

| Order code                                                        | Thermal trip adjustment range | Short circuit breaking capacity at 400V |      | Qty per pkg | Wt    |
|-------------------------------------------------------------------|-------------------------------|-----------------------------------------|------|-------------|-------|
|                                                                   |                               | Icu                                     | Ics  |             |       |
|                                                                   | [A]                           | [kA]                                    | [kA] | n°          | [kg]  |
| IEC breaking capacity Icu 100kA (0.1-10A) / 25kA (9-32A) at 400V. |                               |                                         |      |             |       |
| <b>11 SM1B 00</b>                                                 | 0.1-0.16                      | 100                                     | 100  | 5           | 0.278 |
| <b>11 SM1B 04</b>                                                 | 0.16-0.25                     | 100                                     | 100  | 5           | 0.278 |
| <b>11 SM1B 08</b>                                                 | 0.25-0.4                      | 100                                     | 100  | 5           | 0.278 |
| <b>11 SM1B 12</b>                                                 | 0.4-0.63                      | 100                                     | 100  | 5           | 0.278 |
| <b>11 SM1B 16</b>                                                 | 0.63-1                        | 100                                     | 100  | 5           | 0.278 |
| <b>11 SM1B 20</b>                                                 | 1-1.6                         | 100                                     | 100  | 5           | 0.278 |
| <b>11 SM1B 24</b>                                                 | 1.6-2.5                       | 100                                     | 100  | 5           | 0.352 |
| <b>11 SM1B 28</b>                                                 | 2.5-4                         | 100                                     | 100  | 5           | 0.352 |
| <b>11 SM1B 32</b>                                                 | 4-6.5                         | 100                                     | 100  | 5           | 0.352 |
| <b>11 SM1B 36</b>                                                 | 6.3-10                        | 100                                     | 100  | 5           | 0.352 |
| <b>11 SM1B 40</b>                                                 | 9-14                          | 25                                      | 12.5 | 5           | 0.352 |
| <b>11 SM1B 44</b>                                                 | 13-18                         | 25                                      | 12.5 | 5           | 0.352 |
| <b>11 SM1B 48</b>                                                 | 17-23                         | 25                                      | 12.5 | 5           | 0.352 |
| <b>11 SM1B 52</b>                                                 | 20-25                         | 25                                      | 12.5 | 5           | 0.352 |
| <b>11 SM1B 56</b>                                                 | 24-32                         | 25                                      | 12.5 | 5           | 0.352 |

## Operational characteristics

- IEC rated insulation voltage  $U_i$ : 690V
- IEC rated impulse withstand voltage: 6kV
- IEC rated frequency: 50/60Hz
- Maximum rated current: 32A
- Number of adjustment ranges:  
SM1A: 5 (9 to 32A)  
SM1B: 15 (0.1 to 32A)  
SM1C: 15 (0.1 to 32A)
- IEC breaking capacity: see page 1-17
- Power dissipation: 2.2-9.7W
- Magnetic tripping:  $12I_n$  max
- IEC thermal tripping class: 10A
- Phase failure / Single phase sensitive
- Mechanical life: 100,000 cycles
- Electrical life: 100,000 cycles
- Mounting on 35mm DIN rail (IEC/EN 60715)
- Mounting position: Any
- IEC utilisation category: A
- IEC degree of protection: IP20.

## Certifications and compliance

Certifications obtained: EAC; and UL Listed, for USA and Canada (cULus - File E93602); CCC for some SM1B types only (consult Customer Service for details; see contact details on inside front cover).  
See UL/CSA details under NOTE on the bottom left side.  
Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL508, CSA C22.2 n° 14.

## CONTACT AND RELEASE CHARACTERISTICS

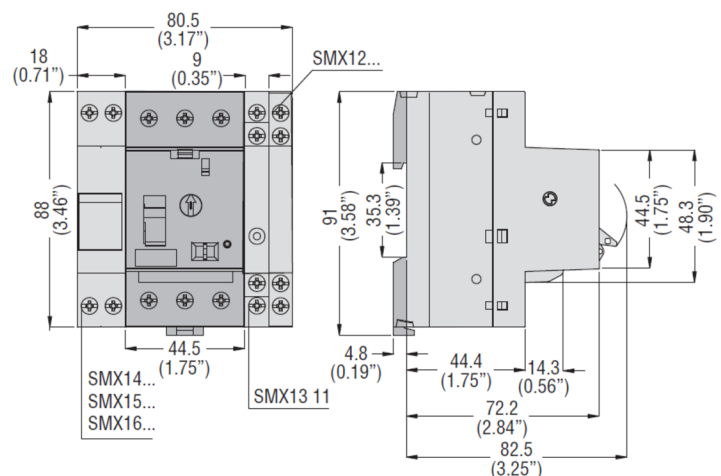
|                                         |        |                 |
|-----------------------------------------|--------|-----------------|
| Rated insulation voltage $U_i$          | V      | 690             |
| Rated impulse voltage $U_{imp}$         | kV     | 6               |
| Rated frequency                         | Hz     | 50/60           |
| Maximum rated current                   | A      | 32              |
| Number of adjustment ranges             | N°     | 15              |
| Power dissipation                       | W      | 2.2-9.7         |
| Magnetic tripping                       | A      | $12 \times I_n$ |
| Mechanical life                         | cycles | 100,000         |
| Electrical life (Ie max AC3)            | cycles | 100,000         |
| Maximum tightening torque for terminals | Nm     | 2.3             |
|                                         | lbin   | 20              |
|                                         | Tool   | PH2             |

|                                                            |                      |     |       |
|------------------------------------------------------------|----------------------|-----|-------|
| Minimum-maximum conductor section connectable 1 or 2 wires |                      |     |       |
|                                                            | AWG                  | N°  | 16-10 |
|                                                            | Flexible without lug | mm² | 1-6   |

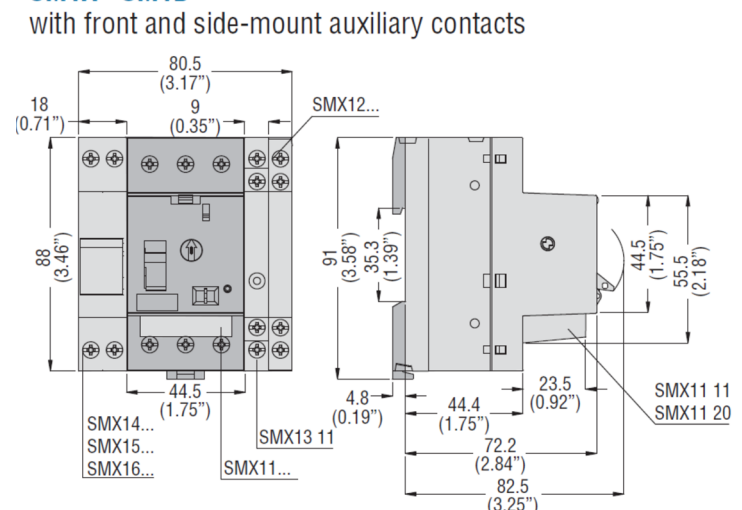
## AMBIENT CONDITIONS

|                   |              |    |           |
|-------------------|--------------|----|-----------|
| Temperature       | Operating    | °C | -20...+60 |
|                   | Storage      | °C | -50...+80 |
|                   | Compensation | °C | -20...+50 |
| Maximum altitude  | m            |    | 3000      |
| Mounting position |              |    | Any       |

## Breakers SM1A - SM1B with side-mount auxiliary contacts only



## SM1A - SM1B with front and side-mount auxiliary contacts





11 SMX11...

11 SMX12...



11 SMX13 11

11 SMX14...



11 SMX15...

11 SMX16...



11 SMX18 10



11 SMX90 30

11 SMX90 31


11 SMX90 3...  
11 SMX90 4...

| Order code                                         | Characteristics                                                          | Qty per pkg | Wt    |
|----------------------------------------------------|--------------------------------------------------------------------------|-------------|-------|
|                                                    |                                                                          | n°          | [kg]  |
| Add-on auxiliary contacts.                         |                                                                          |             |       |
| 11 SMX11 20Ⓢ                                       | Front mount 2NO                                                          | 10          | 0.013 |
| 11 SMX11 11Ⓢ                                       | Front mount 1NO+1NC                                                      | 10          | 0.013 |
| 11 SMX12 11                                        | Side mount 1NO+1NC                                                       | 10          | 0.045 |
| 11 SMX12 02                                        | Side mount 2NC                                                           | 10          | 0.045 |
| 11 SMX12 20                                        | Side mount 2NO                                                           | 10          | 0.045 |
| 11 SMX13 11                                        | Side-mount indicator contacts for thermal and magnetic tripping 1NO+1NCⓈ | 10          | 0.045 |
| Undervoltage trip releases.                        |                                                                          |             |       |
| 11 SMX14 BC                                        | 110VAC 50/60Hz                                                           | 5           | 0.125 |
| 11 SMX14 CL                                        | 230VAC 50/60Hz                                                           | 5           | 0.125 |
| 11 SMX14 EA                                        | 400VAC 50/60Hz                                                           | 5           | 0.125 |
| 11 SMX15 CL                                        | 230VAC 50/60Hz with early-make contacts                                  | 5           | 0.140 |
| 11 SMX15 EA                                        | 400VAC 50/60Hz with early-make contacts                                  | 5           | 0.140 |
| Shunt trip releases.                               |                                                                          |             |       |
| 11 SMX16 AF                                        | 24VAC 50/60Hz                                                            | 5           | 0.124 |
| 11 SMX16 BC                                        | 110VAC 50/60Hz                                                           | 5           | 0.124 |
| 11 SMX16 CL                                        | 230VAC 50/60Hz                                                           | 5           | 0.124 |
| 11 SMX16 EA                                        | 400VAC 50/60Hz                                                           | 5           | 0.124 |
| Padlockable attachment for operating lever.        |                                                                          |             |       |
| 11 SMX18 10                                        | 3 padlocks max Ø 5mm                                                     | 1           | 0.049 |
| Adjuster sealing kit.                              |                                                                          |             |       |
| 11 SMX18 12                                        | For all types                                                            | 1           | 0.006 |
| Padlockable door coupling handle.                  |                                                                          |             |       |
| 11 SMX18 14                                        | 3 padlocks maximum IP65. Red/yellow                                      | 1           | 0.720 |
| 11 SMX18 15                                        | 3 padlocks maximum IP65. Black                                           | 1           | 0.760 |
| Terminal block for busbar supply.                  |                                                                          |             |       |
| 11 SMX90 30                                        | For all types                                                            | 10          | 0.048 |
| Safety cover.                                      |                                                                          |             |       |
| 11 SMX90 31                                        | For unused busbar terminals                                              | 10          | 0.005 |
| Three-phase connection busbars 45mm/1.77" spacing. |                                                                          |             |       |
| 11 SMX90 32                                        | For 2 breakers without side-mount contacts                               | 10          | 0.027 |
| 11 SMX90 33                                        | For 3 breakers without side-mount contacts                               | 10          | 0.050 |
| 11 SMX90 34                                        | For 4 breakers without side-mount contacts                               | 10          | 0.071 |
| 11 SMX90 35                                        | For 5 breakers without side-mount contacts                               | 10          | 0.092 |
| Three-phase connection busbars 54mm/2.13" spacing. |                                                                          |             |       |
| 11 SMX90 42                                        | For 2 breakers complete with side-mount contacts                         | 10          | 0.031 |
| 11 SMX90 43                                        | For 3 breakers complete with side-mount contacts                         | 10          | 0.056 |
| 11 SMX90 44                                        | For 4 breakers complete with side-mount contacts                         | 10          | 0.081 |
| 11 SMX90 45                                        | For 5 breakers complete with side-mount contacts                         | 10          | 0.081 |

Ⓢ Not suitable for fixing on SM1C types.

Ⓢ Tripping is indicated by flag indicator on front.

### General and operational characteristics

#### ADD-ON AUXILIARY BLOCKS

- Snap on to the front or the right side of the breaker
- Maximum combination: 3 SMX... blocks with 6 auxiliary contacts in total of which 2 on front (SM1C excluded) and 4 on the side (2 normal contacts and 2 indicators)
- IEC conventional free air thermal current I<sub>th</sub>: 6A (2.5A for SMX11...)
- IEC rated insulation voltage U<sub>i</sub>: 690V (250V for SMX11...)
- UL/CSA and IEC/EN 60947-5-1 designation: C600 Q600 (C300 R300 for SMX11...)
- Maximum tightening torque: 1Nm/9lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5 mm<sup>2</sup> or 18/14 AWG
- Width of side-mount auxiliary contacts equal to 0.5 standard DIN 46880 module.

#### UNDERVOLTAGE TRIP RELEASE

- Connectable to the left side of the breaker
- Consumption in-rush/holding: 12/3.5VA
- Drop-out voltage: 0.35-0.7Us
- Pick-up voltage: 0.85-1.1Us
- Maximum tightening torque: 1Nm/9lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5mm<sup>2</sup> or 18/14 AWG.

#### SHUNT TRIP RELEASE

- Connectable to the left side of the breaker
- In-rush consumption: 20VA
- Operating limits: 0.7-1.1Us
- Maximum tightening torque: 1Nm/9lbin
- Conductor cross section minimum-maximum (1 or 2 wires): 0.75-2.5mm<sup>2</sup> or 18/14 AWG.

#### TERMINAL BLOCK FOR BUSBAR SUPPLY

- I<sub>max</sub> 63A
- Maximum tightening torque: 2.3Nm/20lbin
- Conductor cross section minimum-maximum: 4-25mm<sup>2</sup> or 10/4 AWG.

#### THREE-PHASE CONNECTION BUSBAR

- I<sub>max</sub> 63A
- SMX90 3... 45mm/1.77" spacing to reduce the width to the minimum
- SMX90 4... 54mm/2.13" spacing to consent to fit one side-mount auxiliary contact block on the breaker.

#### Certifications and compliance

Certifications obtained: EAC for all; UL Listed, for USA and Canada (cULus - File E93602), under motor controllers, for auxiliary contacts, releases and padlockable attachment of operating lever; CCC for SMX12... and SMX13 11 auxiliary contacts. Compliant with standards: IEC/EN 60947-1, IEC/EN 60947-5-1, UL508, CSA C22.2 n° 14.



11 SMX90 03



SMX31 41  
SMX31 42  
SMX32 41



11 SMX90 10



11 SMX90 12



11 SMX90 14



11 SMX17 10  
11 SMX17 11



11 SMX17 20



11 SMX17 35



11 SMX17 40



11 SMX17 45

| Order code | Characteristics | Qty per pkg | Wt   |
|------------|-----------------|-------------|------|
|            |                 | n°          | [kg] |

Rigid SM1 breaker-contactor connections.

|             |                                                                                 |    |       |
|-------------|---------------------------------------------------------------------------------|----|-------|
| 11 SMX90 03 | For SM1 breaker with BG mini-contactor.                                         | 10 | 0.025 |
| SMX31 41    | For SM1 breaker with BF09A-BF25A contactor. Complete with cover                 | 10 | 0.044 |
| SMX31 42    | For SM1 breaker with BF09D-BF25D and BF09L-BF25L contactor. Complete with cover | 10 | 0.046 |
| SMX32 41    | For SM1 breaker with BF26A-BF38A contactor. Complete with cover                 | 10 | 0.050 |

Adapter plates.

|             |                                                                                               |   |       |
|-------------|-----------------------------------------------------------------------------------------------|---|-------|
| 11 SMX90 10 | Adapter plate for direct-on-line starter (SM1 breaker and BG or BF09A-BF38A contactors)       | 1 | 0.058 |
| 11 SMX90 12 | Adapter plate for reversing contactor assembly (SM1 breaker and BG or BF09A-BF38A contactors) | 1 | 0.095 |
| 11 SMX90 14 | Adapter plate for star-delta starter (SM1 breaker and 45mm/1.77" wide contactors BF09A-BF38A) | 1 | 0.118 |
| 11 SMX90 18 | 35mm DIN rail (IEC/EN 60715) for cable bypass of contactor used with SMX90 14 plate           | 1 | 0.025 |
| 11 SMX90 19 | 35mm DIN rail extension                                                                       | 1 | 0.025 |

Surface mount enclosures.

|             |                      |   |       |
|-------------|----------------------|---|-------|
| 11 SMX17 10 | IP40. 100mm/4" wide  | 1 | 0.404 |
| 11 SMX17 11 | IP40. 85mm/3.3" wide | 1 | 0.358 |

Flush mount enclosure.

|             |                                                    |   |       |
|-------------|----------------------------------------------------|---|-------|
| 11 SMX17 20 | IP40. 122mm/4.8" wide, 103x144mm/4.05x5.67" cutout | 1 | 0.341 |
|-------------|----------------------------------------------------|---|-------|

ACCESSORIES FOR ENCLOSURES.

Padlockable rotary actuator.

|             |                                                        |   |       |
|-------------|--------------------------------------------------------|---|-------|
| 11 SMX17 30 | IP65. Grey-black. For SMX17 10 and SMX17 20 enclosures | 1 | 0.110 |
| 11 SMX17 35 | IP65. Red-yellow. For SMX17 10 and SMX17 20 enclosures | 1 | 0.142 |

Actuator with emergency stop button.

|             |                              |    |       |
|-------------|------------------------------|----|-------|
| 11 SMX17 40 | IP65. For SMX17 11 enclosure | 10 | 0.174 |
|-------------|------------------------------|----|-------|

IP65 membrane complete with rim.

|             |                        |    |       |
|-------------|------------------------|----|-------|
| 11 SMX17 45 | For SMX17 11 enclosure | 10 | 0.035 |
|-------------|------------------------|----|-------|

Neutral connection.

|             |                                           |    |       |
|-------------|-------------------------------------------|----|-------|
| 11 SMX17 50 | For SMX17 10 and SMX17 20 enclosures only | 10 | 0.026 |
|-------------|-------------------------------------------|----|-------|

Pilot light.

|          |       |    |       |
|----------|-------|----|-------|
| 23 NEONV | Green | 10 | 0.006 |
| 23 NEONR | Red   | 10 | 0.006 |

Marking elements.

|       |                         |    |       |
|-------|-------------------------|----|-------|
| BFX30 | Blank label for writing | 50 | 0.002 |
|-------|-------------------------|----|-------|

① To obtain IP65 degree of protection, mount the 11 SMX17 45 membrane.

② The device obtained with this actuator is not suitable for isolation per IEC/EN 60947-2 standards.

③ Complete with required voltage. Available voltages:  
– AC 50/60Hz 24/110/220-240 (indicate 220/380-415 (indicate 380) VAC.

### General and operational characteristics

#### SM1 - CONTACTOR CONNECTION

The SMX90 03, SMX31... and SMX32 41 rigid connections electrically and mechanically fasten the breaker together with the contactor forming a single-unit starter for quick installation on 35mm DIN rail (IEC/EN 60715).

#### STARTER ASSEMBLY ADAPTER PLATES

The elements consent to preassemble starters and to form trim and compact single-unit equipment for quick and easy installation.

The starter adapter plates install on 35mm DIN rail (IEC/EN 60715).

#### SURFACE MOUNT ENCLOSURE

- Top or bottom entry:
  - PG16 threaded knockouts for SMX17 10
  - 22.5mm/0.88" knockouts for SMX17 11
- Rear entry:
  - 22.5mm/0.88" knockouts
- Holds a SM1 breaker equipped with one side-mount contact block, one front-mount block (except for SM1C) and either one shunt or undervoltage release
- Earth/ground terminal included
- Operating temperature: -5...+40°C
- Storage temperature: -50...+80°C.

#### FLUSH MOUNT ENCLOSURE

- Use with breaker, complete with 1 front-mount (except for SM1C) and 1 side-mount blocks and one shunt or undervoltage release
- Earth/ground terminal included
- 103x144mm/4.05x5.67" cutout
- Operating temperature: -5...+40°C
- Storage temperature: -50...+80°C.

#### ENCLOSURE ACCESSORIES

##### PADLOCKABLE ROTARY ACTUATOR:

- Suitable for SMX17 10 or SMX17 20 type only
- Raises the degree of protection of the enclosure to IEC IP65
- 3 padlocks maximum.

##### ACTUATOR WITH EMERGENCY PUSH-BUTTON:

- Suitable for SMX17 11 only
- Raises the degree of protection of the enclosure to IEC IP65.

#### Certifications and compliance

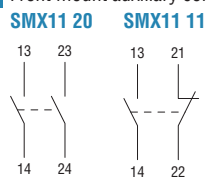
Certifications obtained: EAC for all SMX... types and pilot lights; UL Listed for USA and Canada (cULus - File E93602), under motor controllers, for SMX90 03, SMX31 41 and SMX32 41 connections. Compliant with standards: IEC/EN 60947-1, UL508, CSA C22.2 n° 14.

1

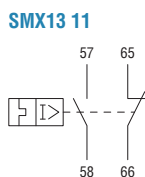
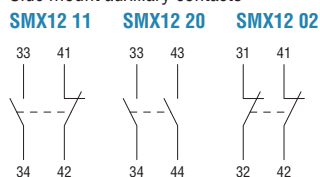
### ADD-ON BLOCKS

For SM1... types

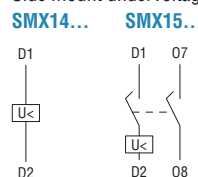
Front mount auxiliary contacts



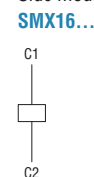
Side mount auxiliary contacts



Side mount undervoltage trip releases

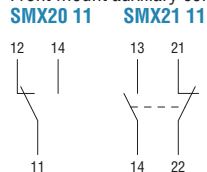


Side mount shunt trip release

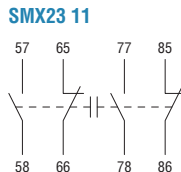
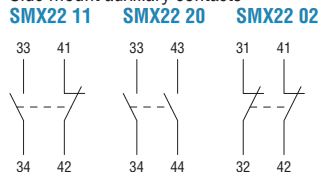


For SM2A... and SM3A types

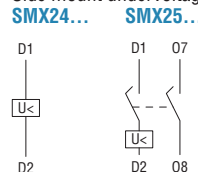
Front mount auxiliary contacts



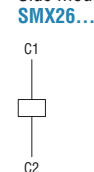
Side mount auxiliary contacts



Side mount undervoltage trip releases



Side mount shunt trip release

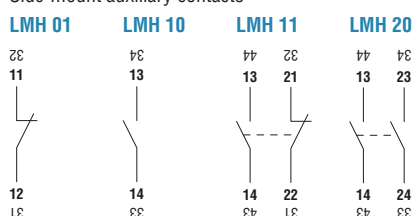


① Change in event of magnetic and/or thermal tripping.  
② Change in event of magnetic tripping.  
NOTE: During breaker testing, only contacts 57-58 and 65-66 switch.

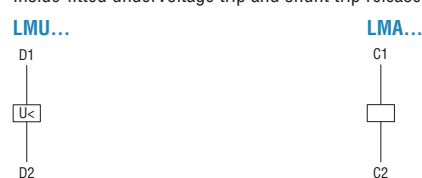
For LMS25 types

The termination of the LMH... auxiliary contacts has more than one numbering due to the fact that the block can assume various mounting positions. The numbering in boldface indicates when it is mounted on the left side of the breaker.

Side-mount auxiliary contacts



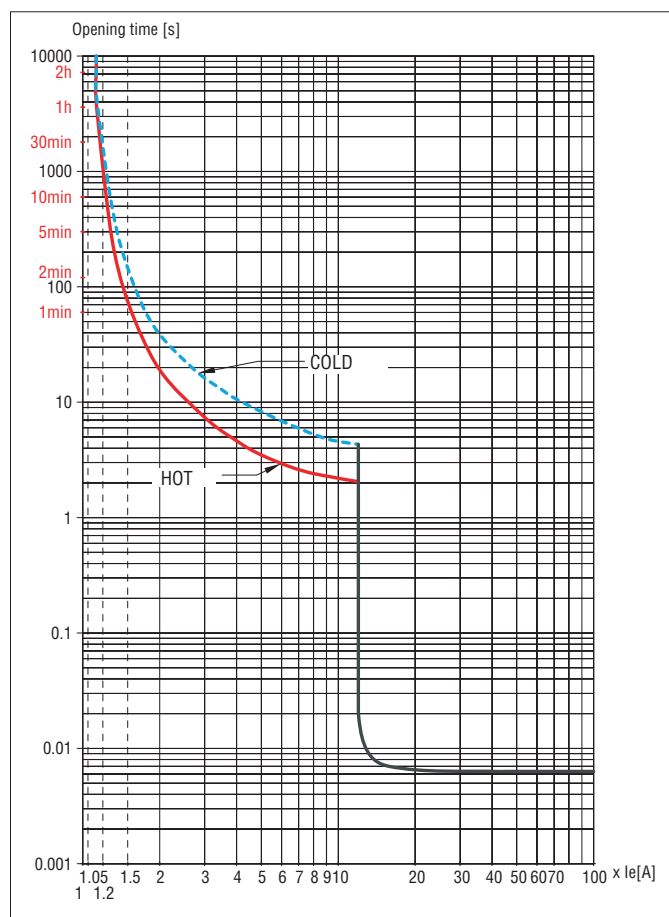
Inside-fitted undervoltage trip and shunt trip releases



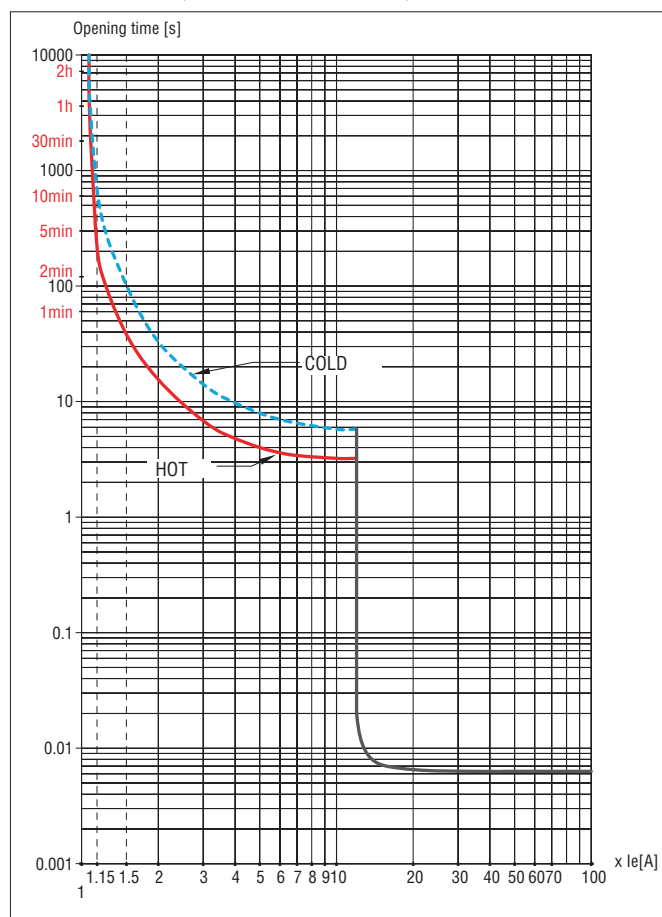
## Technical characteristics

### THERMAL TRIP CHARACTERISTIC (AVERAGE TIME)

Three-phase balanced operation



Two-phase operation (phase failure/single phasing)



Tripping times can have a  $\pm 20\%$  deviation with respect to the average tripping curve values above.