19 | 13944 | 10/33 | 15228 | 7/39 | 18691 | 5/2 |
| 13177 | 10/19 | 13945 | 10/33 | 15229 | 7/39 | 18692 | 5/2 |
| 13177 | 10/19 | 13946 | 10/33 | 15281 | 7/84 | 18693 | 5/9 |
| 13178 | 10/19 | 13947 | 10/33 | 15331 | 7/73 | 18695 | 5/9 |
| 13179 | 10/19 | 13948 | 10/33 | 15331 | 7/73 | 19091 | 2/27 |
| 13180 | 10/19 | 13949 | 10/33 | 15335 | 7/73 | 19091 | 3/18 |
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