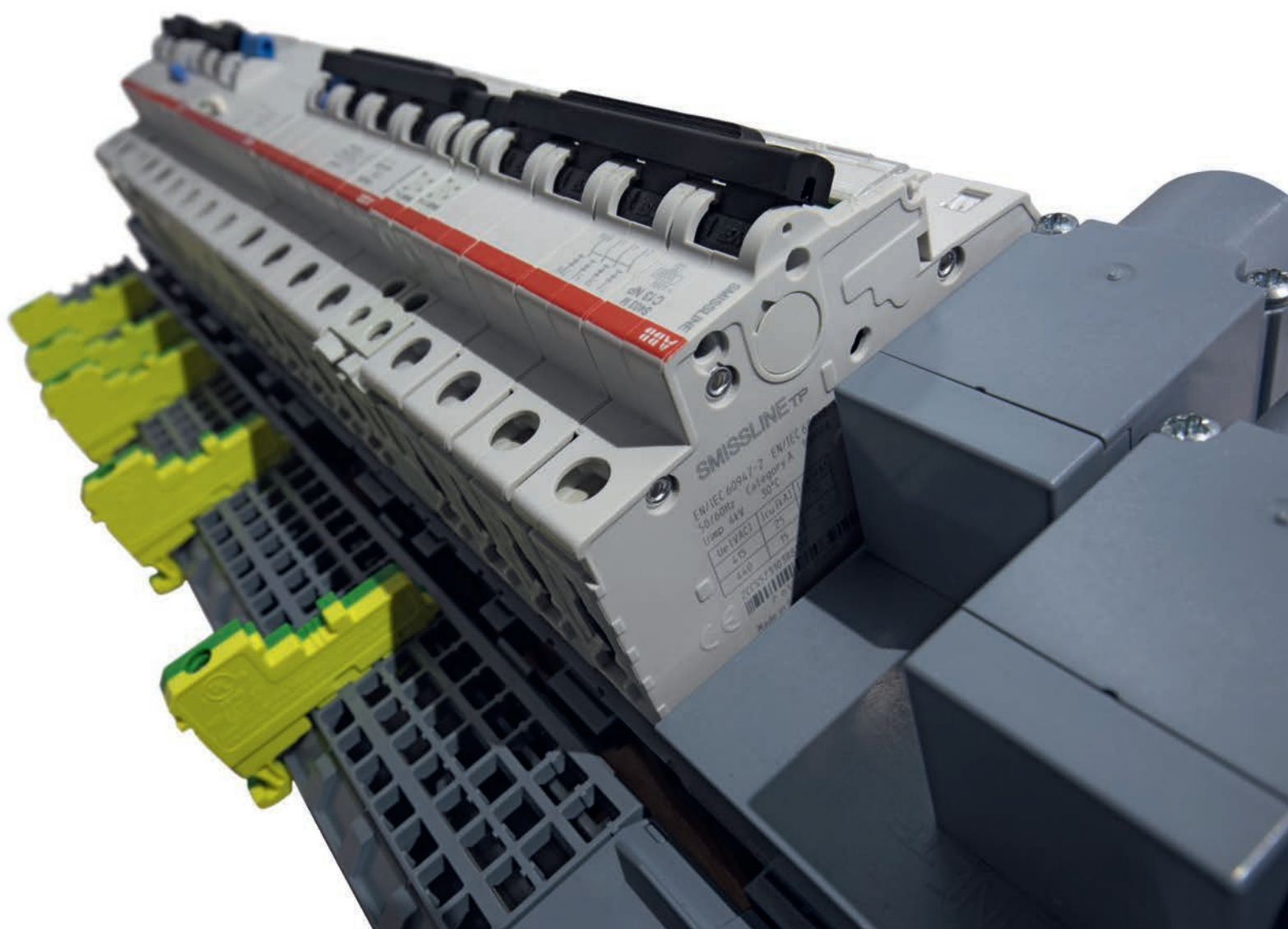


TECHNICAL CATALOGUE

# SMISSLINE TP-Touch proof system

## Power and safety



- Devices and components can be plugged on and off under voltage
- Rapid replacement, easy expansion
- Maximum system availability

—  
**Small cause, large effect.**

**The plug-in SMISSLINE TP system main strengths are wherever rapid replacement, simple expansion capabilities, a mixed-polarity layout or a high level of standardization is required.**

**It is also the perfect fit for any application where costly downtime must be avoided.**



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## SMISSLINE: Product news

### Residual current operated circuit breaker RCCBs Type B



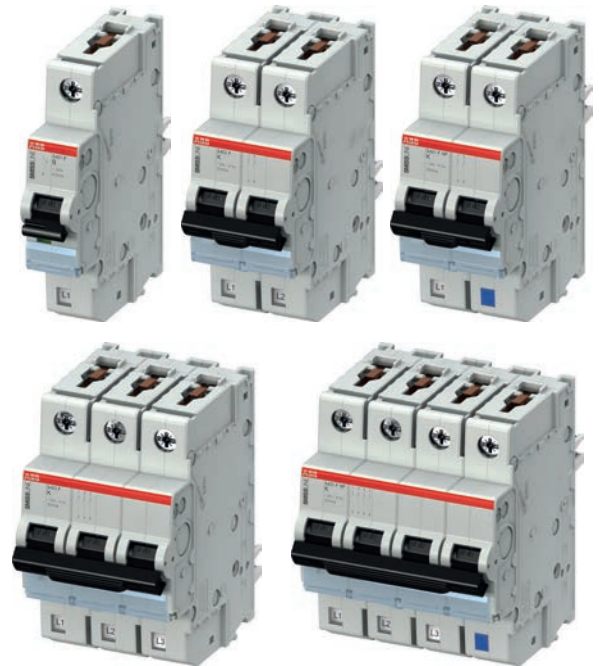
Type B residual-current circuit breakers (RCCBs) are mainly used in trade and industry. The Type B RCCBs are suitable for non-linear circuits, which can generate residual currents with smooth DC residual currents and with strongly varying (high) frequencies.

These components are found in electronic equipment such as frequency converters. The Type B RCCBs have a frequency range from 0 to 2 kHz in order to detect the residual current. They thus ensure a high level of system availability.

#### Advantages

- Maximum operational continuity under all working conditions
- Covers new areas of application with the SMISSLINE system

### High Performance MCB S400P up to 40 kA



The high breaking capacity  $I_{cu}$  of up to 40 kA according IEC/EN 60947-2 allows electric systems to be configured and operated in a simple and safe manner. Coordination with upstream breakers, such as the ABB XTmax, results in excellent back-up protection and selectivity for downstream MCB S400P.

The compact dimensions of 18mm enable a space saving form of energy distribution. The S400P High Performance MCB is available with characteristics B, C, and K from 2 A up to 63 A. The S400P High Performance SMISSLINE MCB also meets the norms VDE, CCC, GL/DNV and EAC.

#### Advantages

- High-performance miniature circuit breaker (MCB) acc. EN/IEC 60947-2
- 2 A...16 A, AC 240/415 V: 40 kA
- 20 A...40 A, AC 240/415 V: 30 kA
- 50 A...63 A, AC 240/415 V: 20 kA



## SMISSLINE: Product news

**Adapter for manual motor starter MS116 and MS132 Push-in terminals**



The new push-in spring-terminal motor starter solution can be wired up exceedingly quickly by simply plugging it in – no tools are required. This reduces the wiring time compared to conventional spring-terminal technology by 50% – and the connections are just as reliable. Special modules are now available for the SMISSLINE plug-in system. The push-in motor starter solution enables very quick and simple installation on the socket system.

### **Advantages**

- Type E and Type F applications in accordance with UL 60947-4-1 are possible up to a rated current of 16 A
- Simple, quick, safe

**Direct feed busbar system 250 A to Moulded Case Circuit Breaker XT4**



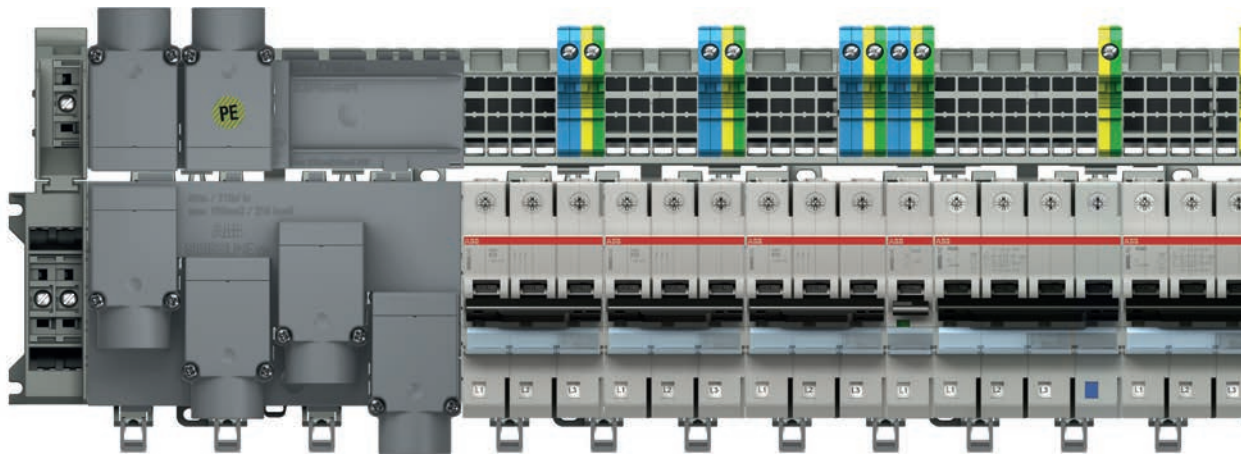
The new direct feed starter pack solution allows a direct connection from the Power Bar System to the ABB XT4 Moulded Case Circuit Breaker. The solution is built for a vertical design with one or two busbar system in one enclosure. The new solution saves space and wiring time. This combination is tested according IEC/EN 61439-6 and UL508 as well.

### **Advantages**

- Direct connection ABB XT4
- Allows quick and simple handling

## SMISSLINE TP Power Bar System 250 A

### More Power with Proven Safety

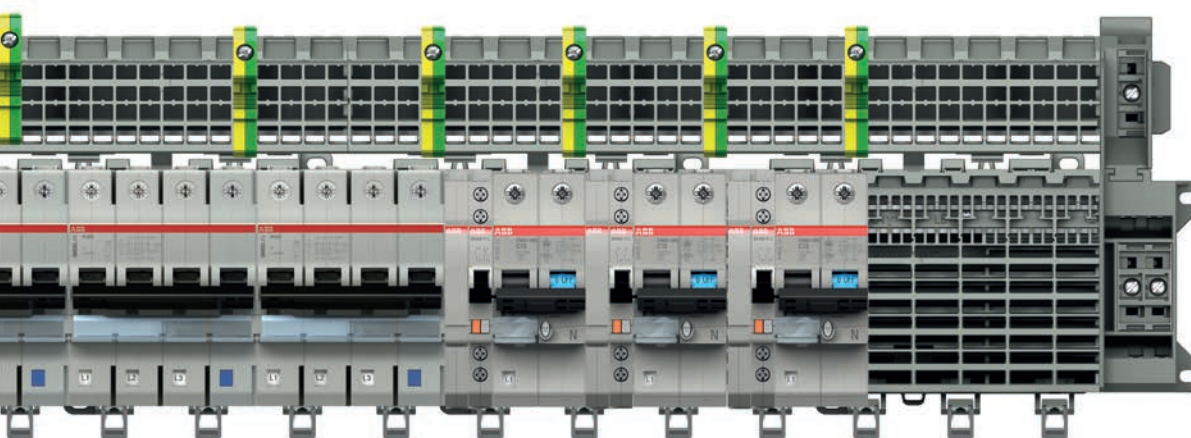


With the new SMISSLINE TP Power Bar System, a high-performance 250 A system is now available. The busbars thus enable lateral 250 A power supply. This increases the range of possible applications.

Especially in applications involving high-current devices, this increases the scope to realize applications. More outputs with high current levels can be positioned on the same busbar system. The power bar system is compatible with the previous directly pluggable devices.

An incoming terminal block is now also available with the connection option for ring lugs. This facilitates connection sizes from 50 mm<sup>2</sup> to 150 mm<sup>2</sup>.

The connecting cables are able to run through several SMISSLINE socket rows. The connection is safe and user-friendly. This allows the full flexibility of the 250 A SMISSLINE system to be exploited to a greater extent. The new incoming terminal block is also able to cope with the higher mechanical forces that occur with a cable connection up to 150 mm<sup>2</sup>. The 250 A power bar system is now also certified to UL 508.

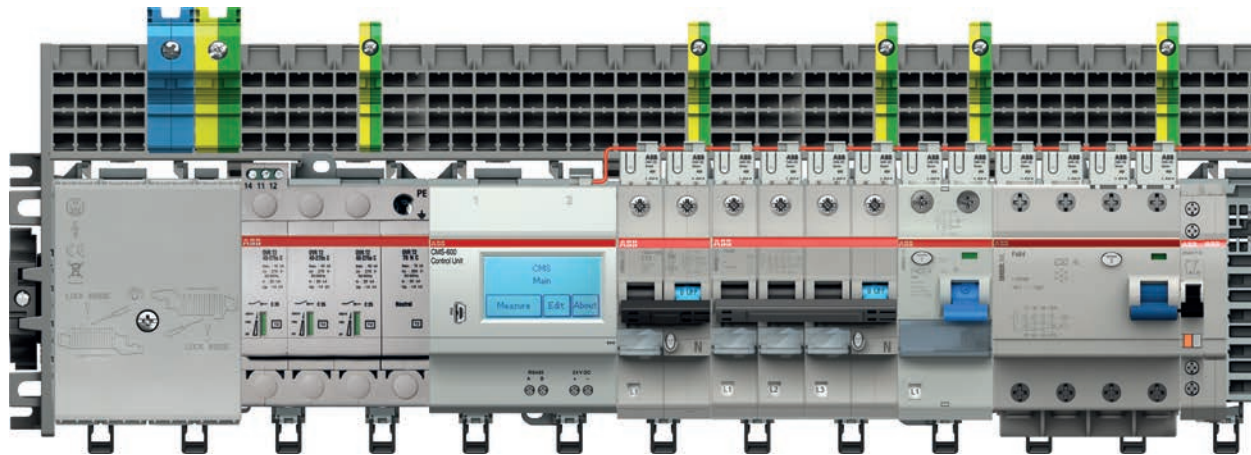
**SMISLINE TP Power Bar System**

- Lateral power supply with 250 A for IEC 61439-6 and UL 508 applications. The additional socket is not UL-approved.
- Power supply solution with threaded connection for a ring lug up to 150 mm<sup>2</sup>
- Safe and strong option for connection to power supply circuit breaker
- Practice-oriented set-up and connection in distribution systems for vertical or horizontal applications
- Simple and quick assembly
- Devices can be arranged on the system in any order
- Systems set up vertically and in parallel: each with one power supply



## Absolutely safe without protective equipment

### The SMISSLINE TP principle taken further

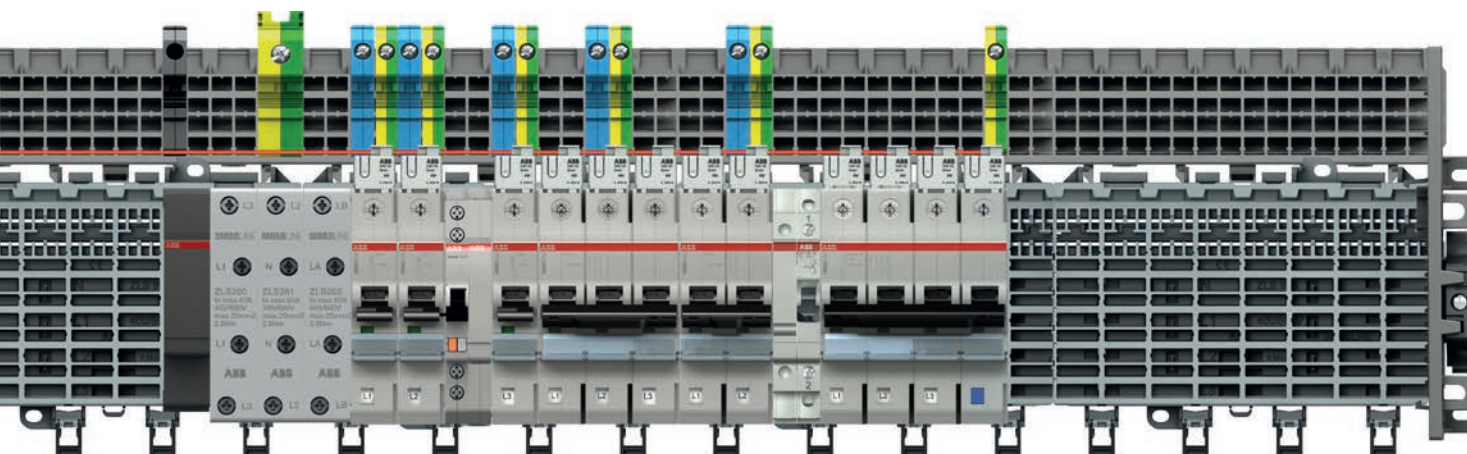


#### The ingenious Click system

Using the SMISSLINE TP system's unique SMISS CLICK function, five different protective devices can easily be plugged into one pluggable socket system with integrated busbars. In this way, the SMISSLINE system allows the uncomplicated, modular, flexible distribution of power. Plugging in the devices quickly and without problems is essential for time-saving, cost-effective planning and execution.

#### Current measurement system

The CMS is a system for current measurement of electrical lines. The system consists of a Control Unit and sensors with different measurement ranges (20 A, 40 A, 80 A). The sensors measure alternating, direct and mixed currents (TRMS). The sensors get connected to the Control Unit by a flat cable. You can remotely query the measurement data via a RS485 interface (Modbus RTU).



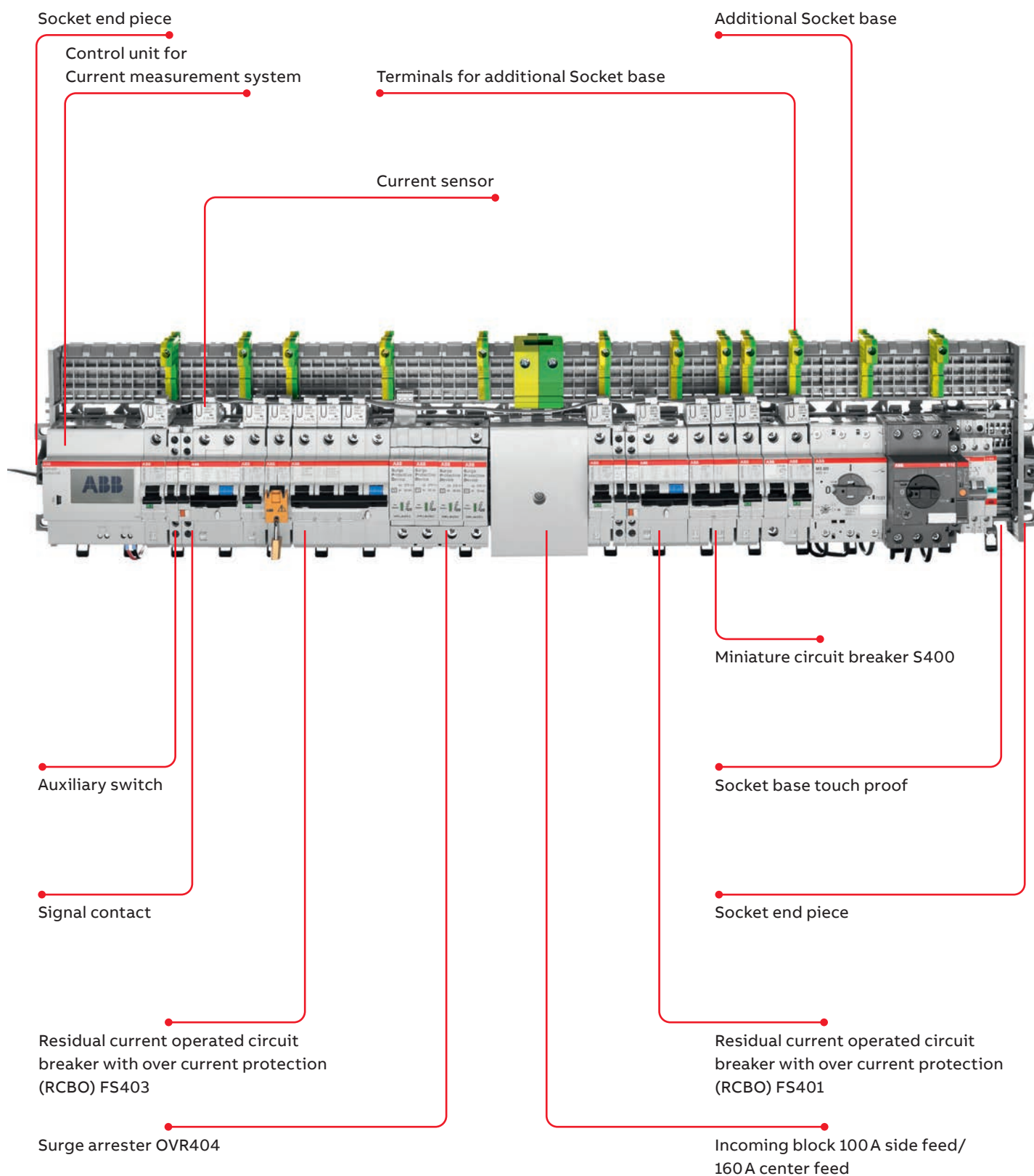
#### The RANGE

- Miniature circuit breaker 1-, 2-, 3- and 4-pole
- Residual current circuit breaker 2- and 4-pole
- Residual current operated circuit breaker with overcurrent protection
- Surge arrester type 2
- Switch disconnector
- Motor protection switch
- Busbar system, contact rails max. 125 A; incoming system with max. 250 A and Power Bar System contact rails max. 250 A; incoming system with max. 400 A
- Wide range of accessories

#### SMISLINE TP at a glance

- **Safe:** load-free plugging in and unplugging possible under power
- **Flexible:** rapid replacement, easy expansion, mixed-pole layout possible
- **Economical:** saves time and space thanks to the plug-in technology

## Six protection devices in one system





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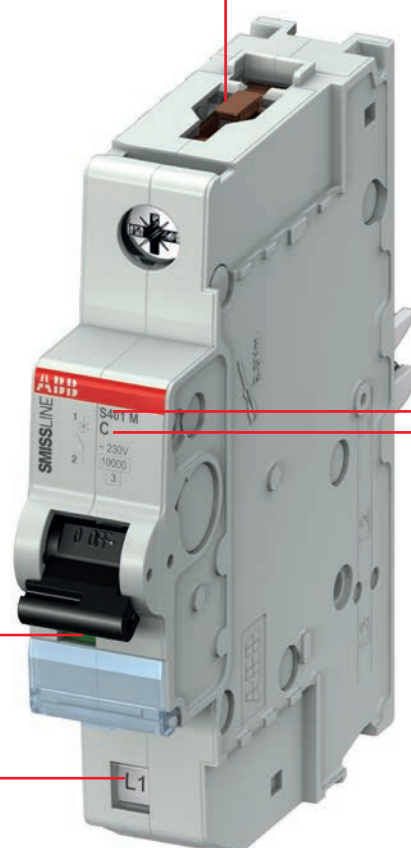
# Miniature circuit breaker (MCB)

## Electrical installation solutions for buildings

New, patented bidirectional terminal with captive screws for maximum comfort, safety and flexibility. The connection takes place in two chambers (35 mm<sup>2</sup> and 10 mm<sup>2</sup>). Two conductors with the same cross-section can be connected in each chamber.

Reliable recognition of the switching status through the new red/green position indicating device that shows the position of the inner contacts.

Laser printing for scratch- and solvent-resistant identification marking



Tripping characteristics B, C, D, K, UCC and UCZ.

Rated breaking capacity of 6 kA to 10 kA according to IEC/EN 60898-1 (B, C, D) and 6 kA to 25 kA according to IEC/EN 60947-2 (C and K)

For S400P

2...16 A, AC 240/415 V: 40 kA  
20...40 A, AC 240/415 V: 30 kA  
50...63 A, AC 240/415 V: 20 kA  
according to IEC/EN 60947-2

Pole conductor indicator changes when the contact is moved to the rear of the device

## Miniature circuit breaker (MCB) for IEC

### S400M technical features

When installed correctly the requirements of EN/IEC 61439-2 are met.

| S400M                                                      |                                                                                                                                                                                                                                |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General data</b>                                        |                                                                                                                                                                                                                                |
| Tripping characteristics                                   | B,C,D,K                                                                                                                                                                                                                        |
| Poles                                                      | 1P, 1P+NP, 2P, 3P, 3P+NP                                                                                                                                                                                                       |
| Rated current $I_n$                                        | 0.5A...63A                                                                                                                                                                                                                     |
| Rated frequency $f$                                        | 50/60Hz                                                                                                                                                                                                                        |
| Rated insulation voltage $U_i$ acc. to DIN EN 60664-1      | 440VAC                                                                                                                                                                                                                         |
| Rated impulse withstand voltage $U_{imp}$ (1.2/50 $\mu$ s) | 4kV                                                                                                                                                                                                                            |
| Overvoltage category                                       | III                                                                                                                                                                                                                            |
| Pollution degree                                           | 3                                                                                                                                                                                                                              |
| <b>Data acc. to IEC/EN 60898-1</b>                         |                                                                                                                                                                                                                                |
| Rated operational voltage $U_e$                            | 1P: 230/400VAC; 1P+NP: 230VAC ; 2...3P: 400VAC; 3P+NP: 400VAC;<br>1P 60VDC; 2P 125VDC                                                                                                                                          |
| Min. operating voltage                                     | 12VAC                                                                                                                                                                                                                          |
| Rated short-circuit capacity $I_{cn}$                      | 10kA                                                                                                                                                                                                                           |
| Energy limiting class                                      | 3                                                                                                                                                                                                                              |
| Reference Ambient Air Temperature for Overload Tripping    | B, C, D: 30°C                                                                                                                                                                                                                  |
| <b>Data acc. to IEC/EN 60947-2</b>                         |                                                                                                                                                                                                                                |
| Rated operational voltage $U_e$                            | 1P: 240VAC; 1P+N: 240VAC; 2...4P: 415VAC; 3P+N: 415VAC; 254/440V                                                                                                                                                               |
| Min. operating voltage                                     | 12VAC-12VDC                                                                                                                                                                                                                    |
| Rated ultimate short-circuit capacity $I_{cu}$             | 25kA (0,5 up to 16A, 240/415V); 0,5 to 2A 50kA on request<br>15kA (20 up to 63A, 240/415V)<br>15kA (0,5 up to 16A, 254/440V)<br>6kA (20 up to 63A, 254/440V)                                                                   |
| Rated service short-circuit capacity $I_{cs}$              | 15kA (0,5 up to 16A, 240/415V)<br>7,5kA (20 up to 63A, 240/415V)<br>6kA (0,5 up to 16A, 254/440V)<br>3kA (20 up to 63A, 254/440V)                                                                                              |
| Reference Ambient Air Temperature for Overload Tripping    | C: 30°C K: 40°C                                                                                                                                                                                                                |
| <b>Mechanical Data</b>                                     |                                                                                                                                                                                                                                |
| Classification acc. To NF F 126-101, NF F 16-102           | Acc. to I2/F3                                                                                                                                                                                                                  |
| IP Code                                                    | IP20, IP40 in enclosure with cover                                                                                                                                                                                             |
| Endurance                                                  | Electrical endurance: 10000ops<br>Mechanical endurance: 10000ops                                                                                                                                                               |
| Shock resistance acc. to IEC/EN 61373                      | 5g – 30ms, 3 shocks                                                                                                                                                                                                            |
| Vibration resistance acc. to IEC/EN 60068-2-6              | 2...13.2 Hz / 1 mm<br>13.2...100Hz / 0.7 g, 5 cycles<br>5...150...5 Hz / 1 g, 4 waves                                                                                                                                          |
| Ambient temperature                                        | -25...+60°C                                                                                                                                                                                                                    |
| Storage temperature                                        | -40...+70°C                                                                                                                                                                                                                    |
| <b>Installation</b>                                        |                                                                                                                                                                                                                                |
| Terminal type                                              | Failsafe bi-directional cylinder-lift terminal (shock protected)                                                                                                                                                               |
| Terminal rigid IEC connections (solid/stranded)            | Single: 0.75 ... 35 mm <sup>2</sup> (front slot), 0.75 ... 10mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75 ... 10mm <sup>2</sup> (front slot), 2x0.75 ... 6mm <sup>2</sup> (rear slot),<br>with cables of same type and size |
| Terminal flexible IEC connections                          | Single: 0.75 ... 25 mm <sup>2</sup> (front side), 0.75 ... 6 mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75 ... 10mm <sup>2</sup> (front slot), 2x0.75 ... 6mm <sup>2</sup> (rear slot),<br>with cables of same type and size |
| Tightening torque                                          | 2.8Nm                                                                                                                                                                                                                          |
| Screwdriver                                                | No. 2 Pozidrive                                                                                                                                                                                                                |
| Mounting                                                   | Plug in on bus bar system SMISSLINE                                                                                                                                                                                            |
| Mounting position                                          | Any                                                                                                                                                                                                                            |
| Supply                                                     | Any                                                                                                                                                                                                                            |
| <b>Dimensions and weight</b>                               |                                                                                                                                                                                                                                |
| Pole dimensions (HxDxW)                                    | 91x18x82                                                                                                                                                                                                                       |
| Pole weight                                                | 110g                                                                                                                                                                                                                           |

## Miniature circuit breaker (MCB)

### Technical data S400M-UC technical features

| S400M-UC                                                          |                                                                                                                                                                                                                               |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General data</b>                                               |                                                                                                                                                                                                                               |
| Tripping characteristics                                          | UCC, UCZ                                                                                                                                                                                                                      |
| Standards                                                         | IEC/EN 60947-2                                                                                                                                                                                                                |
| Poles                                                             | 1P, 2P                                                                                                                                                                                                                        |
| Rated current $I_n$                                               | 0.5A... 63A                                                                                                                                                                                                                   |
| Rated frequency $f$                                               | 50/60 Hz                                                                                                                                                                                                                      |
| Rated insulation voltage $U_i$ acc. to DIN EN 60664-1             | 440VAC                                                                                                                                                                                                                        |
| Rated impulse withstand voltage $U_{imp}$ (1.2/50µs)              | 4kV                                                                                                                                                                                                                           |
| Overvoltage category                                              | III                                                                                                                                                                                                                           |
| Pollution degree                                                  | 3                                                                                                                                                                                                                             |
| <b>Data acc. to IEC/EN 60947-2</b>                                |                                                                                                                                                                                                                               |
| Rated operational voltage $U_e$                                   | 110 VDC (1pole)<br>220VDC (poles 1; 2)<br>440VDC (2pole)<br>230/400 VAC (poles 1; 2)                                                                                                                                          |
| Min. operating voltage                                            | 12VAC–12VDC                                                                                                                                                                                                                   |
| Rated ultimate short-circuit capacity $I_{cu}$                    | 10kA (0,5 up to 63A, 220VDC 1pole)<br>20kA (0,5 up to 63A, 110VDC 1pole)<br>25kA (0,5 up to 63A, 220VDC 2pole)<br>10kA (0,5 up to 63A, 440VDC 2pole)<br>10kA (0,5 up to 63A, 230/400VAC)                                      |
| Rated service short-circuit capacity $I_{cs}$                     | 10kA (0,5 up to 63A, 220VDC 1pole)<br>10kA (0,5 up to 63A, 110VDC 1pole)<br>20kA (0,5 up to 63A, 220VDC 2pole)<br>10kA (0,5 up to 63A, 440VDC 2pole)<br>6kA (0,5 up to 63A, 230/400VAC)                                       |
| Reference Ambient Air Temperature for Overload Tripping           | 30°C                                                                                                                                                                                                                          |
| <b>Mechanical Data</b>                                            |                                                                                                                                                                                                                               |
| IP Code                                                           | IP20B, IP40 in enclosure with cover                                                                                                                                                                                           |
| Endurance                                                         | Electrical endurance: 10000ops<br>Mechanical endurance: 10000ops                                                                                                                                                              |
| Shock resistance acc. to IEC/EN 61373                             | 5g – 30ms, 3 shocks                                                                                                                                                                                                           |
| Vibration resistance acc. to IEC/EN 60068-2-6                     | 2... 13.2 Hz / 1 mm<br>13.2... 100Hz / 0.7 g, 5 cycles<br>5... 150... 5 Hz / 1 g, 4 waves                                                                                                                                     |
| Environmental conditions (damp heat)<br>acc. to IEC/EN 60068-2-30 | 2 cycles with 55°C/90–96% and 25°C/95–100%                                                                                                                                                                                    |
| Ambient temperature                                               | –25... +60°C                                                                                                                                                                                                                  |
| Storage temperature                                               | –40... +70°C                                                                                                                                                                                                                  |
| <b>Installation</b>                                               |                                                                                                                                                                                                                               |
| Top terminal type                                                 | Failsafe bi-directional cylinder-lift terminal with double slot 35/10mm <sup>2</sup>                                                                                                                                          |
| Top terminal rigid IEC connections (solid/stranded)               | Single: 0.75 ... 35mm <sup>2</sup> (front slot), 0.75 ... 10mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75 ... 10mm <sup>2</sup> (front slot), 2x0.75 ... 6mm <sup>2</sup> (rear slot),<br>with cables of same type and size |
| Top terminal flexible IEC connections                             | Single: 0.75 ... 25mm <sup>2</sup> (front side), 0.75 ... 6mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75 ... 10mm <sup>2</sup> (front slot), 2x0.75 ... 6mm <sup>2</sup> (rear slot),<br>with cables of same type and size  |
| Tightening torque                                                 | 2.8Nm                                                                                                                                                                                                                         |
| Screwdriver                                                       | No. 2 Pozidrive                                                                                                                                                                                                               |
| Mounting                                                          | plug in on bus bar system SMISSLINE                                                                                                                                                                                           |
| Mounting position                                                 | any                                                                                                                                                                                                                           |
| Supply                                                            | any                                                                                                                                                                                                                           |
| <b>Dimensions and weight</b>                                      |                                                                                                                                                                                                                               |
| Pole dimensions (HxDxW)                                           | 91x18x82                                                                                                                                                                                                                      |
| Pole weight                                                       | 110g                                                                                                                                                                                                                          |

## Miniature circuit breaker (MCB)

S400M-B,  $I_{cn} = 10 \text{ kA}$

B according to EN 60898-1

|                                                                                     | $I_{cn}$<br>[kA] | $I_n$<br>[A] | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|------------------|--------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
|    | 10               | 4            | S401M-B4  | 2CCS571001R0045 | 010 1214              | 10                     | 1      | 110                   |
|                                                                                     | 10               | 6            | S401M-B6  | 2CCS571001R0065 | 010 1221              | 10                     | 1      | 110                   |
|                                                                                     | 10               | 8            | S401M-B8  | 2CCS571001R0085 | 010 8411              | 10                     | 1      | 110                   |
|                                                                                     | 10               | 10           | S401M-B10 | 2CCS571001R0105 | 010 1238              | 10                     | 1      | 110                   |
|                                                                                     | 10               | 13           | S401M-B13 | 2CCS571001R0135 | 010 1245              | 10                     | 1      | 110                   |
|                                                                                     | 10               | 16           | S401M-B16 | 2CCS571001R0165 | 010 1252              | 10                     | 1      | 110                   |
|                                                                                     | 10               | 20           | S401M-B20 | 2CCS571001R0205 | 010 1269              | 10                     | 1      | 110                   |
|                                                                                     | 10               | 25           | S401M-B25 | 2CCS571001R0255 | 010 1276              | 10                     | 1      | 110                   |
|                                                                                     | 10               | 32           | S401M-B32 | 2CCS571001R0325 | 010 1283              | 10                     | 1      | 110                   |
|                                                                                     | 10               | 40           | S401M-B40 | 2CCS571001R0405 | 010 1290              | 10                     | 1      | 110                   |
|   | 10               | 4            | S402M-B4  | 2CCS572001R0045 | 010 1986              | 5                      | 2      | 221                   |
|                                                                                     | 10               | 6            | S402M-B6  | 2CCS572001R0065 | 010 1993              | 5                      | 2      | 221                   |
|                                                                                     | 10               | 8            | S402M-B8  | 2CCS572001R0085 | 010 8428              | 5                      | 2      | 221                   |
|                                                                                     | 10               | 10           | S402M-B10 | 2CCS572001R0105 | 010 2006              | 5                      | 2      | 221                   |
|                                                                                     | 10               | 13           | S402M-B13 | 2CCS572001R0135 | 010 2013              | 5                      | 2      | 221                   |
|                                                                                     | 10               | 16           | S402M-B16 | 2CCS572001R0165 | 010 2020              | 5                      | 2      | 221                   |
|                                                                                     | 10               | 20           | S402M-B20 | 2CCS572001R0205 | 010 2037              | 5                      | 2      | 221                   |
|                                                                                     | 10               | 25           | S402M-B25 | 2CCS572001R0255 | 010 2044              | 5                      | 2      | 221                   |
|                                                                                     | 10               | 32           | S402M-B32 | 2CCS572001R0325 | 010 2051              | 5                      | 2      | 221                   |
|                                                                                     | 10               | 40           | S402M-B40 | 2CCS572001R0405 | 010 2068              | 5                      | 2      | 221                   |
|  | 10               | 4            | S403M-B4  | 2CCS573001R0045 | 010 2754              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 6            | S403M-B6  | 2CCS573001R0065 | 010 2761              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 8            | S403M-B8  | 2CCS573001R0085 | 010 8435              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 10           | S403M-B10 | 2CCS573001R0105 | 010 2778              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 13           | S403M-B13 | 2CCS573001R0135 | 010 2785              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 16           | S403M-B16 | 2CCS573001R0165 | 010 2792              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 20           | S403M-B20 | 2CCS573001R0205 | 010 2808              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 25           | S403M-B25 | 2CCS573001R0255 | 010 2815              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 32           | S403M-B32 | 2CCS573001R0325 | 010 2822              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 40           | S403M-B40 | 2CCS573001R0405 | 010 2839              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 50           | S403M-B50 | 2CCS573001R0505 | 010 2846              | 3                      | 3      | 322                   |
|                                                                                     | 10               | 63           | S403M-B63 | 2CCS573001R0635 | 010 2853              | 3                      | 3      | 322                   |

Ordering details for auxiliary switch and signal contacts on page 56–57



## Miniature circuit breaker (MCB)

S400M-C,  $I_{cn} = 10 \text{ kA}$ ,  $I_{cu} = 15 \dots 25 \text{ kA}$

C according to EN 60898-1 and IEC/EN 60947-2

|                                                                                     | $I_{cu}$ EN<br>60947-2<br>[kA] | $I_{cn}$ EN<br>60898-1<br>[kA] | $I_n$<br>[A] | Type name  | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|--------------------------------|--------------------------------|--------------|------------|-----------------|-----------------------|------------------------|--------|-----------------------|
|    | 25                             | 10                             | 0.5          | S401M-C0.5 | 2CCS571001R0984 | 010 1320              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 1            | S401M-C1   | 2CCS571001R0014 | 010 1337              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 1.6          | S401M-C1.6 | 2CCS571001R0974 | 010 1344              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 2            | S401M-C2   | 2CCS571001R0024 | 010 1351              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 3            | S401M-C3   | 2CCS571001R0034 | 010 1368              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 4            | S401M-C4   | 2CCS571001R0044 | 010 1375              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 6            | S401M-C6   | 2CCS571001R0064 | 010 1382              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 8            | S401M-C8   | 2CCS571001R0084 | 010 1399              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 10           | S401M-C10  | 2CCS571001R0104 | 010 1405              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 13           | S401M-C13  | 2CCS571001R0134 | 010 1412              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 16           | S401M-C16  | 2CCS571001R0164 | 010 1429              | 10                     | 1      | 110                   |
|                                                                                     | 15                             | 10                             | 20           | S401M-C20  | 2CCS571001R0204 | 010 1436              | 10                     | 1      | 110                   |
|                                                                                     | 15                             | 10                             | 25           | S401M-C25  | 2CCS571001R0254 | 010 1443              | 10                     | 1      | 110                   |
|                                                                                     | 15                             | 10                             | 32           | S401M-C32  | 2CCS571001R0324 | 010 1450              | 10                     | 1      | 110                   |
|                                                                                     | 15                             | 10                             | 40           | S401M-C40  | 2CCS571001R0404 | 010 1467              | 10                     | 1      | 110                   |
|                                                                                     | 15                             | 10                             | 50           | S401M-C50  | 2CCS571001R0504 | 010 1474              | 10                     | 1      | 110                   |
|  | 15                             | 10                             | 63           | S401M-C63  | 2CCS571001R0634 | 010 1481              | 10                     | 1      | 110                   |
|                                                                                     | 25                             | 10                             | 0.5          | S402M-C0.5 | 2CCS572001R0984 | 010 2099              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 1            | S402M-C1   | 2CCS572001R0014 | 010 2105              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 1.6          | S402M-C1.6 | 2CCS572001R0974 | 010 2112              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 2            | S402M-C2   | 2CCS572001R0024 | 010 2129              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 3            | S402M-C3   | 2CCS572001R0034 | 010 2136              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 4            | S402M-C4   | 2CCS572001R0044 | 010 2143              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 6            | S402M-C6   | 2CCS572001R0064 | 010 2150              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 8            | S402M-C8   | 2CCS572001R0084 | 010 2167              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 10           | S402M-C10  | 2CCS572001R0104 | 010 2174              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 13           | S402M-C13  | 2CCS572001R0134 | 010 2181              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 16           | S402M-C16  | 2CCS572001R0164 | 010 2198              | 5                      | 2      | 221                   |
|                                                                                     | 15                             | 10                             | 20           | S402M-C20  | 2CCS572001R0204 | 010 2204              | 5                      | 2      | 221                   |
|                                                                                     | 15                             | 10                             | 25           | S402M-C25  | 2CCS572001R0254 | 010 2211              | 5                      | 2      | 221                   |
|                                                                                     | 15                             | 10                             | 32           | S402M-C32  | 2CCS572001R0324 | 010 2228              | 5                      | 2      | 221                   |
|                                                                                     | 15                             | 10                             | 40           | S402M-C40  | 2CCS572001R0404 | 010 2235              | 5                      | 2      | 221                   |
|  | 15                             | 10                             | 50           | S402M-C50  | 2CCS572001R0504 | 010 2242              | 5                      | 2      | 221                   |
|                                                                                     | 15                             | 10                             | 63           | S402M-C63  | 2CCS572001R0634 | 010 2259              | 5                      | 2      | 221                   |
|                                                                                     | 25                             | 10                             | 0.5          | S403M-C0.5 | 2CCS573001R0984 | 010 2860              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 1            | S403M-C1   | 2CCS573001R0014 | 010 2877              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 1.6          | S403M-C1.6 | 2CCS573001R0974 | 010 2884              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 2            | S403M-C2   | 2CCS573001R0024 | 010 2891              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 3            | S403M-C3   | 2CCS573001R0034 | 010 2907              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 4            | S403M-C4   | 2CCS573001R0044 | 010 2914              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 6            | S403M-C6   | 2CCS573001R0064 | 010 2921              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 8            | S403M-C8   | 2CCS573001R0084 | 010 2938              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 10           | S403M-C10  | 2CCS573001R0104 | 010 2945              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 13           | S403M-C13  | 2CCS573001R0134 | 010 2952              | 3                      | 3      | 322                   |
|                                                                                     | 25                             | 10                             | 16           | S403M-C16  | 2CCS573001R0164 | 010 2969              | 3                      | 3      | 322                   |
|                                                                                     | 15                             | 10                             | 20           | S403M-C20  | 2CCS573001R0204 | 010 2976              | 3                      | 3      | 322                   |
|                                                                                     | 15                             | 10                             | 25           | S403M-C25  | 2CCS573001R0254 | 010 2983              | 3                      | 3      | 322                   |
|                                                                                     | 15                             | 10                             | 32           | S403M-C32  | 2CCS573001R0324 | 010 2990              | 3                      | 3      | 322                   |
|                                                                                     | 15                             | 10                             | 40           | S403M-C40  | 2CCS573001R0404 | 010 3003              | 3                      | 3      | 322                   |
|                                                                                     | 15                             | 10                             | 50           | S403M-C50  | 2CCS573001R0504 | 010 3010              | 3                      | 3      | 322                   |
|                                                                                     | 15                             | 10                             | 63           | S403M-C63  | 2CCS573001R0634 | 010 3027              | 3                      | 3      | 322                   |

## Miniature circuit breaker (MCB)

S400M-D,  $I_{cn} = 10 \text{ kA}$

D according to EN 60898-1

|                                                                                                                                                                            | $I_{cn}$<br>[kA] | $I_n$<br>[A] | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>     | 10               | 6            | S401M-D6  | 2CCS571001R0061 | 010 1498              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 8            | S401M-D8  | 2CCS571001R0081 | 010 1504              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 10           | S401M-D10 | 2CCS571001R0101 | 010 1511              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 13           | S401M-D13 | 2CCS571001R0131 | 010 1528              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 16           | S401M-D16 | 2CCS571001R0161 | 010 1535              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 20           | S401M-D20 | 2CCS571001R0201 | 010 1542              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 25           | S401M-D25 | 2CCS571001R0251 | 010 1559              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 32           | S401M-D32 | 2CCS571001R0321 | 010 1566              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 40           | S401M-D40 | 2CCS571001R0401 | 010 1573              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 50           | S401M-D50 | 2CCS571001R0501 | 010 1580              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 10               | 63           | S401M-D63 | 2CCS571001R0631 | 010 1597              | 10                     | 1      | 110                   |
| <br>  | 10               | 6            | S402M-D6  | 2CCS572001R0061 | 010 2266              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 8            | S402M-D8  | 2CCS572001R0081 | 010 2273              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 10           | S402M-D10 | 2CCS572001R0101 | 010 2280              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 13           | S402M-D13 | 2CCS572001R0131 | 010 2297              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 16           | S402M-D16 | 2CCS572001R0161 | 010 2303              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 20           | S402M-D20 | 2CCS572001R0201 | 010 2310              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 25           | S402M-D25 | 2CCS572001R0251 | 010 2327              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 32           | S402M-D32 | 2CCS572001R0321 | 010 2334              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 40           | S402M-D40 | 2CCS572001R0401 | 010 2341              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 50           | S402M-D50 | 2CCS572001R0501 | 010 2358              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 10               | 63           | S402M-D63 | 2CCS572001R0631 | 010 2365              | 5                      | 2      | 221                   |
| <br> | 10               | 6            | S403M-D6  | 2CCS573001R0061 | 010 3034              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 8            | S403M-D8  | 2CCS573001R0081 | 010 3041              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 10           | S403M-D10 | 2CCS573001R0101 | 010 3058              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 13           | S403M-D13 | 2CCS573001R0131 | 010 3065              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 16           | S403M-D16 | 2CCS573001R0161 | 010 3072              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 20           | S403M-D20 | 2CCS573001R0201 | 010 3089              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 25           | S403M-D25 | 2CCS573001R0251 | 010 3096              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 32           | S403M-D32 | 2CCS573001R0321 | 010 3102              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 40           | S403M-D40 | 2CCS573001R0401 | 010 3119              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 50           | S403M-D50 | 2CCS573001R0501 | 010 3126              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 10               | 63           | S403M-D63 | 2CCS573001R0631 | 010 3133              | 3                      | 3      | 322                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

## Miniature circuit breaker (MCB)

S400M-K,  $I_{cu} = 15 \dots 25 \text{ kA}$

K according to IEC/EN 60947-2

|                                                                                                                                                                            | $I_{cn}$<br>[kA] | $I_n$<br>[A] | Type name  | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|------------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>     | 25               | 0.5          | S401M-K0.5 | 2CCS571001R0157 | 010 1603              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 1            | S401M-K1   | 2CCS571001R0217 | 010 1610              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 1.6          | S401M-K1.6 | 2CCS571001R0257 | 010 1627              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 2            | S401M-K2   | 2CCS571001R0277 | 010 1634              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 3            | S401M-K3   | 2CCS571001R0317 | 010 1641              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 4            | S401M-K4   | 2CCS571001R0337 | 010 1658              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 6            | S401M-K6   | 2CCS571001R0377 | 010 1665              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 8            | S401M-K8   | 2CCS571001R0407 | 010 1672              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 10           | S401M-K10  | 2CCS571001R0427 | 010 1689              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 13           | S401M-K13  | 2CCS571001R0447 | 010 1696              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 25               | 16           | S401M-K16  | 2CCS571001R0467 | 010 1702              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 15               | 20           | S401M-K20  | 2CCS571001R0487 | 010 1719              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 15               | 25           | S401M-K25  | 2CCS571001R0517 | 010 1726              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 15               | 32           | S401M-K32  | 2CCS571001R0537 | 010 1733              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 15               | 40           | S401M-K40  | 2CCS571001R0557 | 010 1740              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 15               | 50           | S401M-K50  | 2CCS571001R0577 | 010 1757              | 10                     | 1      | 110                   |
|                                                                                                                                                                            | 15               | 63           | S401M-K63  | 2CCS571001R0597 | 010 1764              | 10                     | 1      | 110                   |
| <br> | 25               | 0.5          | S402M-K0.5 | 2CCS572001R0157 | 010 2372              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 1            | S402M-K1   | 2CCS572001R0217 | 010 2389              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 1.6          | S402M-K1.6 | 2CCS572001R0257 | 010 2396              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 2            | S402M-K2   | 2CCS572001R0277 | 010 2402              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 3            | S402M-K3   | 2CCS572001R0317 | 010 2419              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 4            | S402M-K4   | 2CCS572001R0337 | 010 2426              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 6            | S402M-K6   | 2CCS572001R0377 | 010 2433              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 8            | S402M-K8   | 2CCS572001R0407 | 010 2440              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 10           | S402M-K10  | 2CCS572001R0427 | 010 2457              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 13           | S402M-K13  | 2CCS572001R0447 | 010 2464              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 16           | S402M-K16  | 2CCS572001R0467 | 010 2471              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 20           | S402M-K20  | 2CCS572001R0487 | 010 2488              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 25           | S402M-K25  | 2CCS572001R0517 | 010 2495              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 32           | S402M-K32  | 2CCS572001R0537 | 010 2501              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 40           | S402M-K40  | 2CCS572001R0557 | 010 2518              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 50           | S402M-K50  | 2CCS572001R0577 | 010 2525              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 63           | S402M-K63  | 2CCS572001R0597 | 010 2532              | 5                      | 2      | 221                   |
| <br> | 25               | 0.5          | S403M-K0.5 | 2CCS573001R0157 | 010 3140              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 1            | S403M-K1   | 2CCS573001R0217 | 010 3157              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 1.6          | S403M-K1.6 | 2CCS573001R0257 | 010 3164              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 2            | S403M-K2   | 2CCS573001R0277 | 010 3171              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 3            | S403M-K3   | 2CCS573001R0317 | 010 3188              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 4            | S403M-K4   | 2CCS573001R0337 | 010 3195              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 6            | S403M-K6   | 2CCS573001R0377 | 010 3201              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 8            | S403M-K8   | 2CCS573001R0407 | 010 3218              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 10           | S403M-K10  | 2CCS573001R0427 | 010 3225              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 13           | S403M-K13  | 2CCS573001R0447 | 010 3232              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 25               | 16           | S403M-K16  | 2CCS573001R0467 | 010 3249              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 15               | 20           | S403M-K20  | 2CCS573001R0487 | 010 3256              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 15               | 25           | S403M-K25  | 2CCS573001R0517 | 010 3263              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 15               | 32           | S403M-K32  | 2CCS573001R0537 | 010 3270              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 15               | 40           | S403M-K40  | 2CCS573001R0557 | 010 3287              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 15               | 50           | S403M-K50  | 2CCS573001R0577 | 010 3294              | 3                      | 3      | 322                   |
|                                                                                                                                                                            | 15               | 63           | S403M-K63  | 2CCS573001R0597 | 010 3300              | 3                      | 3      | 322                   |

## Miniature circuit breaker (MCB)

S400M-B with protected neutral  $I_{cn} = 10 \text{ kA}$

B according to EN 60898-1

|                                                                                                                                                                           | $I_{cn}$<br>[kA] | $I_n$<br>[A] | Type name   | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|-------------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>    | 10               | 6            | S401M-B6NP  | 2CCS571103R8065 | 010 3317              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 8            | S401M-B8NP  | 2CCS571103R8085 | 010 8473              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 10           | S401M-B10NP | 2CCS571103R8105 | 010 3324              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 13           | S401M-B13NP | 2CCS571103R8135 | 010 3331              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 16           | S401M-B16NP | 2CCS571103R8165 | 010 3348              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 20           | S401M-B20NP | 2CCS571103R8205 | 010 3355              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 25           | S401M-B25NP | 2CCS571103R8255 | 010 3362              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 32           | S401M-B32NP | 2CCS571103R8325 | 010 3379              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 40           | S401M-B40NP | 2CCS571103R8405 | 010 3386              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 50           | S401M-B50NP | 2CCS571103R8505 | 010 3393              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 63           | S401M-B63NP | 2CCS571103R8635 | 010 3409              | 5                      | 2      | 221                   |
| <br> | 10               | 6            | S403M-B6NP  | 2CCS573103R8065 | 010 3782              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 8            | S403M-B8NP  | 2CCS573103R8085 | 010 8510              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 10           | S403M-B10NP | 2CCS573103R8105 | 010 3799              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 13           | S403M-B13NP | 2CCS573103R8135 | 010 3805              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 16           | S403M-B16NP | 2CCS573103R8165 | 010 3812              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 20           | S403M-B20NP | 2CCS573103R8205 | 010 3829              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 25           | S403M-B25NP | 2CCS573103R8255 | 010 3836              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 32           | S403M-B32NP | 2CCS573103R8325 | 010 3843              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 40           | S403M-B40NP | 2CCS573103R8405 | 010 3850              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 50           | S403M-B50NP | 2CCS573103R8505 | 010 3867              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 63           | S403M-B63NP | 2CCS573103R8635 | 010 3874              | 2                      | 4      | 428                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

The neutral is protected with 100% of the nominal value of the pole conductor

## Miniature circuit breaker (MCB)

S400M-C with protected neutral  $I_{cn} = 10 \text{ kA}$ ,  $I_{cu} = 15 \dots 25 \text{ kA}$

C according to IEC/EN 60947-2

|                                                                                                                                                                           | $I_{cu}$ EN<br>60947-2<br>[kA] | $I_{cn}$ EN<br>60898-1<br>[kA] | $I_n$<br>[A] | Type name   | ABB IT number   | EAN<br>number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------|--------------|-------------|-----------------|--------------------------|------------------------|--------|-----------------------|
| <br>    | 25                             | 10                             | 2            | S401M-C2NP  | 2CCS571103R8024 | 010 8480                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 25                             | 10                             | 3            | S401M-C3NP  | 2CCS571103R8034 | 010 8497                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 25                             | 10                             | 4            | S401M-C4NP  | 2CCS571103R8044 | 010 8503                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 25                             | 10                             | 6            | S401M-C6NP  | 2CCS571103R8064 | 010 3416                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 25                             | 10                             | 8            | S401M-C8NP  | 2CCS571103R8084 | 010 3423                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 25                             | 10                             | 10           | S401M-C10NP | 2CCS571103R8104 | 010 3430                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 25                             | 10                             | 13           | S401M-C13NP | 2CCS571103R8134 | 010 3447                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 25                             | 10                             | 16           | S401M-C16NP | 2CCS571103R8164 | 010 3454                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 15                             | 10                             | 20           | S401M-C20NP | 2CCS571103R8204 | 010 3461                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 15                             | 10                             | 25           | S401M-C25NP | 2CCS571103R8254 | 010 3478                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 15                             | 10                             | 32           | S401M-C32NP | 2CCS571103R8324 | 010 3485                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 15                             | 10                             | 40           | S401M-C40NP | 2CCS571103R8404 | 010 3492                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 15                             | 10                             | 50           | S401M-C50NP | 2CCS571103R8504 | 010 3508                 | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 15                             | 10                             | 63           | S401M-C63NP | 2CCS571103R8634 | 010 3515                 | 5                      | 2      | 221                   |
| <br> | 25                             | 10                             | 2            | S403M-C2NP  | 2CCS573103R8024 | 010 8527                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 25                             | 10                             | 3            | S403M-C3NP  | 2CCS573103R8034 | 010 8534                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 25                             | 10                             | 4            | S403M-C4NP  | 2CCS573103R8044 | 010 8541                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 25                             | 10                             | 6            | S403M-C6NP  | 2CCS573103R8064 | 010 3881                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 25                             | 10                             | 8            | S403M-C8NP  | 2CCS573103R8084 | 010 3898                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 25                             | 10                             | 10           | S403M-C10NP | 2CCS573103R8104 | 010 3904                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 25                             | 10                             | 13           | S403M-C13NP | 2CCS573103R8134 | 010 3911                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 25                             | 10                             | 16           | S403M-C16NP | 2CCS573103R8164 | 010 3928                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 15                             | 10                             | 20           | S403M-C20NP | 2CCS573103R8204 | 010 3935                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 15                             | 10                             | 25           | S403M-C25NP | 2CCS573103R8254 | 010 3942                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 15                             | 10                             | 32           | S403M-C32NP | 2CCS573103R8324 | 010 3959                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 15                             | 10                             | 40           | S403M-C40NP | 2CCS573103R8404 | 010 3966                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 15                             | 10                             | 50           | S403M-C50NP | 2CCS573103R8504 | 010 3973                 | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 15                             | 10                             | 63           | S403M-C63NP | 2CCS573103R8634 | 010 3980                 | 2                      | 4      | 428                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

The neutral is protected with 100% of the nominal value of the pole conductor



## Miniature circuit breaker (MCB)

S400M-D with protected neutral  $I_{cn} = 10 \text{ kA}$

D according to EN 60898-1

|                                                                                                                                                                           | $I_{cn}$<br>[kA] | $I_n$<br>[A] | Type name   | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|-------------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>    | 10               | 10           | S401M-D10NP | 2CCS571103R8101 | 010 3522              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 13           | S401M-D13NP | 2CCS571103R8131 | 010 3539              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 16           | S401M-D16NP | 2CCS571103R8161 | 010 3546              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 20           | S401M-D20NP | 2CCS571103R8201 | 010 3553              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 25           | S401M-D25NP | 2CCS571103R8251 | 010 3560              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 32           | S401M-D32NP | 2CCS571103R8321 | 010 3577              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 40           | S401M-D40NP | 2CCS571103R8401 | 010 3584              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 50           | S401M-D50NP | 2CCS571103R8501 | 010 3591              | 5                      | 2      | 221                   |
|                                                                                                                                                                           | 10               | 63           | S401M-D63NP | 2CCS571103R8631 | 010 3607              | 5                      | 2      | 221                   |
| <br> | 10               | 10           | S403M-D10NP | 2CCS573103R8101 | 010 3997              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 13           | S403M-D13NP | 2CCS573103R8131 | 010 4000              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 16           | S403M-D16NP | 2CCS573103R8161 | 010 4017              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 20           | S403M-D20NP | 2CCS573103R8201 | 010 4024              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 25           | S403M-D25NP | 2CCS573103R8251 | 010 4031              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 32           | S403M-D32NP | 2CCS573103R8321 | 010 4048              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 40           | S403M-D40NP | 2CCS573103R8401 | 010 4055              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 50           | S403M-D50NP | 2CCS573103R8501 | 010 4062              | 2                      | 4      | 428                   |
|                                                                                                                                                                           | 10               | 63           | S403M-D63NP | 2CCS573103R8631 | 010 4079              | 2                      | 4      | 428                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

The neutral is protected with 100% of the nominal value of the pole conductor

## Miniature circuit breaker (MCB)

S400M-K with protected neutral  $I_{cu} = 15 \dots 25 \text{ kA}$

K according to EN 60898-1

|                                                                                                                                                                            | $I_{cu}$<br>[kA] | $I_n$<br>[A] | Type name    | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|--------------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>     | 25               | 0.5          | S401M-K0.5NP | 2CCS571103R8157 | 010 3614              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 1            | S401M-K1NP   | 2CCS571103R8217 | 010 3621              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 1.6          | S401M-K1.6NP | 2CCS571103R8257 | 010 3638              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 2            | S401M-K2NP   | 2CCS571103R8277 | 010 3645              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 3            | S401M-K3NP   | 2CCS571103R8317 | 010 3652              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 4            | S401M-K4NP   | 2CCS571103R8337 | 010 3669              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 6            | S401M-K6NP   | 2CCS571103R8377 | 010 3676              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 8            | S401M-K8NP   | 2CCS571103R8407 | 010 3683              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 10           | S401M-K10NP  | 2CCS571103R8427 | 010 3690              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 13           | S401M-K13NP  | 2CCS571103R8447 | 010 3706              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 16           | S401M-K16NP  | 2CCS571103R8467 | 010 3713              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 20           | S401M-K20NP  | 2CCS571103R8487 | 010 3720              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 25           | S401M-K25NP  | 2CCS571103R8517 | 010 3737              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 32           | S401M-K32NP  | 2CCS571103R8537 | 010 3744              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 40           | S401M-K40NP  | 2CCS571103R8557 | 010 3751              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 15               | 50           | S401M-K50NP  | 2CCS571103R8577 | 010 3768              | 5                      | 2      | 221                   |
| <br> | 15               | 63           | S401M-K63NP  | 2CCS571103R8597 | 010 3775              | 5                      | 2      | 221                   |
|                                                                                                                                                                            | 25               | 0.5          | S403M-K0.5NP | 2CCS573103R8157 | 010 4086              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 1            | S403M-K1NP   | 2CCS573103R8217 | 010 4093              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 1.6          | S403M-K1.6NP | 2CCS573103R8257 | 010 4109              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 2            | S403M-K2NP   | 2CCS573103R8277 | 010 4116              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 3            | S403M-K3NP   | 2CCS573103R8317 | 010 4123              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 4            | S403M-K4NP   | 2CCS573103R8337 | 010 4130              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 6            | S403M-K6NP   | 2CCS573103R8377 | 010 4147              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 8            | S403M-K8NP   | 2CCS573103R8407 | 010 4154              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 10           | S403M-K10NP  | 2CCS573103R8427 | 010 4161              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 13           | S403M-K13NP  | 2CCS573103R8447 | 010 4178              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 25               | 16           | S403M-K16NP  | 2CCS573103R8467 | 010 4185              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 15               | 20           | S403M-K20NP  | 2CCS573103R8487 | 010 4192              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 15               | 25           | S403M-K25NP  | 2CCS573103R8517 | 010 4208              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 15               | 32           | S403M-K32NP  | 2CCS573103R8537 | 010 4215              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 15               | 40           | S403M-K40NP  | 2CCS573103R8557 | 010 4222              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 15               | 50           | S403M-K50NP  | 2CCS573103R8577 | 010 4239              | 2                      | 4      | 428                   |
|                                                                                                                                                                            | 15               | 63           | S403M-K63NP  | 2CCS573103R8597 | 010 4246              | 2                      | 4      | 428                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

The neutral is protected with 100% of the nominal value of the pole conductor

## Miniature circuit breaker (MCB)

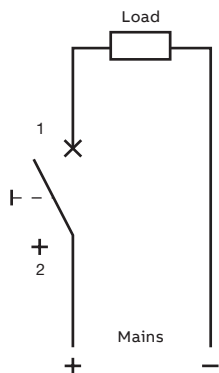
S400M-UC, Universal current range,  $I_{cu} = 10 \dots 25 \text{ kA}$

C according to IEC/EN 60947-2

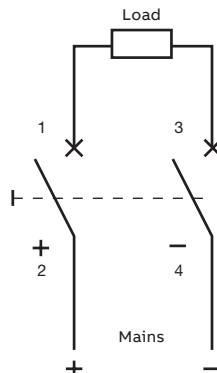
|                                                                                                                           | $I_n$<br>[A] | Type name    | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|---------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------------|-----------------------|------------------------|--------|-----------------------|
|  <p>1 P 220V=</p> <p>1<br/>+2</p>        | 0.5          | S401M-UCC0.5 | 2CCS561001R1984 | 010 9746              | 10                     | 1      | 145                   |
|                                                                                                                           | 1            | S401M-UCC1   | 2CCS561001R1014 | 010 9753              | 10                     | 1      | 145                   |
|                                                                                                                           | 1.6          | S401M-UCC1.6 | 2CCS561001R1974 | 010 9760              | 10                     | 1      | 145                   |
|                                                                                                                           | 2            | S401M-UCC2   | 2CCS561001R1024 | 010 9777              | 10                     | 1      | 145                   |
|                                                                                                                           | 3            | S401M-UCC3   | 2CCS571001R1034 | 010 9784              | 10                     | 1      | 145                   |
|                                                                                                                           | 4            | S401M-UCC4   | 2CCS571001R1044 | 010 9791              | 10                     | 1      | 145                   |
|                                                                                                                           | 6            | S401M-UCC6   | 2CCS571001R1064 | 010 9807              | 10                     | 1      | 145                   |
|                                                                                                                           | 8            | S401M-UCC8   | 2CCS571001R1084 | 010 9814              | 10                     | 1      | 145                   |
|                                                                                                                           | 10           | S401M-UCC10  | 2CCS571001R1104 | 010 9821              | 10                     | 1      | 145                   |
|                                                                                                                           | 13           | S401M-UCC13  | 2CCS571001R1134 | 010 9838              | 10                     | 1      | 145                   |
|                                                                                                                           | 16           | S401M-UCC16  | 2CCS571001R1164 | 010 9845              | 10                     | 1      | 145                   |
|                                                                                                                           | 20           | S401M-UCC20  | 2CCS571001R1204 | 010 9852              | 10                     | 1      | 145                   |
|                                                                                                                           | 25           | S401M-UCC25  | 2CCS571001R1254 | 010 9869              | 10                     | 1      | 145                   |
|                                                                                                                           | 32           | S401M-UCC32  | 2CCS571001R1324 | 010 9876              | 10                     | 1      | 145                   |
|                                                                                                                           | 40           | S401M-UCC40  | 2CCS571001R1404 | 010 9883              | 10                     | 1      | 145                   |
|                                                                                                                           | 50           | S401M-UCC50  | 2CCS571001R1504 | 010 9890              | 10                     | 1      | 145                   |
|  <p>2 P 440V=</p> <p>1 3<br/>+2 4-</p> | 0.5          | S402M-UCC0.5 | 2CCS562001R1984 | 010 9913              | 5                      | 2      | 290                   |
|                                                                                                                           | 1            | S402M-UCC1   | 2CCS562001R1014 | 010 9920              | 5                      | 2      | 290                   |
|                                                                                                                           | 1.6          | S402M-UCC1.6 | 2CCS562001R1974 | 010 9937              | 5                      | 2      | 290                   |
|                                                                                                                           | 2            | S402M-UCC2   | 2CCS562001R1024 | 010 9944              | 5                      | 2      | 290                   |
|                                                                                                                           | 3            | S402M-UCC3   | 2CCS572001R1034 | 010 9951              | 5                      | 2      | 290                   |
|                                                                                                                           | 4            | S402M-UCC4   | 2CCS572001R1044 | 010 9968              | 5                      | 2      | 290                   |
|                                                                                                                           | 6            | S402M-UCC6   | 2CCS572001R1064 | 010 9975              | 5                      | 2      | 290                   |
|                                                                                                                           | 8            | S402M-UCC8   | 2CCS572001R1084 | 010 9982              | 5                      | 2      | 290                   |
|                                                                                                                           | 10           | S402M-UCC10  | 2CCS572001R1104 | 010 9999              | 5                      | 2      | 290                   |
|                                                                                                                           | 13           | S402M-UCC13  | 2CCS572001R1134 | 011 0001              | 5                      | 2      | 290                   |
|                                                                                                                           | 16           | S402M-UCC16  | 2CCS572001R1164 | 011 0018              | 5                      | 2      | 290                   |
|                                                                                                                           | 20           | S402M-UCC20  | 2CCS572001R1204 | 011 0025              | 5                      | 2      | 290                   |
|                                                                                                                           | 25           | S402M-UCC25  | 2CCS572001R1254 | 011 0032              | 5                      | 2      | 290                   |
|                                                                                                                           | 32           | S402M-UCC32  | 2CCS572001R1324 | 011 0049              | 5                      | 2      | 290                   |
|                                                                                                                           | 40           | S402M-UCC40  | 2CCS572001R1404 | 011 0056              | 5                      | 2      | 290                   |
|                                                                                                                           | 50           | S402M-UCC50  | 2CCS572001R1504 | 011 0063              | 5                      | 2      | 290                   |
|                                                                                                                           | 63           | S402M-UCC63  | 2CCS572001R1634 | 011 0070              | 5                      | 2      | 290                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

**Connection diagram,  
single-pole (max. 220 V=) S401M-UC**



**Connection diagram,  
two-pole (max. 440 V=) S402M-UC**



## Miniature circuit breaker (MCB)

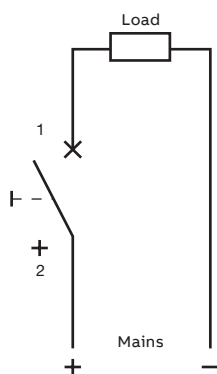
S400M-UC, DC Universal current range,  $I_{cu} = 10 \dots 25 \text{ kA}$

Z according to IEC/EN 60947-2

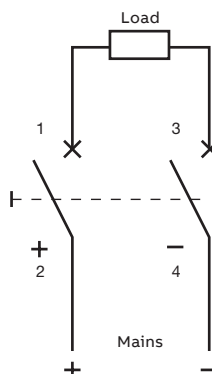
|                                                                                                                              | $I_n$<br>[A] | Type name    | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|-----------------|-----------------------|------------------------|--------|-----------------------|
|  <p>1 P 220V=</p> <p>1</p> <p>+2</p>        | 0.5          | S401M-UCZ0.5 | 2CCS561001R1988 | 011 0087              | 10                     | 1      | 110                   |
|                                                                                                                              | 1            | S401M-UCZ1   | 2CCS561001R1018 | 011 0094              | 10                     | 1      | 110                   |
|                                                                                                                              | 1.6          | S401M-UCZ1.6 | 2CCS561001R1978 | 011 0100              | 10                     | 1      | 110                   |
|                                                                                                                              | 2            | S401M-UCZ2   | 2CCS561001R1028 | 011 0117              | 10                     | 1      | 110                   |
|                                                                                                                              | 3            | S401M-UCZ3   | 2CCS571001R1038 | 011 0124              | 10                     | 1      | 110                   |
|                                                                                                                              | 4            | S401M-UCZ4   | 2CCS571001R1048 | 011 0131              | 10                     | 1      | 110                   |
|                                                                                                                              | 6            | S401M-UCZ6   | 2CCS571001R1068 | 011 0148              | 10                     | 1      | 110                   |
|                                                                                                                              | 8            | S401M-UCZ8   | 2CCS571001R1088 | 011 0155              | 10                     | 1      | 110                   |
|                                                                                                                              | 10           | S401M-UCZ10  | 2CCS571001R1108 | 011 0162              | 10                     | 1      | 110                   |
|                                                                                                                              | 13           | S401M-UCZ13  | 2CCS571001R1138 | 011 0179              | 10                     | 1      | 110                   |
|                                                                                                                              | 16           | S401M-UCZ16  | 2CCS571001R1168 | 011 0186              | 10                     | 1      | 110                   |
|                                                                                                                              | 20           | S401M-UCZ20  | 2CCS571001R1208 | 011 0193              | 10                     | 1      | 110                   |
|                                                                                                                              | 25           | S401M-UCZ25  | 2CCS571001R1258 | 011 0209              | 10                     | 1      | 110                   |
|                                                                                                                              | 32           | S401M-UCZ32  | 2CCS571001R1328 | 011 0216              | 10                     | 1      | 110                   |
|                                                                                                                              | 40           | S401M-UCZ40  | 2CCS571001R1408 | 011 0223              | 10                     | 1      | 110                   |
|  <p>2 P 440V=</p> <p>1 3</p> <p>+2 4-</p> | 50           | S401M-UCZ50  | 2CCS571001R1508 | 011 0230              | 10                     | 1      | 110                   |
|                                                                                                                              | 63           | S401M-UCZ63  | 2CCS571001R1638 | 011 0247              | 10                     | 1      | 110                   |
|                                                                                                                              | 0.5          | S402M-UCZ0.5 | 2CCS562001R1988 | 011 0254              | 10                     | 2      | 221                   |
|                                                                                                                              | 1            | S402M-UCZ1   | 2CCS562001R1018 | 011 0261              | 10                     | 2      | 221                   |
|                                                                                                                              | 1.6          | S402M-UCZ1.6 | 2CCS562001R1978 | 011 0278              | 10                     | 2      | 221                   |
|                                                                                                                              | 2            | S402M-UCZ2   | 2CCS562001R1028 | 011 0285              | 10                     | 2      | 221                   |
|                                                                                                                              | 3            | S402M-UCZ3   | 2CCS572001R1038 | 011 0292              | 10                     | 2      | 221                   |
|                                                                                                                              | 4            | S402M-UCZ4   | 2CCS572001R1048 | 011 0308              | 10                     | 2      | 221                   |
|                                                                                                                              | 6            | S402M-UCZ6   | 2CCS572001R1068 | 011 0315              | 10                     | 2      | 221                   |
|                                                                                                                              | 8            | S402M-UCZ8   | 2CCS572001R1088 | 011 0322              | 10                     | 2      | 221                   |
|                                                                                                                              | 10           | S402M-UCZ10  | 2CCS572001R1108 | 011 0339              | 10                     | 2      | 221                   |
|                                                                                                                              | 13           | S402M-UCZ13  | 2CCS572001R1138 | 011 0346              | 10                     | 2      | 221                   |
|                                                                                                                              | 16           | S402M-UCZ16  | 2CCS572001R1168 | 011 0353              | 10                     | 2      | 221                   |
|                                                                                                                              | 20           | S402M-UCZ20  | 2CCS572001R1208 | 011 0360              | 10                     | 2      | 221                   |
|                                                                                                                              | 25           | S402M-UCZ25  | 2CCS572001R1258 | 011 0377              | 10                     | 2      | 221                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

Connection diagram,  
single-pole (max. 220V=) S401M-UC



Connection diagram,  
two-pole (max. 440V=) S402M-UC



## Miniature circuit breaker (MCB) for IEC

### S400P technical features

|                                                                |                                                                                                                                                                                                                                    |                                                                                            |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Standards</b>                                               |                                                                                                                                                                                                                                    |                                                                                            |
| IEC/EN 606947-2                                                | x                                                                                                                                                                                                                                  |                                                                                            |
| <b>General data</b>                                            |                                                                                                                                                                                                                                    |                                                                                            |
| Tripping characteristics                                       | B, C, K                                                                                                                                                                                                                            |                                                                                            |
| Poles                                                          | 1P, 1P+NP, 2P, 3P, 3P+NP                                                                                                                                                                                                           |                                                                                            |
| Rated current I <sub>n</sub>                                   | 2, 3, 4, 6, 8, 10, 13, 16, 20, 25, 32, 40, 50, 63 A                                                                                                                                                                                |                                                                                            |
| Calibration temperature                                        | B,C 30°C; K 40°C                                                                                                                                                                                                                   |                                                                                            |
| Rated frequency                                                | 50/60Hz                                                                                                                                                                                                                            |                                                                                            |
| Rated insulation voltage U <sub>i</sub> AC 240/415V            | 440V                                                                                                                                                                                                                               |                                                                                            |
| Rated insulation voltage U <sub>i</sub> AC 277/480 V           | 500V                                                                                                                                                                                                                               |                                                                                            |
| Rated impulse withstand voltage U <sub>imp</sub>               | 4 V                                                                                                                                                                                                                                |                                                                                            |
| Overvoltage category                                           | III                                                                                                                                                                                                                                |                                                                                            |
| Pollution degree                                               | AC 240/415V: 3                                                                                                                                                                                                                     | AC 277/480V: 2                                                                             |
| <b>Data acc. to IEC/EN 60947-2</b>                             |                                                                                                                                                                                                                                    |                                                                                            |
| Rated operational voltage U <sub>e</sub>                       | 1P, 1P+NP: AC 240V<br>2P, 3P, 3P+NP: AC 240/415V                                                                                                                                                                                   | 1P, 1P+NP: AC 277 V<br>2P, 3P, 3P+NP: AC 277/480V                                          |
| Minimum operating voltage                                      | AC 12 V                                                                                                                                                                                                                            |                                                                                            |
| Rated ultimate short-circuit capacity I <sub>cu</sub>          | 2...16A, AC 240/415V: 40 kA<br>20...40A, AC 240/415V: 30 kA<br>50...63A, AC 240/415V: 20kA                                                                                                                                         | 2...16A, AC 277/480V: 20kA<br>20...40A, AC 277/480V: 15 kA<br>50...63A, AC 277/480V: 5 kA  |
| Rated service short-circuit capacity I <sub>cs</sub>           | 2...16A, AC 240/415V: 20kA<br>20...40A, AC 240/415V: 15 kA<br>50...63A, AC 240/415V: 7.5 kA                                                                                                                                        | 2...16A, AC 277/480V: 10kA<br>20...40A, AC 277/480V: 5 kA<br>50...63A, AC 277/480V: 2.5 kA |
| Reference ambient air temperature for overload tripping        | B, C: 30°C, K: 40°C                                                                                                                                                                                                                |                                                                                            |
| <b>Mechanical Data</b>                                         |                                                                                                                                                                                                                                    |                                                                                            |
| Contact position indication (green OFF/red ON)                 | x                                                                                                                                                                                                                                  |                                                                                            |
| L1/L2/L3 position indication                                   | x                                                                                                                                                                                                                                  |                                                                                            |
| N position indication                                          | x                                                                                                                                                                                                                                  |                                                                                            |
| Label holder                                                   | x                                                                                                                                                                                                                                  |                                                                                            |
| IP Code                                                        | IP20B, IP40 in enclosure with cover                                                                                                                                                                                                |                                                                                            |
| Endurance                                                      | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                                                                                                                                                                 |                                                                                            |
| Shock resistance acc. to IEC/EN 61373                          | 5 g / 30 ms, 3 shocks                                                                                                                                                                                                              |                                                                                            |
| Vibration resistance acc. to IEC/EN 60068-2-6                  | 2...13.2Hz/1 mm<br>13.2...100Hz/0.7 g, 5 cycles<br>5...150...5Hz/1 g, 4 sweeps                                                                                                                                                     |                                                                                            |
| Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30 | 28 cycles with 55°C/90...96% and 25°C/95...100%                                                                                                                                                                                    |                                                                                            |
| Ambient temperature                                            | -25...+55°C                                                                                                                                                                                                                        |                                                                                            |
| Storage temperature                                            | -40...+70°C                                                                                                                                                                                                                        |                                                                                            |
| <b>Installation</b>                                            |                                                                                                                                                                                                                                    |                                                                                            |
| Top terminal type                                              | Failsafe bi-directional cylinder-lift terminal with double slot 35/10 mm <sup>2</sup>                                                                                                                                              |                                                                                            |
| Top terminal rigid IEC connections (solid/stranded)            | Single: 0.75 ... 35 mm <sup>2</sup> (front slot), 0.75 ... 10mm <sup>2</sup> (rear slot)<br>Multiple: 2x 0.75 ... 10mm <sup>2</sup> (front slot), 2x 0.75 ... 6mm <sup>2</sup> (rear slot),<br>with cables of same type and size   |                                                                                            |
| Top terminal flexible IEC connections                          | Single: 0.75 ... 25 mm <sup>2</sup> (front side), 0.75 ... 6 mm <sup>2</sup> (rear slot)<br>Multiple: 2x 0.75 ... 10 mm <sup>2</sup> (front slot), 2x 0.75 ... 6 mm <sup>2</sup> (rear slot),<br>with cables of same type and size |                                                                                            |
| Top terminal screwdriver                                       | No. 2 Pozidrive                                                                                                                                                                                                                    |                                                                                            |
| Top terminal stripping length                                  | 12.5 mm                                                                                                                                                                                                                            |                                                                                            |
| Top terminal tightening torque                                 | 2.8 Nm                                                                                                                                                                                                                             |                                                                                            |
| Bottom terminal type                                           | Movable plug-on terminal L1/L2/L3, fixed plug-on terminal N                                                                                                                                                                        |                                                                                            |
| Mounting                                                       | SMISSLINE TP socket system only                                                                                                                                                                                                    |                                                                                            |
| Mounting position                                              | Any                                                                                                                                                                                                                                |                                                                                            |
| Supply                                                         | Any                                                                                                                                                                                                                                |                                                                                            |



## Miniature circuit breaker (MCB)

S400P-B,  $I_{cu} = 40 \dots 20 \text{ kA}$

B according to IEC/EN 60947-2

|                                                                                                       | $I_{cu}$<br>[kA] | $I_n$<br>[A] | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------------------------|------------------|--------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>1<br>2           | 40               | 2            | S401P-B2  | 2CCG000364R0001 | 7612271508418         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 3            | S401P-B3  | 2CCG000475R0001 | 7612271508425         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 4            | S401P-B4  | 2CCG000497R0001 | 7612271508432         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 6            | S401P-B6  | 2CCG000508R0001 | 7612271508449         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 8            | S401P-B8  | 2CCG000519R0001 | 7612271508456         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 10           | S401P-B10 | 2CCG000530R0001 | 7612271508463         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 13           | S401P-B13 | 2CCG000541R0001 | 7612271508470         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 16           | S401P-B16 | 2CCG000552R0001 | 7612271508487         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 20           | S401P-B20 | 2CCG000563R0001 | 7612271508494         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 25           | S401P-B25 | 2CCG000365R0001 | 7612271508500         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 32           | S401P-B32 | 2CCG000376R0001 | 7612271508517         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 40           | S401P-B40 | 2CCG000387R0001 | 7612271508524         | 10                     | 1      | 115                   |
|                                                                                                       | 20               | 50           | S401P-B50 | 2CCG000398R0001 | 7612271508531         | 10                     | 1      | 115                   |
|                                                                                                       | 20               | 63           | S401P-B63 | 2CCG000409R0001 | 7612271508548         | 10                     | 1      | 115                   |
| <br>1 3<br>2 4      | 40               | 2            | S402P-B2  | 2CCG000496R0001 | 7612271508692         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 3            | S402P-B3  | 2CCG000498R0001 | 7612271508708         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 4            | S402P-B4  | 2CCG000499R0001 | 7612271508715         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 6            | S402P-B6  | 2CCG000500R0001 | 7612271508722         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 8            | S402P-B8  | 2CCG000501R0001 | 7612271508739         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 10           | S402P-B10 | 2CCG000502R0001 | 7612271508746         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 13           | S402P-B13 | 2CCG000503R0001 | 7612271508753         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 16           | S402P-B16 | 2CCG000504R0001 | 7612271508760         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 20           | S402P-B20 | 2CCG000505R0001 | 7612271508777         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 25           | S402P-B25 | 2CCG000506R0001 | 7612271508784         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 32           | S402P-B32 | 2CCG000507R0001 | 7612271508791         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 40           | S402P-B40 | 2CCG000509R0001 | 7612271508807         | 5                      | 2      | 230                   |
|                                                                                                       | 20               | 50           | S402P-B50 | 2CCG000510R0001 | 7612271508814         | 5                      | 2      | 230                   |
|                                                                                                       | 20               | 63           | S402P-B63 | 2CCG000511R0001 | 7612271508821         | 5                      | 2      | 230                   |
| <br>1 3 5<br>2 4 6 | 40               | 2            | S403P-B2  | 2CCG000512R0001 | 7612271508838         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 3            | S403P-B3  | 2CCG000513R0001 | 7612271508845         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 4            | S403P-B4  | 2CCG000514R0001 | 7612271508852         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 6            | S403P-B6  | 2CCG000515R0001 | 7612271508869         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 8            | S403P-B8  | 2CCG000516R0001 | 7612271508876         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 10           | S403P-B10 | 2CCG000517R0001 | 7612271508883         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 13           | S403P-B13 | 2CCG000518R0001 | 7612271508890         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 16           | S403P-B16 | 2CCG000520R0001 | 7612271508906         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 20           | S403P-B20 | 2CCG000521R0001 | 7612271508913         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 25           | S403P-B25 | 2CCG000522R0001 | 7612271508920         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 32           | S403P-B32 | 2CCG000523R0001 | 7612271508937         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 40           | S403P-B40 | 2CCG000524R0001 | 7612271508944         | 3                      | 3      | 345                   |
|                                                                                                       | 20               | 50           | S403P-B50 | 2CCG000525R0001 | 7612271508951         | 3                      | 3      | 345                   |
|                                                                                                       | 20               | 63           | S403P-B63 | 2CCG000526R0001 | 7612271508968         | 3                      | 3      | 345                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

## Miniature circuit breaker (MCB)

S400P-C,  $I_{cu} = 40 \dots 20 \text{ kA}$

C according to IEC/EN 60947-2

|                                                                                                       | $I_{cu}$<br>[kA] | $I_n$<br>[A] | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------------------------|------------------|--------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>1<br>2           | 40               | 2            | S401P-C2  | 2CCG000543R0001 | 7612271509118         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 3            | S401P-C3  | 2CCG000544R0001 | 7612271509125         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 4            | S401P-C4  | 2CCG000545R0001 | 7612271509132         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 6            | S401P-C6  | 2CCG000546R0001 | 7612271509149         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 8            | S401P-C8  | 2CCG000547R0001 | 7612271509156         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 10           | S401P-C10 | 2CCG000548R0001 | 7612271509163         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 13           | S401P-C13 | 2CCG000549R0001 | 7612271509170         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 16           | S401P-C16 | 2CCG000550R0001 | 7612271509187         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 20           | S401P-C20 | 2CCG000551R0001 | 7612271509194         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 25           | S401P-C25 | 2CCG000553R0001 | 7612271509200         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 32           | S401P-C32 | 2CCG000554R0001 | 7612271509217         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 40           | S401P-C40 | 2CCG000555R0001 | 7612271509224         | 10                     | 1      | 115                   |
|                                                                                                       | 20               | 50           | S401P-C50 | 2CCG000556R0001 | 7612271509231         | 10                     | 1      | 115                   |
|                                                                                                       | 20               | 63           | S401P-C63 | 2CCG000557R0001 | 7612271509248         | 10                     | 1      | 115                   |
| <br>1 3<br>2 4      | 40               | 2            | S402P-C2  | 2CCG000573R0001 | 7612271509392         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 3            | S402P-C3  | 2CCG000366R0001 | 7612271509408         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 4            | S402P-C4  | 2CCG000367R0001 | 7612271509415         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 6            | S402P-C6  | 2CCG000368R0001 | 7612271509422         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 8            | S402P-C8  | 2CCG000369R0001 | 7612271509439         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 10           | S402P-C10 | 2CCG000370R0001 | 7612271509446         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 13           | S402P-C13 | 2CCG000371R0001 | 7612271509453         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 16           | S402P-C16 | 2CCG000372R0001 | 7612271509460         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 20           | S402P-C20 | 2CCG000373R0001 | 7612271509477         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 25           | S402P-C25 | 2CCG000374R0001 | 7612271509484         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 32           | S402P-C32 | 2CCG000375R0001 | 7612271509491         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 40           | S402P-C40 | 2CCG000377R0001 | 7612271509507         | 5                      | 2      | 230                   |
|                                                                                                       | 20               | 50           | S402P-C50 | 2CCG000378R0001 | 7612271509514         | 5                      | 2      | 230                   |
|                                                                                                       | 20               | 63           | S402P-C63 | 2CCG000379R0001 | 7612271509521         | 5                      | 2      | 230                   |
| <br>1 3 5<br>2 4 6 | 40               | 2            | S403P-C2  | 2CCG000380R0001 | 7612271509538         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 3            | S403P-C3  | 2CCG000381R0001 | 7612271509545         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 4            | S403P-C4  | 2CCG000382R0001 | 7612271509552         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 6            | S403P-C6  | 2CCG000383R0001 | 7612271509569         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 8            | S403P-C8  | 2CCG000384R0001 | 7612271509576         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 10           | S403P-C10 | 2CCG000385R0001 | 7612271509583         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 13           | S403P-C13 | 2CCG000386R0001 | 7612271509590         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 16           | S403P-C16 | 2CCG000388R0001 | 7612271509606         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 20           | S403P-C20 | 2CCG000389R0001 | 7612271509613         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 25           | S403P-C25 | 2CCG000390R0001 | 7612271509620         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 32           | S403P-C32 | 2CCG000391R0001 | 7612271509637         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 40           | S403P-C40 | 2CCG000392R0001 | 7612271509644         | 3                      | 3      | 345                   |
|                                                                                                       | 20               | 50           | S403P-C50 | 2CCG000393R0001 | 7612271509651         | 3                      | 3      | 345                   |
|                                                                                                       | 20               | 63           | S403P-C63 | 2CCG000394R0001 | 7612271509668         | 3                      | 3      | 345                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

## Miniature circuit breaker (MCB)

S400P-K,  $I_{cu} = 40 \dots 20 \text{ kA}$

K according to IEC/EN 60947-2

|                                                                                                       | $I_{cu}$<br>[kA] | $I_n$<br>[A] | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------------------------|------------------|--------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>1<br>2           | 40               | 2            | S401P-K2  | 2CCG000411R0001 | 7612271509811         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 3            | S401P-K3  | 2CCG000412R0001 | 7612271509828         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 4            | S401P-K4  | 2CCG000413R0001 | 7612271509835         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 6            | S401P-K6  | 2CCG000414R0001 | 7612271509842         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 8            | S401P-K8  | 2CCG000415R0001 | 7612271509859         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 10           | S401P-K10 | 2CCG000416R0001 | 7612271509866         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 13           | S401P-K13 | 2CCG000417R0001 | 7612271509873         | 10                     | 1      | 115                   |
|                                                                                                       | 40               | 16           | S401P-K16 | 2CCG000418R0001 | 7612271509880         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 20           | S401P-K20 | 2CCG000419R0001 | 7612271509897         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 25           | S401P-K25 | 2CCG000421R0001 | 7612271509903         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 32           | S401P-K32 | 2CCG000422R0001 | 7612271509910         | 10                     | 1      | 115                   |
|                                                                                                       | 30               | 40           | S401P-K40 | 2CCG000423R0001 | 7612271509927         | 10                     | 1      | 115                   |
|                                                                                                       | 20               | 50           | S401P-K50 | 2CCG000424R0001 | 7612271509934         | 10                     | 1      | 115                   |
|                                                                                                       | 20               | 63           | S401P-K63 | 2CCG000425R0001 | 7612271509941         | 10                     | 1      | 115                   |
| <br>1 3<br>2 4      | 40               | 2            | S402P-K2  | 2CCG000441R0001 | 7612271510091         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 3            | S402P-K3  | 2CCG000443R0001 | 7612271510107         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 4            | S402P-K4  | 2CCG000444R0001 | 7612271510114         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 6            | S402P-K6  | 2CCG000445R0001 | 7612271510121         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 8            | S402P-K8  | 2CCG000446R0001 | 7612271510138         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 10           | S402P-K10 | 2CCG000447R0001 | 7612271510145         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 13           | S402P-K13 | 2CCG000448R0001 | 7612271510152         | 5                      | 2      | 230                   |
|                                                                                                       | 40               | 16           | S402P-K16 | 2CCG000449R0001 | 7612271510169         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 20           | S402P-K20 | 2CCG000450R0001 | 7612271510176         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 25           | S402P-K25 | 2CCG000451R0001 | 7612271510183         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 32           | S402P-K32 | 2CCG000452R0001 | 7612271510190         | 5                      | 2      | 230                   |
|                                                                                                       | 30               | 40           | S402P-K40 | 2CCG000454R0001 | 7612271510206         | 5                      | 2      | 230                   |
|                                                                                                       | 20               | 50           | S402P-K50 | 2CCG000455R0001 | 7612271510213         | 5                      | 2      | 230                   |
|                                                                                                       | 20               | 63           | S402P-K63 | 2CCG000456R0001 | 7612271510220         | 5                      | 2      | 230                   |
| <br>1 3 5<br>2 4 6 | 40               | 2            | S403P-K2  | 2CCG000457R0001 | 7612271510237         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 3            | S403P-K3  | 2CCG000458R0001 | 7612271510244         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 4            | S403P-K4  | 2CCG000459R0001 | 7612271510251         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 6            | S403P-K6  | 2CCG000460R0001 | 7612271510268         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 8            | S403P-K8  | 2CCG000461R0001 | 7612271510275         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 10           | S403P-K10 | 2CCG000462R0001 | 7612271510282         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 13           | S403P-K13 | 2CCG000463R0001 | 7612271510299         | 3                      | 3      | 345                   |
|                                                                                                       | 40               | 16           | S403P-K16 | 2CCG000465R0001 | 7612271510305         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 20           | S403P-K20 | 2CCG000466R0001 | 7612271510312         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 25           | S403P-K25 | 2CCG000467R0001 | 7612271510329         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 32           | S403P-K32 | 2CCG000468R0001 | 7612271510336         | 3                      | 3      | 345                   |
|                                                                                                       | 30               | 40           | S403P-K40 | 2CCG000469R0001 | 7612271510343         | 3                      | 3      | 345                   |
|                                                                                                       | 20               | 50           | S403P-K50 | 2CCG000470R0001 | 7612271510350         | 3                      | 3      | 345                   |
|                                                                                                       | 20               | 63           | S403P-K63 | 2CCG000471R0001 | 7612271510367         | 3                      | 3      | 345                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

## Miniature circuit breaker (MCB)

S400P-K with protected neutral  $I_{cu} = 20 \dots 40 \text{ kA}$

K according to IEC/EN 60947-2

|                                                                                                                                                                           | $I_{cu}$<br>[kA] | $I_n$<br>[A] | Type name   | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|-------------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>    | 40               | 2            | S401P-B2NP  | 2CCG000420R0001 | 7612271508555         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 3            | S401P-B3NP  | 2CCG000431R0001 | 7612271508562         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 4            | S401P-B4NP  | 2CCG000442R0001 | 7612271508579         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 6            | S401P-B6NP  | 2CCG000453R0001 | 7612271508586         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 8            | S401P-B8NP  | 2CCG000464R0001 | 7612271508593         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 10           | S401P-B10NP | 2CCG000476R0001 | 7612271508609         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 13           | S401P-B13NP | 2CCG000487R0001 | 7612271508616         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 16           | S401P-B16NP | 2CCG000489R0001 | 7612271508623         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 20           | S401P-B20NP | 2CCG000490R0001 | 7612271508630         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 25           | S401P-B25NP | 2CCG000491R0001 | 7612271508647         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 32           | S401P-B32NP | 2CCG000492R0001 | 7612271508654         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 40           | S401P-B40NP | 2CCG000493R0001 | 7612271508661         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 20               | 50           | S401P-B50NP | 2CCG000494R0001 | 7612271508678         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 20               | 63           | S401P-B63NP | 2CCG000495R0001 | 7612271508685         | 5                      | 2      | 230                   |
| <br> | 40               | 2            | S403P-B2NP  | 2CCG000527R0001 | 7612271508975         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 3            | S403P-B3NP  | 2CCG000528R0001 | 7612271508982         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 4            | S403P-B4NP  | 2CCG000529R0001 | 7612271508999         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 6            | S403P-B6NP  | 2CCG000531R0001 | 7612271509002         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 8            | S403P-B8NP  | 2CCG000532R0001 | 7612271509019         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 10           | S403P-B10NP | 2CCG000533R0001 | 7612271509026         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 13           | S403P-B13NP | 2CCG000534R0001 | 7612271509033         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 16           | S403P-B16NP | 2CCG000535R0001 | 7612271509040         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 20           | S403P-B20NP | 2CCG000536R0001 | 7612271509057         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 25           | S403P-B25NP | 2CCG000537R0001 | 7612271509064         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 32           | S403P-B32NP | 2CCG000538R0001 | 7612271509071         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 40           | S403P-B40NP | 2CCG000539R0001 | 7612271509088         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 20               | 50           | S403P-B50NP | 2CCG000540R0001 | 7612271509095         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 20               | 63           | S403P-B63NP | 2CCG000542R0001 | 7612271509101         | 5                      | 2      | 460                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

## Miniature circuit breaker (MCB)

S400P-C with protected neutral  $I_{cu} = 20 \dots 40 \text{ kA}$

C according to IEC/EN 60947-2

|                                                                                                                                                                           | $I_{cu}$<br>[kA] | $I_n$<br>[A] | Type name   | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|-------------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>    | 40               | 2            | S401P-C2NP  | 2CCG000558R0001 | 7612271509255         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 3            | S401P-C3NP  | 2CCG000559R0001 | 7612271509262         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 4            | S401P-C4NP  | 2CCG000560R0001 | 7612271509279         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 6            | S401P-C6NP  | 2CCG000561R0001 | 7612271509286         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 8            | S401P-C8NP  | 2CCG000562R0001 | 7612271509293         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 10           | S401P-C10NP | 2CCG000564R0001 | 7612271509309         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 13           | S401P-C13NP | 2CCG000565R0001 | 7612271509316         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 16           | S401P-C16NP | 2CCG000566R0001 | 7612271509323         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 20           | S401P-C20NP | 2CCG000567R0001 | 7612271509330         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 25           | S401P-C25NP | 2CCG000568R0001 | 7612271509347         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 32           | S401P-C32NP | 2CCG000569R0001 | 7612271509354         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 40           | S401P-C40NP | 2CCG000570R0001 | 7612271509361         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 20               | 50           | S401P-C50NP | 2CCG000571R0001 | 7612271509378         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 20               | 63           | S401P-C63NP | 2CCG000572R0001 | 7612271509385         | 5                      | 2      | 230                   |
| <br> | 40               | 2            | S403P-C2NP  | 2CCG000395R0001 | 7612271509675         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 3            | S403P-C3NP  | 2CCG000396R0001 | 7612271509682         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 4            | S403P-C4NP  | 2CCG000397R0001 | 7612271509699         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 6            | S403P-C6NP  | 2CCG000399R0001 | 7612271509705         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 8            | S403P-C8NP  | 2CCG000400R0001 | 7612271509712         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 10           | S403P-C10NP | 2CCG000401R0001 | 7612271509729         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 13           | S403P-C13NP | 2CCG000402R0001 | 7612271509736         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 16           | S403P-C16NP | 2CCG000403R0001 | 7612271509743         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 20           | S403P-C20NP | 2CCG000404R0001 | 7612271509750         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 25           | S403P-C25NP | 2CCG000405R0001 | 7612271509767         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 32           | S403P-C32NP | 2CCG000406R0001 | 7612271509774         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 40           | S403P-C40NP | 2CCG000407R0001 | 7612271509781         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 20               | 50           | S403P-C50NP | 2CCG000408R0001 | 7612271509798         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 20               | 63           | S403P-C63NP | 2CCG000410R0001 | 7612271509804         | 5                      | 2      | 460                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

## Miniature circuit breaker (MCB)

S400P-K with protected neutral  $I_{cu} = 20 \dots 40 \text{ kA}$

K according to IEC/EN 60947-2

|                                                                                                                                                                           | $I_{cu}$<br>[kA] | $I_n$<br>[A] | Type name   | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------|-------------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <br>    | 40               | 2            | S401P-K2NP  | 2CCG000426R0001 | 7612271509958         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 3            | S401P-K3NP  | 2CCG000427R0001 | 7612271509965         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 4            | S401P-K4NP  | 2CCG000428R0001 | 7612271509972         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 6            | S401P-K6NP  | 2CCG000429R0001 | 7612271509989         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 8            | S401P-K8NP  | 2CCG000430R0001 | 7612271509996         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 10           | S401P-K10NP | 2CCG000432R0001 | 7612271510008         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 13           | S401P-K13NP | 2CCG000433R0001 | 7612271510015         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 40               | 16           | S401P-K16NP | 2CCG000434R0001 | 7612271510022         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 20           | S401P-K20NP | 2CCG000435R0001 | 7612271510039         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 25           | S401P-K25NP | 2CCG000436R0001 | 7612271510046         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 32           | S401P-K32NP | 2CCG000437R0001 | 7612271510053         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 30               | 40           | S401P-K40NP | 2CCG000438R0001 | 7612271510060         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 20               | 50           | S401P-K50NP | 2CCG000439R0001 | 7612271510077         | 5                      | 2      | 230                   |
|                                                                                                                                                                           | 20               | 63           | S401P-K63NP | 2CCG000440R0001 | 7612271510084         | 5                      | 2      | 230                   |
| <br> | 40               | 2            | S403P-K2NP  | 2CCG000472R0001 | 7612271510374         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 3            | S403P-K3NP  | 2CCG000473R0001 | 7612271510381         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 4            | S403P-K4NP  | 2CCG000474R0001 | 7612271510398         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 6            | S403P-K6NP  | 2CCG000477R0001 | 7612271510404         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 8            | S403P-K8NP  | 2CCG000478R0001 | 7612271510411         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 10           | S403P-K10NP | 2CCG000479R0001 | 7612271510428         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 13           | S403P-K13NP | 2CCG000480R0001 | 7612271510435         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 40               | 16           | S403P-K16NP | 2CCG000481R0001 | 7612271510442         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 20           | S403P-K20NP | 2CCG000482R0001 | 7612271510459         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 25           | S403P-K25NP | 2CCG000483R0001 | 7612271510466         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 32           | S403P-K32NP | 2CCG000484R0001 | 7612271510473         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 30               | 40           | S403P-K40NP | 2CCG000485R0001 | 7612271510480         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 20               | 50           | S403P-K50NP | 2CCG000486R0001 | 7612271510497         | 5                      | 2      | 460                   |
|                                                                                                                                                                           | 20               | 63           | S403P-K63NP | 2CCG000488R0001 | 7612271510503         | 5                      | 2      | 460                   |

Ordering details for auxiliary switch and signal contacts on page 56–57



## Miniature circuit breaker (MCB) for UL489 240 VAC

### SU401M technical features

#### Technical Data

| General Data                                                   |                                                                                                                 |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Standards                                                      | UL 489, CSA 22.2 No. 5, IEC/EN 60947-2                                                                          |
| Poles                                                          | 1P                                                                                                              |
| Tripping characteristics                                       | K                                                                                                               |
| Rated current $I_n$                                            | 2 to 32 A                                                                                                       |
| Rated frequency $f$                                            | 50/60 Hz                                                                                                        |
| Overvoltage category                                           | III                                                                                                             |
| Pollution degree                                               | 3                                                                                                               |
| Calibration temperature                                        | 40 °C                                                                                                           |
| Mechanical Data                                                |                                                                                                                 |
| Contact position indication                                    | Real CPI (green OFF / red ON)                                                                                   |
| IP Code                                                        | IP20B, IP40 in enclosure with cover                                                                             |
| Endurance                                                      | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                                              |
| Vibration resistance acc. to IEC/EN 60068-2-6                  | Frequency 2 – 13.2 Hz @ 1 mm Displacement;<br>13.2 – 100 Hz @ 0.7 g<br>Frequency 5 – 150 – 5 Hz @ 1 g, 4 Sweeps |
| Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30 | 28 cycles with 55 °C/90–96% and 25 °C/95–100%                                                                   |
| Ambient temperature                                            | –13 F ... +131 F; –25 ... +55 °C                                                                                |
| Storage temperature                                            | –40 F ... +158 F; –40 ... +70 °C                                                                                |
| Installation                                                   |                                                                                                                 |
| Terminal at load side                                          | Failsafe bi-directional cylinder-lift terminal with double slot 35/10 mm <sup>2</sup>                           |
| Top terminal rigid IEC connections (solid/stranded)            | – Single: 0.75 ... 35 mm <sup>2</sup> (front slot), 0.75 ... 10 mm <sup>2</sup> (rear slot)<br>– Multiple: –    |
| Top terminal flexible IEC connections                          | – Single: 0.75 ... 25 mm <sup>2</sup> (front side), 0.75 ... 6 mm <sup>2</sup> (rear slot)<br>– Multiple: –     |
| Top terminal UL connections                                    | – Single: AWG 14...8, Cu only<br>– Multiple: –                                                                  |
|                                                                | AWG 14-8 single conductor CU only                                                                               |
| Torque                                                         | 2.8 Nm, 25 in. lbs.                                                                                             |
| Wire temperature                                               | 60/75 °C                                                                                                        |
| Screwdriver                                                    | No. 2 Pozidrive                                                                                                 |
| Mounting                                                       | SMISSLINE TP only                                                                                               |
| Mounting position                                              | Any                                                                                                             |
| Pole weight                                                    | 114 g                                                                                                           |

## Miniature circuit breaker (MCB)

SU401M-K for UL489 I<sub>cu</sub> 10 kA and IEC 60947-2

### Ordering Data



| I <sub>n</sub> [A] | Type       | ABB IT number   | EAN number<br>761 227 | Packing-in<br>unit | Module | Weight in<br>grams |
|--------------------|------------|-----------------|-----------------------|--------------------|--------|--------------------|
| 2                  | SU401M-K2  | 2CCF330023A0001 | 1493059               | 10                 | 1      | 114                |
| 3                  | SU401M-K3  | 2CCF330024A0001 | 1493073               | 10                 | 1      | 114                |
| 4                  | SU401M-K4  | 2CCF330025A0001 | 1493097               | 10                 | 1      | 114                |
| 6                  | SU401M-K6  | 2CCF330026A0001 | 1493110               | 10                 | 1      | 114                |
| 8                  | SU401M-K8  | 2CCF330027A0001 | 1493134               | 10                 | 1      | 114                |
| 10                 | SU401M-K10 | 2CCF330028A0001 | 1493158               | 10                 | 1      | 114                |
| 13                 | SU401M-K13 | 2CCF330029A0001 | 1493172               | 10                 | 1      | 114                |
| 16                 | SU401M-K16 | 2CCF330030A0001 | 1493196               | 10                 | 1      | 114                |
| 20                 | SU401M-K20 | 2CCF330031A0001 | 1493219               | 10                 | 1      | 114                |
| 25                 | SU401M-K25 | 2CCF330032A0001 | 1493233               | 10                 | 1      | 114                |
| 30                 | SU401M-K30 | 2CCF330033A0001 | 1493257               | 10                 | 1      | 114                |
| 32                 | SU401M-K32 | 2CCF330034A0001 | 1493271               | 10                 | 1      | 114                |

Ordering details for auxiliary switch and signal contacts on page 56–57

## Miniature circuit breaker (MCB) for UL489 277/480 VAC

### SUP400M technical features

#### Technical Data

| General Data                                       |                                        |
|----------------------------------------------------|----------------------------------------|
| Standards                                          | UL 489, CSA 22.2 No. 5, IEC/EN 60947-2 |
| Rated voltage                                      | 277/480 VAC                            |
| Poles                                              | 1P, 2P, 3P                             |
| Tripping characteristics                           | K                                      |
| Rated current I <sub>n</sub>                       | 2 to 30 A                              |
| Rated frequency f                                  | 50/60 Hz                               |
| Short circuit current rating (acc. to UL 489)      | 10 kA                                  |
| Overvoltage category                               | III                                    |
| Pollution degree                                   | 3                                      |
| Reference temperature for tripping characteristics | 40 °C                                  |

| Mechanical Data                                                |                                                                                           |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Contact position indication                                    | Real CPI (green OFF / red ON)                                                             |
| L1/L2/L3 position indication                                   | Yes                                                                                       |
| IP Code                                                        | IP20B, IP40 in enclosure with cover                                                       |
| Label holder                                                   | Yes                                                                                       |
| Endurance                                                      | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                        |
| Shock resistance acc. to IEC/EN 61373                          | 5 g/30 ms, 3 shocks                                                                       |
| Vibration resistance acc. to IEC/EN 60068-2-6                  | 2 ... 13.2 Hz/1 mm<br>13.2 ... 100 Hz/0.7 g, 5 cycles<br>5 ... 150 ... 5 Hz/1 g, 4 sweeps |
| Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30 | 28 cycles with 55 °C/90 ... 96 % and 25 °C/95 ... 100 %                                   |
| Ambient temperature                                            | –25 ... +60 °C                                                                            |
| Storage temperature                                            | –40 ... +70 °C                                                                            |

| Installation                                        |                                                                                                              |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Terminal at load side                               | Failsafe bi-directional cylinder-lift terminal with double slot 35/10 mm <sup>2</sup>                        |
| Top terminal rigid IEC connections (solid/stranded) | – Single: 0.75 ... 35 mm <sup>2</sup> (front slot), 0.75 ... 10 mm <sup>2</sup> (rear slot)<br>– Multiple: – |
| Top terminal flexible IEC connections               | – Single: 0.75 ... 25 mm <sup>2</sup> (front side), 0.75 ... 6 mm <sup>2</sup> (rear slot)<br>– Multiple: –  |
| Top terminal UL connections                         | – Single: AWG 14...8, Cu only<br>– Multiple: –                                                               |
| Torque                                              | 2.8 Nm, 25 in. lbs.                                                                                          |
| Stripping length                                    | 12.5 mm                                                                                                      |
| Wire temperature                                    | 60/75 °C                                                                                                     |
| Screwdriver                                         | No. 2 Pozidrive                                                                                              |
| Terminal at line side                               | Movable plug-on terminal L1, L2, L3                                                                          |
| Mounting                                            | SMISSLINE TP socket system only                                                                              |
| Mounting position                                   | Any                                                                                                          |

#### Dimensions and weight

|             |       |
|-------------|-------|
| Pole weight | 120 g |
|-------------|-------|

The devices are suitable with

- S2C-H6RU (auxiliary contact)
- S2C-S6RU (signal/auxiliary contact)
- E210-DH (false pole 1/2 module)
- SA (locking device)

## Miniature circuit breaker SUP400 (MCB)

SUP400 for branch circuit protection acc. to UL 489 File E312425

### Ordering Data

|                                                                                                                                                                            | I <sub>n</sub> [A] | Type        | ABB IT number   | EAN number<br>761 227 | Packaging<br>unit | Module | Weight in<br>grams |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------|-----------------|-----------------------|-------------------|--------|--------------------|
| <br>     | 2                  | SUP401M-K2  | 2CCG000142R0001 | 1506759               | 10                | 1      | 120                |
|                                                                                                                                                                            | 3                  | SUP401M-K3  | 2CCG000143R0001 | 1506766               | 10                | 1      | 120                |
|                                                                                                                                                                            | 4                  | SUP401M-K4  | 2CCG000144R0001 | 1506773               | 10                | 1      | 120                |
|                                                                                                                                                                            | 5                  | SUP401M-K5  | 2CCG000153R0001 | 1506865               | 10                | 1      | 120                |
|                                                                                                                                                                            | 6                  | SUP401M-K6  | 2CCG000145R0001 | 1506780               | 10                | 1      | 120                |
|                                                                                                                                                                            | 8                  | SUP401M-K8  | 2CCG000146R0001 | 1506797               | 10                | 1      | 120                |
|                                                                                                                                                                            | 10                 | SUP401M-K10 | 2CCG000147R0001 | 1506803               | 10                | 1      | 120                |
|                                                                                                                                                                            | 13                 | SUP401M-K13 | 2CCG000148R0001 | 1506810               | 10                | 1      | 120                |
|                                                                                                                                                                            | 15                 | SUP401M-K15 | 2CCG000154R0001 | 1506872               | 10                | 1      | 120                |
|                                                                                                                                                                            | 16                 | SUP401M-K16 | 2CCG000149R0001 | 1506827               | 10                | 1      | 120                |
|                                                                                                                                                                            | 20                 | SUP401M-K20 | 2CCG000150R0001 | 1506834               | 10                | 1      | 120                |
|                                                                                                                                                                            | 25                 | SUP401M-K25 | 2CCG000151R0001 | 1506841               | 10                | 1      | 120                |
| <br>  | 30                 | SUP401M-K30 | 2CCG000152R0001 | 1506858               | 10                | 1      | 120                |
|                                                                                                                                                                            | 2                  | SUP402M-K2  | 2CCG000106R0001 | 1506384               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 3                  | SUP402M-K3  | 2CCG000107R0001 | 1506391               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 4                  | SUP402M-K4  | 2CCG000108R0001 | 1506506               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 5                  | SUP402M-K5  | 2CCG000117R0001 | 1506599               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 6                  | SUP402M-K6  | 2CCG000109R0001 | 1506513               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 8                  | SUP402M-K8  | 2CCG000110R0001 | 1506520               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 10                 | SUP402M-K10 | 2CCG000111R0001 | 1506537               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 13                 | SUP402M-K13 | 2CCG000112R0001 | 1506544               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 15                 | SUP402M-K15 | 2CCG000118R0001 | 1506605               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 16                 | SUP402M-K16 | 2CCG000113R0001 | 1506551               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 20                 | SUP402M-K20 | 2CCG000114R0001 | 1506568               | 5                 | 2      | 240                |
| <br> | 25                 | SUP402M-K25 | 2CCG000115R0001 | 1506575               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 30                 | SUP402M-K30 | 2CCG000116R0001 | 1506582               | 5                 | 2      | 240                |
|                                                                                                                                                                            | 2                  | SUP403M-K2  | 2CCG000119R0001 | 1506612               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 3                  | SUP403M-K3  | 2CCG000120R0001 | 1506629               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 4                  | SUP403M-K4  | 2CCG000121R0001 | 1506636               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 5                  | SUP403M-K5  | 2CCG000130R0001 | 1506728               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 6                  | SUP403M-K6  | 2CCG000122R0001 | 1506643               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 8                  | SUP403M-K8  | 2CCG000123R0001 | 1506650               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 10                 | SUP403M-K10 | 2CCG000124R0001 | 1506667               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 13                 | SUP403M-K13 | 2CCG000125R0001 | 1506674               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 15                 | SUP403M-K15 | 2CCG000131R0001 | 1506735               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 16                 | SUP403M-K16 | 2CCG000126R0001 | 1506681               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 20                 | SUP403M-K20 | 2CCG000127R0001 | 1506698               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 25                 | SUP403M-K25 | 2CCG000128R0001 | 1506704               | 3                 | 3      | 360                |
|                                                                                                                                                                            | 30                 | SUP403M-K30 | 2CCG000129R0001 | 1506711               | 3                 | 3      | 360                |

Ordering details for auxiliary switch and signal contacts on page 56–57

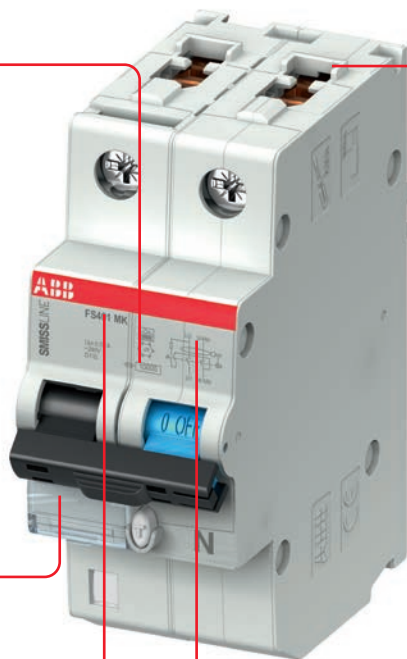
## Residual current operated circuit breaker (RCBO)

The difference lies in the detail

Type F RCBOs have a minimum non-tripping time of 10 ms and a surge current withstand capacity (resistance against accidental tripping) of 3 kA. The standard functionality is not impaired by overlapping smooth DC residual currents of up to 10 mA. When using Type F RCBOs with short-time delay, there is no risk of false tripping due to (capacitive) currents flowing to ground for short periods.

Reliable recognition of the switching status through the new red/green position indicating device that shows the position of the inner contacts.

Short-circuit breaking capacity of 10 kA to 32A according to EN/IEC 61009-1  
 Rated breaking capacity  $I_{cu}$  kA  
 6...16 A and 15 kA 20...32 A acc. to IEC/EN 60947-2



New, patented bidirectional terminal with captive screws for maximum comfort, safety and flexibility. The connection takes place in two chambers (35 mm<sup>2</sup> and 10 mm<sup>2</sup>). Two conductors with the same cross-section can be connected in each chamber.

Laser printing for clearly legible information during the entire service life.

## Residual current operated circuit breaker (RCBO)

### FS401 technical features

|                                                                                                              | FS401E                                                                                                                                                                                                                         | FS401M                                                                             | FS401MK                                                                            |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Standards                                                                                                    | IEC/EN 61009-1,<br>IEC/EN 61009-2-1                                                                                                                                                                                            | IEC/EN 61009-1,<br>IEC/EN 61009-2-1                                                | IEC/EN 61009-1, IEC/EN<br>61009-2-1 IEC/EN 62423                                   |
| <b>Electrical features</b>                                                                                   |                                                                                                                                                                                                                                |                                                                                    |                                                                                    |
| type (wave form of the earth leakage sensed)                                                                 | A                                                                                                                                                                                                                              | A                                                                                  | APR - F                                                                            |
| Number of poles                                                                                              | 1P + N                                                                                                                                                                                                                         | 1P + N                                                                             | 1P + N                                                                             |
| Rated current $I_n$                                                                                          | $6 \leq I_n \leq 32\text{ A}$                                                                                                                                                                                                  | $6 \leq I_n \leq 32\text{ A}$                                                      | $6 \leq I_n \leq 32\text{ A}$                                                      |
| Rated sensitivity $I_{\Delta n}$                                                                             | 0.03 A                                                                                                                                                                                                                         | 0.03–0.1 A                                                                         | 0.03–0.3 A                                                                         |
| Rated voltage $U_e$                                                                                          | 240 V                                                                                                                                                                                                                          | 240 V                                                                              | 240 V                                                                              |
| Insulation voltage $U_i$                                                                                     | 500 V                                                                                                                                                                                                                          | 500 V                                                                              | 500 V                                                                              |
| Overvoltage category                                                                                         | III                                                                                                                                                                                                                            | III                                                                                | III                                                                                |
| Pollution degree                                                                                             | 2                                                                                                                                                                                                                              | 2                                                                                  | 2                                                                                  |
| Operating voltage of circuit test                                                                            | 110 V (170 for 30 mA) – 264                                                                                                                                                                                                    | 110 V (170 for 30 mA) – 264                                                        | 110 V (170 for 30 mA) – 264                                                        |
| Rated frequency                                                                                              | 50/60 Hz                                                                                                                                                                                                                       | 50/60 Hz                                                                           | 50/60 Hz                                                                           |
| Rated breaking capacity acc. to IEC/EN 61009-1 $I_{cn}$                                                      | 6000 A                                                                                                                                                                                                                         | 10000 A                                                                            | 10000 A                                                                            |
| Rated ultimate short-circuit capacity $I_{cu}$ acc. to IEC/EN 60947-2 (only referring to short circuit test) | 6...16 A<br>20...32 A                                                                                                                                                                                                          | 25 kA<br>15 kA                                                                     | 25 kA<br>15 kA                                                                     |
| Rated service short-circuit capacity $I_{cs}$ acc. to IEC/EN 60947-2 (only referring to short circuit test)  | 6...16 A<br>20...32 A                                                                                                                                                                                                          | 15 kA<br>7.5 kA                                                                    | 15 kA<br>7.5 kA                                                                    |
| Rated residual breaking capacity acc. to IEC/EN 61009-1 $I_{\Delta m}$                                       | 6000 A                                                                                                                                                                                                                         | 10000 A                                                                            | 10000 A                                                                            |
| Rated impulse withstand voltage (1.2/50) $U_{imp}$                                                           | 4 kV                                                                                                                                                                                                                           | 4 kV                                                                               | 4 kV                                                                               |
| Dielectric test voltage at ind. freq. for 1 min.                                                             | 2.5 kV (50/60 Hz, 1 min.)                                                                                                                                                                                                      | 2.5 kV (50/60 Hz, 1 min.)                                                          | 2.5 kV (50/60 Hz, 1 min.)                                                          |
| Thermomagnetic release – characteristic                                                                      | B: $3 I_n \leq I_n \leq 5 I_n$<br>C: $5 I_n \leq I_n \leq 10 I_n$                                                                                                                                                              | X<br>X                                                                             | X<br>X                                                                             |
| Energy limiting class acc. to EN 61009-1                                                                     | 3                                                                                                                                                                                                                              | 3                                                                                  | 3                                                                                  |
| <b>Mechanical features</b>                                                                                   |                                                                                                                                                                                                                                |                                                                                    |                                                                                    |
| Housing                                                                                                      | Insulation group I, light grey RAL 7035                                                                                                                                                                                        | Insulation group I, light grey RAL 7035                                            | Insulation group I, light grey RAL 7036                                            |
| Toggle                                                                                                       | Insulation group II, black RAL 9005, sealable in ON-OFF positions                                                                                                                                                              | Insulation group II, black RAL 9005, sealable in ON-OFF positions                  | Insulation group II, black RAL 9005, sealable in ON-OFF positions                  |
| Contact position indication                                                                                  | Green/Red Window                                                                                                                                                                                                               | Green/Red Window                                                                   | Green/Red Window                                                                   |
| Endurance                                                                                                    | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                                                                                                                                                             |                                                                                    |                                                                                    |
| IP code                                                                                                      | IP20, IP40 in enclosure with cover                                                                                                                                                                                             | IP20, IP40 in enclosure with cover                                                 | IP20, IP40 in enclosure with cover                                                 |
| Shock resistance acc. to IEC/EN 61373                                                                        | 5 g–30 ms, 3 shocks                                                                                                                                                                                                            | 5 g–30 ms, 3 shocks                                                                | 5 g–30 ms, 3 shocks                                                                |
| Vibration resistance acc. to IEC/EN 60068-2-6                                                                | 2...13.2 Hz/1 mm<br>13.2...100 Hz/0.7 g, 5 cycles<br>5...150 ... 5 Hz/1 g, 4 waves                                                                                                                                             | 2...13.2 Hz/1 mm<br>13.2...100 Hz/0.7 g, 5 cycles<br>5...150 ... 5 Hz/1 g, 4 waves | 2...13.2 Hz/1 mm<br>13.2...100 Hz/0.7 g, 5 cycles<br>5...150 ... 5 Hz/1 g, 4 waves |
| Reference temperature for setting of thermal element                                                         | 30 °C                                                                                                                                                                                                                          | 30 °C                                                                              | 30 °C                                                                              |
| Ambient temperature                                                                                          | –25...+60 °C                                                                                                                                                                                                                   | –25...+60 °C                                                                       | –25...+60 °C                                                                       |
| Storage temperature                                                                                          | –40...+70 °C                                                                                                                                                                                                                   | –40...+70 °C                                                                       | –40...+70 °C                                                                       |
| <b>Installation</b>                                                                                          |                                                                                                                                                                                                                                |                                                                                    |                                                                                    |
| Terminal type                                                                                                | failsafe bi-directional cylinder-lift terminal (shock protected)                                                                                                                                                               |                                                                                    |                                                                                    |
| Top terminal rigid IEC connections (solid/stranded)                                                          | Single: 0.75 ... 35 mm <sup>2</sup> (front slot), 0.75 ... 10 mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75 ... 10 mm <sup>2</sup> (front slot), 2x0.75 ... 6 mm <sup>2</sup> (rear slot), with cables of same type and size |                                                                                    |                                                                                    |
| Top terminal flexible IEC connections                                                                        | Single: 0.75 ... 25 mm <sup>2</sup> (front side), 0.75 ... 6 mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75 ... 10 mm <sup>2</sup> (front slot), 2x0.75 ... 6 mm <sup>2</sup> (rear slot), with cables of same type and size  |                                                                                    |                                                                                    |



## RCBOs (1P+N)

FS401 series 6000 10000 A  type,  
B and C characteristics

### A Type:

Function: protection of end user single-phase circuits against overload and short-circuit

currents; protection against the effects of sinusoidal alternating and direct pulsating earth fault currents.

### B, 6 kA according to EN 61009-1

|                                                                                   | $I_{\Delta n}$<br>[mA] | $I_n$<br>[A] | $I_{cn}$<br>[kA] | Type name       | ABB IT number   | EAN<br>number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-----------------------------------------------------------------------------------|------------------------|--------------|------------------|-----------------|-----------------|--------------------------|------------------------|--------|-----------------------|
|  | 30                     | 10           | 6                | FS401E-B10/0.03 | 2CCL562111E1105 | 147 2825                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 13           | 6                | FS401E-B13/0.03 | 2CCL562111E0135 | 010 8558                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 16           | 6                | FS401E-B16/0.03 | 2CCL562111E0165 | 010 8565                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 20           | 6                | FS401E-B20/0.03 | 2CCL562111E0205 | 010 9692                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 25           | 6                | FS401E-B25/0.03 | 2CCL562111E0255 | 010 9708                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 32           | 6                | FS401E-B32/0.03 | 2CCL562111E0325 | 010 9715                 | 1                      | 2      | 200                   |

### C, 6 kA according to EN 61009-1

|                                                                                    |    |    |   |                 |                 |          |   |   |     |
|------------------------------------------------------------------------------------|----|----|---|-----------------|-----------------|----------|---|---|-----|
|  | 30 | 6  | 6 | FS401E-C6/0.03  | 2CCL562111E1064 | 147 2788 | 1 | 2 | 200 |
|                                                                                    | 30 | 10 | 6 | FS401E-C10/0.03 | 2CCL562111E1104 | 147 2801 | 1 | 2 | 200 |
|                                                                                    | 30 | 13 | 6 | FS401E-C13/0.03 | 2CCL562111E0134 | 010 8572 | 1 | 2 | 200 |
|                                                                                    | 30 | 16 | 6 | FS401E-C16/0.03 | 2CCL562111E0164 | 010 8589 | 1 | 2 | 200 |
|                                                                                    | 30 | 20 | 6 | FS401E-C20/0.03 | 2CCL562110E0204 | 010 4574 | 1 | 2 | 200 |
|                                                                                    | 30 | 25 | 6 | FS401E-C25/0.03 | 2CCL562110E0254 | 010 4581 | 1 | 2 | 200 |
|                                                                                    | 30 | 32 | 6 | FS401E-C32/0.03 | 2CCL562110E0324 | 010 4598 | 1 | 2 | 200 |

### B, 10 kA according to EN 61009-1

|                                                                                     |    |    |    |                 |                 |          |   |   |     |
|-------------------------------------------------------------------------------------|----|----|----|-----------------|-----------------|----------|---|---|-----|
|  | 30 | 6  | 10 | FS401M-B6/0.03  | 2CCL562110E1065 | 147 2641 | 1 | 2 | 200 |
|                                                                                     | 30 | 10 | 10 | FS401M-B10/0.03 | 2CCL562110E0105 | 010 9685 | 1 | 2 | 200 |
|                                                                                     | 30 | 13 | 10 | FS401M-B13/0.03 | 2CCL562110E0135 | 010 4505 | 1 | 2 | 200 |
|                                                                                     | 30 | 16 | 10 | FS401M-B16/0.03 | 2CCL562110E0165 | 010 4512 | 1 | 2 | 200 |
|                                                                                     | 30 | 20 | 10 | FS401M-B20/0.03 | 2CCL562110E1205 | 147 2689 | 1 | 2 | 200 |
|                                                                                     | 30 | 25 | 10 | FS401M-B25/0.03 | 2CCL562110E1255 | 147 2726 | 1 | 2 | 200 |
|                                                                                     | 30 | 32 | 10 | FS401M-B32/0.03 | 2CCL562110E1325 | 147 2764 | 1 | 2 | 200 |

### C, 10 kA according to EN 61009-1

|                                                                                     |    |    |    |                 |                 |          |   |   |     |
|-------------------------------------------------------------------------------------|----|----|----|-----------------|-----------------|----------|---|---|-----|
|  | 30 | 6  | 10 | FS401M-C6/0.03  | 2CCL562010E0064 | 140 6905 | 1 | 2 | 200 |
|                                                                                     | 30 | 10 | 10 | FS401M-C10/0.03 | 2CCL562110E0104 | 010 4543 | 1 | 2 | 200 |
|                                                                                     | 30 | 13 | 10 | FS401M-C13/0.03 | 2CCL562110E0134 | 010 4550 | 1 | 2 | 200 |
|                                                                                     | 30 | 16 | 10 | FS401M-C16/0.03 | 2CCL562110E0164 | 010 4567 | 1 | 2 | 200 |
|                                                                                     | 30 | 20 | 10 | FS401M-C20/0.03 | 2CCL562110E1204 | 147 2665 | 1 | 2 | 200 |
|                                                                                     | 30 | 25 | 10 | FS401M-C25/0.03 | 2CCL562110E1254 | 147 2702 | 1 | 2 | 200 |
|                                                                                     | 30 | 32 | 10 | FS401M-C32/0.03 | 2CCL562110E1324 | 147 2740 | 1 | 2 | 200 |

### C, 10 kA according to EN 61009-1

|                                                                                     |     |    |    |                |                 |          |   |   |     |
|-------------------------------------------------------------------------------------|-----|----|----|----------------|-----------------|----------|---|---|-----|
|  | 100 | 6  | 10 | FS401M-C6/0.1  | 2CCL562120E0064 | 142 4534 | 1 | 2 | 200 |
|                                                                                     | 100 | 10 | 10 | FS401M-C10/0.1 | 2CCL562120E0104 | 141 3217 | 1 | 2 | 200 |
|                                                                                     | 100 | 13 | 10 | FS401M-C13/0.1 | 2CCL562120E0134 | 149 0706 | 1 | 2 | 200 |
|                                                                                     | 100 | 16 | 10 | FS401M-C16/0.1 | 2CCL562120E0164 | 142 1618 | 1 | 2 | 200 |
|                                                                                     | 100 | 20 | 10 | FS401M-C20/0.1 | 2CCL562122E0204 | 149 0720 | 1 | 2 | 200 |
|                                                                                     | 100 | 25 | 10 | FS401M-C25/0.1 | 2CCL562122E0254 | 149 0744 | 1 | 2 | 200 |
|                                                                                     | 100 | 32 | 10 | FS401M-C32/0.1 | 2CCL562122E0324 | 149 0768 | 1 | 2 | 200 |

Ordering details for auxiliary switch and signal contacts on page 56–57

## RCBOs (1P+N)

FS401 series 10000 F  type, AP-R (high immunity)

B and C characteristics

### Type F:

Function: protection of end user single-phase circuits against overload and short-circuit currents; protection against the effects of sinusoidal alter-

nating earth fault currents; protection against indirect contact and additional protection against direct contact ( $I_{\Delta n}=30\text{ mA}$ ). Specifically suitable for the protection of lines supplying single phase inverters.

#### B, 10 kA according to EN 61009-1

|                                                                                   | $I_{\Delta n}$<br>[mA] | $I_n$<br>[A] | $I_{cn}$<br>[kA] | Type name        | ABB IT number   | EAN<br>number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-----------------------------------------------------------------------------------|------------------------|--------------|------------------|------------------|-----------------|--------------------------|------------------------|--------|-----------------------|
|  | 30                     | 6            | 10               | FS401MK-B6/0.03  | 2CCL562130E1035 | 147 2849                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 10           | 10               | FS401MK-B10/0.03 | 2CCL562310E1105 | 147 2887                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 13           | 10               | FS401MK-B13/0.03 | 2CCL562310E1135 | 147 2900                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 16           | 10               | FS401MK-B16/0.03 | 2CCL562310E1165 | 147 2924                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 20           | 10               | FS401MK-B20/0.03 | 2CCL562310E1205 | 147 2962                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 25           | 10               | FS401MK-B25/0.03 | 2CCL562310E1255 | 147 3006                 | 1                      | 2      | 200                   |
|                                                                                   | 30                     | 32           | 10               | FS401MK-B32/0.03 | 2CCL562310E1325 | 147 3044                 | 1                      | 2      | 200                   |
|                                                                                   |                        |              |                  |                  |                 |                          |                        |        |                       |

#### C 10 kA according to EN 61009-1

|                                                                                    |    |    |    |                  |                 |          |   |   |     |
|------------------------------------------------------------------------------------|----|----|----|------------------|-----------------|----------|---|---|-----|
|  | 30 | 6  | 10 | FS401MK-C6/0.03  | 2CCL562330E1064 | 147 3068 | 1 | 2 | 200 |
|                                                                                    | 30 | 10 | 10 | FS401MK-C10/0.03 | 2CCL562310E0104 | 140 4031 | 1 | 2 | 200 |
|                                                                                    | 30 | 13 | 10 | FS401MK-C13/0.03 | 2CCL562310E0134 | 010 4604 | 1 | 2 | 200 |
|                                                                                    | 30 | 16 | 10 | FS401MK-C16/0.03 | 2CCL562310E0164 | 010 4611 | 1 | 2 | 200 |
|                                                                                    | 30 | 20 | 10 | FS401MK-C20/0.03 | 2CCL562310E1204 | 147 2948 | 1 | 2 | 200 |
|                                                                                    | 30 | 25 | 10 | FS401MK-C25/0.03 | 2CCL562310E1254 | 147 2986 | 1 | 2 | 200 |
|                                                                                    | 30 | 32 | 10 | FS401MK-C32/0.03 | 2CCL562310E1324 | 147 3020 | 1 | 2 | 200 |
|                                                                                    |    |    |    |                  |                 |          |   |   |     |

#### C, 10 kA according to EN 61009-1

|                                                                                     |     |    |    |                 |                 |          |   |   |     |
|-------------------------------------------------------------------------------------|-----|----|----|-----------------|-----------------|----------|---|---|-----|
|  | 300 | 6  | 10 | FS401MK-C6/0.3  | 2CCL562130E3034 | 147 3068 | 1 | 2 | 200 |
|                                                                                     | 300 | 10 | 10 | FS401MK-C10/0.3 | 2CCL562330E1104 | 147 3082 | 1 | 2 | 200 |
|                                                                                     | 300 | 13 | 10 | FS401MK-C13/0.3 | 2CCL562330E1134 | 147 3105 | 1 | 2 | 200 |
|                                                                                     | 300 | 16 | 10 | FS401MK-C16/0.3 | 2CCL562330E1164 | 147 3143 | 1 | 2 | 200 |
|                                                                                     | 300 | 20 | 10 | FS401MK-C20/0.3 | 2CCL562330E1204 | 147 3181 | 1 | 2 | 200 |
|                                                                                     | 300 | 25 | 10 | FS401MK-C25/0.3 | 2CCL562330E1254 | 147 3228 | 1 | 2 | 200 |
|                                                                                     | 300 | 32 | 10 | FS401MK-C32/0.3 | 2CCL562330E1324 | 147 3266 | 1 | 2 | 200 |

Ordering details for auxiliary switch and signal contacts on page 56–57

## Residual current operated circuit breaker (RCBO)

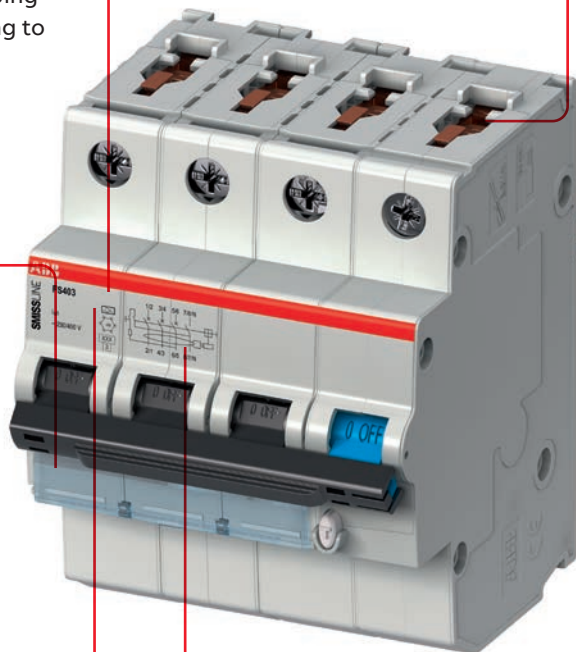
The difference lies in the detail

Type F RCBOs have a minimum non-tripping time of 10 ms and a surge current withstand capacity (resistance against accidental tripping) of 3 kA. The standard functionality is not impaired by overlapping smooth DC residual currents of up to 10 mA. When using Type F RCBOs with short-time delay, there is no risk of false tripping due to (capacitive) currents flowing to ground for short periods.

Reliable recognition of the switching status through the new red/green position indicating device that shows the position of the inner contacts.

Short-circuit breaking capacity of 10 kA to 32A according to EN/IEC 61009-1  
Rated breaking capacity  $I_{cu}$  kA  
6...16A and 15kA 20...32A  
acc. to IEC/EN 60947-2

New, patented bidirectional terminal with captive screws for maximum comfort, safety and flexibility. The connection takes place in two chambers (35 mm<sup>2</sup> and 10 mm<sup>2</sup>). Two conductors with the same cross-section can be connected in each chamber.



Laser printing for clearly legible information during the entire service life.

## Residual current operated circuit breaker (RCBO)

### FS403 technical features

|                                                                                                              | FS403E                                                                                                                                                                                                                         | FS403M                                                                             | FS403MK                                                                            |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Standards                                                                                                    | IEC 61009-1, EN 61009-1, EN 61009-2-1                                                                                                                                                                                          | IEC 61009-1, EN 61009-1, EN 61009-2-1                                              | IEC/EN 61009-1, IEC/EN 61009-2-1, IEC/EN 62423                                     |
| <b>Electrical features</b>                                                                                   |                                                                                                                                                                                                                                |                                                                                    |                                                                                    |
| type (wave form of the earth leakage sensed)                                                                 | A                                                                                                                                                                                                                              | A                                                                                  | APR - F                                                                            |
| Number of poles                                                                                              | 3P + N                                                                                                                                                                                                                         | 3P + N                                                                             | 3P + N                                                                             |
| Rated current $I_n$                                                                                          | $6 \leq I_n \leq 32 \text{ A}$                                                                                                                                                                                                 | $6 \leq I_n \leq 32 \text{ A}$                                                     | $6 \leq I_n \leq 32 \text{ A}$                                                     |
| Rated sensitivity $I_{\Delta n}$                                                                             | 0.03 A                                                                                                                                                                                                                         | 0.03–0.1 A                                                                         | 0.03–0.3 A                                                                         |
| Rated voltage $U_e$                                                                                          | 240/415 V                                                                                                                                                                                                                      | 240/415 V                                                                          | 240/415 V                                                                          |
| Insulation voltage $U_i$                                                                                     | 500 V                                                                                                                                                                                                                          | 500 V                                                                              | 500 V                                                                              |
| Overvoltage category                                                                                         | III                                                                                                                                                                                                                            | III                                                                                | III                                                                                |
| Pollution degree                                                                                             | 2                                                                                                                                                                                                                              | 2                                                                                  | 2                                                                                  |
| Operating voltage of circuit test                                                                            | 110 V (170 for 30 mA) – 264                                                                                                                                                                                                    | 110 V (170 for 30 mA) – 264                                                        | 110 V (170 for 30 mA) – 264                                                        |
| Rated frequency                                                                                              | 50/60 Hz                                                                                                                                                                                                                       | 50/60 Hz                                                                           | 50/60 Hz                                                                           |
| Rated breaking capacity acc. to IEC/EN 61009-1 $I_{cn}$                                                      | 6000 A                                                                                                                                                                                                                         | 10000 A                                                                            | 10000 A                                                                            |
| Rated ultimate short-circuit capacity $I_{cu}$ acc. to IEC/EN 60947-2 (only referring to short circuit test) | 6...16 A<br>20...32 A                                                                                                                                                                                                          | 25 kA<br>15 kA                                                                     | 25 kA 15 kA                                                                        |
| Rated service short-circuit capacity $I_{cs}$ acc. to IEC/EN 60947-2 (only referring to short circuit test)  | 6...16 A<br>20...32 A                                                                                                                                                                                                          | 15 kA<br>7.5 kA                                                                    | 15 kA<br>7.5 kA                                                                    |
| Rated residual breaking capacity acc. to IEC/EN 61009-1 $I_{\Delta m}$                                       | 6000 A                                                                                                                                                                                                                         | 10000 A                                                                            | 10000 A                                                                            |
| Rated impulse withstand voltage (1.2/50) $U_{imp}$                                                           | 4 kV                                                                                                                                                                                                                           | 4 kV                                                                               | 4 kV                                                                               |
| Dielectric test voltage at ind. freq. for 1 min.                                                             | 2.5 kV (50/60 Hz, 1 min.)                                                                                                                                                                                                      | 2.5 kV (50/60 Hz, 1 min.)                                                          | 2.5 kV (50/60 Hz, 1 min.)                                                          |
| Thermomagnetic release – characteristic                                                                      | B: $3 I_n \leq I_n \leq 5 I_n$<br>C: $5 I_n \leq I_n \leq 10 I_n$                                                                                                                                                              | X                                                                                  | X                                                                                  |
| Energy limiting class acc. to EN 61009-1                                                                     | 3                                                                                                                                                                                                                              | 3                                                                                  | 3                                                                                  |
| <b>Mechanical features</b>                                                                                   |                                                                                                                                                                                                                                |                                                                                    |                                                                                    |
| Housing                                                                                                      | Insulation group I, light grey RAL 7035                                                                                                                                                                                        | Insulation group I, light grey RAL 7035                                            | Insulation group I, light grey RAL 7036                                            |
| Toggle                                                                                                       | Insulation group II, black RAL 9005, sealable in ON-OFF positions                                                                                                                                                              | Insulation group II, black RAL 9005, sealable in ON-OFF positions                  | Insulation group II, black RAL 9005, sealable in ON-OFF positions                  |
| Contact position indication                                                                                  | Green/Red Window                                                                                                                                                                                                               | Green/Red Window                                                                   | Green/Red Window                                                                   |
| Endurance                                                                                                    | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                                                                                                                                                             | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                 | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                 |
| IP code                                                                                                      | IP20, IP40 in enclosure with cover                                                                                                                                                                                             | IP20, IP40 in enclosure with cover                                                 | IP20, IP40 in enclosure with cover                                                 |
| Shock resistance acc. to IEC/EN 61373                                                                        | 5 g – 30 ms, 3 shocks                                                                                                                                                                                                          | 5 g – 30 ms, 3 shocks                                                              | 5 g – 30 ms, 3 shocks                                                              |
| Vibration resistance acc. to IEC/EN 60068-2-6                                                                | 2...13.2 Hz/1 mm<br>13.2...100 Hz/0.7 g, 5 cycles<br>5...150 ... 5 Hz/1 g, 4 waves                                                                                                                                             | 2...13.2 Hz/1 mm<br>13.2...100 Hz/0.7 g, 5 cycles<br>5...150 ... 5 Hz/1 g, 4 waves | 2...13.2 Hz/1 mm<br>13.2...100 Hz/0.7 g, 5 cycles<br>5...150 ... 5 Hz/1 g, 4 waves |
| Reference temperature for setting of thermal element                                                         | 30 °C                                                                                                                                                                                                                          | 30 °C                                                                              | 30 °C                                                                              |
| Ambient temperature                                                                                          | –25...+60 °C                                                                                                                                                                                                                   | –25...+60 °C                                                                       | –25...+60 °C                                                                       |
| Storage temperature                                                                                          | –40...+70 °C                                                                                                                                                                                                                   | –40...+70 °C                                                                       | –40...+70 °C                                                                       |
| <b>Installation</b>                                                                                          |                                                                                                                                                                                                                                |                                                                                    |                                                                                    |
| Terminal type                                                                                                | failsafe bi-directional cylinder-lift terminal (shock protected)                                                                                                                                                               |                                                                                    |                                                                                    |
| Top terminal rigid IEC connections (solid/stranded)                                                          | Single: 0.75 ... 35 mm <sup>2</sup> (front slot), 0.75 ... 10 mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75 ... 10 mm <sup>2</sup> (front slot), 2x0.75 ... 6 mm <sup>2</sup> (rear slot), with cables of same type and size |                                                                                    |                                                                                    |
| Top terminal flexible IEC connections                                                                        | Single: 0.75 ... 25 mm <sup>2</sup> (front side), 0.75 ... 6 mm <sup>2</sup> (rear slot) Multiple: 2x0.75 ... 10 mm <sup>2</sup> (front slot), 2x0.75 ... 6 mm <sup>2</sup> (rear slot), with cables of same type and size     |                                                                                    |                                                                                    |

## RCBOs (3P+N)

FS403 series 6000 10000 A  type,  
B and C characteristics

### A Type:

Function: protection of end user against overload and short-circuit currents; protection against the

effects of sinusoidal alternating and direct pulsating earth fault currents.

### B, 10 kA according to EN 61009-1

|                                                                                   | $I_{\Delta n}$<br>[mA] | $I_n$<br>[A] | $I_{cn}$<br>[kA] | Type name       | ABB IT number   | EAN<br>number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-----------------------------------------------------------------------------------|------------------------|--------------|------------------|-----------------|-----------------|--------------------------|------------------------|--------|-----------------------|
|  | 30                     | 6            | 10               | FS403M-B6/0.03  | 2CCL564110E0065 | 143 4434                 | 1                      | 4      | 410                   |
|                                                                                   | 30                     | 10           | 10               | FS403M-B10/0.03 | 2CCL564110E0105 | 140 7612                 | 1                      | 4      | 410                   |
|                                                                                   | 30                     | 13           | 10               | FS403M-B13/0.03 | 2CCL564110E0135 | 140 7629                 | 1                      | 4      | 410                   |
|                                                                                   | 30                     | 16           | 10               | FS403M-B16/0.03 | 2CCL564110E0165 | 140 7636                 | 1                      | 4      | 410                   |
|                                                                                   | 30                     | 20           | 10               | FS403M-B20/0.03 | 2CCL563110E0205 | 144 2576                 | 1                      | 4      | 410                   |
|                                                                                   | 30                     | 25           | 10               | FS403M-B25/0.03 | 2CCL563110E0255 | 144 2590                 | 1                      | 4      | 410                   |
|                                                                                   | 30                     | 32           | 10               | FS403M-B32/0.03 | 2CCL563110E0325 | 144 2613                 | 1                      | 4      | 410                   |

### C, 6 kA according to EN 61009-1

|                                                                                     | $I_{\Delta n}$<br>[mA] | $I_n$<br>[A] | $I_{cn}$<br>[kA] | Type name       | ABB IT number   | EAN<br>number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|------------------------|--------------|------------------|-----------------|-----------------|--------------------------|------------------------|--------|-----------------------|
|  | 30                     | 6            | 6                | FS403E-C6/0.03  | 2CCL564111E0064 | 141 9141                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 10           | 6                | FS403E-C10/0.03 | 2CCL564111E0104 | 143 4489                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 13           | 6                | FS403E-C13/0.03 | 2CCL564111E0134 | 143 4519                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 16           | 6                | FS403E-C16/0.03 | 2CCL564111E0164 | 143 4601                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 20           | 6                | FS403E-C20/0.03 | 2CCL564111E0203 | 140 9609                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 25           | 6                | FS403E-C25/0.03 | 2CCL564111E0254 | 140 8770                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 32           | 6                | FS403E-C32/0.03 | 2CCL564111E0324 | 140 8787                 | 1                      | 4      | 410                   |

### C, 10 kA according to EN 61009-1

|                                                                                     | $I_{\Delta n}$<br>[mA] | $I_n$<br>[A] | $I_{cn}$<br>[kA] | Type name       | ABB IT number   | EAN<br>number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|------------------------|--------------|------------------|-----------------|-----------------|--------------------------|------------------------|--------|-----------------------|
|  | 30                     | 6            | 10               | FS403M-C6/0.03  | 2CCL564110E0064 | 141 9127                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 10           | 10               | FS403M-C10/0.03 | 2CCL564110E0104 | 140 7674                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 13           | 10               | FS403M-C13/0.03 | 2CCL564110E0134 | 140 7681                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 16           | 10               | FS403M-C16/0.03 | 2CCL564110E0164 | 140 7698                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 20           | 10               | FS403M-C20/0.03 | 2CCL563110E0204 | 144 2569                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 25           | 10               | FS403M-C25/0.03 | 2CCL563110E0254 | 144 2583                 | 1                      | 4      | 410                   |
|                                                                                     | 30                     | 32           | 10               | FS403M-C32/0.03 | 2CCL563110E0324 | 144 2606                 | 1                      | 4      | 410                   |

### C, 10 kA according to EN 61009-1

|                                                                                     | $I_{\Delta n}$<br>[mA] | $I_n$<br>[A] | $I_{cn}$<br>[kA] | Type name      | ABB IT number   | EAN<br>number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|------------------------|--------------|------------------|----------------|-----------------|--------------------------|------------------------|--------|-----------------------|
|  | 100                    | 6            | 10               | FS403M-C6/0.1  | 2CCL564121E0064 | 142 4527                 | 1                      | 4      | 410                   |
|                                                                                     | 100                    | 10           | 10               | FS403M-C10/0.1 | 2CCL564121E0104 | 142 4510                 | 1                      | 4      | 410                   |
|                                                                                     | 100                    | 13           | 10               | FS403M-C13/0.1 | 2CCL563120E0134 | 144 2620                 | 1                      | 4      | 410                   |
|                                                                                     | 100                    | 16           | 10               | FS403M-C16/0.1 | 2CCL564120E0164 | 142 0109                 | 1                      | 4      | 410                   |
|                                                                                     | 100                    | 20           | 10               | FS403M-C20/0.1 | 2CCL563120E0204 | 144 2637                 | 1                      | 4      | 410                   |
|                                                                                     | 100                    | 25           | 10               | FS403M-C25/0.1 | 2CCL563120E0254 | 144 2644                 | 1                      | 4      | 410                   |
|                                                                                     | 100                    | 32           | 10               | FS403M-C32/0.1 | 2CCL563120E0324 | 144 2651                 | 1                      | 4      | 410                   |

Ordering details for auxiliary switch and signal contacts on page 56–57

## RCBOs (3P+N)

FS403 series 10000 F  type, AP-R (high immunity)

B and C characteristics

### Type F:

Function: protection of end user multipole-phase circuits against overload and short-circuit currents; protection against the effects of sinusoidal

alternating earth fault currents; protection against indirect contact and additional protection against direct contact ( $I_{\Delta n}=30\text{ mA}$ ). Specifically suitable for the protection of lines supplying inverters.

#### B 10kA according to EN 61009-1

|                                                                                   | $I_{\Delta n}$<br>[mA] | $I_n$<br>[A] | $I_{cn}$<br>[kA] | Type name        | ABB IT number   | EAN<br>number<br>761 227 | VPE | Module | Weight<br>in<br>grams |
|-----------------------------------------------------------------------------------|------------------------|--------------|------------------|------------------|-----------------|--------------------------|-----|--------|-----------------------|
|  | 30                     | 6            | 10               | FS403MK-B6/0.03  | 2CCL564310E0065 | 147 0951                 | 1   | 4      | 410                   |
|                                                                                   | 30                     | 10           | 10               | FS403MK-B10/0.03 | 2CCL564310E0105 | 147 0999                 | 1   | 4      | 410                   |
|                                                                                   | 30                     | 13           | 10               | FS403MK-B13/0.03 | 2CCL564310E0135 | 147 1033                 | 1   | 4      | 410                   |
|                                                                                   | 30                     | 16           | 10               | FS403MK-B16/0.03 | 2CCL564310E0165 | 147 1071                 | 1   | 4      | 410                   |
|                                                                                   | 30                     | 20           | 10               | FS403MK-B20/0.03 | 2CCL563310E0205 | 147 0777                 | 1   | 4      | 410                   |
|                                                                                   | 30                     | 25           | 10               | FS403MK-B25/0.03 | 2CCL563310E0255 | 147 0814                 | 1   | 4      | 410                   |
|                                                                                   | 30                     | 32           | 10               | FS403MK-B32/0.03 | 2CCL563310E0325 | 147 0852                 | 1   | 4      | 410                   |

#### C, 10kA according to EN 61009-1

|                                                                                     | $I_{\Delta n}$<br>[mA] | $I_n$<br>[A] | $I_{cn}$<br>[kA] | Type name        | ABB IT number   | EAN<br>number<br>761 227 | VPE | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|------------------------|--------------|------------------|------------------|-----------------|--------------------------|-----|--------|-----------------------|
|  | 30                     | 6            | 10               | FS403MK-C6/0.03  | 2CCL564310E0064 | 147 0937                 | 1   | 4      | 410                   |
|                                                                                     | 30                     | 10           | 10               | FS403MK-C10/0.03 | 2CCL564310E0104 | 147 0975                 | 1   | 4      | 410                   |
|                                                                                     | 30                     | 13           | 10               | FS403MK-C13/0.03 | 2CCL564310E0134 | 147 1019                 | 1   | 4      | 410                   |
|                                                                                     | 30                     | 16           | 10               | FS403MK-C16/0.03 | 2CCL564310E0164 | 147 1057                 | 1   | 4      | 410                   |
|                                                                                     | 30                     | 20           | 10               | FS403MK-C20/0.03 | 2CCL563310E0204 | 147 0753                 | 1   | 4      | 410                   |
|                                                                                     | 30                     | 25           | 10               | FS403MK-C25/0.03 | 2CCL563310E0254 | 147 0791                 | 1   | 4      | 410                   |
|                                                                                     | 30                     | 32           | 10               | FS403MK-C32/0.03 | 2CCL563310E0324 | 147 0838                 | 1   | 4      | 410                   |

#### C, 10kA according to EN 61009-1

|                                                                                     | $I_{\Delta n}$<br>[mA] | $I_n$<br>[A] | $I_{cn}$<br>[kA] | Type name       | ABB IT number   | EAN<br>number<br>761 227 | VPE | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|------------------------|--------------|------------------|-----------------|-----------------|--------------------------|-----|--------|-----------------------|
|  | 300                    | 6            | 10               | FS403MK-C6/0.3  | 2CCL564330E0064 | 147 1095                 | 1   | 4      | 410                   |
|                                                                                     | 300                    | 10           | 10               | FS403MK-C10/0.3 | 2CCL564330E0104 | 147 1118                 | 1   | 4      | 410                   |
|                                                                                     | 300                    | 13           | 10               | FS403MK-C13/0.3 | 2CCL564330E0134 | 147 1132                 | 1   | 4      | 410                   |
|                                                                                     | 300                    | 16           | 10               | FS403MK-C16/0.3 | 2CCL564330E0164 | 147 1156                 | 1   | 4      | 410                   |
|                                                                                     | 300                    | 20           | 10               | FS403MK-C20/0.3 | 2CCL563330E0204 | 147 0876                 | 1   | 4      | 410                   |
|                                                                                     | 300                    | 25           | 10               | FS403MK-C25/0.3 | 2CCL563330E0254 | 147 0890                 | 1   | 4      | 410                   |
|                                                                                     | 300                    | 32           | 10               | FS403MK-C32/0.3 | 2CCL563330E0324 | 147 0913                 | 1   | 4      | 410                   |

Ordering details for auxiliary switch and signal contacts on page 56–57





## Residual current operated circuit breaker RCCBs

### F402 technical features, A type and APR-F (K type)

|                                                                | F402                                                                                                                                                                                                                   | F402 APR                                                                                 |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Standards                                                      | IEC/EN 61008-1<br>IEC/EN 61008-2-1                                                                                                                                                                                     | IEC/EN 61008-1<br>IEC/EN 61008-2-1<br>IEC/EN 62423                                       |
| <b>Electrical features</b>                                     |                                                                                                                                                                                                                        |                                                                                          |
| Type (wave form of the earth leakage sensed)                   | A                                                                                                                                                                                                                      | APR - F                                                                                  |
| Number of poles                                                | 1P + N                                                                                                                                                                                                                 | 1P + N                                                                                   |
| Rated current $I_n$                                            | 25, 40 A                                                                                                                                                                                                               | 40 A                                                                                     |
| Rated sensitivity $I_{\Delta n}$                               | 0.01, 0.03, 0.1 A                                                                                                                                                                                                      | 0.03 A                                                                                   |
| Rated voltage $U_e$                                            | 230 V                                                                                                                                                                                                                  | 230/400 V                                                                                |
| Rated insulation voltage ( $U_i$ )                             | 500 V                                                                                                                                                                                                                  | 500 V                                                                                    |
| Overvoltage category                                           | III                                                                                                                                                                                                                    | III                                                                                      |
| Pollution degree                                               | 2                                                                                                                                                                                                                      | 2                                                                                        |
| Operating voltage of circuit test                              | 110 V (170 for 30 mA) – 254 V                                                                                                                                                                                          | 170 – 254 V                                                                              |
| Rated frequency                                                | 50/60 Hz                                                                                                                                                                                                               | 50/60 Hz                                                                                 |
| Rated conditional short-circuit current $I_{nc}$               | 10 kA with SCPD - fuse gG 100 A or high performance MCB S800 100 A                                                                                                                                                     |                                                                                          |
| Rated residual breaking capacity $I_{\Delta m}$                | 1 kA                                                                                                                                                                                                                   |                                                                                          |
| Surge current resistance (wave 8/20)                           | N/A                                                                                                                                                                                                                    | 3000 A                                                                                   |
| <b>Mechanical features</b>                                     |                                                                                                                                                                                                                        |                                                                                          |
| Housing                                                        | Insulation group I, light grey RAL 7035                                                                                                                                                                                | Insulation group I, light grey RAL 7035                                                  |
| Toggle                                                         | Insulation group II, blue RAL 5015, sealable in ON-OFF positions                                                                                                                                                       | Insulation group II, blue RAL 5015, sealable in ON-OFF positions                         |
| Contact position indication                                    | Green/Red Window                                                                                                                                                                                                       | Green/Red Window                                                                         |
| Endurance                                                      | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                                                                                                                                                     | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                       |
| IP code                                                        | IP20, IP40 in enclosure with cover                                                                                                                                                                                     | IP20, IP40 in enclosure with cover                                                       |
| Shock resistance acc. to IEC/EN 61373                          | 5 g – 30 ms, 3 shocks                                                                                                                                                                                                  | 5 g – 30 ms, 3 shocks                                                                    |
| Vibration resistance acc. to IEC/EN 60068-2-6                  | 2 ... 13.2 Hz/1 mm<br>13.2 ... 100 Hz/0.7 g, 5 cycles<br>5 ... 150 ... 5 Hz/1 g, 4 waves                                                                                                                               | 2 ... 13.2 Hz/1 mm<br>13.2 ... 100 Hz/0.7 g, 5 cycles<br>5 ... 150 ... 5 Hz/1 g, 4 waves |
| Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30 | 28 cycles with 55°C/90...96% and 25°C/95...100%                                                                                                                                                                        |                                                                                          |
| Ambient temperature                                            | –25 ... +55 °C                                                                                                                                                                                                         | –25 ... +55 °C                                                                           |
| Storage temperature                                            | –40 ... +70 °C                                                                                                                                                                                                         | –40 ... +70 °C                                                                           |
| <b>Installation</b>                                            |                                                                                                                                                                                                                        |                                                                                          |
| Terminal type                                                  | failsafe bi-directional cylinder-lift terminal (shock protected)                                                                                                                                                       |                                                                                          |
| Top terminal rigid IEC connections (solid/stranded)            | Single: 0.75...25 mm <sup>2</sup> (front slot), 0.75...10 mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75...10 mm <sup>2</sup> (front slot), 2x0.75...6 mm <sup>2</sup> (rear slot), with cables of same type and size |                                                                                          |
| Top terminal flexible IEC connections                          | Single: 0.75...16 mm <sup>2</sup> (front side), 0.75...6 mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75...10 mm <sup>2</sup> (front slot), 2x0.75...6 mm <sup>2</sup> (rear slot), with cables of same type and size  |                                                                                          |

## Residual current operated circuit breaker RCCBs

### F404 technical features, A type and APR-F (K type)

|                                                                | F404 A                                                                                                                                                                                                                 | F404 A-K                                                           | F404 S                                                             | F404 LF                                                            |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| Standards                                                      | IEC/EN 61008-1<br>IEC/EN 61008-2-1                                                                                                                                                                                     | IEC/EN 61008-1<br>IEC/EN 61008-2-1<br>IEC/EN 62423                 | IEC/EN 61008-1<br>IEC/EN 61008-2-1                                 | IEC/EN 61008-1<br>IEC/EN 61008-2-1                                 |
| <b>Electrical features</b>                                     |                                                                                                                                                                                                                        |                                                                    |                                                                    |                                                                    |
| Type (wave form of the earth leakage sensed)                   | A                                                                                                                                                                                                                      | APR - F                                                            | A                                                                  | A                                                                  |
| Number of poles                                                | 3P + N                                                                                                                                                                                                                 | 3P + N                                                             | 3P + N                                                             | 3P + N                                                             |
| Rated current $I_n$                                            | 25, 40, 63 A                                                                                                                                                                                                           | 40, 63 A                                                           | 63 A                                                               | 63 A                                                               |
| Rated sensitivity $I_{\Delta n}$                               | 0.03, 0.1, 0.3 A                                                                                                                                                                                                       | 0.03–0.1 A                                                         | 0.1, 0.3 A                                                         | 0.03, 0.3 A                                                        |
| Rated voltage $U_e$                                            | 230/400V                                                                                                                                                                                                               | 230/400V                                                           | 230/400V                                                           | 230/400V                                                           |
| Rated insulation voltage ( $U_i$ )                             | 500V                                                                                                                                                                                                                   | 500V                                                               | 500V                                                               | 500V                                                               |
| Overvoltage category                                           | III                                                                                                                                                                                                                    | III                                                                | III                                                                | III                                                                |
| Pollution degree                                               | 2                                                                                                                                                                                                                      | 2                                                                  | 2                                                                  | 2                                                                  |
| Operating voltage of circuit test                              | 110V (170 for 30 mA) – 254V                                                                                                                                                                                            | 110V (170 for 30 mA) – 254V                                        | 110 – 254V                                                         | 110 (170 for 30 mA) – 254V                                         |
| Rated frequency Hz                                             | 50/60Hz                                                                                                                                                                                                                | 50/60Hz                                                            | 50/60Hz                                                            | 16 <sup>2/3</sup> Hz                                               |
| Rated conditional short-circuit current $I_{nc}$               | 10 kA with SCPD – fuse gG                                                                                                                                                                                              | 100A or high performance                                           | MCB S800 100A                                                      |                                                                    |
| Rated residual breaking capacity $I_{\Delta m}$                | 1 kA                                                                                                                                                                                                                   | 1 kA                                                               | 1 kA                                                               | 1 kA                                                               |
| Surge current resistance (wave 8/20)                           | N/A                                                                                                                                                                                                                    | 3000A                                                              | 5000A                                                              | N/A                                                                |
| <b>Mechanical features</b>                                     |                                                                                                                                                                                                                        |                                                                    |                                                                    |                                                                    |
| Housing                                                        | Insulation group I, light grey RAL 7035                                                                                                                                                                                | Insulation group I, light grey RAL 7035                            | Insulation group I, light grey RAL 7035                            | Insulation group I, light grey RAL 7035                            |
| Toggle                                                         | Insulation group II, blue RAL 5015, sealable in ON-OFF positions                                                                                                                                                       | Insulation group II, blue RAL 5015, sealable in ON-OFF positions   | Insulation group II, blue RAL 5015, sealable in ON-OFF positions   | Insulation group II, blue RAL 5015, sealable in ON-OFF positions   |
| Contact position indication                                    | Green/Red Window                                                                                                                                                                                                       | Green/Red Window                                                   | Green/Red Window                                                   | Green/Red Window                                                   |
| Endurance                                                      | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops                                                                                                                                                     | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops | Electrical endurance: 10000 ops<br>Mechanical endurance: 10000 ops |
| IP code                                                        | IP20, IP40 in enclosure with cover                                                                                                                                                                                     | IP20, IP40 in enclosure with cover                                 | IP20, IP40 in enclosure with cover                                 | IP20, IP40 in enclosure with cover                                 |
| Shock resistance acc. to IEC/EN 61373                          | 5 g – 30 ms, 3 shocks                                                                                                                                                                                                  | 5 g – 30 ms, 3 shocks                                              | 5 g – 30 ms, 3 shocks                                              | 5 g – 30 ms, 3 shocks                                              |
| Vibration resistance acc. to IEC/EN 60068-2-6                  | 2 ... 13.2 Hz/1 mm, 13.2 ... 100 Hz/0.7 g, 5 cycles, 5 ... 150 ... 5 Hz/1 g, 4 waves                                                                                                                                   |                                                                    |                                                                    |                                                                    |
| Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30 | 28 cycles with 55 °C/90 ... 96 % and 25 °C/95 ... 100 %                                                                                                                                                                |                                                                    |                                                                    |                                                                    |
| Ambient temperature                                            | –25 ... +55 °C                                                                                                                                                                                                         | –25 ... +55 °C                                                     | –25 ... +55 °C                                                     | –25 ... +55 °C                                                     |
| Storage temperature                                            | –40 ... +70 °C                                                                                                                                                                                                         | –40 ... +70 °C                                                     | –40 ... +70 °C                                                     | –40 ... +70 °C                                                     |
| <b>Installation</b>                                            |                                                                                                                                                                                                                        |                                                                    |                                                                    |                                                                    |
| Terminal type                                                  | failsafe bi-directional cylinder-lift terminal (shock protected)                                                                                                                                                       |                                                                    |                                                                    |                                                                    |
| Top terminal rigid IEC connections (solid/stranded)            | Single: 0.75...25 mm <sup>2</sup> (front slot), 0.75...10 mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75...10 mm <sup>2</sup> (front slot), 2x0.75...6 mm <sup>2</sup> (rear slot), with cables of same type and size |                                                                    |                                                                    |                                                                    |
| Top terminal flexible IEC connections                          | Single: 0.75...16 mm <sup>2</sup> (front side), 0.75...6 mm <sup>2</sup> (rear slot)<br>Multiple: 2x0.75...10 mm <sup>2</sup> (front slot), 2x0.75...6 mm <sup>2</sup> (rear slot), with cables of same type and size  |                                                                    |                                                                    |                                                                    |

#### Tripping time settings type A

Tripping time

| Type                   | Rated sensitivity                    | Tripping time        |                          |                          |             |
|------------------------|--------------------------------------|----------------------|--------------------------|--------------------------|-------------|
|                        | Alternating current                  | 1 x $I_{\Delta n}$   | 2 x $I_{\Delta n}$       | 5 x $I_{\Delta n}$       | 500 A       |
|                        | Pulsating current with DC components | 1,4 x $I_{\Delta n}$ | 2 x 1,4 x $I_{\Delta n}$ | 5 x 1,4 x $I_{\Delta n}$ | 500 A       |
|                        | Detection of smooth DC currents      | 2 x $I_{\Delta n}$   | 2 x 2 x $I_{\Delta n}$   | 5 x 2 x $I_{\Delta n}$   | 500 A       |
| Standard or short time |                                      | max. 0,3 s           | max. 0,15 s              | max. 0,04 s              | max. 0,04 s |

# RCCBs

## F402, F404 series A type

F404 Type A, protection against the effects of sinusoidal alternating and direct pulsating earth fault currents; protection against indirect contacts and additional protection against direct contacts (with  $I_{\Delta n}=30\text{ mA}$ ).

### 2-pole residual current operated circuit breaker, series F402 (RCCB)

|                                                                                    | $I_{\Delta n}$<br>mA | $I_n$<br>A | Type name    | ABB IT number   | EAN<br>number<br>801 254 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|------------------------------------------------------------------------------------|----------------------|------------|--------------|-----------------|--------------------------|------------------------|--------|-----------------------|
|  | 10                   | 25         | F402 25 A10  | 2CSF502110R0250 | 203 7033                 | 1                      | 2      | 187                   |
|                                                                                    | 30                   | 25         | F402 25 A30  | 2CSF502110R1250 | 203 4339                 | 1                      | 2      | 187                   |
|                                                                                    | 30                   | 40         | F402 40 A30  | 2CSF502110R1400 | 203 6937                 | 1                      | 2      | 187                   |
|                                                                                    | 100                  | 40         | F402 40 A100 | 2CSF502110R2400 | 203 4230                 | 1                      | 2      | 187                   |



### 2-pole short time delayed residual current operated circuit breaker, series F402 K

|    |    |               |                 |          |   |   |     |
|----|----|---------------|-----------------|----------|---|---|-----|
| 30 | 40 | F402 40 APR30 | 2CSF502410R1400 | 203 6838 | 1 | 2 | 187 |
|----|----|---------------|-----------------|----------|---|---|-----|

### 4-pole residual current operated circuit breaker, series F404 (RCCB)

|                                                                                     |     |    |                |                 |          |   |   |     |
|-------------------------------------------------------------------------------------|-----|----|----------------|-----------------|----------|---|---|-----|
|  | 30  | 25 | F404 A 25/0.03 | 2CCF544110E0250 | 010 4253 | 1 | 4 | 430 |
|                                                                                     | 30  | 40 | F404 A 40/0.03 | 2CCF544110E0400 | 010 4260 | 1 | 4 | 430 |
|                                                                                     | 100 | 40 | F404 A 40/0.1  | 2CCF544120E0400 | 010 4277 | 1 | 4 | 430 |
|                                                                                     | 300 | 40 | F404 A 40/0.3  | 2CCF544130E0400 | 010 4284 | 1 | 4 | 430 |
|                                                                                     | 30  | 63 | F404 A 63/0.03 | 2CCF544110E0630 | 010 4291 | 1 | 4 | 430 |
|                                                                                     | 100 | 63 | F404 A 63/0.1  | 2CCF544120E0630 | 010 4307 | 1 | 4 | 430 |
|                                                                                     | 300 | 63 | F404 A 63/0.3  | 2CCF544130E0630 | 010 4314 | 1 | 4 | 430 |



### 4-pole short time delayed residual current operated circuit breaker, series F404 K (RCCB)

|     |    |                  |                 |          |   |   |     |
|-----|----|------------------|-----------------|----------|---|---|-----|
| 30  | 40 | F404 A-K 40/0.03 | 2CCF544310E0400 | 010 4321 | 1 | 4 | 430 |
| 100 | 40 | F404 A-K 40/0.1  | 2CCF544320E0400 | 010 4338 | 1 | 4 | 430 |
| 30  | 63 | F404 A-K 63/0.03 | 2CCF544310E0630 | 010 4345 | 1 | 4 | 430 |

### 4-pole selective residual current operated circuit breaker, series F404 S (RCCB)

|     |    |                 |                 |          |   |   |     |
|-----|----|-----------------|-----------------|----------|---|---|-----|
| 100 | 63 | F404 A-S 63/0.1 | 2CCF544220E0630 | 010 4352 | 1 | 4 | 430 |
| 300 | 63 | F404 A-S 63/0.3 | 2CCF544230E0630 | 010 4369 | 1 | 4 | 430 |

### 4-pole residual current operated circuit breaker, special design $16^{2/3}$ Hz, series F404 LF (RCCB)

|     |    |                   |                 |          |   |   |     |
|-----|----|-------------------|-----------------|----------|---|---|-----|
| 30  | 63 | F404 A-LF 63/0.03 | 2CCF544110E0631 | 010 4376 | 1 | 4 | 430 |
| 300 | 63 | F404 A-LF 63/0.3  | 2CCF544130E0631 | 010 4383 | 1 | 4 | 430 |

Ordering details for auxiliary switch and signal contacts on page 56–57

# Residual current operated circuit breaker RCCBs

Type B   

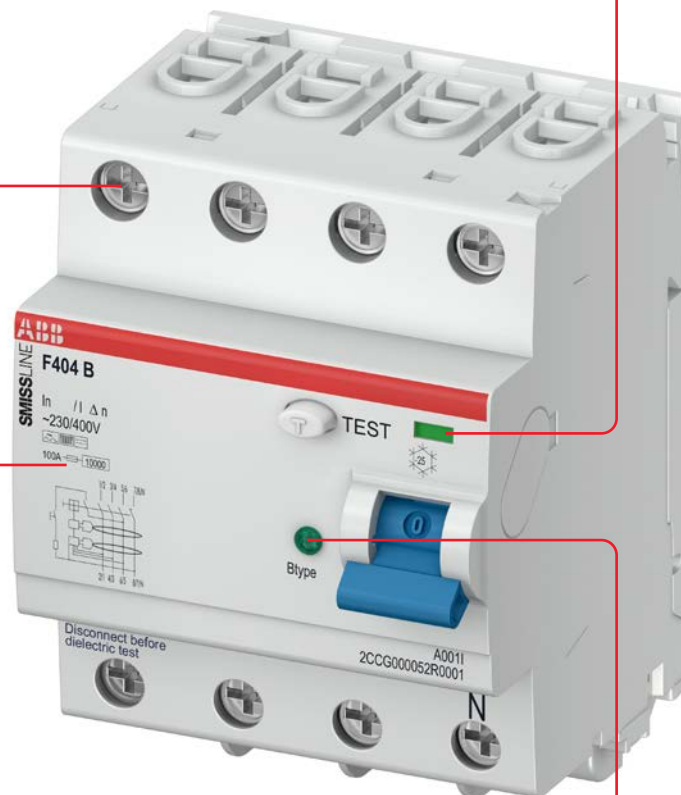
F404 B RCCBs offer protection against direct contact and are the correct choice to guarantee maximum operational reliability through early detection of smooth DC residual currents at high frequencies.

## Advantages

- High interference resistance in exceedingly harsh weather conditions due to ambient temperatures from  $-25$  to  $+50^{\circ}\text{C}$
- High level of system availability due to high surge current withstand capacity of 3 kA (or optionally 5 kA) and 10 ms short-time delay
- Coordination and back-up protection with ABB devices

Terminals for comfortable, safe and flexible wiring.

Reliable recognition of the switching status through red/green position indicating device and position of the switching knob.



Identification marking according to EN 62423. Simple identification of the fields of application via symbols showing the forms of residual current.

Green LED to monitor the operating condition:

- RCCB with Type B functionality
- RCCB only with Type A and Type F functionality

## Residual current operated circuit breaker RCCBs

### F404 technical features, B type

| F404 B                                                         |                                                                                                                                                                                                                                    |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Standards                                                      | IEC/EN 61008-1<br>IEC/EN 61008-2-1<br>IEC/EN 62423"                                                                                                                                                                                |
| <b>Electrical features</b>                                     |                                                                                                                                                                                                                                    |
| Type (wave form of the earth leakage sensed)                   | B                                                                                                                                                                                                                                  |
| Number of poles                                                | 3P + N                                                                                                                                                                                                                             |
| Rated current $I_n$                                            | 25, 40, 63 A                                                                                                                                                                                                                       |
| Rated sensitivity $I_{\Delta n}$                               | 0.03, 0.3 A                                                                                                                                                                                                                        |
| Rated voltage $U_e$                                            | 230/400 V                                                                                                                                                                                                                          |
| Rated insulation voltage ( $U_i$ )                             | 500 V                                                                                                                                                                                                                              |
| Overvoltage category                                           | III                                                                                                                                                                                                                                |
| Pollution degree                                               | 2                                                                                                                                                                                                                                  |
| Operating voltage of circuit test                              | 110 V (170 for 30 mA) – 254 V                                                                                                                                                                                                      |
| Rated frequency                                                | 50/60 Hz                                                                                                                                                                                                                           |
| Rated conditional short-circuit current $I_{nc}$               | 10 kA with SCPD – fuse gG 100 A or high performance MCB S800 100 A                                                                                                                                                                 |
| Rated residual breaking capacity $I_{\Delta m}$                | 1 kA                                                                                                                                                                                                                               |
| Surge current resistance (wave 8/20)                           | 3000 A                                                                                                                                                                                                                             |
| <b>Mechanical features</b>                                     |                                                                                                                                                                                                                                    |
| Housing                                                        | Insulation group I, light grey RAL 7035                                                                                                                                                                                            |
| Toggle                                                         | Insulation group II, blue RAL 5015, sealable in ON-OFF positions                                                                                                                                                                   |
| Contact position indication                                    | Green/Red Window                                                                                                                                                                                                                   |
| Electrical life                                                | 10000 operations                                                                                                                                                                                                                   |
| Mechanical life                                                | 10000 operations                                                                                                                                                                                                                   |
| IP code                                                        | IP20, IP40 in enclosure with cover                                                                                                                                                                                                 |
| Shock resistance acc. to IEC/EN 61373                          | 5 g – 30 ms, 3 shocks                                                                                                                                                                                                              |
| Vibration resistance acc. to IEC/EN 60068-2-6                  | 2 ... 13.2 Hz/1 mm<br>13.2 ... 100 Hz/0.7 g, 5 cycles<br>5 ... 150 ... 5 Hz/1 g, 4 waves                                                                                                                                           |
| Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30 | 28 cycles with 55 °C/90 ... 96 % and 25 °C/95 ... 100 %                                                                                                                                                                            |
| Ambient temperature                                            | –25 ... +50 °C                                                                                                                                                                                                                     |
| Storage temperature                                            | –40 ... +70 °C                                                                                                                                                                                                                     |
| <b>Installation</b>                                            |                                                                                                                                                                                                                                    |
| Terminal type                                                  | failsafe bi-directional cylinder-lift terminal (shock protected)                                                                                                                                                                   |
| Top terminal rigid IEC connections (solid/stranded)            | Single: 0.75 ... 25 mm <sup>2</sup> (front slot), 0.75 ... 10 mm <sup>2</sup> (rear slot)<br>Multiple: 2 x 0.75 ... 10 mm <sup>2</sup> (front slot), 2 x 0.75 ... 6 mm <sup>2</sup> (rear slot), with cables of same type and size |
| Top terminal flexible IEC connections                          | Single: 0.75 ... 16 mm <sup>2</sup> (front side), 0.75 ... 6 mm <sup>2</sup> (rear slot)<br>Multiple: 2 x 0.75 ... 10 mm <sup>2</sup> (front slot), 2 x 0.75 ... 6 mm <sup>2</sup> (rear slot), with cables of same type and size  |





RCCBs

F 404 series – B type for continuous, selective continuous type fault currents  
technical features

F404 B RCCBs provide additional protection against direct contact and are the right choice to ensure maximum system safety thanks to early detection of fault currents with continuous wave-forms or high frequencies.



|                                                                                   | Number of poles | I <sub>Δn</sub> mA | I <sub>n</sub> A | Type name      | ABB IT number   | EAN number 761 227 | Pack-aging unit | Weight in grams |
|-----------------------------------------------------------------------------------|-----------------|--------------------|------------------|----------------|-----------------|--------------------|-----------------|-----------------|
|  | 4               | 30                 | 25               | F404 B 25/0.03 | 2CCG000052R0001 | 150 6285           | 1               | 435             |
|                                                                                   | 4               | 30                 | 40               | F404 B 40/0.03 | 2CCG000053R0001 | 150 6292           | 1               | 435             |
|                                                                                   | 4               | 30                 | 63               | F404 B 63/0.03 | 2CCG000054R0001 | 150 6308           | 1               | 435             |
|                                                                                   | 4               | 300                | 25               | F404 B 25/0.3  | 2CCG000055R0001 | 150 6315           | 1               | 435             |
|                                                                                   | 4               | 300                | 40               | F404 B 40/0.3  | 2CCG000056R0001 | 150 6322           | 1               | 435             |
|                                                                                   | 4               | 300                | 63               | F404 B 63/0.3  | 2CCG000057R0001 | 150 6339           | 1               | 435             |

Ordering details for auxiliary switch and signal contacts on page 56–57

## Surge arrester (SPD)

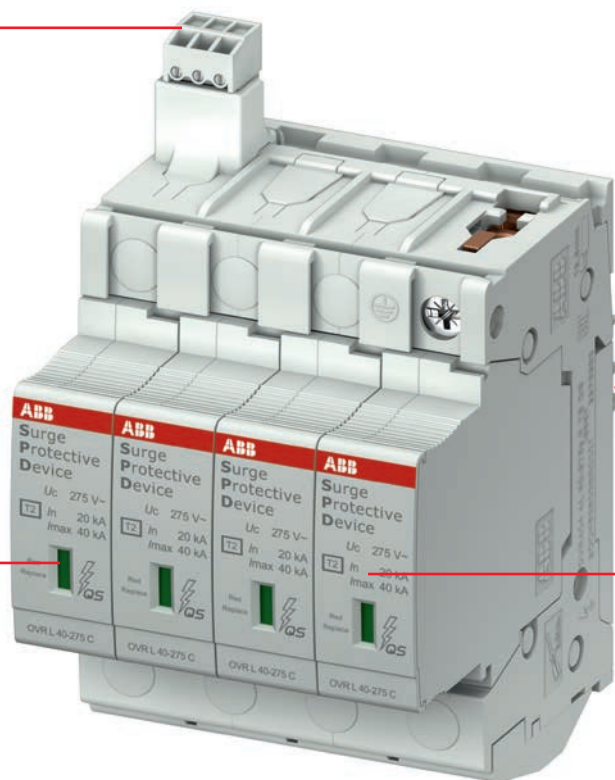
### Type 2 QuickSafe®-Technologie

Type 2 surge protective device of the SMISLINE QuickSafe series are suitable for protection of low-voltage electrical systems and terminal devices in the 240/415 V system. The high nominal discharge capacity of 20 kA enables a longer service life to be achieved compared to the

minimum requirements in the standard. The devices consist of a basic unit and plug-in protection modules that can be very easily removed in order to perform the insulation measurement.

Integrated signal contact

Can be plugged directly onto the socket system



The end of the service life is displayed

Plug-in cartridges can be changed if required

## Surge arrester (SPD)

### OVR404 technical features

| Type                                                               | OVR404 4L 40-275 P TS QS                        | OVR404 3N 40-275 P TS QS                        |
|--------------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Technology                                                         | varistor                                        | Varistor/gaz tube (N)                           |
| System network                                                     | TNS                                             | TT-TNS                                          |
| <b>Electrical features</b>                                         |                                                 |                                                 |
| Standard                                                           | IEC 61643-11/EN 61643-11                        | IEC 61643-11/EN 61643-11                        |
| Type / test class                                                  | Type 2                                          | Type 2                                          |
| Number of pole                                                     | 4                                               | 4                                               |
| Nominal voltage $U_N$ (L-N, L-L)                                   | 240/415V                                        | 240/415V                                        |
| Type of voltage                                                    | a. c. 45–65 Hz                                  | a. c. 45–65 Hz                                  |
| Max. cont. operating voltage $U_c$                                 | 275 V AC                                        | 275 V AC                                        |
| Nominal discharge current $I_n$ (8/20)                             | 20 kA                                           | 20 kA                                           |
| Maximum discharge current $I_{max}$ (8/20)                         | 40 kA                                           | 40 kA                                           |
| Maximum impulse current $I_{imp}$ (10/350)                         | 2 kV                                            | 2 kA                                            |
| Voltage protection level $U_p$ at $I_n$ (L-N / N-PE / L-PE)        | 1.5 kV                                          | 1.25/1.4/1.5 kV                                 |
| Voltage protection level $U_p$ at 3 kA (L-N / N-PE / L-PE)         | 0.5 kV                                          | 0.8/1.4/0.85 kV                                 |
| Voltage protection level $U_p$ at 5 kA (L-N / N-PE / L-PE)         | 0.7 kV                                          | 0.85/1.4/0.95 kV                                |
| Voltage protection level $U_p$ at 10 kA (L-N / N-PE / L-PE)        | 0.9 kV                                          | 1/1.4/1.15 kV                                   |
| TOV (Temporary overvoltage) withstand $U_t$ (L-N: 5s./N-PE: 200ms) | 337/-V                                          | 337/1200V                                       |
| Response time                                                      | ≤ 25 ns                                         | ≤ 25 ns                                         |
| Short-circuit withstand capability $I_{scrr}$                      | 100 kA                                          | 100 kA                                          |
| Back up protection circuit breaker                                 | ≤ 125 A; S800S B                                | ≤ 125 A; S800S B                                |
| Pluggable cartridge                                                | Yes                                             | Yes                                             |
| Integrated QuickSafe® technology                                   | Yes                                             | Yes                                             |
| State indicator                                                    | Yes                                             | Yes                                             |
| Auxiliary contact (TS)                                             | Yes                                             | Yes                                             |
| <b>Installation</b>                                                |                                                 |                                                 |
| Wire range (L, N, PE)                                              | 2.5...25 mm <sup>2</sup><br>cable or rope       | 2.5...25 mm <sup>2</sup><br>cable or rope       |
| Connection cross-section                                           | 2.5...16 mm <sup>2</sup> litz wire with ferrule | 2.5...16 mm <sup>2</sup> litz wire with ferrule |
| Tightening torque                                                  | 2.8 Nm                                          | 2.8 Nm                                          |
| <b>Auxiliary contact (TS)</b>                                      |                                                 |                                                 |
| Contacts information                                               | 1 NO – 1 NC                                     | 1 NO – 1 NC                                     |
| Max. load/current                                                  | 12 V DC – 10 mA                                 | 12 V DC – 10 mA                                 |
| Min. load/current                                                  | 250 V AC – 1 A<br>1.5 mm <sup>2</sup>           | 250 V AC – 1 A<br>1.5 mm <sup>2</sup>           |
| Operating temperature                                              | –25 °C – +60 °C                                 | –25 °C – +60 °C                                 |
| Storage temperature                                                | –25 °C – +80 °C                                 | –25 °C – +80 °C                                 |

#### Back up protection

| Typ 2 QuickSafe®<br>Surge Protective Devices                            | Prospective short circuit<br>current at SPD location ( $I_p$ ) | Circuit breaker maximum ratings <sup>1)</sup><br>curve B or C | Fuse <sup>2)</sup><br>(gL - gG) | MCCB                              |
|-------------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------------------------|---------------------------------|-----------------------------------|
| Maximum ratings<br>$I_n$ : 5, 20, 30 kA<br>$U_c$ : 275, 350, 440, 600 V | 0,625 kA < $I_p$ < 100 kA                                      | S800S B or C – 125 A <sup>2)</sup>                            | 125 A fuse                      | 250 A XT4 (see<br>settings below) |

<sup>1)</sup> Maximum ratings, must be in accordance with the installation to follow coordination rules with main or upstream short circuit protection(s).

<sup>2)</sup> up to  $I_p$  ≤ 50 kA

#### Settings for XT4

- N = ON – 100%
- I1 =  $I_n \cdot 1$
- t1(s) = 3
- I2 =  $I_n \cdot 10$
- t2(s) = 0,1
- I = 10  $I_n$  = L
- I3 =  $I_n \cdot 3,5$
- LOC
- MAN

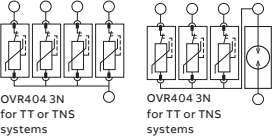
Surge arrester Type 2

OVR Type 2 surge protective devices are designed to protect electric installations and sensitive equipment against indirect surges with ensuring

a low protection level ( $U_p$ ). They are characterized by their capacity to safely discharge current with 8/20  $\mu$ s wave form.

Surge arrester OVR404

|  | $I_{sn}$ (8/20 $\mu$ s)<br>[kA] | Type name                | ABB IT number   | EAN number       | Pack-aging<br>unit | Module | Weight<br>in<br>grams |
|--|---------------------------------|--------------------------|-----------------|------------------|--------------------|--------|-----------------------|
|  | 20                              | OVR404 4L 40-275 P TS QS | 2CCF606000R0001 | 761 227 145 5491 | 1                  | 4      | 470                   |
|  | 20                              | OVR404 3N 40-275 P TS QS | 2CCF606002R0001 | 761 227 145 5507 | 1                  | 4      | 450                   |
|  | 20                              | OVR404 4L 40-440 P TS QS | 2CCF606000A0003 | 761 227 146 5322 | 1                  | 4      | 470                   |



# IS404 technical details

## Switch disconnecter

### Technical data for switch disconnecter IS404

|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rated voltage $U_n$                                            | 230/400V~                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Rated current $I_n$                                            | 63A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Rated frequency $f_n$                                          | 50Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Number of poles                                                | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Rated impulse withstand voltage                                | 6kV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Connection cross-sections $C_u$                                | <p>Top terminal type: Failsafe bi-directional cylinder-lift terminal with double slot 25/10mm<sup>2</sup></p> <p>Top terminal rigid IEC connections (solid/stranded):</p> <ul style="list-style-type: none"> <li>– Single: 0.75 ... 25mm<sup>2</sup> (front slot), 0.75 ... 10mm<sup>2</sup> (rear slot)</li> <li>– Multiple: 2x0.75 ... 10mm<sup>2</sup> (front slot), 2x0.75 ... 6mm<sup>2</sup> (rear slot), with cables of same type and size</li> </ul> <p>Top terminal flexible IEC connections:</p> <ul style="list-style-type: none"> <li>– Single: 0.75 ... 16mm<sup>2</sup> (front side), 0.75 ... 6mm<sup>2</sup> (rear slot)</li> <li>– Multiple: 2x0.75 ... 10mm<sup>2</sup> (front slot), 2x0.75 ... 6mm<sup>2</sup> (rear slot), with cables of same type and size</li> </ul> |
| IP Code                                                        | IP20, IP40 in enclosure with cover                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Endurance, mechanical/electrical                               | <p>Electrical endurance: 10000ops</p> <p>Mechanical endurance: 20000ops</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Mounting position                                              | any                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Ambient temperature                                            | –25°C ... +60°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Standard                                                       | EN/IEC 60947-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30 | 28 cycles with 55°C/90...96% and 25°C/95...100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Weight (approx.)                                               | 250g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Switching duty                                                 | AC-22A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

# Switch disconnecter

## General switch disconnecter

When used in a smissline socket system, the switch disconnecter can be used instead of the incoming terminal block for up to 63A.

With the smissline IS404 switch disconnecter, individual loads, groups of loads or entire system parts can be separated or connected to the input supply.

The key features of the switch disconnecter

- Input supply switch
- On-Off function
- Clear indication of switching position
- Snap-on auxiliary switch available
- Uniform smissline design

### Switch disconnecter IS404

|  | I <sub>n</sub><br>[A] | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|--|-----------------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
|  | 63                    | IS404 63  | 2CCF544160E0630 | 010 4390              | 1                      | 4      | 380                   |



1/2 3/4 5/6 7/8/N  
21 43 65 87/N

Ordering details for auxiliary switch and signal contacts on page 41–45

### Cover switch disconnecter IS404/F404

The Cover is for the Incoming terminals

|  | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Weight<br>in<br>grams |
|--|-----------|-----------------|-----------------------|------------------------|-----------------------|
|  | ZFI301    | 2CCA601560R0001 | 142 0451              | 1                      | 1                     |



# Auxiliary switches and signal contacts SK400, HK400

## Description, technical features



13 21  
14 22



13 21  
14 22



13 21  
14 22

### General

The auxiliary switches and signal contacts are snapped on to the left of the protective devices. On the miniature circuit breakers an optional mounting on the right is also possible.

For auxiliary switches and signal contacts supplied via SMISSLINE auxiliary busbars LA or LB a version with integrated contacting pieces is available. Conventional supply via the terminals of the auxiliary devices is possible.

### Function

The auxiliary switch works in the same way as the main contacts. The signal contact only operates when the protective device trips.

This can be simulated with the white test button. Each time the signal contact is tripped, it must be reset to its starting position using the orange-coloured reset button.

Auxiliary switch and signal contacts have special contacts which ensure high switching reliability even in systems with low voltages or low currents (PLC, signal systems etc.).

Auxiliary switch contacts operate at the same time as the contacts of the protective device (activated manually or automatically).

Normally open contact

**NO**



joint operation with protective device

Normally close contact

**NC**



opposing operation with protective device

Signal contacts only operate when the protective device is tripped electrically as a result of a short-circuit, a fault current or overcurrent (undervoltage for MS325).

Normally open contact

**NO**



closes during automatic trip

Normally close contact

**NC**



opens during automatic trip

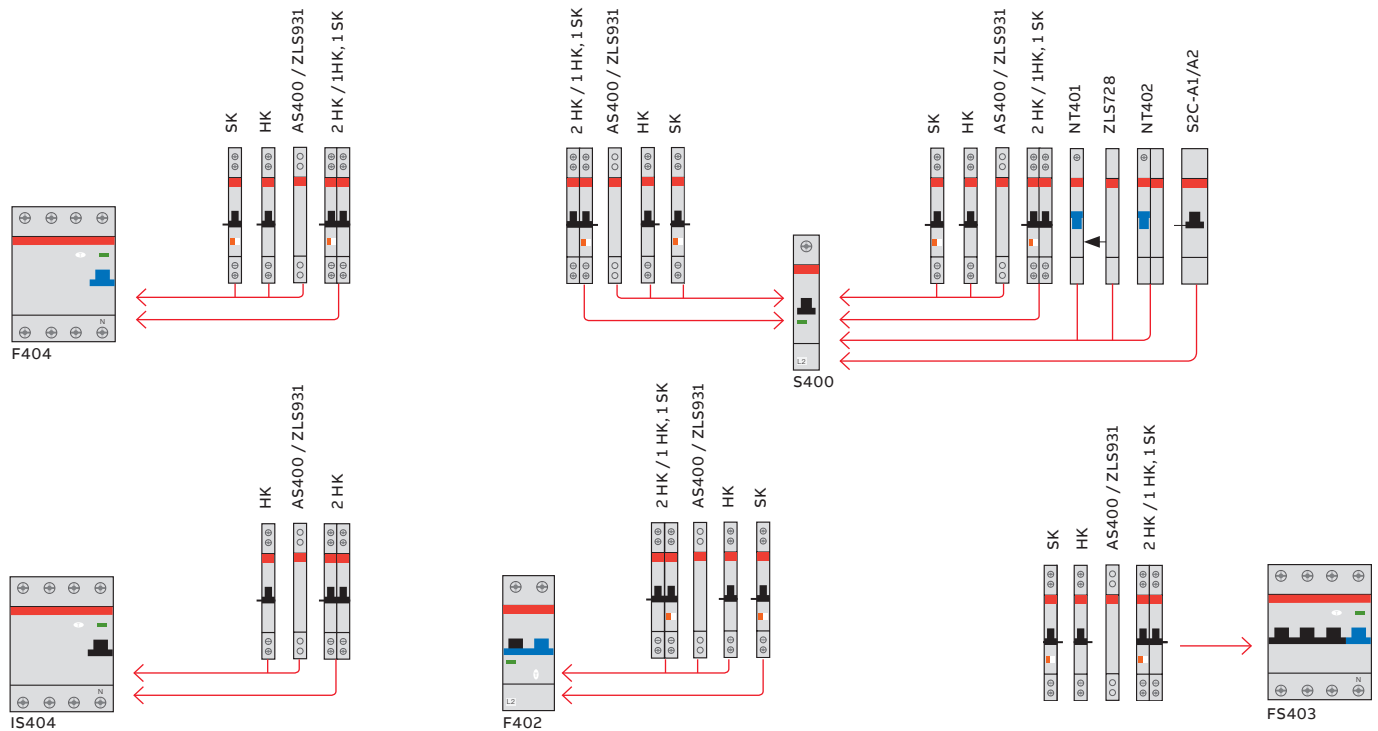
### Technical data for auxiliary switch and signal contact

|                                                                      | Signal contact<br><b>SK400</b>                                                                                                                                                                                                                                    | Auxiliary switch<br><b>HK400</b> |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Rated voltage $U_n$                                                  | 400V                                                                                                                                                                                                                                                              | 400V                             |
| Rated impulse withstand voltage $U_{imp}$                            | 4 kV                                                                                                                                                                                                                                                              | 4 kV                             |
| Rated current                                                        |                                                                                                                                                                                                                                                                   |                                  |
| – $I_{th}$                                                           | 6 A                                                                                                                                                                                                                                                               | 6 A                              |
| – AC15                                                               | 2 A/230V / 1 A/400V                                                                                                                                                                                                                                               | 2 A/230V / 1 A/400V              |
| – DC13                                                               | 0.55 A/125V=                                                                                                                                                                                                                                                      | 0.55 A/125V=                     |
| – DC13                                                               | 0.27 A/250V=                                                                                                                                                                                                                                                      | 0.27 A/250V=                     |
| Minimum current/voltage<br>(to ensure reliable electrical operation) | 10mA 12V=                                                                                                                                                                                                                                                         | 10mA 12V=                        |
| Connection cross-sections                                            | Rigid IEC connections (solid/stranded)<br>Single: 0.75 ... 1.5 mm <sup>2</sup> , Multiple: 2x0.75 ... 1.5 mm <sup>2</sup> , Flexible IEC connections<br>Single: 0.75 ... 1.5 mm <sup>2</sup> , Multiple: 2x0.75 ... 1.5 mm <sup>2</sup> , Stripping length 7.5 mm |                                  |
| Internal resistance $R_i$                                            | 0.0065 Ω                                                                                                                                                                                                                                                          | 0.0065 Ω                         |
| Power loss at rated current $P_v$                                    | 0.24 W                                                                                                                                                                                                                                                            | 0.24 W                           |
| Environmental conditions (damp heat)<br>acc. to IEC/EN 60068-2-30    | 28 cycles with 55 °C/90...96% and 25 °C/95...100%                                                                                                                                                                                                                 |                                  |
| Ambient temperature                                                  | Tmax. +55 °C Tmin –25 °C                                                                                                                                                                                                                                          | Tmax. +55 °C Tmin –25 °C         |
| Tightening torque                                                    | 1 Nm                                                                                                                                                                                                                                                              | 1 Nm                             |



# Accessory mounting

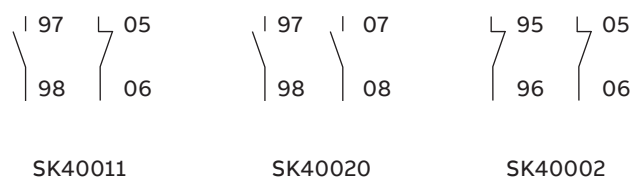
## Options for protective devices



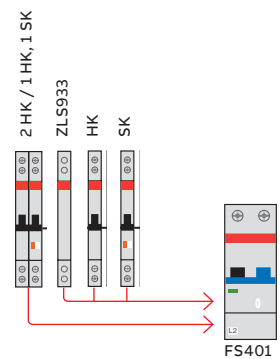
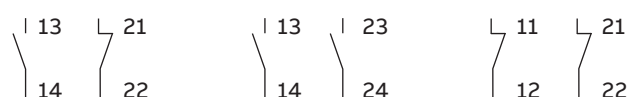
On each protective device can be mounted:

- 1 auxiliary switch
- or 1 signal contact
- or 2 auxiliary contact switches
- or 1 auxiliary switch and 1 signal contact

### Contact description signal contact



### Contact description auxiliary switch



# Auxiliary switch and signal contacts

## S400, F402, F404, FS401, FS402, IS404

The auxiliary switch and signal contacts are supplied with one contacting piece.  
The signal contact collective alarm are supplied with two contacting pieces.

### Auxiliary switch



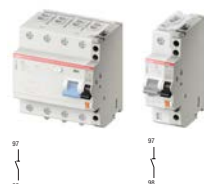
|                                                                    | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|--------------------------------------------------------------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <b>for left side mounting on MCB S400, RCBO FS401, FS403</b>       |           |                 |                       |                        |        |                       |
| 1NO and 1NC                                                        | HK40011-L | 2CCS500900R0081 | 010 0910              | 10                     | 0.5    | 45                    |
| 2NO                                                                | HK40020-L | 2CCF201112R0001 | 011 1183              | 10                     | 0.5    | 40                    |
| 2NC                                                                | HK40002-L | 2CCF201114R0001 | 011 1190              | 10                     | 0.5    | 40                    |
| <b>for right side mounting on RCB F404/402, MCB S400 and IS404</b> |           |                 |                       |                        |        |                       |
| 1NO and 1NC                                                        | HK40011-R | 2CCS500900R0214 | 010 8619              | 10                     | 0.5    | 45                    |
| 2NO                                                                | HK40020-R | 2CCF201113R0001 | 011 1206              | 10                     | 0.5    | 40                    |
| 2NC                                                                | HK40002-R | 2CCF201115R0001 | 011 1213              | 10                     | 0.5    | 40                    |

### Signal contacts



|                                                                    | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|--------------------------------------------------------------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <b>for left side mounting on MCB S400, RCBO FS401, FS403</b>       |           |                 |                       |                        |        |                       |
| 1NO and 1NC                                                        | SK40011-L | 2CCS500900R0101 | 010 0934              | 10                     | 0.5    | 45                    |
| 2NO                                                                | SK40020-L | 2CCF201162R0001 | 011 1107              | 10                     | 0.5    | 40                    |
| 2NC                                                                | SK40002-L | 2CCF201164R0001 | 011 1114              | 10                     | 0.5    | 40                    |
| <b>for right side mounting on RCB F404/402, MCB S400 and IS404</b> |           |                 |                       |                        |        |                       |
| 1NO and 1NC                                                        | SK40011-R | 2CCS500900R0215 | 010 8626              | 10                     | 0.5    | 45                    |
| 2NO                                                                | SK40020-R | 2CCF201163R0001 | 011 1121              | 10                     | 0.5    | 40                    |
| 2NC                                                                | SK40002-R | 2CCF201165R0001 | 011 1138              | 10                     | 0.5    | 40                    |

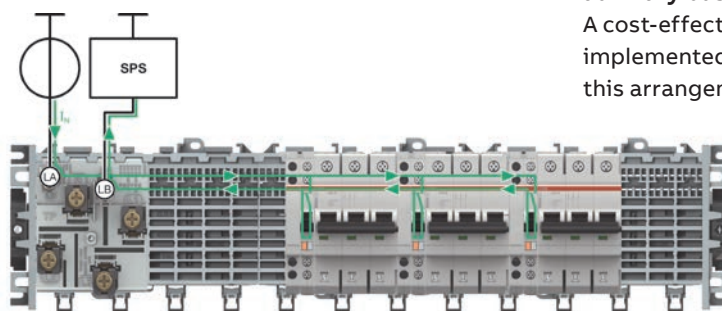
### Signal contact collective alarm and auxiliary contact



|                                                             | Type name    | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------|--------------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <b>for left side mounting S400, RCBO FS401, FS403</b>       |              |                 |                       |                        |        |                       |
| 1NO                                                         | SK40010-L SA | 2CCS500900R0141 | 010 7964              | 10                     | 0.5    | 45                    |
| 1NO                                                         | HK40010-L SA | 2CCF201212R0001 | 140 7902              | 10                     | 0.5    | 45                    |
| <b>for right side mounting F404/402, MCB S400 and IS404</b> |              |                 |                       |                        |        |                       |
| 1NO                                                         | SK40010-R SA | 2CCS500900R0216 | 010 8633              | 10                     | 0.5    | 45                    |
| 1NO                                                         | HK40010-R SA | 2CCF201213R0001 | 140 7919              | 10                     | 0.5    | 45                    |

### Collective alarm, signal contact contacts the auxiliary busbars LA, LB

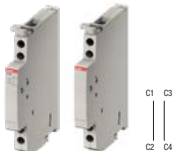
A cost-effective collective alarm solution can be implemented without additional wiring by using this arrangement.



# Dummy, housing, Neutral disconnecter, shunt trip

## Connection support dummy housing

for left or right side mounting on MCB S400, RCCB F402, RCCB F404, RCBO FS401

|                                                                                   | Connection support    | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-----------------------------------------------------------------------------------|-----------------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
|  |                       | AS400     | 2CCS500900R0151 | 010 0958              | 10                     | 0.5    | 45                    |
|                                                                                   | <b>Dummy housing</b>  |           |                 |                       |                        |        |                       |
|                                                                                   | Compensation to 18 mm | ZLS931    | 2CCS500900R0161 | 010 0965              | 10                     | 0.5    | 35                    |

## Contacting pieces for auxiliary switch and signal contacts

|                                                                                    | Connection support                                              | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit        | Module | Weight<br>in<br>grams |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------|-----------|-----------------|-----------------------|-------------------------------|--------|-----------------------|
|  | Contacting piece for<br>HK/SK LA, LB<br>Pack contains 100 items | ZLS632    | 2CCS500900R0171 | 010 0972              | Pack<br>contains<br>100 items | –      | 200                   |
|                                                                                    | Contacting piece for<br>HK/SK LA, LB<br>Pack contains 10 items  | ZLS635    | 2CC5201307R0171 | 010 9265              | Pack<br>contains<br>10 items  | –      | 20                    |
|                                                                                    | Contact Pin                                                     | ZLS633    | 2CCS500900R0201 | 010 8640              | Pack<br>contains<br>10 items  |        |                       |

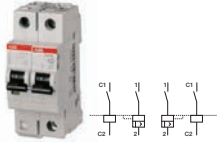
## Neutral disconnecter

On the load side terminal two separate conductors can be clamped

|                                                                                     | Connection support                    | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit       | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|---------------------------------------|-----------|-----------------|-----------------------|------------------------------|--------|-----------------------|
|  | Neutral disconnecter<br>9 mm          | NT401 63  | 2CCS500900R0021 | 010 0859              | 10                           | 0.5    | 45                    |
|                                                                                     | Neutral disconnecter<br>18 mm         | NT402 63  | 2CCS500900R0011 | 010 0842              | 10                           | 1      | 58                    |
|                                                                                     | Compensation to 18 mm<br>for NT401 63 | ZLS728    | 2CCS400900R0101 | 010 4710              | 1 Bag<br>contains<br>5 items | 0.5    | 15                    |

## Shunt trip

Function: remote opening of the device when a voltage is applied. Suitable for MCBs S400 series.

|                                                                                     | Rated voltage                  | Type name | ABB IT number      | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|--------------------------------|-----------|--------------------|-----------------------|------------------------|--------|-----------------------|
|  | 12–60 VAC/DC                   | S 2C-A1   | 2CDS 200 909 R0001 | 257 0992              | 1                      | 1      | 150                   |
|                                                                                     | 110–415 VAC/DC,<br>110–250 VDC | S 2C-A2   | 2CDS 200 909 R0002 | 257 1005              | 1                      | 1      | 150                   |
|                                                                                     |                                |           |                    |                       |                        |        |                       |

# Auxiliary switch and signal contacts for SUP400

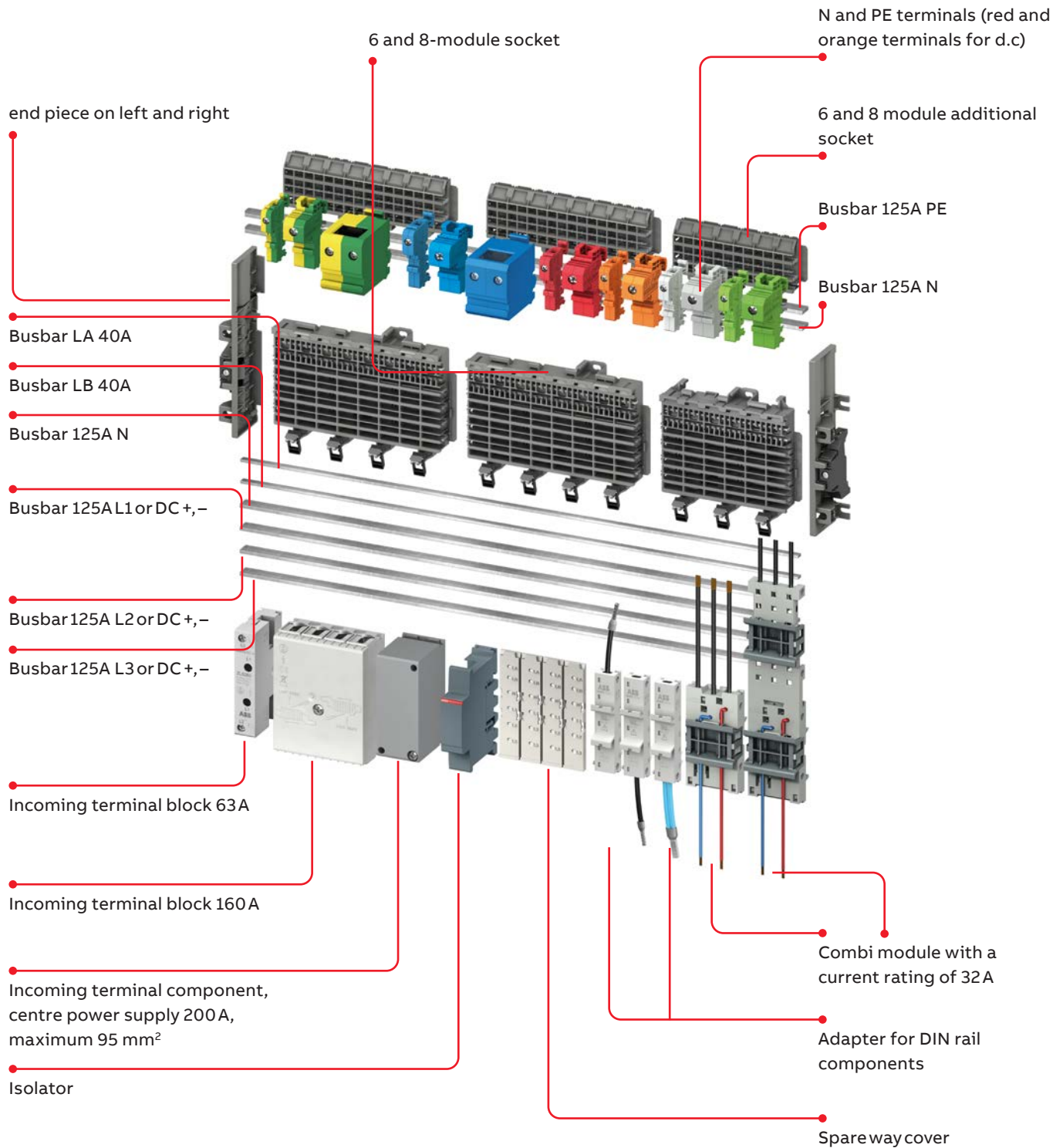
Auxiliary switch



|                                                 | Type name | ABB IT number   | EAN number       | Pack-aging unit | Module | Weight in grams |
|-------------------------------------------------|-----------|-----------------|------------------|-----------------|--------|-----------------|
| <b>Auxiliary switch for right side mounting</b> |           |                 |                  |                 |        |                 |
| changeover contact                              | S2C-H6RU  | 2CDS200914R0001 | 401 677 961 5617 | 1               | 0.5    | 6               |
| <b>Signal switch for right side mounting</b>    |           |                 |                  |                 |        |                 |
| changeover contact                              | S2C-S6RU  | 2CDS200924R0001 | 401 677 961 5624 | 1               | 0.5    | 6               |
| <b>Dummy housing Compensation to 18mm</b>       |           |                 |                  |                 |        |                 |
|                                                 | E210-DHR  | 2CCA703488R0001 | 761 227 144 1708 | 1               | 0.5    | 18              |

# Busbar system 125 A

## Overview



## Technical data IEC/EN 61439-6

### Busbar system 125 A

#### Busbar system touch proof:

Use only for wall mounted application (horizontal or vertical). When installed correctly the requirements of IEC/EN 61439-2 are met.

|                                                                |                                                                                                     |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Number of poles                                                | max. 6 to 110<br>3p+N / 2 additional bars PE+N                                                      |
| Rated operational voltage ( $U_e$ )                            | 690 VAC, 1000 VDC<br>(400 V for LA, LB busbars)                                                     |
| Rated insulation voltage ( $U_i$ )                             | 690 VAC, 1000 VDC                                                                                   |
| IP Code                                                        | IP20B                                                                                               |
| Mounting position                                              | horizontal or vertical, direct mounting or mounting on DIN rail<br>acc. to EN 60715 35 mm           |
| Pollution degree                                               | 3 (690 V a.c.) 2 (1000 V d.c.)                                                                      |
| Rated impulse voltage ( $U_{imp}$ )                            | 8 kV (L1L2L3N)                                                                                      |
| Rated current of the assembly ( $I_n$ )                        | Max. 125 A (side feeding)<br>Max. 200 A (center feeding)<br>Max. 250 A (Double feed side or center) |
| Auxiliary circuit                                              | max. 40 A                                                                                           |
| Rated current of a circuit ( $I_{nc}$ )                        | Main circuit: Max. 125 A                                                                            |
| Rated current of Auxiliary circuit                             | 40 A                                                                                                |
| Rated short-time withstand current ( $I_{cw}$ )                | 10 kA / 300 ms                                                                                      |
| Auxiliary circuit                                              | 4 kA / 50 ms                                                                                        |
| Rated peak withstand current ( $I_{pk}$ )                      | Main circuit: 30 kA                                                                                 |
| Auxiliary circuit                                              | Auxiliary busbars LA, LB 6 kA                                                                       |
| Rated frequency (f)                                            | 50/60 Hz, DC                                                                                        |
| Rated conditional short-circuit current ( $I_{cc}$ )           | 100 kA (415 V), 50 kA (690 V)                                                                       |
| Ambient air temperature                                        | max. 60°C                                                                                           |
| Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30 | 1 cycle with 55°C/90...96% and 25°C/95...100%                                                       |
| Size of CU bars 3P+N+PE                                        | 3x10 mm (30 mm <sup>2</sup> )                                                                       |
| Size of CU auxiliary bars La Lb                                | 2x5 mm (10 mm <sup>2</sup> )                                                                        |

|                        | Maximum rated voltage | Maximum rated current             | Cross-section of conductors |
|------------------------|-----------------------|-----------------------------------|-----------------------------|
| Busbar ZLS200          | 690 VAC 1000 VDC      | 125 A                             |                             |
| Busbar ZLS202          | 690 VAC 600 VDC       | 40 A                              |                             |
| DIN Rail adapters 32 A | 690 VAC 600 VDC       | 32 A Line or neutral              |                             |
| DIN Rail adapters 63 A | 690 VAC 600 VDC       | 63 A Line or neutral              |                             |
| Combi module           | 690 VAC 600 VDC       | 32 A Line or neutral 6A LA,<br>LB |                             |

The SMISSLINE system and components are tested for vibration according to IEC 60068-2-6 (2–13.2 Hz/1 mm displacement, 13.2–100 Hz/0.7 g) and for Miniature circuit breakers (5 g, 20 frequency cycles 5 ... 150 ... 5 Hz at 0.8 rated current)

Standard: IEC 60068-2-6

Environmental testing – Part 2–6: Test Fc. Vibration (sinusoidal)

| Rated Voltage ( $U_e$ ) | Rated conditional short-circuit current ( $I_{cc}$ ) | Incoming current of main busbars (L1, L2, L3, N) | Short circuit protection device (SCPD) |                                              |
|-------------------------|------------------------------------------------------|--------------------------------------------------|----------------------------------------|----------------------------------------------|
|                         |                                                      |                                                  | Fuse                                   | MCCB                                         |
| 415 V                   | 100 kA                                               | 250 A                                            | NH1 gG 690 V/250 A                     | ABB<br>T <sub>max</sub> XT Serie up to 250 A |
| 690 V                   | 25 kA                                                | 250 A                                            | NH1 gG 690 V/250 A                     | ABB<br>T <sub>max</sub> XT Serie up to 250 A |
|                         |                                                      | Incoming current of auxiliary busbars (La, Lb)   |                                        |                                              |
|                         | 25 kA                                                | 40 A                                             | NH00 gG 415 V/40 A                     | ABB Type S800 (240/415 VAC)                  |

## Technical data data UL508; Approvals for US and CA: cULus

### Busbar system 125A

SMISLINE TP system for UL 508 – Industrial Control Equipment, CSA C22.2 No. 14 – Industrial Control Equipment UL File E222110

#### Technical data UL508 Industrial Control Equipment SMISLINE TP busbar system

|                                          |                                                 |
|------------------------------------------|-------------------------------------------------|
| Rated Voltage                            | 600 VAC                                         |
| Rated Current                            | 125 A                                           |
| Rated Current (End Feed, left and right) | 125 A left, 125 A right                         |
| Rated Current (Center)                   | 250 A max. (double feed)                        |
| Rated Current (Center Feed)              | 250 A max. if used with two feeder blocks       |
| Short Circuit Ratings                    | 50 kA, max. 480 VAC, 480 Y/277 V and 240 VAC or |
| ABB T <sub>max</sub> XT2, XT3, XT4       | 35 kA, max. 600 VAC and 600 V/347 V             |

#### Technical data UL508 Industrial Control Equipment (ZLS906,ZLS908,ZLS920,ZLS926,ZLS928)

|                          | Busbar<br>ZLS200 | Feeder<br>ZLS924 | Feeder block<br>ZLS95X | Combimodule<br>ZLS840X, 842X | DIN Rail<br>adapter<br>ZLS97X | Terminals<br>ZLS95XUL,<br>91XUL | Combi modul<br>ZMS132X | Adapter moter<br>strater ZMS93X |
|--------------------------|------------------|------------------|------------------------|------------------------------|-------------------------------|---------------------------------|------------------------|---------------------------------|
| Maximum<br>rated voltage | 600 VAC          | 600 VAC          | 600 VAC                | 600 VAC                      | 600 VAC                       | 600 VAC                         | 600 VAC                | 600 VAC                         |
| Maximum<br>rated current | 125 A            | 150 A            | 150 A                  | 30 A                         | 32 A, 63 A                    | 32 A, 100 A,<br>150 A           | 32 A                   | 32 A                            |

#### Terminals for 125 A SMISLINE TP System

ZLS954UL – Terminal 150 A (Neutral)  
 ZLS959UL – Terminal (PE)  
 ZLS913UL – Terminal 63 A (Neutral)  
 ZLS918UL – Terminal 32 A (Neutral)  
 ZLS919UL – Terminal (PE)  
 ZLS929UL – Terminal (PE)

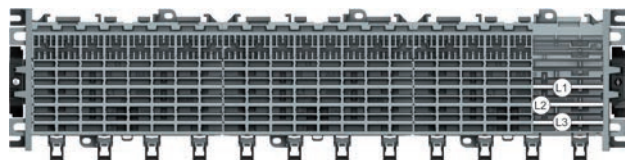
#### DIN Rail adapters for MCB SU200 and SUP200

|                            | 970UL, 971UL, 972UL or 973UL |
|----------------------------|------------------------------|
| Maximum<br>nominal current | 25 A, 45 A                   |



## Starter pack Touch proof 3L

Busbar system 125 A

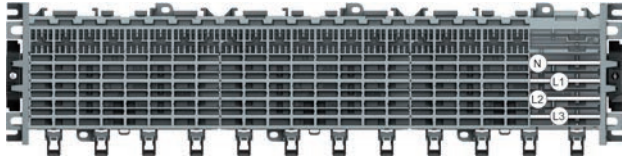


Starter Pack 3L: L1, L2, L3 inclusive socket end piece

| Solutions available | Busbars length incl. Socket end piece mm | Busbars length mm | Type name    | ABB IT number   | EAN number 761 227 | Pack-aging | Weight in grams |
|---------------------|------------------------------------------|-------------------|--------------|-----------------|--------------------|------------|-----------------|
| 18 PLE 3L           | 364                                      | 320               | ZLS905E18-3L | 2CCA183232R0001 | 142 6514           | 1          | 530             |
| 20 PLE 3L           | 401                                      | 357               | ZLS905E20-3L | 2CCA183100R0001 | 141 3231           | 1          | 637             |
| 22 PLE 3L           | 437                                      | 393               | ZLS905E22-3L | 2CCA183102R0001 | 141 3255           | 1          | 693             |
| 24 PLE 3L           | 473                                      | 429               | ZLS905E24-3L | 2CCA183104R0001 | 141 3279           | 1          | 749             |
| 26 PLE 3L           | 509                                      | 465               | ZLS905E26-3L | 2CCA183106R0001 | 141 3293           | 1          | 813             |
| 28 PLE 3L           | 545                                      | 501               | ZLS905E28-3L | 2CCA183108R0001 | 141 3415           | 1          | 848             |
| 30 PLE 3L           | 581                                      | 537               | ZLS905E30-3L | 2CCA183110R0001 | 141 3439           | 1          | 933             |
| 32 PLE 3L           | 617                                      | 573               | ZLS905E32-3L | 2CCA183112R0001 | 141 3453           | 1          | 981             |
| 34 PLE 3L           | 653                                      | 609               | ZLS905E34-3L | 2CCA183114R0001 | 141 3477           | 1          | 1044            |
| 36 PLE 3L           | 689                                      | 645               | ZLS905E36-3L | 2CCA183116R0001 | 141 3491           | 1          | 1100            |
| 38 PLE 3L           | 725                                      | 681               | ZLS905E38-3L | 2CCA183118R0001 | 141 3514           | 1          | 1156            |
| 40 PLE 3L           | 761                                      | 717               | ZLS905E40-3L | 2CCA183120R0001 | 141 3538           | 1          | 1212            |
| 42 PLE 3L           | 797                                      | 753               | ZLS905E42-3L | 2CCA183122R0001 | 141 3552           | 1          | 1276            |
| 44 PLE 3L           | 833                                      | 789               | ZLS905E44-3L | 2CCA183124R0001 | 141 3576           | 1          | 1332            |
| 46 PLE 3L           | 869                                      | 825               | ZLS905E46-3L | 2CCA183126R0001 | 141 3590           | 1          | 1388            |
| 48 PLE 3L           | 905                                      | 861               | ZLS905E48-3L | 2CCA183128R0001 | 141 3613           | 1          | 1444            |
| 50 PLE 3L           | 941                                      | 897               | ZLS905E50-3L | 2CCA183130R0001 | 141 3637           | 1          | 1508            |
| 52 PLE 3L           | 977                                      | 933               | ZLS905E52-3L | 2CCA183132R0001 | 141 3651           | 1          | 1564            |
| 54 PLE 3L           | 1013                                     | 969               | ZLS905E54-3L | 2CCA183134R0001 | 141 3675           | 1          | 1620            |
| 56 PLE 3L           | 1049                                     | 1005              | ZLS905E56-3L | 2CCA183136R0001 | 141 3699           | 1          | 1675            |
| 58 PLE 3L           | 1058                                     | 1041              | ZLS905E58-3L | 2CCA183138R0001 | 141 3712           | 1          | 1739            |
| 60 PLE 3L           | 1122                                     | 1078              | ZLS905E60-3L | 2CCA183140R0001 | 141 3736           | 1          | 1795            |
| 62 PLE 3L           | 1158                                     | 1114              | ZLS905E62-3L | 2CCA183142R0001 | 141 3750           | 1          | 1851            |
| 64 PLE 3L           | 1194                                     | 1150              | ZLS905E64-3L | 2CCA183144R0001 | 141 3774           | 1          | 1907            |
| 66 PLE 3L           | 1230                                     | 1186              | ZLS905E66-3L | 2CCA183146R0001 | 141 3798           | 1          | 1971            |
| 68 PLE 3L           | 1266                                     | 1222              | ZLS905E68-3L | 2CCA183148R0001 | 141 3811           | 1          | 2027            |
| 70 PLE 3L           | 1302                                     | 1258              | ZLS905E70-3L | 2CCA183150R0001 | 141 3835           | 1          | 2083            |
| 72 PLE 3L           | 1338                                     | 1294              | ZLS905E72-3L | 2CCA183152R0001 | 141 3859           | 1          | 2139            |
| 74 PLE 3L           | 1374                                     | 1330              | ZLS905E74-3L | 2CCA183154R0001 | 141 3873           | 1          | 2203            |
| 76 PLE 3L           | 1410                                     | 1366              | ZLS905E76-3L | 2CCA183156R0001 | 141 3897           | 1          | 2269            |
| 78 PLE 3L           | 1446                                     | 1402              | ZLS905E78-3L | 2CCA183158R0001 | 141 3910           | 1          | 2314            |
| 80 PLE 3L           | 1482                                     | 1438              | ZLS905E80-3L | 2CCA183160R0001 | 141 3934           | 1          | 2370            |

## Starter pack Touch proof 3LN

Busbar system 125 A

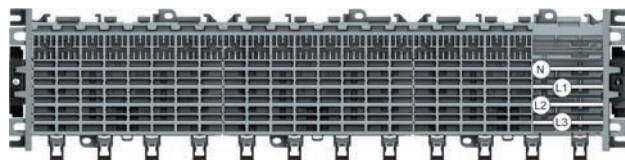


Starter Pack 3LN: L1, L2, L3, N inclusive socket end piece

| Solutions available | Busbars length incl. Socket end piece mm | Busbars length mm | Type name     | ABB IT number   | EAN number 761 227 | Pack-aging | Weight in grams |
|---------------------|------------------------------------------|-------------------|---------------|-----------------|--------------------|------------|-----------------|
| 18 PLE 3LN          | 364                                      | 320               | ZLS905E18-3LN | 2CCA183234R0001 | 142 6521           | 1          | 615             |
| 20 PLE 3LN          | 401                                      | 357               | ZLS905E20-3LN | 2CCA183101R0001 | 141 3248           | 1          | 724             |
| 22 PLE 3LN          | 437                                      | 393               | ZLS905E22-3LN | 2CCA183103R0001 | 141 3262           | 1          | 789             |
| 24 PLE 3LN          | 473                                      | 429               | ZLS905E24-3LN | 2CCA183105R0001 | 141 3286           | 1          | 800             |
| 26 PLE 3LN          | 509                                      | 465               | ZLS905E26-3LN | 2CCA183107R0001 | 141 3408           | 1          | 926             |
| 28 PLE 3LN          | 545                                      | 501               | ZLS905E28-3LN | 2CCA183109R0001 | 141 3422           | 1          | 970             |
| 30 PLE 3LN          | 581                                      | 537               | ZLS905E30-3LN | 2CCA183111R0001 | 141 3446           | 1          | 1046            |
| 32 PLE 3LN          | 617                                      | 573               | ZLS905E32-3LN | 2CCA183113R0001 | 141 3460           | 1          | 1120            |
| 34 PLE 3LN          | 653                                      | 609               | ZLS905E34-3LN | 2CCA183115R0001 | 141 3484           | 1          | 1193            |
| 36 PLE 3LN          | 689                                      | 645               | ZLS905E36-3LN | 2CCA183117R0001 | 141 3507           | 1          | 1257            |
| 38 PLE 3LN          | 725                                      | 681               | ZLS905E38-3LN | 2CCA183119R0001 | 141 3521           | 1          | 1322            |
| 40 PLE 3LN          | 761                                      | 717               | ZLS905E40-3LN | 2CCA183121R0001 | 141 3545           | 1          | 1387            |
| 42 PLE 3LN          | 797                                      | 753               | ZLS905E42-3LN | 2CCA183123R0001 | 141 3569           | 1          | 1459            |
| 44 PLE 3LN          | 833                                      | 789               | ZLS905E44-3LN | 2CCA183125R0001 | 141 3583           | 1          | 1524            |
| 46 PLE 3LN          | 869                                      | 825               | ZLS905E46-3LN | 2CCA183127R0001 | 141 3606           | 1          | 1589            |
| 48 PLE 3LN          | 905                                      | 861               | ZLS905E48-3LN | 2CCA183129R0001 | 141 3620           | 1          | 1653            |
| 50 PLE 3LN          | 941                                      | 897               | ZLS905E50-3LN | 2CCA183131R0001 | 141 3644           | 1          | 1726            |
| 52 PLE 3LN          | 977                                      | 933               | ZLS905E52-3LN | 2CCA183133R0001 | 141 3668           | 1          | 1791            |
| 54 PLE 3LN          | 1013                                     | 969               | ZLS905E54-3LN | 2CCA183135R0001 | 141 3682           | 1          | 1855            |
| 56 PLE 3LN          | 1049                                     | 1005              | ZLS905E56-3LN | 2CCA183137R0001 | 141 3705           | 1          | 1920            |
| 58 PLE 3LN          | 1058                                     | 1041              | ZLS905E58-3LN | 2CCA183139R0001 | 141 3729           | 1          | 1992            |
| 60 PLE 3LN          | 1122                                     | 1078              | ZLS905E60-3LN | 2CCA183141R0001 | 141 3743           | 1          | 2057            |
| 62 PLE 3LN          | 1158                                     | 1114              | ZLS905E62-3LN | 2CCA183143R0001 | 141 3767           | 1          | 2122            |
| 64 PLE 3LN          | 1194                                     | 1150              | ZLS905E64-3LN | 2CCA183145R0001 | 141 3781           | 1          | 2186            |
| 66 PLE 3LN          | 1230                                     | 1186              | ZLS905E66-3LN | 2CCA183147R0001 | 141 3804           | 1          | 2259            |
| 68 PLE 3LN          | 1266                                     | 1222              | ZLS905E68-3LN | 2CCA183149R0001 | 141 3828           | 1          | 2324            |
| 70 PLE 3LN          | 1302                                     | 1258              | ZLS905E70-3LN | 2CCA183151R0001 | 141 3842           | 1          | 2388            |
| 72 PLE 3LN          | 1338                                     | 1294              | ZLS905E72-3LN | 2CCA183153R0001 | 141 3866           | 1          | 2453            |
| 74 PLE 3LN          | 1374                                     | 1330              | ZLS905E74-3LN | 2CCA183155R0001 | 141 3880           | 1          | 2526            |
| 76 PLE 3LN          | 1410                                     | 1366              | ZLS905E76-3LN | 2CCA183157R0001 | 141 3903           | 1          | 2590            |
| 78 PLE 3LN          | 1446                                     | 1402              | ZLS905E78-3LN | 2CCA183159R0001 | 141 3927           | 1          | 2655            |
| 80 PLE 3LN          | 1482                                     | 1438              | ZLS905E80-3LN | 2CCA183161R0001 | 141 3941           | 1          | 2719            |

## Starter pack Touch proof 3L LA LB

Busbar system 125A

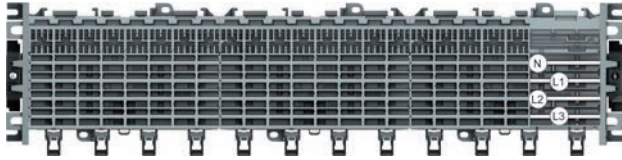


Starter Pack 3LLALB: L1, L2, L3, LA, LB inclusive socket end piece

| Solutions available | Busbars length incl. Socket end piece mm | Busbars length mm | Type name        | ABB IT number   | EAN number 761 227 | Pack-aging | Weight in grams |
|---------------------|------------------------------------------|-------------------|------------------|-----------------|--------------------|------------|-----------------|
| 18 PLE 3L LA LB     | 364                                      | 320               | ZLS905E18-3LLALB | 2CCA183233R0001 | 142 6538           | 1          | 586             |
| 20 PLE 3L LA LB     | 401                                      | 357               | ZLS905E20-3LLALB | 2CCA183162R0001 | 141 6904           | 1          | 753             |
| 22 PLE 3L LA LB     | 437                                      | 393               | ZLS905E22-3LLALB | 2CCA183164R0001 | 141 6911           | 1          | 821             |
| 24 PLE 3L LA LB     | 473                                      | 429               | ZLS905E24-3LLALB | 2CCA183166R0001 | 141 6928           | 1          | 835             |
| 26 PLE 3L LA LB     | 509                                      | 465               | ZLS905E26-3LLALB | 2CCA183168R0001 | 141 6935           | 1          | 964             |
| 28 PLE 3L LA LB     | 545                                      | 501               | ZLS905E28-3LLALB | 2CCA183170R0001 | 141 6942           | 1          | 1011            |
| 30 PLE 3L LA LB     | 581                                      | 537               | ZLS905E30-3LLALB | 2CCA183172R0001 | 141 6959           | 1          | 1107            |
| 32 PLE 3L LA LB     | 617                                      | 573               | ZLS905E32-3LLALB | 2CCA183174R0001 | 141 6966           | 1          | 1167            |
| 34 PLE 3L LA LB     | 653                                      | 609               | ZLS905E34-3LLALB | 2CCA183176R0001 | 141 6973           | 1          | 1242            |
| 36 PLE 3L LA LB     | 689                                      | 645               | ZLS905E36-3LLALB | 2CCA183178R0001 | 141 6980           | 1          | 1310            |
| 38 PLE 3L LA LB     | 725                                      | 681               | ZLS905E38-3LLALB | 2CCA183180R0001 | 141 6997           | 1          | 1377            |
| 40 PLE 3L LA LB     | 761                                      | 717               | ZLS905E40-3LLALB | 2CCA183182R0001 | 141 7000           | 1          | 1445            |
| 42 PLE 3L LA LB     | 797                                      | 753               | ZLS905E42-3LLALB | 2CCA183184R0001 | 141 7017           | 1          | 1520            |
| 44 PLE 3L LA LB     | 833                                      | 789               | ZLS905E44-3LLALB | 2CCA183186R0001 | 141 7024           | 1          | 1588            |
| 46 PLE 3L LA LB     | 869                                      | 825               | ZLS905E46-3LLALB | 2CCA183188R0001 | 141 7031           | 1          | 1656            |
| 48 PLE 3L LA LB     | 905                                      | 861               | ZLS905E48-3LLALB | 2CCA183190R0001 | 141 7048           | 1          | 1723            |
| 50 PLE 3L LA LB     | 941                                      | 897               | ZLS905E50-3LLALB | 2CCA183192R0001 | 141 7055           | 1          | 1799            |
| 52 PLE 3L LA LB     | 977                                      | 933               | ZLS905E52-3LLALB | 2CCA183194R0001 | 141 7062           | 1          | 1866            |
| 54 PLE 3L LA LB     | 1013                                     | 969               | ZLS905E54-3LLALB | 2CCA183196R0001 | 141 7079           | 1          | 1934            |
| 56 PLE 3L LA LB     | 1049                                     | 1005              | ZLS905E56-3LLALB | 2CCA183198R0001 | 141 7086           | 1          | 2001            |
| 58 PLE 3L LA LB     | 1058                                     | 1041              | ZLS905E58-3LLALB | 2CCA183200R0001 | 141 7093           | 1          | 2077            |
| 60 PLE 3L LA LB     | 1122                                     | 1078              | ZLS905E60-3LLALB | 2CCA183202R0001 | 141 7109           | 1          | 2144            |
| 62 PLE 3L LA LB     | 1158                                     | 1114              | ZLS905E62-3LLALB | 2CCA183204R0001 | 141 7116           | 1          | 2212            |
| 64 PLE 3L LA LB     | 1194                                     | 1150              | ZLS905E64-3LLALB | 2CCA183206R0001 | 141 7123           | 1          | 2279            |
| 66 PLE 3L LA LB     | 1230                                     | 1186              | ZLS905E66-3LLALB | 2CCA183208R0001 | 141 7130           | 1          | 2355            |
| 68 PLE 3L LA LB     | 1266                                     | 1222              | ZLS905E68-3LLALB | 2CCA183210R0001 | 141 7147           | 1          | 2423            |
| 70 PLE 3L LA LB     | 1302                                     | 1258              | ZLS905E70-3LLALB | 2CCA183212R0001 | 141 7154           | 1          | 2490            |
| 72 PLE 3L LA LB     | 1338                                     | 1294              | ZLS905E72-3LLALB | 2CCA183214R0001 | 141 7161           | 1          | 2558            |
| 74 PLE 3L LA LB     | 1374                                     | 1330              | ZLS905E74-3LLALB | 2CCA183216R0001 | 141 7178           | 1          | 2633            |
| 76 PLE 3L LA LB     | 1410                                     | 1366              | ZLS905E76-3LLALB | 2CCA183218R0001 | 141 7185           | 1          | 2701            |
| 78 PLE 3L LA LB     | 1446                                     | 1402              | ZLS905E78-3LLALB | 2CCA183220R0001 | 141 7192           | 1          | 2768            |
| 80 PLE 3L LA LB     | 1482                                     | 1438              | ZLS905E80-3LLALB | 2CCA183222R0001 | 141 7208           | 1          | 2836            |

## Starter pack Touch proof 3LN LA LB

Busbar system 125A



Starter Pack 3LNLALB: L1, L2, L3, N, LA, LB inclusive socket end piece

| Solutions available | Busbars length incl. Socket end piece mm | Busbars length mm | Type name         | ABB IT number   | EAN number 761 227 | Pack-aging | Weight in grams |
|---------------------|------------------------------------------|-------------------|-------------------|-----------------|--------------------|------------|-----------------|
| 18 PLE 3LN LA LB    | 364                                      | 320               | ZLS905E18-3LNLALB | 2CCA183235R0001 | 142 6545           | 1          | 671             |
| 20 PLE 3LN LA LB    | 401                                      | 357               | ZLS905E20-3LNLALB | 2CCA183163R0001 | 141 7215           | 1          | 841             |
| 22 PLE 3LN LA LB    | 437                                      | 393               | ZLS905E22-3LNLALB | 2CCA183165R0001 | 141 7222           | 1          | 917             |
| 24 PLE 3LN LA LB    | 473                                      | 429               | ZLS905E24-3LNLALB | 2CCA183167R0001 | 141 7239           | 1          | 939             |
| 26 PLE 3LN LA LB    | 509                                      | 465               | ZLS905E26-3LNLALB | 2CCA183169R0001 | 141 7246           | 1          | 1078            |
| 28 PLE 3LN LA LB    | 545                                      | 501               | ZLS905E28-3LNLALB | 2CCA183171R0001 | 141 7253           | 1          | 1133            |
| 30 PLE 3LN LA LB    | 581                                      | 537               | ZLS905E30-3LNLALB | 2CCA183173R0001 | 141 7260           | 1          | 1238            |
| 32 PLE 3LN LA LB    | 617                                      | 573               | ZLS905E32-3LNLALB | 2CCA183175R0001 | 141 7277           | 1          | 1306            |
| 34 PLE 3LN LA LB    | 653                                      | 609               | ZLS905E34-3LNLALB | 2CCA183177R0001 | 141 7284           | 1          | 1391            |
| 36 PLE 3LN LA LB    | 689                                      | 645               | ZLS905E36-3LNLALB | 2CCA183179R0001 | 141 7291           | 1          | 1467            |
| 38 PLE 3LN LA LB    | 725                                      | 681               | ZLS905E38-3LNLALB | 2CCA183181R0001 | 141 7307           | 1          | 1543            |
| 40 PLE 3LN LA LB    | 761                                      | 717               | ZLS905E40-3LNLALB | 2CCA183183R0001 | 141 7314           | 1          | 1619            |
| 42 PLE 3LN LA LB    | 797                                      | 753               | ZLS905E42-3LNLALB | 2CCA183185R0001 | 141 7321           | 1          | 1704            |
| 44 PLE 3LN LA LB    | 833                                      | 789               | ZLS905E44-3LNLALB | 2CCA183187R0001 | 141 7338           | 1          | 1780            |
| 46 PLE 3LN LA LB    | 869                                      | 825               | ZLS905E46-3LNLALB | 2CCA183189R0001 | 141 7345           | 1          | 1856            |
| 48 PLE 3LN LA LB    | 905                                      | 861               | ZLS905E48-3LNLALB | 2CCA183191R0001 | 141 7352           | 1          | 1933            |
| 50 PLE 3LN LA LB    | 941                                      | 897               | ZLS905E50-3LNLALB | 2CCA183193R0001 | 141 7369           | 1          | 2017            |
| 52 PLE 3LN LA LB    | 977                                      | 933               | ZLS905E52-3LNLALB | 2CCA183195R0001 | 141 7376           | 1          | 2093            |
| 54 PLE 3LN LA LB    | 1013                                     | 969               | ZLS905E54-3LNLALB | 2CCA183197R0001 | 141 7383           | 1          | 2169            |
| 56 PLE 3LN LA LB    | 1049                                     | 1005              | ZLS905E56-3LNLALB | 2CCA183199R0001 | 141 7390           | 1          | 2246            |
| 58 PLE 3LN LA LB    | 1058                                     | 1041              | ZLS905E58-3LNLALB | 2CCA183201R0001 | 141 7406           | 1          | 2330            |
| 60 PLE 3LN LA LB    | 1122                                     | 1078              | ZLS905E60-3LNLALB | 2CCA183203R0001 | 141 7413           | 1          | 2406            |
| 62 PLE 3LN LA LB    | 1158                                     | 1114              | ZLS905E62-3LNLALB | 2CCA183205R0001 | 141 7505           | 1          | 2482            |
| 64 PLE 3LN LA LB    | 1194                                     | 1150              | ZLS905E64-3LNLALB | 2CCA183207R0001 | 141 9172           | 1          | 2559            |
| 66 PLE 3LN LA LB    | 1230                                     | 1186              | ZLS905E66-3LNLALB | 2CCA183209R0001 | 141 7420           | 1          | 2643            |
| 68 PLE 3LN LA LB    | 1266                                     | 1222              | ZLS905E68-3LNLALB | 2CCA183211R0001 | 141 7437           | 1          | 2719            |
| 70 PLE 3LN LA LB    | 1302                                     | 1258              | ZLS905E70-3LNLALB | 2CCA183213R0001 | 141 7444           | 1          | 2796            |
| 72 PLE 3LN LA LB    | 1338                                     | 1294              | ZLS905E72-3LNLALB | 2CCA183215R0001 | 141 7451           | 1          | 2872            |
| 74 PLE 3LN LA LB    | 1374                                     | 1330              | ZLS905E74-3LNLALB | 2CCA183217R0001 | 141 7468           | 1          | 2956            |
| 76 PLE 3LN LA LB    | 1410                                     | 1366              | ZLS905E76-3LNLALB | 2CCA183219R0001 | 141 7475           | 1          | 3032            |
| 78 PLE 3LN LA LB    | 1446                                     | 1402              | ZLS905E78-3LNLALB | 2CCA183221R0001 | 141 7482           | 1          | 3109            |
| 80 PLE 3LN LA LB    | 1482                                     | 1438              | ZLS905E80-3LNLALB | 2CCA183223R0001 | 141 7499           | 1          | 3185            |

## Sockets Touch proof

### Busbar system 125 A

#### Socket base

|                                                                                   | Description                                                   | Type name | ABB IT number   | EAN number 761 227 | Pack unit | Moduls (1 PLE 18mm) | Weight in grams |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------|-----------|-----------------|--------------------|-----------|---------------------|-----------------|
|  | 8-module socket<br>Length 144 mm<br>(includes base and cover) | ZLS908    | 2CCA183030R0001 | 141 3965           | 10        | 8                   | 92              |
|                                                                                   | 6-module socket<br>Length 108 mm<br>(includes base and cover) | ZLS906    | 2CCA183035R0001 | 141 3958           | 10        | 6                   | 71              |



#### Busbars for the sockets

|                                                                                     | Description                                                                           | Type name | ABB IT number   | EAN number 761 227 | Packaging unit | Module | Weight in grams |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------|-----------------|--------------------|----------------|--------|-----------------|
|  | 125A busbar plated,<br>10x3 mm, for L1, L2, L3, N and PE<br>– Delivery length 1979 mm | ZLS200    | 2CCF002772R0001 | 001 5702           | 10             | 110    | 640             |
|                                                                                     | 40A auxiliary busbar plated,<br>5x2 mm, for LA und LB<br>– Delivery length 1979 mm    | ZLS202    | 2CCF002773R0001 | 001 5719           | 10             | 110    | 240             |

#### Socket end piece

|                                                                                     | Description                                    | Type name | ABB IT number   | EAN number 761 227 | Packaging unit | Module                   |
|-------------------------------------------------------------------------------------|------------------------------------------------|-----------|-----------------|--------------------|----------------|--------------------------|
|  | To prevent displacement of sockets and busbars | ZLS920    | 2CCA183017R0001 | 141 5617           | 1              | 2 pieces, left and right |

## Additional socket touch proof

### Busbar system 125 A

#### Additional socket

The additional socket can easily be fitted onto the socket base to accommodate the external N and/or PE busbars. This enables neutral connections to be made where single-pole miniature circuit breakers are used with unswitched neutral.

Neutral terminals are clipped onto the additional socket and can be used as detachable neutral connections. One N busbar and/or one PE busbar can be fitted. Each socket base can be equipped with an additional socket.

#### Additional socket for external N and PE busbars

|                                                                                    |                                                     | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|------------------------------------------------------------------------------------|-----------------------------------------------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
|   | – 8-module socket<br>(suitable for 8-module socket) | ZLS928    | 2CCA183630R0001 | 142 0444              | 10                     | 8      | 34                    |
|                                                                                    | – 6-module socket<br>(suitable for 6-module socket) | ZLS926    | 2CCA183635R0001 | 142 0437              | 10                     | 6      | 26                    |
|  |                                                     |           |                 |                       |                        |        |                       |

## Incoming devices and terminals

Technical data IEC/EN 61439-6 and UL508

### Incoming blocks

|                                                 | ZLS26X                                                                                  | ZLS924                                                                                                                                                                                                       | ZLS25X,95X                                                              |
|-------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>General data</b>                             |                                                                                         |                                                                                                                                                                                                              |                                                                         |
| Standards                                       | IEC/EN 61439-6                                                                          | IEC/EN 61439-6, UL508                                                                                                                                                                                        | IEC/EN 61439-6, UL508                                                   |
| Rated voltage $U_e$ acc. IEC                    | 690 VAC, 1000 VDC                                                                       | 690 VAC, 1000 VDC                                                                                                                                                                                            | 690 VAC, 1000 VDC                                                       |
| Rated Voltage acc. UL                           |                                                                                         | 600 VAC                                                                                                                                                                                                      | 600 VAC                                                                 |
| Rated current $I_n$ acc. IEC                    | 63 A                                                                                    | 160 A                                                                                                                                                                                                        | 200 A                                                                   |
| Rated current $I_n$ acc. UL                     |                                                                                         | 150 A                                                                                                                                                                                                        | 200 A                                                                   |
| <b>Installation</b>                             |                                                                                         |                                                                                                                                                                                                              |                                                                         |
| Terminal rigid IEC connections (solid/stranded) | 2,5 mm <sup>2</sup> to 25 mm <sup>2</sup><br>max. 1 wire                                | 10 mm <sup>2</sup> up to 50 mm <sup>2</sup> (3LN)<br>1.5 mm <sup>2</sup> up to 10 mm <sup>2</sup> (LA, LB)<br>Multiple 3LN: –<br>Multiple LA, LB: –                                                          | 10 mm <sup>2</sup> to 95 mm <sup>2</sup>                                |
| Terminal flexible IEC connections               | 2,5 mm <sup>2</sup> to 25 mm <sup>2</sup><br>max. 1 wire<br>flexible wire with ferrules | 10 mm <sup>2</sup> up to 50 mm <sup>2</sup> single wire<br>1.5 mm <sup>2</sup> up to 10 mm <sup>2</sup> (LA, LB) single wire<br>2x25 mm <sup>2</sup> cable with the same type and size<br>Multiple LA, LB: – | 10 mm <sup>2</sup> to 95 mm <sup>2</sup><br>flexible wire with ferrules |
| Other connections                               |                                                                                         | Flat cable 9x2x0,8 up to 9x9x0,8 mm and 10x3 mm<br>Busbar 10x3 mm combined with 10 mm <sup>2</sup> up to 25 mm <sup>2</sup> rigid or flexible IEC connections                                                | 10 mm <sup>2</sup> to 95 mm <sup>2</sup>                                |
| Terminal rigid UL connections                   |                                                                                         | Single: 8 up to 1/0 AWG, Cu only<br>Multiple: –                                                                                                                                                              | 2 AWG – 1/0 AWG                                                         |
| Torque                                          | 2.8 Nm                                                                                  | 4.0 Nm (L,N); 1.5 Nm (LA, LB);<br>1.2 Nm Cover screw                                                                                                                                                         | 2.0 Nm                                                                  |
| Stripping length                                | 13 mm                                                                                   | 18 mm (L,N); 11 Nm (LA, LB)                                                                                                                                                                                  | 21 mm                                                                   |



## Incoming terminal block

|                                                                                   | Type name   | ABB IT number | EAN number 761 227 | Pack-aging unit | Module | Weight in grams |
|-----------------------------------------------------------------------------------|-------------|---------------|--------------------|-----------------|--------|-----------------|
|  | L1, L3 63 A | ZLS260        | 2CCA205305R0001    | 011 1572        | 1      | 90              |
|                                                                                   | L2, N 63 A  | ZLS261        | 2CCA205306R0001    | 011 1589        | 1      | 90              |
|                                                                                   | LA, LB 6 A  | ZLS262        | 2CCA205307R0001    | 011 1596        | 1      | 90              |

|                                                                                   |                                     | Type name      | ABB<br>IT number | EAN<br>number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-----------------------------------------------------------------------------------|-------------------------------------|----------------|------------------|--------------------------|------------------------|--------|-----------------------|
|  | Incoming terminal block incl. cover |                |                  |                          |                        |        |                       |
|                                                                                   | 3L left                             | ZLS924-3L      | 2CCF181816R0001  | 150 3086                 | 1                      | 4      | 140                   |
|                                                                                   | 3L+N left                           | ZLS924-3LN     | 2CCF181818R0001  | 150 3093                 | 1                      | 4      | 168                   |
|                                                                                   | 3L+N+LA+LB left                     | ZLS924-3LNAB   | 2CCF181820R0001  | 150 3109                 | 1                      | 4      | 188                   |
|                                                                                   | 3L right                            | ZLS924-3L-R    | 2CCF181817R0001  | 150 3116                 | 1                      | 4      | 140                   |
|                                                                                   | 3L+N right                          | ZLS924-3LN-R   | 2CCF181819R0001  | 150 3123                 | 1                      | 4      | 168                   |
|                                                                                   | 3L+N+LA+LB right                    | ZLS924-3LNAB-R | 2CCF181821R0001  | 150 3130                 | 1                      | 4      | 188                   |

ZLS924 right version



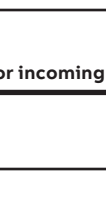
ZLS924 right version



ZLS924 left version



ZLS924 left version



### Terminals for incoming block

|                                                                                     |                | Type name | ABB IT number   | EAN number<br>761 227 | Pack-aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|----------------|-----------|-----------------|-----------------------|--------------------|--------|-----------------------|
|  | Terminal L     | ZLS936    | 2CCF181805R0001 | 150 3147              | 1                  | –      | 28                    |
|                                                                                     | Terminal LA LB | ZLS937    | 2CCF181807R0001 | 150 3154              | 1                  | –      | 10                    |

### Cover for incoming terminal block

|                                                                                     | Type name        | ABB IT number | EAN number<br>761 227 | Pack-aging<br>unit | Module | Weight<br>in<br>grams |    |
|-------------------------------------------------------------------------------------|------------------|---------------|-----------------------|--------------------|--------|-----------------------|----|
|  | Cover for ZLS924 | ZLS939        | 2CCF181812R0001       | 150 3161           | 1      | 4                     | 26 |

## Incoming components

Technical data IEC/EN 61439-6 and UL508

|                                                                                   | Version                                           | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-----------------------------------------------------------------------------------|---------------------------------------------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
|                                                                                   |                                                   |           |                 |                       |                        |        |                       |
|  | Feeder component L1                               | ZLS251    | 2CCV672501R0001 | 050 5319              | 1                      | 2      | 120                   |
|                                                                                   | Feeder component L2                               | ZLS252    | 2CCV672502R0001 | 050 5326              | 1                      | 2      | 120                   |
|                                                                                   | Feeder component L3                               | ZLS253    | 2CCV672503R0001 | 050 5333              | 1                      | 2      | 120                   |
|                                                                                   | Feeder component N                                | ZLS250    | 2CCV672500R0001 | 050 5340              | 1                      | 2      | 120                   |
|                                                                                   | Feeder component N additional socket              | ZLS954    | 2CCV672508R0001 | 142 4404              | 1                      | 2      | 100                   |
|                                                                                   | Feeder component PE additional socket             | ZLS959    | 2CCA672510R0001 | 148 7164              | 1                      | 2      | 100                   |
|                                                                                   | Feeder component N additional socket<br>(2 holes) | ZLS954-1  | 2CCF183335R0001 | 145 2797              | 1                      | 2      | 88                    |

### Cover for feeder component

|                                                                                   | Type name              | ABB IT number | EAN number<br>761 227 | Pack-aging<br>unit | Module | Weight<br>in<br>grams |    |
|-----------------------------------------------------------------------------------|------------------------|---------------|-----------------------|--------------------|--------|-----------------------|----|
|  | Cover for ZLS250...253 | ZLS25D        | 2CCA183483R0001       | 150 1419           | 1      | 2                     | 23 |

## Incoming terminals

Technical data IEC/EN 61439-6 and UL508

### Terminals

|                                                       | 10 mm <sup>2</sup> IEC<br>ZLS918, ZLS919                                                                                     | 10 mm <sup>2</sup> UL<br>ZLS918UL,<br>ZLS919UL | 35 mm <sup>2</sup> IEC<br>ZLS913, ZLS916,<br>ZLS929 | 35 mm <sup>2</sup> UL<br>ZLS913UL,<br>ZLS929UL | 95 mm <sup>2</sup> IEC<br>ZLS954, ZLS959                                                                                  | 95 mm <sup>2</sup> UL<br>ZLS954UL,<br>ZLS959UL |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-----------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| <b>General data</b>                                   |                                                                                                                              |                                                |                                                     |                                                |                                                                                                                           |                                                |
| Standards                                             | IEC/EN 61439-6                                                                                                               | UL 508<br>CSA C22.2 No. 14-13                  | IEC/EN 61439-6                                      | UL 508<br>CSA C22.2 No. 14-13                  | IEC/EN 61439-6                                                                                                            | UL 508<br>CSA C22.2 No. 14-13                  |
| Rated voltage<br>U <sub>e</sub> acc. IEC              | 690 VAC, 1000 VDC                                                                                                            | –                                              | 690 VAC, 1000 VDC                                   | –                                              | 690 VAC, 1000 VDC                                                                                                         | –                                              |
| Rated voltage acc. UL–                                | –                                                                                                                            | 600 VAC                                        | –                                                   | 600 VAC                                        | –                                                                                                                         | 600 VAC                                        |
| Rated current<br>I <sub>n</sub> acc. IEC              | 32 A                                                                                                                         | –                                              | 63 A                                                | –                                              | 200 A                                                                                                                     | –                                              |
| Rated current acc. UL–                                | –                                                                                                                            | 32 A                                           | –                                                   | 63 A                                           | –                                                                                                                         | 150 A                                          |
| <b>Installation</b>                                   |                                                                                                                              |                                                |                                                     |                                                |                                                                                                                           |                                                |
| Terminal rigid<br>IEC connections<br>(solid/stranded) | Single: 1 ... 10 mm <sup>2</sup><br>Multiple:<br>2 x 1.5 ... 2.5 mm <sup>2</sup> ,<br>with cables of same<br>type and size   | –                                              | –                                                   | –                                              | –                                                                                                                         | –                                              |
| Terminal flexible<br>IEC connections                  | Single: 0.7 ... 10 mm <sup>2</sup><br>Multiple:<br>2 x 1.5 ... 2.5 mm <sup>2</sup> ,<br>with cables of same<br>type and size | –                                              | Single: 16 ... 35 mm <sup>2</sup><br>Multiple: –    | –                                              | Single: 10 ... 95 mm <sup>2</sup><br>Multiple:<br>2 x 10 ... 25 mm <sup>2</sup> ,<br>with cables of same<br>type and size | –                                              |
| Terminal UL<br>connections                            | –                                                                                                                            | Single: 14 ... 8 AWG<br>Multiple: –            | –                                                   | Single: 6 ... 2 AWG<br>Multiple: –             | –                                                                                                                         | Single: 2 ... 1/0 AWG<br>Multiple: –           |
| Torque                                                | 1.2 Nm                                                                                                                       | 1.2 Nm                                         | 2.5 Nm                                              | 2.5 Nm                                         | 2.0 Nm                                                                                                                    | 2.0 Nm                                         |
| Stripping length:                                     | 12 mm                                                                                                                        | 12 mm                                          | 15 mm                                               | 15 mm                                          | 21 mm                                                                                                                     | 21 mm                                          |

## SMISSLINE TP

### Terminal range IEC

#### N terminals and PE terminals

Corresponding N terminals (blue) or PE terminals (yellow-green) are available for the power supply and the outgoing conductors of the external N and PE busbars for cross sections. The terminals are fitted with label holders which can be used with the marking adapter or the marking label (Phoenix Contact type Cliqueline UC-TM).

#### N terminal for additional socket light blue, for external busbars

| Terminal for additional socketing, for external supply                            |                   |           |                 |                       |                        |        |                       |
|-----------------------------------------------------------------------------------|-------------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
|                                                                                   |                   | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|  | N 10mm²           | ZLS918    | 2CCA183440R0001 | 148 7027              | Set of<br>10           | 0.5    | 11                    |
|                                                                                   | N 35mm²           | ZLS913    | 2CCA183470R0001 | 142 1304              | 1                      | 1      | 30                    |
|                                                                                   | N 95mm²           | ZLS954    | 2CCV672508R0001 | 142 4404              | 1                      | 2      | 100                   |
|                                                                                   | N 95mm² two holes | ZLS954-1  | 2CCF183335R0001 | 145 2797              | 1                      | 2      | 100                   |

#### PE terminal for additional socket yellow-green, for external busbars

|                                                                                   |                       |        |                 |          |              |     |     |
|-----------------------------------------------------------------------------------|-----------------------|--------|-----------------|----------|--------------|-----|-----|
|  | PE 10 mm <sup>2</sup> | ZLS919 | 2CCA183441R0001 | 148 7041 | Set of<br>10 | 0.5 | 11  |
|                                                                                   | PE 35 mm <sup>2</sup> | ZLS929 | 2CCA183387R0001 | 148 6921 | 1            | 1   | 30  |
|                                                                                   | PE 95 mm <sup>2</sup> | ZLS959 | 2CCA672510R0001 | 148 7164 | 1            | 2   | 100 |

#### Red/orange terminals for additional socket

|                                                                                     |                    |               |                 |          |   |     |    |
|-------------------------------------------------------------------------------------|--------------------|---------------|-----------------|----------|---|-----|----|
|  | 10 mm <sup>2</sup> | ZLS918/Red    | 2CCA183443R0001 | 148 7089 | 1 | 0.5 | 11 |
|                                                                                     | 10 mm <sup>2</sup> | ZLS919/Orange | 2CCA183444R0001 | 148 7102 | 1 | 0.5 | 11 |
|                                                                                     | 10 mm <sup>2</sup> | ZLS918/Black  | 2CCA183445R0001 | 148 7126 | 1 | 0.5 | 11 |
|                                                                                     | 35 mm <sup>2</sup> | ZLS913/Red    | 2CCA183465R0001 | 142 1342 | 1 | 1   | 30 |
|                                                                                     | 35 mm <sup>2</sup> | ZLS916/Orange | 2CCA183466R0001 | 142 1366 | 1 | 1   | 30 |

#### Insulator block

The dark grey insulator block isolates the interrupted bus bar ends from one another and simultaneously marks the disconnection point externally.

#### Insulator block for additional socket

|                                                                                     |                                                                    | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
|  | dark gray, to isolate<br>the N bus bar<br>on the additional socket | ZLS927    | 2CCA183442R0001 | 148 7065              | 1                      | 0.5    | 9                     |

## SMISSLINE TP

### Terminal range UL

The 250A additional (ZLSP926 and ZLSP928) socket has no UL approbation.

The use for this terminals is only for the 125A system.

#### N terminal for additional socket light grey, for external busbars

| Abbreviations for additional socket light grey, for external busbars              |                      |               |                       |                        |        |                       |    |
|-----------------------------------------------------------------------------------|----------------------|---------------|-----------------------|------------------------|--------|-----------------------|----|
|                                                                                   | Type name            | ABB IT number | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |    |
|  | N 10 mm <sup>2</sup> | ZLS918UL      | 2CCA183446R0001       | 149 3301               | 1      | 0.5                   | 11 |
|                                                                                   | N 35 mm <sup>2</sup> | ZLS913UL      | 2CCA183398R0001       | 148 6945               | 1      | 1                     | 30 |
|                                                                                   | N 95 mm <sup>2</sup> | ZLS954UL      | 2CCA672511R0001       | 148 7188               | 1      | 2                     | 88 |

#### PE terminal for additional socket grey-green, for external busbars

|                                                                                   |                       |          |                 |          |   |     |    |
|-----------------------------------------------------------------------------------|-----------------------|----------|-----------------|----------|---|-----|----|
|  | PE 10 mm <sup>2</sup> | ZLS919UL | 2CCA183447R0001 | 148 7140 | 1 | 0.5 | 11 |
|                                                                                   | PE 35 mm <sup>2</sup> | ZLS929UL | 2CCA183399R0001 | 148 6969 | 1 | 1   | 30 |
|                                                                                   | PE 95 mm <sup>2</sup> | ZLS959UL | 2CCA672512R0001 | 148 7201 | 1 | 2   | 88 |

#### Insulator block

The dark grey insulator block isolates the interrupted bus bar ends from one another and simultaneously marks the disconnection point externally.

#### Insulator block for additional socket

|                                                                                     |                                                                    | Type name | ABB IT number   | EAN number<br>761 227 | Pack-aging<br>unit | Module | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------|-----------------|-----------------------|--------------------|--------|-----------------------|
|  | dark gray, to isolate<br>the N bus bar<br>on the additional socket | ZLS927    | 2CCA183442R0001 | 148 7065              | 1                  | 0.5    | 9                     |

## Socket accessories

### Intermediate piece



light grey, fills shock-proof empty module spaces 18mm  
– bag containing 5 items

Compensation piece to 18mm for NT 9mm  
– bag containing 5 items

| Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
| ZLS725    | 2CCS500900R0181 | 010 0989              | 1                      | 1      | 100                   |
| ZLS728    | 2CCS400900R0101 | 010 4710              | 1                      | 1      | 70                    |

### Busbar insulator



dark grey  
for isolation and spacing of separate busbar sections, 18mm

|        |                 |          |   |   |   |
|--------|-----------------|----------|---|---|---|
| ZLS938 | 2CCA205611R0001 | 141 8205 | 1 | 1 | 1 |
|--------|-----------------|----------|---|---|---|

### Busbar cover



electrically protected covering of main and auxiliary busbars. The 4 modules cover can be divided. Suitable to accept extension adapter ZLS 101 4x18mm  
– bag containing 5 items

|        |                 |          |   |   |    |
|--------|-----------------|----------|---|---|----|
| ZLS100 | 2CCF002762R0001 | 001 5603 | 1 | 1 | 95 |
|--------|-----------------|----------|---|---|----|

### Add-on adapter

18mm wide, can be plugged on busbar cover ZLS100. To mount conventional DIN devices with 45mm cap size.  
– bag containing 10 items

|        |                 |          |    |   |   |
|--------|-----------------|----------|----|---|---|
| ZLS101 | 2CCF002763R0001 | 001 5610 | 10 | 1 | 2 |
|--------|-----------------|----------|----|---|---|

### Mounting rail adapter



Height compensation 22.5mm, to equalize the installation depth of standard DIN-rail mounted devices alongside the SMISSLINE plug-in system.

|        |                 |          |    |   |   |
|--------|-----------------|----------|----|---|---|
| ZLS741 | 2CCA180081R0001 | 001 9632 | 10 | 1 | 3 |
|--------|-----------------|----------|----|---|---|

### Locking device



Padlock adapter 3mm  
– Bag containing 10 items

Padlock

|      |                 |          |   |   |    |
|------|-----------------|----------|---|---|----|
| SA 1 | GJF1101903R0001 | 010 4833 | 1 | – | 23 |
| SA 2 | GJF1101903R0002 | 010 4857 | 1 | – | 20 |

## Combi module 32 A (I<sub>N</sub>), 6 A (I<sub>A</sub>, I<sub>B</sub>)

MS116/132 + AF contactor

Combi module for MS116/MS132 and AF contactor

Motor starter MS116/132 and AF contactors are not part of this catalogue.

|                                                                                    | Designation                                                                    | Type name      | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------|-----------------|-----------------------|------------------------|--------|-----------------------|
|   | Combi module L1, L2, L3<br>top feed                                            | ZMS132-3L      | 2CCA182500R0001 | 1414641               | 1                      | 2,5    | 95                    |
|                                                                                    | Combi module L1, L2, L3, LA<br>top feed                                        | ZMS132-3LA     | 2CCA182502R0001 | 1414634               | 1                      | 2,5    | 98                    |
|                                                                                    | Combi module L1, L2, L3, LB<br>top feed                                        | ZMS132-3LB     | 2CCA182504R0001 | 1414627               | 1                      | 2,5    | 98                    |
|                                                                                    | Combi module L1, L2, L3, LA, LB<br>top feed                                    | ZMS132-3LAB    | 2CCA182506R0001 | 1414610               | 1                      | 2,5    | 102                   |
|                                                                                    | Combi module<br>without plug-in contacts                                       | ZMS137         | 2CCA182508R0001 | 1414603               | 1                      | 2,5    | 75                    |
|                                                                                    | Connection pin to mont<br>2 combi moduls together                              | E210-SPV       | 2CCC703715R0001 | 1414801               | Set of<br>30 pces      |        |                       |
|                                                                                    | Intermediate<br>piece 9 mm                                                     | ZMS935         | 2CCA182616R0001 | 141 4412              | 1                      | 0,5    | 6                     |
|  | Combi module L1, L2, L3<br>bottom feed                                         | ZMS132-3LWB    | 2CCF182543R0001 | 150 3208              | 1                      |        | 105                   |
|                                                                                    | <b>Combi module for manual motor starter MS116 and MS132 Push-in terminals</b> |                |                 |                       |                        |        |                       |
|                                                                                    | Adapter MS116/132<br>L123 wire top feed<br>For push terminals                  | ZMS132-3L-PI   | 2CCF182540R0001 | 1503178               | 1                      |        | 105                   |
|                                                                                    | Adapter MS116/132<br>L123LB wire top feed for push<br>terminals                | ZMS132-3LB-PI  | 2CCF182541R0001 | 1503185               | 1                      |        | 105                   |
|                                                                                    | <b>Adapter for manual motor starter MS116 and MS132 Push-in terminals</b>      |                |                 |                       |                        |        |                       |
|                                                                                    | Adapter MS116/132<br>L123LAB wire top feed for push<br>terminals               | ZMS132-3LAB-PI | 2CCF182542R0001 | 1503192               | 1                      |        | 105                   |



## Combi module: starting solutions in kit form

### Mounting possibilities

#### Direct-On-Line Starters

MS116

- + BEA16-4
- + AF09, AF12, AF16

MS116 up to 16 A

- + BEA26-4
- + AF26, AF30, AF38

MS116 > 16 A

- + BEA38-4
- + AF26, AF30, AF38

MS132

- + BEA16-4
- + AF09, AF12, AF16

MS132 up to 10 A

- + BEA26-4
- + AF26, AF30, AF38

MS132 > 10 A

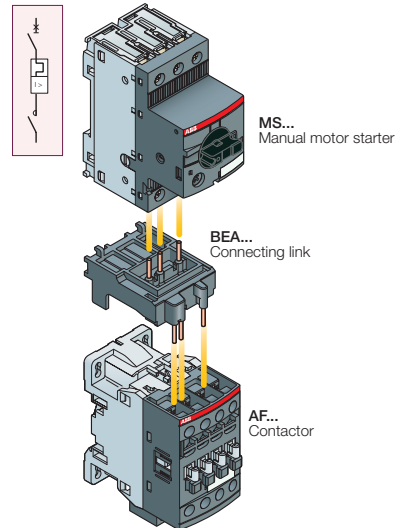
- + BEA38-4
- + AF26, AF30, AF38



with control voltage

#### Mounting possibilities on the combi module:

The following combinations of contactor, motor circuit breaker and connector are possible on the combi module.



#### Reversing Starters

MS116

- + BEA16-4, BER16-4, VEM4
- + AF09, AF12, AF16

MS116 up to 16 A

- + BEA26-4, BER38-4, VEM4
- + AF26, AF30, AF38

MS116 > 16 A

- + BEA38-4, BER38-4, VEM4
- + AF26, AF30, AF38

MS132

- + BEA16-4, BER16-4, VEM4
- + AF09, AF12, AF16

MS132 up to 10 A

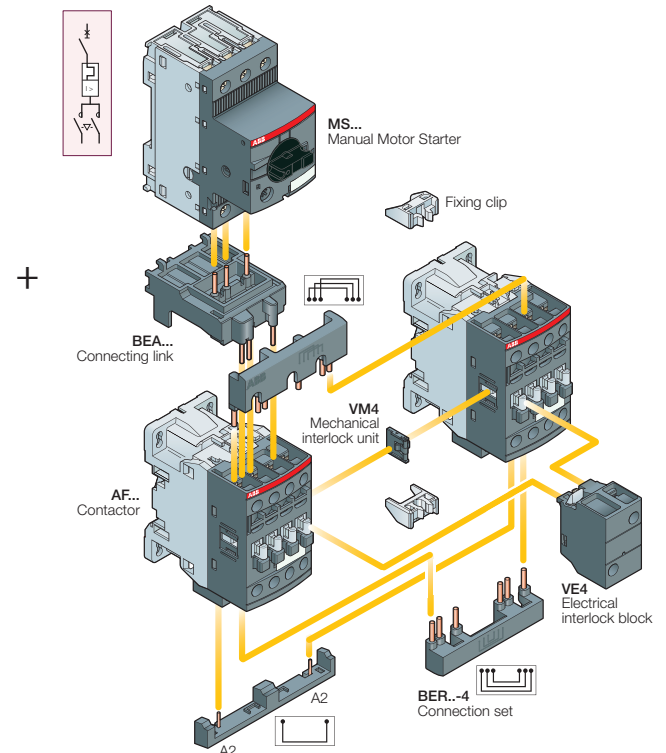
- + BEA26-4, BER38-4, VEM4
- + AF26, AF30, AF38

MS132 > 10 A

- + BEA38-4, BER38-4, VEM4
- + AF26, AF30, AF38



without control voltage



## Combi module 32 A (I<sub>N</sub>), 6 A (I<sub>A</sub>, I<sub>B</sub>)

### MS116/132 + AF contactor

#### Adapter for manual motor starter MS116 and MS132

|                                                                                                                              | Designation                                                               | Type name | ABB IT number   | EAN number<br>761 227 | Pack-aging<br>unit | Module | Weight<br>in<br>grams |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------|-----------------|-----------------------|--------------------|--------|-----------------------|
|  <div>Top feed</div> <div>Bottom feed</div> | Adapter MS116/132<br>L123 wire bottom feed                                | ZMS930    | 2CCA182520R0001 | 141 4597              | 1                  | 2,5    | 30                    |
|                                                                                                                              | Adapter MS116/132<br>L123LALB wire bottom feed                            | ZMS931    | 2CCA182522R0001 | 141 4580              | 1                  | 2,5    | 62                    |
|                                                                                                                              | Adapter MS116/132<br>L123LA wire bottom feed                              | ZMS936    | 2CCA182521R0001 | 142 4619              | 1                  | 2,5    | 58                    |
|                                                                                                                              | Adapter MS116/132<br>L123 wire top feed                                   | ZMS932    | 2CCA182524R0001 | 141 4573              | 1                  | 2,5    | 30                    |
|                                                                                                                              | Adapter MS116/132<br>L123LALB wire top feed                               | ZMS933    | 2CCA182526R0001 | 141 4566              | 1                  | 2,5    | 62                    |
|                                                                                                                              | Adapter MS116/132<br>L123LA wire top feed                                 | ZMS937    | 2CCA182525R0001 | 142 4626              | 1                  | 2,5    | 58                    |
|                                                                                                                              | Adapter MS116/132<br>empty                                                | ZMS934    | 2CCA182512R0001 | 141 4559              | 1                  | 2,5    | 34                    |
|                                                                                                                              | Intermediate<br>piece 9mm                                                 | ZMS935    | 2CCA182616R0001 | 141 4412              | 1                  | 0,5    | 6                     |
|                                                                                                                              | Adapter for AF contactor no wires                                         | ZMS938    | 2CCA182510R0001 | 141 4542              | 1                  |        | 34                    |
|                                                                                                                              | <b>Adapter for manual motor starter MS116 and MS132 Push-in terminals</b> |           |                 |                       |                    |        |                       |
|                                                                                                                              | Adapter MS116/132<br>L123 wire bottom for push<br>in terminals            | ZMS930-PI | 2CCF182550R0001 | 150 3215              | 1                  |        | 58                    |
|                                                                                                                              | Adapter MS116/132<br>L123 wire top for push in terminals                  | ZMS932-PI | 2CCF182551R0001 | 150 3208              | 1                  |        | 58                    |

The 9 mm wide additional housing is need to use when an unequal number (1, 3, 5, ...) of combi modules or adapter are plugged on the socket.

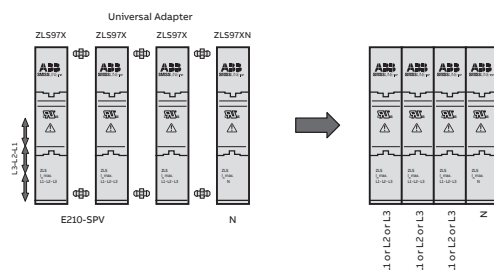
This is needed to fill the space into a full module (18 mm).

The 9 mm wide additional housing can be also use when on one side of the manual motor starter an auxiliary contact is mounted.

The order codes of manual motor starter and the contactors auf in the ABB catalogue DOC 1SBC100155C0202 or in the local ABB catalogue.

## DIN rail adapters

IEC and UL508 32 A, 63 A



Multipole universal adapter can plugged together with single adapters and the connection piece E210SPV.

### Universal adapters 32 A and 63 A, Adapter for use EN/IEC 61439-6 or UL508

| Designation                        | Type name  | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|------------------------------------|------------|-----------------|-----------------------|------------------------|--------|-----------------------|
| <b>Adapter 32A</b>                 |            |                 |                       |                        |        |                       |
| L1 or L2 or L3 wire top            | ZLS970     | 2CCA180551R0001 | 144 4563              | 10                     | 1      | 20                    |
| L1 or L2 or L3 wire bottom         | ZLS971     | 2CCA180552R0001 | 144 4570              | 10                     | 1      | 20                    |
| N wire top                         | ZLS970N    | 2CCA180553R0001 | 144 4587              | 10                     | 1      | 20                    |
| N wire bottom                      | ZLS971N    | 2CCA180554R0001 | 144 4570              | 10                     | 1      | 20                    |
| <b>Adapter 63A</b>                 |            |                 |                       |                        |        |                       |
| L1 or L2 or L3 wire top            | ZLS972     | 2CCA180555R0001 | 144 4709              | 10                     | 1      | 24                    |
| L1 or L2 or L3 wire bottom         | ZLS973     | 2CCA180556R0001 | 144 4716              | 10                     | 1      | 24                    |
| N wire top                         | ZLS972N    | 2CCA180557R0001 | 144 4723              | 10                     | 1      | 24                    |
| N wire bottom                      | ZLS973N    | 2CCA180558R0001 | 144 4730              | 10                     | 1      | 24                    |
| <b>Adapter 32A with 300mm wire</b> |            |                 |                       |                        |        |                       |
| L1 or L2 or L3 wire top            | ZLS970300  | 2CCA180559R0001 | 144 4747              | 10                     | 1      | 26                    |
| L1 or L2 or L3 wire bottom         | ZLS971300  | 2CCA180560R0001 | 144 4754              | 10                     | 1      | 26                    |
| N wire top                         | ZLS970N300 | 2CCA180561R0001 | 144 4761              | 10                     | 1      | 26                    |
| N wire bottom                      | ZLS971N300 | 2CCA180562R0001 | 144 4778              | 10                     | 1      | 26                    |
| <b>Adapter 63A with 300mm wire</b> |            |                 |                       |                        |        |                       |
| L1 or L2 or L3 wire top            | ZLS972300  | 2CCA180563R0001 | 144 4785              | 10                     | 1      | 37                    |
| L1 or L2 or L3 wire bottom         | ZLS973300  | 2CCA180564R0001 | 144 4792              | 10                     | 1      | 37                    |
| N wire top                         | ZLS972N300 | 2CCA180565R0001 | 144 4808              | 10                     | 1      | 37                    |
| N wire bottom                      | ZLS973N300 | 2CCA180566R0001 | 144 4815              | 10                     | 1      | 37                    |

## Adapters for MCB SU200 and SUP200

UL489 25A, 45A; Circuit breaker accessories E257901

### Adapters



#### Adapter 25A UL489, adapter can be only used together with ABB for MCB SU200 and SUP200

|                            |          |                 |          |    |   |    |
|----------------------------|----------|-----------------|----------|----|---|----|
| L1 or L2 or L3 wire top    | ZLS970UL | 2CCA337020R0001 | 144 4822 | 10 | 1 | 21 |
| L1 or L2 or L3 wire bottom | ZLS971UL | 2CCA337021R0001 | 144 4839 | 10 | 1 | 21 |
| N wire top                 | ZLS970N  | 2CCA180553R0001 | 144 4587 | 10 | 1 | 20 |
| N wire bottom              | ZLS971N  | 2CCA180554R0001 | 144 4570 | 10 | 1 | 20 |



#### Adapter 45A UL489, adapter can be only used together with ABB for MCB SU200 and SUP200

|                            |          |                 |          |    |   |    |
|----------------------------|----------|-----------------|----------|----|---|----|
| L1 or L2 or L3 wire top    | ZLS972UL | 2CCA337024R0001 | 144 4860 | 10 | 1 | 25 |
| L1 or L2 or L3 wire bottom | ZLS973UL | 2CCA337025R0001 | 144 4877 | 10 | 1 | 25 |
| N wire top                 | ZLS972N  | 2CCA180557R0001 | 144 4723 | 10 | 1 | 24 |
| N wire bottom              | ZLS973N  | 2CCA180558R0001 | 144 4730 | 10 | 1 | 24 |

### Accessory



#### Dummy housing

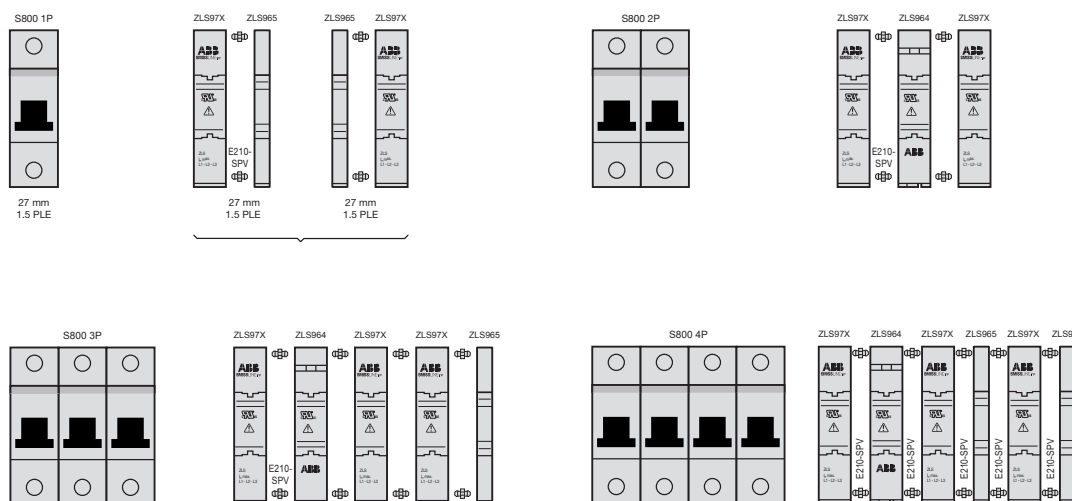
|           |        |                 |          |    |   |    |
|-----------|--------|-----------------|----------|----|---|----|
| 18mm wide | ZLS964 | 2CCA180550R0001 | 144 4556 | 10 | 1 | 11 |
|-----------|--------|-----------------|----------|----|---|----|

#### Connector for multi-pole adapter

|                                                                      |          |                 |          |                   |  |    |
|----------------------------------------------------------------------|----------|-----------------|----------|-------------------|--|----|
| Bag with 30 pcs.<br>2 connectors are needed to connect<br>2 adapters | E210-SPV | 2CCC703715R0001 | 141 4801 | Set of<br>30 pcs. |  | 50 |
|----------------------------------------------------------------------|----------|-----------------|----------|-------------------|--|----|

## 27 mm wide Solution for S800

adapter and S800. Maximum rated current of outgoing circuits ( $I_{nc}$ ) max. 50 A for S800 with ZLS972X, ZLS973X.



| Designation | Type name | ABB IT number   | EAN number<br>761 227 | Pack-<br>aging<br>unit | Module | Weight<br>in<br>grams |
|-------------|-----------|-----------------|-----------------------|------------------------|--------|-----------------------|
| 9 mm wide   | ZLS965    | 2CCA180545R1001 | 150 1440              | Set of 5               | 0.5    | 5                     |

## Busbars 40 A and 125 A

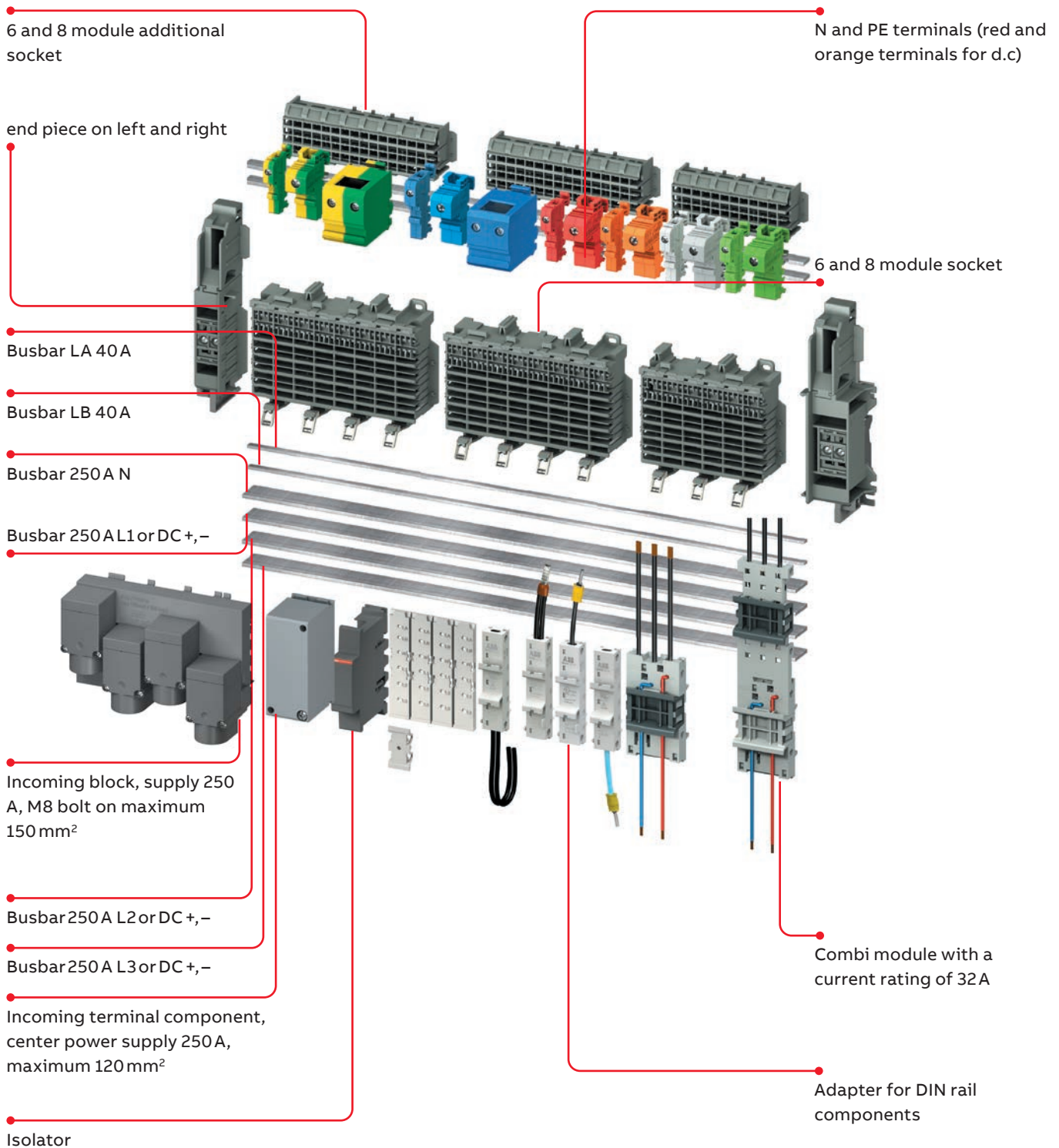
40 A and 125 A busbars / selection table for sockets

| Order data<br>busbar<br>125 A | ABB<br>IT number | EAN<br>number<br>761 227 | ZLS908 | ZLS906 | Module | Length<br>incl.<br>end piece | Busbar<br>length<br>in mm | Order data<br>busbar<br>40 A | ABB<br>IT number | EAN<br>number<br>761 227 |
|-------------------------------|------------------|--------------------------|--------|--------|--------|------------------------------|---------------------------|------------------------------|------------------|--------------------------|
| ZLS201E6                      | 2CCF800158R0001  | 001 6778                 | –      | 1      | 6      | 148                          | 103                       | ZLS203E6                     | 2CCF800218R0001  | 001 7966                 |
| ZLS201E8                      | 2CCF800159R0001  | 001 6983                 | 1      | –      | 8      | 186                          | 139                       | ZLS203E8                     | 2CCF800219R0001  | 001 8178                 |
| ZLS201E12                     | 2CCF800160R0001  | 001 6211                 | –      | 2      | 12     | 256                          | 211                       | ZLS203E12                    | 2CCF800220R0001  | 001 7409                 |
| ZLS201E14                     | 2CCF800161R0001  | 001 6310                 | 1      | 1      | 14     | 292                          | 247                       | ZLS203E14                    | 2CCF800221R0001  | 001 7508                 |
| ZLS201E16                     | 2CCF800162R0001  | 001 6334                 | 2      | –      | 16     | 328                          | 283                       | ZLS203E16                    | 2CCF800222R0001  | 001 7522                 |
| ZLS201E18                     | 2CCF800163R0001  | 001 6358                 | –      | 3      | 18     | 364                          | 319                       | ZLS203E18                    | 2CCF800223R0001  | 001 7546                 |
| ZLS201E20                     | 2CCF800164R0001  | 001 6372                 | 1      | 2      | 20     | 401                          | 355                       | ZLS203E20                    | 2CCF800224R0001  | 001 7560                 |
| ZLS201E22                     | 2CCF800165R0001  | 001 6396                 | 2      | 1      | 22     | 437                          | 391                       | ZLS203E22                    | 2CCF800225R0001  | 001 7584                 |
| ZLS201E24                     | 2CCF800666R0001  | 001 6419                 | 3      | –      | 24     | 473                          | 427                       | ZLS203E24                    | 2CCF800226R0001  | 001 7607                 |
| ZLS201E26                     | 2CCF800167R0001  | 001 6433                 | 1      | 3      | 26     | 509                          | 463                       | ZLS203E26                    | 2CCF800227R0001  | 001 7621                 |
| ZLS201E28                     | 2CCF800168R0001  | 001 6457                 | 2      | 2      | 28     | 545                          | 499                       | ZLS203E28                    | 2CCF800228R0001  | 001 7645                 |
| ZLS201E30                     | 2CCF800169R0001  | 001 6471                 | 3      | 1      | 30     | 581                          | 535                       | ZLS203E30                    | 2CCF800229R0001  | 001 7669                 |
| ZLS201E32                     | 2CCF800170R0001  | 001 6495                 | 4      | –      | 32     | 617                          | 571                       | ZLS203E32                    | 2CCF800230R0001  | 001 7683                 |
| ZLS201E34                     | 2CCF800171R0001  | 001 6518                 | 2      | 3      | 34     | 653                          | 607                       | ZLS203E34                    | 2CCF800231R0001  | 001 7706                 |
| ZLS201E36                     | 2CCF800172R0001  | 001 6532                 | 3      | 2      | 36     | 689                          | 643                       | ZLS203E36                    | 2CCF800232R0001  | 001 7720                 |
| ZLS201E38                     | 2CCF800173R0001  | 001 6556                 | 4      | 1      | 38     | 725                          | 679                       | ZLS203E38                    | 2CCF800233R0001  | 001 7744                 |
| ZLS201E40                     | 2CCF800174R0001  | 001 6570                 | 5      | –      | 40     | 761                          | 715                       | ZLS203E40                    | 2CCF800234R0001  | 001 7768                 |
| ZLS201E42                     | 2CCF800175R0001  | 001 6594                 | 3      | 3      | 42     | 797                          | 751                       | ZLS203E42                    | 2CCF800235R0001  | 001 7782                 |
| ZLS201E44                     | 2CCF800176R0001  | 001 6617                 | 4      | 2      | 44     | 833                          | 787                       | ZLS203E44                    | 2CCF800236R0001  | 001 7805                 |
| ZLS201E46                     | 2CCF800177R0001  | 001 6631                 | 5      | 1      | 46     | 869                          | 823                       | ZLS203E46                    | 2CCF800237R0001  | 001 7829                 |
| ZLS201E48                     | 2CCF800178R0001  | 001 6655                 | 6      | –      | 48     | 905                          | 859                       | ZLS203E48                    | 2CCF800238R0001  | 001 7843                 |
| ZLS201E50                     | 2CCF800179R0001  | 001 6679                 | 4      | 3      | 50     | 941                          | 895                       | ZLS203E50                    | 2CCF800239R0001  | 001 7867                 |
| ZLS201E52                     | 2CCF800180R0001  | 001 6693                 | 5      | 2      | 52     | 977                          | 932                       | ZLS203E52                    | 2CCF800240R0001  | 001 7881                 |
| ZLS201E54                     | 2CCF800181R0001  | 001 6716                 | 6      | 1      | 54     | 1013                         | 968                       | ZLS203E54                    | 2CCF800241R0001  | 001 7904                 |
| ZLS201E56                     | 2CCF800182R0001  | 001 6730                 | 7      | –      | 56     | 1049                         | 1004                      | ZLS203E56                    | 2CCF800242R0001  | 001 7928                 |
| ZLS201E58                     | 2CCF800183R0001  | 001 6754                 | 5      | 3      | 58     | 1085                         | 1040                      | ZLS203E58                    | 2CCF800243R0001  | 001 7942                 |
| ZLS201E60                     | 2CCF800184R0001  | 001 6785                 | 6      | 2      | 60     | 1122                         | 1076                      | ZLS203E60                    | 2CCF800244R0001  | 001 7973                 |
| ZLS201E62                     | 2CCF800185R0001  | 001 6808                 | 7      | 1      | 62     | 1158                         | 1112                      | ZLS203E62                    | 2CCF800245R0001  | 001 7997                 |
| ZLS201E64                     | 2CCF800186R0001  | 001 6822                 | 8      | –      | 64     | 1194                         | 1148                      | ZLS203E64                    | 2CCF800246R0001  | 001 8017                 |
| ZLS201E66                     | 2CCF800187R0001  | 001 6846                 | 6      | 3      | 66     | 1230                         | 1184                      | ZLS203E66                    | 2CCF800247R0001  | 001 8031                 |
| ZLS201E68                     | 2CCF800188R0001  | 001 6860                 | 7      | 2      | 68     | 1266                         | 1220                      | ZLS203E68                    | 2CCF800248R0001  | 001 8055                 |
| ZLS201E70                     | 2CCF800189R0001  | 001 6884                 | 8      | 1      | 70     | 1302                         | 1256                      | ZLS203E70                    | 2CCF800249R0001  | 001 8079                 |
| ZLS201E72                     | 2CCF800190R0001  | 001 6907                 | 9      | –      | 72     | 1338                         | 1292                      | ZLS203E72                    | 2CCF800250R0001  | 001 8093                 |
| ZLS201E74                     | 2CCF800191R0001  | 001 6921                 | 7      | 3      | 74     | 1374                         | 1328                      | ZLS203E74                    | 2CCF800251R0001  | 001 8116                 |
| ZLS201E76                     | 2CCF800192R0001  | 001 6945                 | 8      | 2      | 76     | 1410                         | 1364                      | ZLS203E76                    | 2CCF800252R0001  | 001 8130                 |
| ZLS201E78                     | 2CCF800193R0001  | 001 6969                 | 9      | 1      | 78     | 1446                         | 1400                      | ZLS203E78                    | 2CCF800253R0001  | 001 8154                 |
| ZLS201E80                     | 2CCF800194R0001  | 001 6990                 | 10     | –      | 80     | 1482                         | 1436                      | ZLS203E80                    | 2CCF800254R0001  | 001 8185                 |
| ZLS201E82                     | 2CCF800195R0001  | 001 7010                 | 8      | 3      | 82     | 1518                         | 1472                      | ZLS203E82                    | 2CCF800255R0001  | 001 8208                 |
| ZLS201E84                     | 2CCF800196R0001  | 001 7034                 | 9      | 2      | 84     | 1554                         | 1508                      | ZLS203E84                    | 2CCF800256R0001  | 001 8222                 |
| ZLS201E86                     | 2CCF800197R0001  | 001 7058                 | 10     | 1      | 86     | 1590                         | 1544                      | ZLS203E86                    | 2CCF800257R0001  | 001 8246                 |
| ZLS201E88                     | 2CCF800198R0001  | 001 7072                 | 11     | –      | 88     | 1626                         | 1580                      | ZLS203E88                    | 2CCF800258R0001  | 001 8260                 |
| ZLS201E90                     | 2CCF800199R0001  | 001 7096                 | 9      | 3      | 90     | 1662                         | 1616                      | ZLS203E90                    | 2CCF800259R0001  | 001 8284                 |
| ZLS201E92                     | 2CCF800200R0001  | 001 7119                 | 10     | 2      | 92     | 1698                         | 1652                      | ZLS203E92                    | 2CCF800260R0001  | 001 8307                 |
| ZLS201E94                     | 2CCF800201R0001  | 001 7133                 | 11     | 1      | 94     | 1734                         | 1688                      | ZLS203E94                    | 2CCF800261R0001  | 001 8321                 |
| ZLS201E96                     | 2CCF800202R0001  | 001 7157                 | 12     | –      | 96     | 1770                         | 1724                      | ZLS203E96                    | 2CCF800262R0001  | 001 8345                 |
| ZLS201E98                     | 2CCF800203R0001  | 001 7171                 | 10     | 3      | 98     | 1806                         | 1760                      | ZLS203E98                    | 2CCF800263R0001  | 001 8369                 |
| ZLS201E100                    | 2CCF800204R0001  | 001 6006                 | 11     | 2      | 100    | 1843                         | 1796                      | ZLS203E100                   | 2CCF800264R0001  | 001 7195                 |
| ZLS201E102                    | 2CCF800205R0001  | 001 6020                 | 12     | 1      | 102    | 1879                         | 1832                      | ZLS203E102                   | 2CCF800265R0001  | 001 7218                 |
| ZLS201E104                    | 2CCF800206R0001  | 001 6044                 | 13     | –      | 104    | 1915                         | 1868                      | ZLS203E104                   | 2CCF800266R0001  | 001 7232                 |
| ZLS201E106                    | 2CCF800207R0001  | 001 6068                 | 11     | 3      | 106    | 1951                         | 1904                      | ZLS203E106                   | 2CCF800267R0001  | 001 7256                 |
| ZLS201E108                    | 2CCF800208R0001  | 001 6082                 | 12     | 2      | 108    | 1987                         | 1940                      | ZLS203E108                   | 2CCF800268R0001  | 001 7270                 |

Planning for the incorporation of feeder block and spare places should be taken into account.  
The total lengths given above were calculated taking socket spacings and tolerances into account.  
For this reason, the indicated busbar length is not necessarily a multiple of 18 mm (1 Module).

# Busbar system Power Bar System 250 A

## Overview



## Technical data according to IEC/EN 61439-6

### Power Bar System 250 A

#### Busbar system touch proof:

Use only for wall mounted application (horizontal or vertical). When installed correctly the requirements of EN/IEC 61439-2 are met.

| Number of poles                                                   | 30 to 110<br>3p+N / 2 additional bars PE+N                   |                                                  |                                        |                                                     |
|-------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------|----------------------------------------|-----------------------------------------------------|
| Rated operational voltage (U <sub>e</sub> )                       | 690 VAC, 1000 VDC<br>(400 V for LA, LB busbars)              |                                                  |                                        |                                                     |
| Rated insulation voltage (U <sub>i</sub> ) Main circuit           | 690 VAC, 1000 VDC                                            |                                                  |                                        |                                                     |
| Rated insulation voltage (U <sub>i</sub> ) Auxiliary circuit      | 415 VAC                                                      |                                                  |                                        |                                                     |
| IP Code                                                           | IP20B                                                        |                                                  |                                        |                                                     |
| Mounting position                                                 | horizontal or vertical                                       |                                                  |                                        |                                                     |
| Overvoltage category                                              | IV                                                           |                                                  |                                        |                                                     |
| Pollution degree                                                  | 3 (690 V a.c.) 2 (1000 V d.c.)                               |                                                  |                                        |                                                     |
| Rated impulse voltage (U <sub>imp</sub> )                         | 8 kV mainbusbars; 6 kV auxiliary busbars                     |                                                  |                                        |                                                     |
| Rated current of the assembly (I <sub>nA</sub> )                  | Side feed: 250 A, Middle feed 400 A, Auxiliary busbars: 40 A |                                                  |                                        |                                                     |
| Rated current of a circuit (I <sub>nc</sub> )                     | Main circuit: Max. 100 A                                     |                                                  |                                        |                                                     |
| Rated current of Auxiliary circuit                                | 40 A                                                         |                                                  |                                        |                                                     |
| Rated short-time withstand current (I <sub>cw</sub> )             | 15 kA/100 ms Main circuit, 4 kA/50 ms Auxiliary circuit      |                                                  |                                        |                                                     |
| Rated peak withstand current Main circuit (I <sub>pk</sub> )      | 30 kA                                                        |                                                  |                                        |                                                     |
| Rated peak withstand current Auxiliary circuit (I <sub>pk</sub> ) | 6 kA                                                         |                                                  |                                        |                                                     |
| Rated frequency (f)                                               | 50/60 Hz                                                     |                                                  |                                        |                                                     |
| Rated conditional short-circuit current (I <sub>cc</sub> )        | see table below                                              |                                                  |                                        |                                                     |
| Ambient air temperature                                           | max. 60°C                                                    |                                                  |                                        |                                                     |
| Environmental conditions (damp heat) acc. to IEC/EN 60068-2-30    | 1 cycle with 55°C/90...96% and 25°C/95...100%                |                                                  |                                        |                                                     |
| Size of CU bars 3P+N+PE                                           | 3 x 25 mm (75 mm <sup>2</sup> )                              |                                                  |                                        |                                                     |
| Size of CU auxiliary bars La Lb                                   | 2 x 5 mm (10 mm <sup>2</sup> )                               |                                                  |                                        |                                                     |
| Rated Voltage (U <sub>e</sub> )                                   | Rated conditional short-circuit current (I <sub>cc</sub> )   | Incoming current of main busbars (L1, L2, L3, N) | Short circuit protection device (SCPD) |                                                     |
|                                                                   |                                                              |                                                  | Fuse                                   | MCCB                                                |
| 415 V                                                             | 100 kA                                                       | 250 A                                            | NH2 gG 690 V/250 A*                    | ABB T <sub>max</sub> XT Serie up to 250 A*          |
| 690 V                                                             | 25 kA                                                        | 250 A                                            | NH2 gG 690 V/250 A                     | ABB T <sub>max</sub> XT Serie up to 250 A*          |
|                                                                   |                                                              | Incoming current of auxiliary busbars (La, Lb)   |                                        |                                                     |
|                                                                   |                                                              | 25 kA                                            | 40 A                                   | NH00 gG 415 V/40 A      ABB Type S800 (240/415 VAC) |

\* For 400 A Incoming for upstream protection are two fuses or XT breaker necessary or two XT circuit breaker



## Technical data data UL508; Approvals for US and CA: cULus

### Busbar system 250 A

#### SMISSLINE TP system for UL 508 – Industrial Control Equipment, CSA C22.2 No. 14 – Industrial Control Equipment UL File E222110

|                                                             |                                                                               |
|-------------------------------------------------------------|-------------------------------------------------------------------------------|
| Rated Voltage                                               | 600VAC                                                                        |
| Rated Current                                               | 250A left or right                                                            |
| Short Circuit Ratings<br>ABB T <sub>max</sub> XT2, XT3, XT4 | 50kA, max. 480VAC, 480Y/277V and 240VAC or<br>35kA, max. 600VAC and 600Y/347V |

#### Technical data UL508 Industrial Control Equipment (ZLSP906, ZLSP908, ZLSP920)

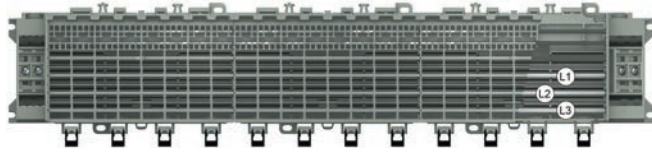
|                          | Busbar<br>ZLSP200 | Feeder<br>ZLSP934 | Feeder block<br>ZLS95X | Combimodule<br>ZLS840X, 842X | DIN Rail<br>adapter<br>ZLS97X | Terminals<br>ZLS95XUL,<br>91XUL | Combi modul<br>ZMS132X | Adapter moter<br>strater ZMS93X |
|--------------------------|-------------------|-------------------|------------------------|------------------------------|-------------------------------|---------------------------------|------------------------|---------------------------------|
| Maximum<br>rated voltage | 600VAC            | 600VAC            | 600VAC                 | 600VAC                       | 600VAC                        | 600VAC                          | 600VAC                 | 600VAC                          |
| Maximum<br>rated current | 250A              | 250A              | 150A                   | 30A                          | 32A, 63A                      | 32A, 100A,<br>150A              | 32A                    | 32A                             |

#### DIN rail adapters for MCB SU200 and SUP200

|                            |                              |
|----------------------------|------------------------------|
|                            | 970UL, 971UL, 972UL or 973UL |
| Maximum<br>nominal current | 25A, 45A                     |

## Starter pack Touch proof 3L

### Power Bar System 250 A

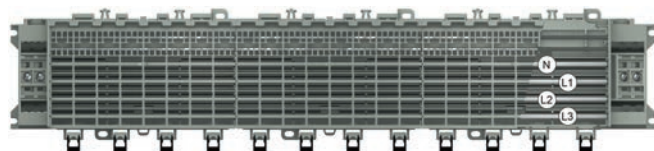


#### Starter Pack 3L: L1, L2, L3 included socket end piece

| Solutions available | Busbars length incl. Socket end piece mm | Busbars length mm | Type name      | ABB IT number   | EAN number 761 227 | Pack unit | Weight in grams |
|---------------------|------------------------------------------|-------------------|----------------|-----------------|--------------------|-----------|-----------------|
| 30PLE 3L            | 614                                      | 535               | ZLSP950E30-3L  | 2CCF212200A0001 | 1488246            | 1         | 1755            |
| 32PLE 3L            | 650                                      | 571               | ZLSP950E32-3L  | 2CCF212201A0001 | 1488260            | 1         | 1863            |
| 34PLE 3L            | 686                                      | 607               | ZLSP950E34-3L  | 2CCF212202A0001 | 1488284            | 1         | 1981            |
| 36PLE 3L            | 722                                      | 643               | ZLSP950E36-3L  | 2CCF212203A0001 | 1488307            | 1         | 2088            |
| 38PLE 3L            | 758                                      | 679               | ZLSP950E38-3L  | 2CCF212204A0001 | 1488321            | 1         | 2195            |
| 40PLE 3L            | 794                                      | 715               | ZLSP950E40-3L  | 2CCF212205A0001 | 1488345            | 1         | 2303            |
| 42PLE 3L            | 830                                      | 751               | ZLSP950E42-3L  | 2CCF212206A0001 | 1488369            | 1         | 2421            |
| 44PLE 3L            | 866                                      | 787               | ZLSP950E44-3L  | 2CCF212207A0001 | 1488383            | 1         | 2528            |
| 46PLE 3L            | 902                                      | 823               | ZLSP950E46-3L  | 2CCF212208A0001 | 1488406            | 1         | 2635            |
| 48PLE 3L            | 938                                      | 859               | ZLSP950E48-3L  | 2CCF212209A0001 | 1488420            | 1         | 2742            |
| 50PLE 3L            | 974                                      | 895               | ZLSP950E50-3L  | 2CCF212210A0001 | 1488444            | 1         | 2861            |
| 52PLE 3L            | 1010                                     | 932               | ZLSP950E52-3L  | 2CCF212211A0001 | 1488468            | 1         | 2968            |
| 54PLE 3L            | 1046                                     | 968               | ZLSP950E54-3L  | 2CCF212212A0001 | 1488482            | 1         | 3075            |
| 56PLE 3L            | 1082                                     | 1004              | ZLSP950E56-3L  | 2CCF212213A0001 | 1488505            | 1         | 3182            |
| 58PLE 3L            | 1091                                     | 1040              | ZLSP950E58-3L  | 2CCF212214A0001 | 1488529            | 1         | 3301            |
| 60PLE 3L            | 1155                                     | 1076              | ZLSP950E60-3L  | 2CCF212215A0001 | 1488543            | 1         | 3408            |
| 62PLE 3L            | 1191                                     | 1112              | ZLSP950E62-3L  | 2CCF212216A0001 | 1488567            | 1         | 3515            |
| 64PLE 3L            | 1227                                     | 1148              | ZLSP950E64-3L  | 2CCF212217A0001 | 1488581            | 1         | 3622            |
| 66PLE 3L            | 1263                                     | 1184              | ZLSP950E66-3L  | 2CCF212218A0001 | 1488604            | 1         | 3741            |
| 68PLE 3L            | 1299                                     | 1220              | ZLSP950E68-3L  | 2CCF212219A0001 | 1488628            | 1         | 3848            |
| 70PLE 3L            | 1291                                     | 1256              | ZLSP950E70-3L  | 2CCF212220A0001 | 1488642            | 1         | 3955            |
| 72PLE 3L            | 1371                                     | 1292              | ZLSP950E72-3L  | 2CCF212221A0001 | 1488666            | 1         | 4062            |
| 74PLE 3L            | 1407                                     | 1328              | ZLSP950E74-3L  | 2CCF212222A0001 | 1488680            | 1         | 4180            |
| 76PLE 3L            | 1443                                     | 1364              | ZLSP950E76-3L  | 2CCF212223A0001 | 1488703            | 1         | 4288            |
| 78PLE 3L            | 1479                                     | 1400              | ZLSP950E78-3L  | 2CCF212224A0001 | 1488727            | 1         | 4395            |
| 80PLE 3L            | 1515                                     | 1436              | ZLSP950E80-3L  | 2CCF212225A0001 | 1488741            | 1         | 4502            |
| 82PLE 3L            | 1551                                     | 1472              | ZLSP950E82-3L  | 2CCF212226A0001 | 1488765            | 1         | 4620            |
| 84PLE 3L            | 1587                                     | 1508              | ZLSP950E84-3L  | 2CCF212227A0001 | 1488789            | 1         | 4728            |
| 86PLE 3L            | 1623                                     | 1544              | ZLSP950E86-3L  | 2CCF212228A0001 | 1488802            | 1         | 4835            |
| 88PLE 3L            | 1659                                     | 1580              | ZLSP950E88-3L  | 2CCF212229A0001 | 1488826            | 1         | 4942            |
| 90PLE 3L            | 1695                                     | 1616              | ZLSP950E90-3L  | 2CCF212230A0001 | 1488840            | 1         | 5060            |
| 92PLE 3L            | 1731                                     | 1652              | ZLSP950E92-3L  | 2CCF212231A0001 | 1488864            | 1         | 5167            |
| 94PLE 3L            | 1767                                     | 1688              | ZLSP950E94-3L  | 2CCF212232A0001 | 1488888            | 1         | 5275            |
| 96PLE 3L            | 1803                                     | 1724              | ZLSP950E96-3L  | 2CCF212233A0001 | 1488901            | 1         | 5382            |
| 98PLE 3L            | 1839                                     | 1760              | ZLSP950E98-3L  | 2CCF212234A0001 | 1488925            | 1         | 5500            |
| 100PLE 3L           | 1875                                     | 1796              | ZLSP950E100-3L | 2CCF212235A0001 | 1488949            | 1         | 5607            |
| 102PLE 3L           | 1911                                     | 1832              | ZLSP950E102-3L | 2CCF212236A0001 | 1488963            | 1         | 5715            |
| 104PLE 3L           | 1947                                     | 1868              | ZLSP950E104-3L | 2CCF212237A0001 | 1488987            | 1         | 5822            |
| 106PLE 3L           | 1983                                     | 1904              | ZLSP950E106-3L | 2CCF212238A0001 | 1489007            | 1         | 5940            |
| 108PLE 3L           | 2019                                     | 1940              | ZLSP950E108-3L | 2CCF212239A0001 | 1489021            | 1         | 6047            |
| 110PLE 3L           | 2058                                     | 1979              | ZLSP950E110-3L | 2CCF212240A0001 | 1489045            | 1         | 6121            |

## Starter pack Touch proof 3LN

### Power Bar System 250 A

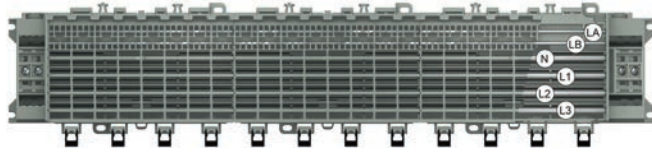


#### Starter Pack 3L: L1, L2, L3 included socket end piece

| Solutions available | Busbars length incl. Socket end piece mm | Busbars length mm | Type name       | ABB IT number   | EAN number 761 227 | Pack unit | Weight in grams |
|---------------------|------------------------------------------|-------------------|-----------------|-----------------|--------------------|-----------|-----------------|
| 30PLE 3LN           | 614                                      | 535               | ZLSP950E30-3LN  | 2CCF212300A0001 | 1489069            | 1         | 2122            |
| 32PLE 3LN           | 650                                      | 571               | ZLSP950E32-3LN  | 2CCF212301A0001 | 1489083            | 1         | 2253            |
| 34PLE 3LN           | 686                                      | 607               | ZLSP950E34-3LN  | 2CCF212302A0001 | 1489106            | 1         | 2396            |
| 36PLE 3LN           | 722                                      | 643               | ZLSP950E36-3LN  | 2CCF212303A0001 | 1489120            | 1         | 2527            |
| 38PLE 3LN           | 758                                      | 679               | ZLSP950E38-3LN  | 2CCF212304A0001 | 1489144            | 1         | 2659            |
| 40PLE 3LN           | 794                                      | 715               | ZLSP950E40-3LN  | 2CCF212305A0001 | 1489168            | 1         | 2791            |
| 42PLE 3LN           | 830                                      | 751               | ZLSP950E42-3LN  | 2CCF212306A0001 | 1489182            | 1         | 2933            |
| 44PLE 3LN           | 866                                      | 787               | ZLSP950E44-3LN  | 2CCF212307A0001 | 1489205            | 1         | 3065            |
| 46PLE 3LN           | 902                                      | 823               | ZLSP950E46-3LN  | 2CCF212308A0001 | 1489229            | 1         | 3197            |
| 48PLE 3LN           | 938                                      | 859               | ZLSP950E48-3LN  | 2CCF212309A0001 | 1489243            | 1         | 3328            |
| 50PLE 3LN           | 974                                      | 895               | ZLSP950E50-3LN  | 2CCF212310A0001 | 1489267            | 1         | 3471            |
| 52PLE 3LN           | 1010                                     | 932               | ZLSP950E52-3LN  | 2CCF212311A0001 | 1489281            | 1         | 3603            |
| 54PLE 3LN           | 1046                                     | 968               | ZLSP950E54-3LN  | 2CCF212312A0001 | 1489304            | 1         | 3734            |
| 56PLE 3LN           | 1082                                     | 1004              | ZLSP950E56-3LN  | 2CCF212313A0001 | 1489328            | 1         | 3866            |
| 58PLE 3LN           | 1091                                     | 1040              | ZLSP950E58-3LN  | 2CCF212314A0001 | 1489342            | 1         | 4008            |
| 60PLE 3LN           | 1155                                     | 1076              | ZLSP950E60-3LN  | 2CCF212315A0001 | 1489366            | 1         | 4140            |
| 62PLE 3LN           | 1191                                     | 1112              | ZLSP950E62-3LN  | 2CCF212316A0001 | 1489380            | 1         | 4272            |
| 64PLE 3LN           | 1227                                     | 1148              | ZLSP950E64-3LN  | 2CCF212317A0001 | 1489403            | 1         | 4403            |
| 66PLE 3LN           | 1263                                     | 1184              | ZLSP950E66-3LN  | 2CCF212318A0001 | 1489427            | 1         | 4546            |
| 68PLE 3LN           | 1299                                     | 1220              | ZLSP950E68-3LN  | 2CCF212319A0001 | 1489441            | 1         | 4678            |
| 70PLE 3LN           | 1291                                     | 1256              | ZLSP950E70-3LN  | 2CCF212320A0001 | 1489465            | 1         | 4809            |
| 72PLE 3LN           | 1371                                     | 1292              | ZLSP950E72-3LN  | 2CCF212321A0001 | 1489489            | 1         | 4941            |
| 74PLE 3LN           | 1407                                     | 1328              | ZLSP950E74-3LN  | 2CCF212322A0001 | 1489502            | 1         | 5084            |
| 76PLE 3LN           | 1443                                     | 1364              | ZLSP950E76-3LN  | 2CCF212323A0001 | 1489526            | 1         | 5215            |
| 78PLE 3LN           | 1479                                     | 1400              | ZLSP950E78-3LN  | 2CCF212324A0001 | 1489540            | 1         | 5347            |
| 80PLE 3LN           | 1515                                     | 1436              | ZLSP950E80-3LN  | 2CCF212325A0001 | 1489564            | 1         | 5478            |
| 82PLE 3LN           | 1551                                     | 1472              | ZLSP950E82-3LN  | 2CCF212326A0001 | 1489588            | 1         | 5621            |
| 84PLE 3LN           | 1587                                     | 1508              | ZLSP950E84-3LN  | 2CCF212327A0001 | 1489601            | 1         | 5753            |
| 86PLE 3LN           | 1623                                     | 1544              | ZLSP950E86-3LN  | 2CCF212328A0001 | 1489625            | 1         | 5884            |
| 88PLE 3LN           | 1659                                     | 1580              | ZLSP950E88-3LN  | 2CCF212329A0001 | 1489649            | 1         | 6016            |
| 90PLE 3LN           | 1695                                     | 1616              | ZLSP950E90-3LN  | 2CCF212330A0001 | 1489663            | 1         | 6159            |
| 92PLE 3LN           | 1731                                     | 1652              | ZLSP950E92-3LN  | 2CCF212331A0001 | 1489687            | 1         | 6290            |
| 94PLE 3LN           | 1767                                     | 1688              | ZLSP950E94-3LN  | 2CCF212332A0001 | 1489700            | 1         | 6422            |
| 96PLE 3LN           | 1803                                     | 1724              | ZLSP950E96-3LN  | 2CCF212333A0001 | 1489724            | 1         | 6554            |
| 98PLE 3LN           | 1839                                     | 1760              | ZLSP950E98-3LN  | 2CCF212334A0001 | 1489748            | 1         | 6696            |
| 100PLE 3LN          | 1875                                     | 1796              | ZLSP950E100-3LN | 2CCF212335A0001 | 1489762            | 1         | 6828            |
| 102PLE 3LN          | 1911                                     | 1832              | ZLSP950E102-3LN | 2CCF212336A0001 | 1489786            | 1         | 6959            |
| 104PLE 3LN          | 1947                                     | 1868              | ZLSP950E104-3LN | 2CCF212337A0001 | 1489809            | 1         | 7091            |
| 106PLE 3LN          | 1983                                     | 1904              | ZLSP950E106-3LN | 2CCF212338A0001 | 1489823            | 1         | 7234            |
| 108PLE 3LN          | 2019                                     | 1940              | ZLSP950E108-3LN | 2CCF212339A0001 | 1489847            | 1         | 7365            |
| 110PLE 3LN          | 2058                                     | 1979              | ZLSP950E110-3LN | 2CCF212340A0001 | 1489861            | 1         | 7463            |

## Starter pack Touch proof 3LN LA LB

### Power Bar System 250 A



#### Starter Pack 3L: L1, L2, L3 included socket end piece

| Solutions available | Busbars length incl. Socket end piece mm | Busbars length mm | Type name           | ABB IT number   | EAN number 761 227 | Pack unit | Weight in grams |
|---------------------|------------------------------------------|-------------------|---------------------|-----------------|--------------------|-----------|-----------------|
| 30PLE 3LN LA LB     | 614                                      | 535               | ZLSP950E30-3LNLALB  | 2CCF212400A0001 | 1489885            | 1         | 2480            |
| 32PLE 3LN LA LB     | 650                                      | 571               | ZLSP950E32-3LNLALB  | 2CCF212401A0001 | 1489908            | 1         | 2611            |
| 34PLE 3LN LA LB     | 686                                      | 607               | ZLSP950E34-3LNLALB  | 2CCF212402A0001 | 1489922            | 1         | 2754            |
| 36PLE 3LN LA LB     | 722                                      | 643               | ZLSP950E36-3LNLALB  | 2CCF212403A0001 | 1489946            | 1         | 2885            |
| 38PLE 3LN LA LB     | 758                                      | 679               | ZLSP950E38-3LNLALB  | 2CCF212404A0001 | 1489960            | 1         | 3017            |
| 40PLE 3LN LA LB     | 794                                      | 715               | ZLSP950E40-3LNLALB  | 2CCF212405A0001 | 1489984            | 1         | 3149            |
| 42PLE 3LN LA LB     | 830                                      | 751               | ZLSP950E42-3LNLALB  | 2CCF212406A0001 | 1490003            | 1         | 3291            |
| 44PLE 3LN LA LB     | 866                                      | 787               | ZLSP950E44-3LNLALB  | 2CCF212407A0001 | 1490027            | 1         | 3423            |
| 46PLE 3LN LA LB     | 902                                      | 823               | ZLSP950E46-3LNLALB  | 2CCF212408A0001 | 1490041            | 1         | 3555            |
| 48PLE 3LN LA LB     | 938                                      | 859               | ZLSP950E48-3LNLALB  | 2CCF212409A0001 | 1490065            | 1         | 3686            |
| 50PLE 3LN LA LB     | 974                                      | 895               | ZLSP950E50-3LNLALB  | 2CCF212410A0001 | 1490089            | 1         | 3829            |
| 52PLE 3LN LA LB     | 1010                                     | 932               | ZLSP950E52-3LNLALB  | 2CCF212411A0001 | 1490102            | 1         | 3961            |
| 54PLE 3LN LA LB     | 1046                                     | 968               | ZLSP950E54-3LNLALB  | 2CCF212412A0001 | 1490126            | 1         | 4092            |
| 56PLE 3LN LA LB     | 1082                                     | 1004              | ZLSP950E56-3LNLALB  | 2CCF212413A0001 | 1490140            | 1         | 4224            |
| 58PLE 3LN LA LB     | 1091                                     | 1040              | ZLSP950E58-3LNLALB  | 2CCF212414A0001 | 1490164            | 1         | 4366            |
| 60PLE 3LN LA LB     | 1155                                     | 1076              | ZLSP950E60-3LNLALB  | 2CCF212415A0001 | 1490188            | 1         | 4498            |
| 62PLE 3LN LA LB     | 1191                                     | 1112              | ZLSP950E62-3LNLALB  | 2CCF212416A0001 | 1490201            | 1         | 4630            |
| 64PLE 3LN LA LB     | 1227                                     | 1148              | ZLSP950E64-3LNLALB  | 2CCF212417A0001 | 1490225            | 1         | 4761            |
| 66PLE 3LN LA LB     | 1263                                     | 1184              | ZLSP950E66-3LNLALB  | 2CCF212418A0001 | 1490249            | 1         | 4904            |
| 68PLE 3LN LA LB     | 1299                                     | 1220              | ZLSP950E68-3LNLALB  | 2CCF212419A0001 | 1490263            | 1         | 5036            |
| 70PLE 3LN LA LB     | 1291                                     | 1256              | ZLSP950E70-3LNLALB  | 2CCF212420A0001 | 1492087            | 1         | 5167            |
| 72PLE 3LN LA LB     | 1371                                     | 1292              | ZLSP950E72-3LNLALB  | 2CCF212421A0001 | 1490300            | 1         | 5299            |
| 74PLE 3LN LA LB     | 1407                                     | 1328              | ZLSP950E74-3LNLALB  | 2CCF212422A0001 | 1490324            | 1         | 5442            |
| 76PLE 3LN LA LB     | 1443                                     | 1364              | ZLSP950E76-3LNLALB  | 2CCF212423A0001 | 1490348            | 1         | 5573            |
| 78PLE 3LN LA LB     | 1479                                     | 1400              | ZLSP950E78-3LNLALB  | 2CCF212424A0001 | 1490362            | 1         | 5705            |
| 80PLE 3LN LA LB     | 1515                                     | 1436              | ZLSP950E80-3LNLALB  | 2CCF212425A0001 | 1490386            | 1         | 5836            |
| 82PLE 3LN LA LB     | 1551                                     | 1472              | ZLSP950E82-3LNLALB  | 2CCF212426A0001 | 1490409            | 1         | 5979            |
| 84PLE 3LN LA LB     | 1587                                     | 1508              | ZLSP950E84-3LNLALB  | 2CCF212427A0001 | 1490423            | 1         | 6111            |
| 86PLE 3LN LA LB     | 1623                                     | 1544              | ZLSP950E86-3LNLALB  | 2CCF212428A0001 | 1490447            | 1         | 6242            |
| 88PLE 3LN LA LB     | 1659                                     | 1580              | ZLSP950E88-3LNLALB  | 2CCF212429A0001 | 1490461            | 1         | 6374            |
| 90PLE 3LN LA LB     | 1695                                     | 1616              | ZLSP950E90-3LNLALB  | 2CCF212430A0001 | 1490485            | 1         | 6517            |
| 92PLE 3LN LA LB     | 1731                                     | 1652              | ZLSP950E92-3LNLALB  | 2CCF212431A0001 | 1490508            | 1         | 6648            |
| 94PLE 3LN LA LB     | 1767                                     | 1688              | ZLSP950E94-3LNLALB  | 2CCF212432A0001 | 1490522            | 1         | 6780            |
| 96PLE 3LN LA LB     | 1803                                     | 1724              | ZLSP950E96-3LNLALB  | 2CCF212433A0001 | 1490546            | 1         | 6912            |
| 98PLE 3LN LA LB     | 1839                                     | 1760              | ZLSP950E98-3LNLALB  | 2CCF212434A0001 | 1490560            | 1         | 7054            |
| 100PLE 3LN LA LB    | 1875                                     | 1796              | ZLSP950E100-3LNLALB | 2CCF212435A0001 | 1490584            | 1         | 7186            |
| 102PLE 3LN LA LB    | 1911                                     | 1832              | ZLSP950E102-3LNLALB | 2CCF212436A0001 | 1490607            | 1         | 7317            |
| 104PLE 3LN LA LB    | 1947                                     | 1868              | ZLSP950E104-3LNLALB | 2CCF212437A0001 | 1490621            | 1         | 7449            |
| 106PLE 3LN LA LB    | 1983                                     | 1904              | ZLSP950E106-3LNLALB | 2CCF212438A0001 | 1490645            | 1         | 7592            |
| 108PLE 3LN LA LB    | 2019                                     | 1940              | ZLSP950E108-3LNLALB | 2CCF212439A0001 | 1490669            | 1         | 7723            |
| 110PLE 3LN LA LB    | 2058                                     | 1979              | ZLSP950E110-3LNLALB | 2CCF212440A0001 | 1490683            | 1         | 7821            |

## Socket system Power Bar System 250 A

Socket base, Busbars for the sockets, Socket end piece

### Socket base

|                                                                                   | Description                                                   | Type name | ABB IT number   | EAN number 761 227 | Pack unit | Moduls (1 PLE 18mm) | Weight in grams |
|-----------------------------------------------------------------------------------|---------------------------------------------------------------|-----------|-----------------|--------------------|-----------|---------------------|-----------------|
|  | 6-module socket<br>Length 108 mm<br>(includes base and cover) | ZLSP906   | 2CCF212053A0001 | 148 7324           | 10        | 6                   | 113             |
|                                                                                   | 8-module socket<br>Length 144 mm<br>(includes base and cover) | ZLSP908   | 2CCF212052A0001 | 148 7300           | 10        | 8                   | 147             |

### Busbars for the sockets

|                                                                                     | Description                                                                           | Type name | ABB IT number   | EAN number 761 227 | Pack-aging unit | Module | Weight in grams |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------|-----------------|--------------------|-----------------|--------|-----------------|
|  | 250A busbar plated,<br>25x3 mm, for L1, L2, L3, N and PE<br>– Delivery length 1979 mm | ZLSP1250  | 2CCF212100M0110 | 148 8222           | 1               | 110    | 1343            |
|                                                                                     | 40A auxiliary busbar plated,<br>5x2 mm, for LA und LB<br>– Delivery length 1979 mm    | ZLS202    | 2CCF002773R0001 | 001 5719           | 10              | 110    | 240             |

### Socket end piece

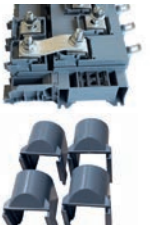
|                                                                                     | Description                                                                                | Type name | ABB IT number   | EAN number 761 227 | Pack-aging unit | Module | Weight in grams |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-----------|-----------------|--------------------|-----------------|--------|-----------------|
|  | End piece main socket ZLSP906 or ZLSP908 (Bag cont. 2 pcs.: 1 pc. left/ 1 pc. right)       | ZLSP920   | 2CCF212082A0001 | 148 7386           | 1               | 2      | 103             |
|                                                                                     | End piece additional socket ZLSP926 or ZLSP928 (Bag cont. 2 pcs.: 1 pc. left/ 1 pc. right) | ZLSP921   | 2CCF212085A0001 | 148 7409           | 1               | 2      | 54              |

## Socket system Power Bar System 250 A

### Incoming terminal block and component

#### Incoming block bolt-on solution M8 50mm<sup>2</sup> up to 150 mm or 4/0AWG for UL

This solution is only possible to mount on a ZLSP908 (not on ZLSP906, ZLS906, ZLS908)

|                                                                                     | Version                                                                                                                                                  | Type name      | ABB IT number   | EAN number<br>761 227 | Pack-aging<br>unit | Weight<br>in<br>grams |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|-----------------------|--------------------|-----------------------|
|   | Incoming terminal block<br>3L 8PLE left 250A                                                                                                             | ZLSP934-3L-1   | 2CCG000036R0001 | 150 6124              | 1                  | 300                   |
|                                                                                     | Incoming terminal block<br>3L+N 8PLE left 250A                                                                                                           | ZLSP934-3LN    | 2CCG000038R0001 | 150 6148              | 1                  | 300                   |
|                                                                                     | Incoming terminal block<br>3L 8PLE right 250A                                                                                                            | ZLSP934-3L-R-1 | 2CCG000039R0001 | 150 6155              | 1                  | 400                   |
|                                                                                     | Incoming terminal block<br>3L+N 8PLE right 250A                                                                                                          | ZLSP934-3LN-R  | 2CCG000041R0001 | 150 6179              | 1                  | 400                   |
|                                                                                     | Incoming terminal block additional<br>socket N PE left 250A 8PLE                                                                                         | ZLSP935-8NPE   | 2CCG000042R0001 | 150 6186              | 1                  | 200                   |
|                                                                                     | Incoming terminal block additional<br>socket PE left 250A 8PLE                                                                                           | ZLSP935-8PE    | 2CCG000043R0001 | 150 6193              | 1                  | 100                   |
|                                                                                     | Incoming terminal block additional<br>socket N PE right 250A 8PLE                                                                                        | ZLSP935-8NPE-R | 2CCG000046R0001 | 150 6223              | 1                  | 200                   |
|                                                                                     | Incoming terminal block additional<br>socket PE right 250A 8PLE                                                                                          | ZLSP935-8PE-R  | 2CCG000047R0001 | 150 6230              | 1                  | 100                   |
|  | <b>Covers for ZLSP934</b>                                                                                                                                |                |                 |                       |                    |                       |
|                                                                                     | Cover for Incoming terminal block 250A                                                                                                                   | ZLSP963        | 2CCG000051R0001 | 150 6278              | 1                  | 200                   |
|                                                                                     | <b>Connection N to N (Main socket to Additional socket)</b>                                                                                              |                |                 |                       |                    |                       |
|  | Connection to wire N from main socket<br>to additional socket. Can only be used for<br>M8 120mm². Feeding is only possible<br>from the main socket side. | ZLSP963N-N     | 2CCG000050R0001 | 150 6261              | 1                  | 50                    |
|                                                                                     | <b>Cover for wiring by using 2 rows</b>                                                                                                                  |                |                 |                       |                    |                       |
|                                                                                     | Cover for connection with the cables<br>on one terminal (Pac à 4 pcs)                                                                                    | ZLSP964        | 2CCG000207R0001 | 150 7541              | 1                  | 34                    |

#### Incoming terminal component 250A

| Version                                                                             | Type name                                      | ABB IT number | EAN number 761 227 | Pack-aging unit | Module | Weight in grams |
|-------------------------------------------------------------------------------------|------------------------------------------------|---------------|--------------------|-----------------|--------|-----------------|
|  | Feeder component N                             | ZLSP250       | 2CCV672600R0001    | 149 0782        | 1 2    | 112             |
|                                                                                     | Feeder component L1                            | ZLSP251       | 2CCV672601R0001    | 149 0805        | 1 2    | 112             |
|                                                                                     | Feeder component L2                            | ZLSP252       | 2CCV672602R0001    | 149 0829        | 1 2    | 112             |
|                                                                                     | Feeder component L3                            | ZLSP253       | 2CCV672603R0001    | 149 0843        | 1 2    | 112             |
|                                                                                     | Feeder component N additional socket           | ZLSP954       | 2CCV672608R0001    | 149 0867        | 1 2    | 100             |
|                                                                                     | Feeder component N additional socket (2 holes) | ZLSP954-1     | 2CCG000034R0001    | 150 6100        | 1 2    | 100             |
|                                                                                     | Feeder component PE additional socket          | ZLSP959       | 2CCV672609R0001    | 149 0881        | 1 2    | 100             |

#### Cover for Incoming block 250A

|                               |         |                 |          |   |   |    |
|-------------------------------|---------|-----------------|----------|---|---|----|
| Cover for Incoming block 250A | ZLSP25D | 2CCA183484R0001 | 150 1426 | 1 | 2 | 23 |
|-------------------------------|---------|-----------------|----------|---|---|----|

## Socket system Power Bar System 250 A

### Additonal socket

#### Additional socket

The additional socket can easily be fitted onto the socket base to accomodate the external N and/or PE busbars. This enables neutral connections to be made where single-pole miniature circuit breakers are used with unswitched neutral.

Neutral terminals are clipped onto the additional socket and can be used as detachable neutral connections. One N busbar and/or one PE busbar can be fitted. Each socket base can be equipped with an additional socket.

#### Additional socket for external N and PE busbars

|                                                                                   |                                                  | Type name | ABB IT number   | EAN number 761 227 | Pack-aging unit | Module | Weight in grams |
|-----------------------------------------------------------------------------------|--------------------------------------------------|-----------|-----------------|--------------------|-----------------|--------|-----------------|
|  | – 8-module socket (suitable for 8-module socket) | ZLSP928   | 2CCF212060A0001 | 148 7348           | 10              | 8      | 67              |
|                                                                                   | – 6-module socket (suitable for 6-module socket) | ZLSP926   | 2CCF212061A0001 | 148 7362           | 10              | 6      | 53              |

#### Busbar insulator

|                                                                                     |                                                                           | Type name | ABB IT number   | EAN number 761 227 | Pack-aging unit | Module | Weight in grams |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------|-----------------|--------------------|-----------------|--------|-----------------|
|  | dark grey, 20 for isolation and spacing of separate busbar sections, 18mm | ZLS938    | 2CCA205611R0001 | 141 8205           | 1               | 1      | 1               |

#### Busbar cover

|                                                                                     |                                                                                                                                                                                 | Type name | ABB IT number   | EAN number 761 227 | Pack-aging unit | Module | Weight in grams |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------|--------------------|-----------------|--------|-----------------|
|  | electrically protected covering of main and auxiliary busbars. The 4 modules cover can be divided. Suitable to accept extension adapter ZLS 101 4x18mm – bag containing 5 items | ZLS100    | 2CCF002762R0001 | 001 5603           | 1               | 1      | 95              |
|  | DIN rail Clip for ZLSP926 and ZLSP928. This item is need if the additional socket will be mounted on a DIN rail. 1 pcs. every 30cm                                              | ZLSP937   | 2CCA212012R0001 | 498 306            | Bag of 5        | –      | 18              |



## Socket system Power Bar System 250 A

### Busbars 40 A and 250 A

250 A and 40 A busbars / selection table for sockets

| Order data<br>busbar<br>250 A | ABB<br>IT number | EAN<br>number<br>761227 | ZLSP908 | ZLSP906 | Pack<br>unit | Moduls<br>(1 PLE<br>18mm) | Weight<br>in<br>grams | Busbar<br>length<br>in mm | Order data<br>busbar<br>40 A | ABB<br>IT number | EAN<br>number<br>761 227 |
|-------------------------------|------------------|-------------------------|---------|---------|--------------|---------------------------|-----------------------|---------------------------|------------------------------|------------------|--------------------------|
| ZLSP1250E30                   | 2CCF212100M0030  | 148 7423                | 3       | 1       | 1            | 30                        | 366                   | 535                       | ZLS203E30                    | 2CCF800229R0001  | 001 7669                 |
| ZLSP1250E32                   | 2CCF212100M0032  | 148 7447                | 4       | –       | 1            | 32                        | 391                   | 571                       | ZLS203E32                    | 2CCF800230R0001  | 001 7683                 |
| ZLSP1250E34                   | 2CCF212100M0034  | 148 7461                | 2       | 3       | 1            | 34                        | 415                   | 607                       | ZLS203E34                    | 2CCF800231R0001  | 001 7706                 |
| ZLSP1250E36                   | 2CCF212100M0036  | 148 7485                | 3       | 2       | 1            | 36                        | 439                   | 643                       | ZLS203E36                    | 2CCF800232R0001  | 001 7720                 |
| ZLSP1250E38                   | 2CCF212100M0038  | 148 7508                | 4       | 1       | 1            | 38                        | 464                   | 679                       | ZLS203E38                    | 2CCF800233R0001  | 001 7744                 |
| ZLSP1250E40                   | 2CCF212100M0040  | 148 7522                | 5       | –       | 1            | 40                        | 488                   | 715                       | ZLS203E40                    | 2CCF800234R0001  | 001 7768                 |
| ZLSP1250E42                   | 2CCF212100M0042  | 148 7546                | 3       | 3       | 1            | 42                        | 513                   | 751                       | ZLS203E42                    | 2CCF800235R0001  | 001 7782                 |
| ZLSP1250E44                   | 2CCF212100M0044  | 148 7560                | 4       | 2       | 1            | 44                        | 537                   | 787                       | ZLS203E44                    | 2CCF800236R0001  | 001 7805                 |
| ZLSP1250E46                   | 2CCF212100M0046  | 148 7584                | 5       | 1       | 1            | 46                        | 561                   | 823                       | ZLS203E46                    | 2CCF800237R0001  | 001 7829                 |
| ZLSP1250E48                   | 2CCF212100M0048  | 148 7607                | 6       | –       | 1            | 48                        | 586                   | 859                       | ZLS203E48                    | 2CCF800238R0001  | 001 7843                 |
| ZLSP1250E50                   | 2CCF212100M0050  | 148 7621                | 4       | 3       | 1            | 50                        | 610                   | 895                       | ZLS203E50                    | 2CCF800239R0001  | 001 7867                 |
| ZLSP1250E52                   | 2CCF212100M0052  | 148 7645                | 5       | 2       | 1            | 52                        | 635                   | 932                       | ZLS203E52                    | 2CCF800240R0001  | 001 7881                 |
| ZLSP1250E54                   | 2CCF212100M0054  | 148 7669                | 6       | 1       | 1            | 54                        | 659                   | 968                       | ZLS203E54                    | 2CCF800241R0001  | 001 7904                 |
| ZLSP1250E56                   | 2CCF212100M0056  | 148 7683                | 7       | –       | 1            | 56                        | 683                   | 1004                      | ZLS203E56                    | 2CCF800242R0001  | 001 7928                 |
| ZLSP1250E58                   | 2CCF212100M0058  | 148 7706                | 5       | 3       | 1            | 58                        | 708                   | 1040                      | ZLS203E58                    | 2CCF800243R0001  | 001 7942                 |
| ZLSP1250E60                   | 2CCF212100M0060  | 148 7720                | 6       | 2       | 1            | 60                        | 732                   | 1076                      | ZLS203E60                    | 2CCF800244R0001  | 001 7973                 |
| ZLSP1250E62                   | 2CCF212100M0062  | 148 7744                | 7       | 1       | 1            | 62                        | 757                   | 1112                      | ZLS203E62                    | 2CCF800245R0001  | 001 7997                 |
| ZLSP1250E64                   | 2CCF212100M0064  | 148 7768                | 8       | –       | 1            | 64                        | 781                   | 1148                      | ZLS203E64                    | 2CCF800246R0001  | 001 8017                 |
| ZLSP1250E66                   | 2CCF212100M0066  | 148 7782                | 6       | 3       | 1            | 66                        | 806                   | 1184                      | ZLS203E66                    | 2CCF800247R0001  | 001 8031                 |
| ZLSP1250E68                   | 2CCF212100M0068  | 148 7805                | 7       | 2       | 1            | 68                        | 830                   | 1220                      | ZLS203E68                    | 2CCF800248R0001  | 001 8055                 |
| ZLSP1250E70                   | 2CCF212100M0070  | 148 7829                | 8       | 1       | 1            | 70                        | 854                   | 1256                      | ZLS203E70                    | 2CCF800249R0001  | 001 8079                 |
| ZLSP1250E72                   | 2CCF212100M0072  | 148 7843                | 9       | –       | 1            | 72                        | 879                   | 1292                      | ZLS203E72                    | 2CCF800250R0001  | 001 8093                 |
| ZLSP1250E74                   | 2CCF212100M0074  | 148 7867                | 7       | 3       | 1            | 74                        | 903                   | 1328                      | ZLS203E74                    | 2CCF800251R0001  | 001 8116                 |
| ZLSP1250E76                   | 2CCF212100M0076  | 148 7881                | 8       | 2       | 1            | 76                        | 928                   | 1364                      | ZLS203E76                    | 2CCF800252R0001  | 001 8130                 |
| ZLSP1250E78                   | 2CCF212100M0078  | 148 7904                | 9       | 1       | 1            | 78                        | 952                   | 1400                      | ZLS203E78                    | 2CCF800253R0001  | 001 8154                 |
| ZLSP1250E80                   | 2CCF212100M0080  | 148 7928                | 10      | –       | 1            | 80                        | 976                   | 1436                      | ZLS203E80                    | 2CCF800254R0001  | 001 8185                 |
| ZLSP1250E82                   | 2CCF212100M0082  | 148 7942                | 8       | 3       | 1            | 82                        | 1001                  | 1472                      | ZLS203E82                    | 2CCF800255R0001  | 001 8208                 |
| ZLSP1250E84                   | 2CCF212100M0084  | 148 7966                | 9       | 2       | 1            | 84                        | 1025                  | 1508                      | ZLS203E84                    | 2CCF800256R0001  | 001 8222                 |
| ZLSP1250E86                   | 2CCF212100M0086  | 148 7980                | 10      | 1       | 1            | 86                        | 1050                  | 1544                      | ZLS203E86                    | 2CCF800257R0001  | 001 8246                 |
| ZLSP1250E88                   | 2CCF212100M0088  | 148 8000                | 11      | –       | 1            | 88                        | 1074                  | 1580                      | ZLS203E88                    | 2CCF800258R0001  | 001 8260                 |
| ZLSP1250E90                   | 2CCF212100M0090  | 148 8024                | 9       | 3       | 1            | 90                        | 1098                  | 1616                      | ZLS203E90                    | 2CCF800259R0001  | 001 8284                 |
| ZLSP1250E92                   | 2CCF212100M0092  | 148 8048                | 10      | 2       | 1            | 92                        | 1123                  | 1652                      | ZLS203E92                    | 2CCF800260R0001  | 001 8307                 |
| ZLSP1250E94                   | 2CCF212100M0094  | 148 8062                | 11      | 1       | 1            | 94                        | 1147                  | 1688                      | ZLS203E94                    | 2CCF800261R0001  | 001 8321                 |
| ZLSP1250E96                   | 2CCF212100M0096  | 148 8086                | 12      | –       | 1            | 96                        | 1172                  | 1724                      | ZLS203E96                    | 2CCF800262R0001  | 001 8345                 |
| ZLSP1250E98                   | 2CCF212100M0098  | 148 8109                | 10      | 3       | 1            | 98                        | 1196                  | 1760                      | ZLS203E98                    | 2CCF800263R0001  | 001 8369                 |
| ZLSP1250E100                  | 2CCF212100M0100  | 148 8123                | 11      | 2       | 1            | 100                       | 1220                  | 1796                      | ZLS203E100                   | 2CCF800264R0001  | 001 7195                 |
| ZLSP1250E102                  | 2CCF212100M0102  | 148 8147                | 12      | 1       | 1            | 102                       | 1245                  | 1832                      | ZLS203E102                   | 2CCF800265R0001  | 001 7218                 |
| ZLSP1250E104                  | 2CCF212100M0104  | 148 8161                | 13      | –       | 1            | 104                       | 1269                  | 1868                      | ZLS203E104                   | 2CCF800266R0001  | 001 7232                 |
| ZLSP1250E106                  | 2CCF212100M0106  | 148 8185                | 11      | 3       | 1            | 106                       | 1294                  | 1904                      | ZLS203E106                   | 2CCF800267R0001  | 001 7256                 |
| ZLSP1250E108                  | 2CCF212100M0108  | 148 8208                | 12      | 2       | 1            | 108                       | 1318                  | 1940                      | ZLS203E108                   | 2CCF800268R0001  | 001 7270                 |

Planning for the incorporation of feeder block and spare places should be taken into account.  
The total lengths given above were calculated taking socket spacings and tolerances into account.  
For this reason, the indicated busbar length is not necessarily a multiple of 18 mm (1 Module).



## Busbar system 250 A

### Direct feed

XT4D can be used with Power Bar DF in series with a MCCB Type XT4 for the published  $I_{cc}$ .

If XT5 is used upstream

$I_{cc}$  will be lower

- Thermal protection of the system shall be given ( $I_{th}$  250 A)
- Different coordination with outgoing circuits

#### Direct Feed 250A



|                                                                       |                                                      |
|-----------------------------------------------------------------------|------------------------------------------------------|
| Number of poles                                                       | 32 to 80<br>3p+N/2 additional bars PE+N              |
| Rated operational voltage ( $U_e$ )                                   | 690VAC, 1000VDC<br>(400V for LA, LB busbars)         |
| Rated insulation voltage ( $U_i$ )                                    | 690VAC, 1000VDC                                      |
| IP Code                                                               | IP20B                                                |
| Pollution degree                                                      | 3 (690V a.c.) 2 (1000V d.c.)                         |
| Rated impulse voltage ( $U_{imp}$ )                                   | 8 kV (L1L2L3N)                                       |
| Rated current of the assembly ( $I_{nA}$ )                            | 250 A                                                |
| Rated current of a circuit ( $I_{nc}$ ): main circuit                 | Max. 250 A                                           |
| Rated current of Auxiliary circuit                                    | 40 A                                                 |
| Rated short-time withstand current ( $I_{cw}$ )                       | 15 kA/100ms Main circuit, 4kA/50ms Auxiliary circuit |
| Rated peak withstand current Main circuit ( $I_{pk}$ )                | 30 kA                                                |
| Rated peak withstand current Auxiliary circuit ( $I_{pk}$ )           | 6 kA                                                 |
| Rated frequency (f)                                                   | 50/60Hz                                              |
| Rated conditional short-circuit current ( $I_{cc}$ ): see table below |                                                      |
| Ambient air temperature                                               | max. 60°C                                            |
| Size of CU bars 3P+N+PE                                               | 3 x 25 mm (75 mm <sup>2</sup> )                      |
| Size of CU auxiliary bars La Lb                                       | 2 x 5 mm (10 mm <sup>2</sup> )                       |
| Environmental conditions (damp heat)                                  | 1 cycle with 55°C/90...96% and 25°C/95...100%        |

| Voltage (VAC) | Rated conditional short-circuit current ( $I_{cc}$ ) | Incoming current of main busbars (L1, L2, L3, N) | Short circuit protection device (SCPD) |
|---------------|------------------------------------------------------|--------------------------------------------------|----------------------------------------|
| 415 V         | 100 kA                                               | 250 A                                            | ABB                                    |
| 690 V         | 25 kA                                                | 250 A                                            | Tmax XT4 250 A                         |

Technical data data UL508; Approvals for US and CA: cULus  
Direct Feed 250A

| SMISSLINE TP system for UL 508 – Industrial Control Equipment, CSA C22.2 No. 14 – Industrial Control Equipment UL File E222110 | Control Equipment UL File E222110        |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|
| UL Rated Voltage                                                                                                               | 600 VAC                                  |
| UL Rated Current (End Feed)                                                                                                    | 250 A                                    |
| UL Short Circuit Rating                                                                                                        | 50 kA (480V), 35 kA (600V) with XT4 250A |

## Busbar system 250 A

### Direct feed

#### Ordering data

|                                                                                    |                                                                                    | Solutions available          | Type name        | ABB IT number   | EAN number 761 227 | Pack unit | Moduls (1 PLE 18mm) | Weight in grams |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------|------------------|-----------------|--------------------|-----------|---------------------|-----------------|
|  |  | Direct Feed 3L 32 PLE left   | ZLSP960-3L-32-L  | 2CCG000155R0001 | 150 7022           | 1         | 32                  | 2868            |
|                                                                                    |                                                                                    | Direct Feed 3LN 32 PLE left  | ZLSP960-3LN-32-L | 2CCG000156R0001 | 150 7039           | 1         | 32                  | 4258            |
|                                                                                    |                                                                                    | Direct Feed 3L 32 PLE right  | ZLSP960-3L-32-R  | 2CCG000157R0001 | 150 7046           | 1         | 32                  | 3258            |
|                                                                                    |                                                                                    | Direct Feed 3LN 32 PLE right | ZLSP960-3LN-32-R | 2CCG000158R0001 | 150 7053           | 1         | 32                  | 4258            |
|                                                                                    |                                                                                    | Direct Feed 3L 40 PLE left   | ZLSP960-3L-40-L  | 2CCG000159R0001 | 150 7060           | 1         | 40                  | 3308            |
|                                                                                    |                                                                                    | Direct Feed 3LN 40 PLE left  | ZLSP960-3LN-40-L | 2CCG000160R0001 | 150 7077           | 1         | 40                  | 4796            |
|                                                                                    |                                                                                    | Direct Feed 3L 40 PLE right  | ZLSP960-3L-40-R  | 2CCG000161R0001 | 150 7084           | 1         | 40                  | 3308            |
|                                                                                    |                                                                                    | Direct Feed 3LN 40 PLE right | ZLSP960-3LN-40-R | 2CCG000162R0001 | 150 7091           | 1         | 40                  | 4796            |
|                                                                                    |                                                                                    | Direct Feed 3L 48 PLE left   | ZLSP960-3L-48-L  | 2CCG000163R0001 | 150 7107           | 1         | 48                  | 3747            |
|                                                                                    |                                                                                    | Direct Feed 3LN 48 PLE left  | ZLSP960-3LN-48-L | 2CCG000164R0001 | 150 7114           | 1         | 48                  | 5333            |
|                                                                                    |                                                                                    | Direct Feed 3L 48 PLE right  | ZLSP960-3L-48-R  | 2CCG000165R0001 | 150 7121           | 1         | 48                  | 3747            |
|                                                                                    |                                                                                    | Direct Feed 3LN 48 PLE right | ZLSP960-3LN-48-R | 2CCG000166R0001 | 150 7138           | 1         | 48                  | 5333            |
|                                                                                    |                                                                                    | Direct Feed 3L 56 PLE left   | ZLSP960-3L-56-L  | 2CCG000167R0001 | 150 7145           | 1         | 56                  | 4187            |
|                                                                                    |                                                                                    | Direct Feed 3LN 56 PLE left  | ZLSP960-3LN-56-L | 2CCG000168R0001 | 150 7152           | 1         | 56                  | 5871            |
|                                                                                    |                                                                                    | Direct Feed 3L 56 PLE right  | ZLSP960-3L-56-R  | 2CCG000169R0001 | 150 7169           | 1         | 56                  | 4187            |
|                                                                                    |                                                                                    | Direct Feed 3LN 56 PLE right | ZLSP960-3LN-56-R | 2CCG000170R0001 | 150 7176           | 1         | 56                  | 5871            |
|                                                                                    |                                                                                    | Direct Feed 3L 64 PLE left   | ZLSP960-3L-64-L  | 2CCG000171R0001 | 150 7183           | 1         | 64                  | 4627            |
|                                                                                    |                                                                                    | Direct Feed 3LN 64 PLE left  | ZLSP960-3LN-64-L | 2CCG000172R0001 | 150 7190           | 1         | 64                  | 6408            |
|                                                                                    |                                                                                    | Direct Feed 3L 64 PLE right  | ZLSP960-3L-64-R  | 2CCG000173R0001 | 150 7206           | 1         | 64                  | 4627            |
|                                                                                    |                                                                                    | Direct Feed 3LN 64 PLE right | ZLSP960-3LN-64-R | 2CCG000174R0001 | 150 7213           | 1         | 64                  | 6408            |
|                                                                                    |                                                                                    | Direct Feed 3L-66 left       | ZLSP960-3L-66-L  | 2CCG000175R0001 | 150 7220           | 1         | 66                  | 4746            |
|                                                                                    |                                                                                    | Direct Feed 3LN-66 left      | ZLSP960-3LN-66-L | 2CCG000176R0001 | 150 7237           | 1         | 66                  | 6551            |
|                                                                                    |                                                                                    | Direct Feed 3L-66 right      | ZLSP960-3L-66-R  | 2CCG000177R0001 | 150 7244           | 1         | 66                  | 4746            |
|                                                                                    |                                                                                    | Direct Feed 3LN-66 right     | ZLSP960-3LN-66-R | 2CCG000178R0001 | 150 7251           | 1         | 68                  | 6551            |
|                                                                                    |                                                                                    | Direct Feed 3L 68 PLE left   | ZLSP960-3L-68-L  | 2CCG000179R0001 | 150 7268           | 1         | 68                  | 4853            |
|                                                                                    |                                                                                    | Direct Feed 3LN 68 PLE left  | ZLSP960-3LN-68-L | 2CCG000180R0001 | 150 7275           | 1         | 68                  | 6683            |
|                                                                                    |                                                                                    | Direct Feed 3L 68 PLE right  | ZLSP960-3L-68-R  | 2CCG000181R0001 | 150 7282           | 1         | 68                  | 4853            |
|                                                                                    |                                                                                    | Direct Feed 3LN 68 PLE right | ZLSP960-3LN-68-R | 2CCG000182R0001 | 150 7299           | 1         | 70                  | 6683            |
|                                                                                    |                                                                                    | Direct Feed 3L 70 PLE left   | ZLSP960-3L-70-L  | 2CCG000183R0001 | 150 7305           | 1         | 70                  | 4960            |
|                                                                                    |                                                                                    | Direct Feed 3LN 70 PLE left  | ZLSP960-3LN-70-L | 2CCG000184R0001 | 150 7312           | 1         | 70                  | 6814            |
|                                                                                    |                                                                                    | Direct Feed 3L 70 PLE right  | ZLSP960-3L-70-R  | 2CCG000185R0001 | 150 7329           | 1         | 70                  | 4960            |
|                                                                                    |                                                                                    | Direct Feed 3LN 70 PLE right | ZLSP960-3LN-70-R | 2CCG000186R0001 | 150 7336           | 1         | 72                  | 6814            |
|                                                                                    |                                                                                    | Direct Feed 3L 72 PLE left   | ZLSP960-3L-72-L  | 2CCG000187R0001 | 150 7343           | 1         | 72                  | 5067            |
|                                                                                    |                                                                                    | Direct Feed 3LN 72 PLE left  | ZLSP960-3LN-72-L | 2CCG000188R0001 | 150 7350           | 1         | 72                  | 6946            |
|                                                                                    |                                                                                    | Direct Feed 3L 72 PLE right  | ZLSP960-3L-72-R  | 2CCG000189R0001 | 150 7367           | 1         | 72                  | 5067            |
|                                                                                    |                                                                                    | Direct Feed 3LN 72 PLE right | ZLSP960-3LN-72-R | 2CCG000190R0001 | 150 7374           | 1         | 74                  | 6946            |
|                                                                                    |                                                                                    | Direct Feed 3L-74 left       | ZLSP960-3L-74-L  | 2CCG000191R0001 | 150 7381           | 1         | 74                  | 5185            |
|                                                                                    |                                                                                    | Direct Feed 3LN-74 left      | ZLSP960-3LN-74-L | 2CCG000192R0001 | 150 7398           | 1         | 74                  | 7089            |
|                                                                                    |                                                                                    | Direct Feed 3L-74 right      | ZLSP960-3L-74-R  | 2CCG000193R0001 | 150 7404           | 1         | 74                  | 5185            |
|                                                                                    |                                                                                    | Direct Feed 3LN-74 right     | ZLSP960-3LN-74-R | 2CCG000194R0001 | 150 7411           | 1         | 76                  | 7089            |
|                                                                                    |                                                                                    | Direct Feed 3L-76 left       | ZLSP960-3L-76-L  | 2CCG000195R0001 | 150 7428           | 1         | 76                  | 5293            |
|                                                                                    |                                                                                    | Direct Feed 3LN-76 left      | ZLSP960-3LN-76-L | 2CCG000196R0001 | 150 7435           | 1         | 76                  | 7220            |
|                                                                                    |                                                                                    | Direct Feed 3L-76 right      | ZLSP960-3L-76-R  | 2CCG000197R0001 | 150 7442           | 1         | 76                  | 5293            |
|                                                                                    |                                                                                    | Direct Feed 3LN-76 right     | ZLSP960-3LN-76-R | 2CCG000198R0001 | 150 7459           | 1         | 78                  | 7220            |
|                                                                                    |                                                                                    | Direct Feed 3L 78 PLE left   | ZLSP960-3L-78-L  | 2CCG000644R0001 | 151 1234           | 1         | 78                  | 5400            |
|                                                                                    |                                                                                    | Direct Feed 3LN 78 PLE left  | ZLSP960-3LN-78-L | 2CCG000200R0001 | 150 7473           | 1         | 78                  | 7352            |
|                                                                                    |                                                                                    | Direct Feed 3L 78 PLE right  | ZLSP960-3L-78-R  | 2CCG000645R0001 | 151 1241           | 1         | 78                  | 5400            |
|                                                                                    |                                                                                    | Direct Feed 3LN 78 PLE right | ZLSP960-3LN-78-R | 2CCG000202R0001 | 150 7497           | 1         | 80                  | 7352            |
|                                                                                    |                                                                                    | Direct Feed 3L 80 PLE left   | ZLSP960-3L-80-L  | 2CCG000203R0001 | 150 7503           | 1         | 80                  | 5507            |
|                                                                                    |                                                                                    | Direct Feed 3LN 80 PLE left  | ZLSP960-3LN-80-L | 2CCG000204R0001 | 150 7510           | 1         | 80                  | 7483            |
|                                                                                    |                                                                                    | Direct Feed 3L 80 PLE right  | ZLSP960-3L-80-R  | 2CCG000205R0001 | 150 7527           | 1         | 80                  | 5507            |
|                                                                                    |                                                                                    | Direct Feed 3LN 80 PLE right | ZLSP960-3LN-80-R | 2CCG000206R0001 | 150 7534           | 1         | 80                  | 7483            |



# Busbar system 250 A

Direct feed Accessories



Ordering data

|                                                                                   | Solutions available                                                  | Type name     | ABB IT number   | EAN number 761 227 | Pack unit | Weight in grams |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------|-----------------|--------------------|-----------|-----------------|
|  | Screws (only fro replacement, allscrees are included in direct feed) | ZLSP960screw  | 2CCG000361R0001 | 150 8401           |           | 55              |
|                                                                                   | Heatsink 3L                                                          | ZLSP960HS-3L  | 2CCG000736R0001 | 151 2446           | 1         | 197             |
|                                                                                   | Heatsink 3LN                                                         | ZLSP960HS-3LN | 2CCG000739R0001 | 151 2453           | 1         | 262             |
|  |                                                                      |               |                 |                    |           |                 |
|  |                                                                      |               |                 |                    |           |                 |

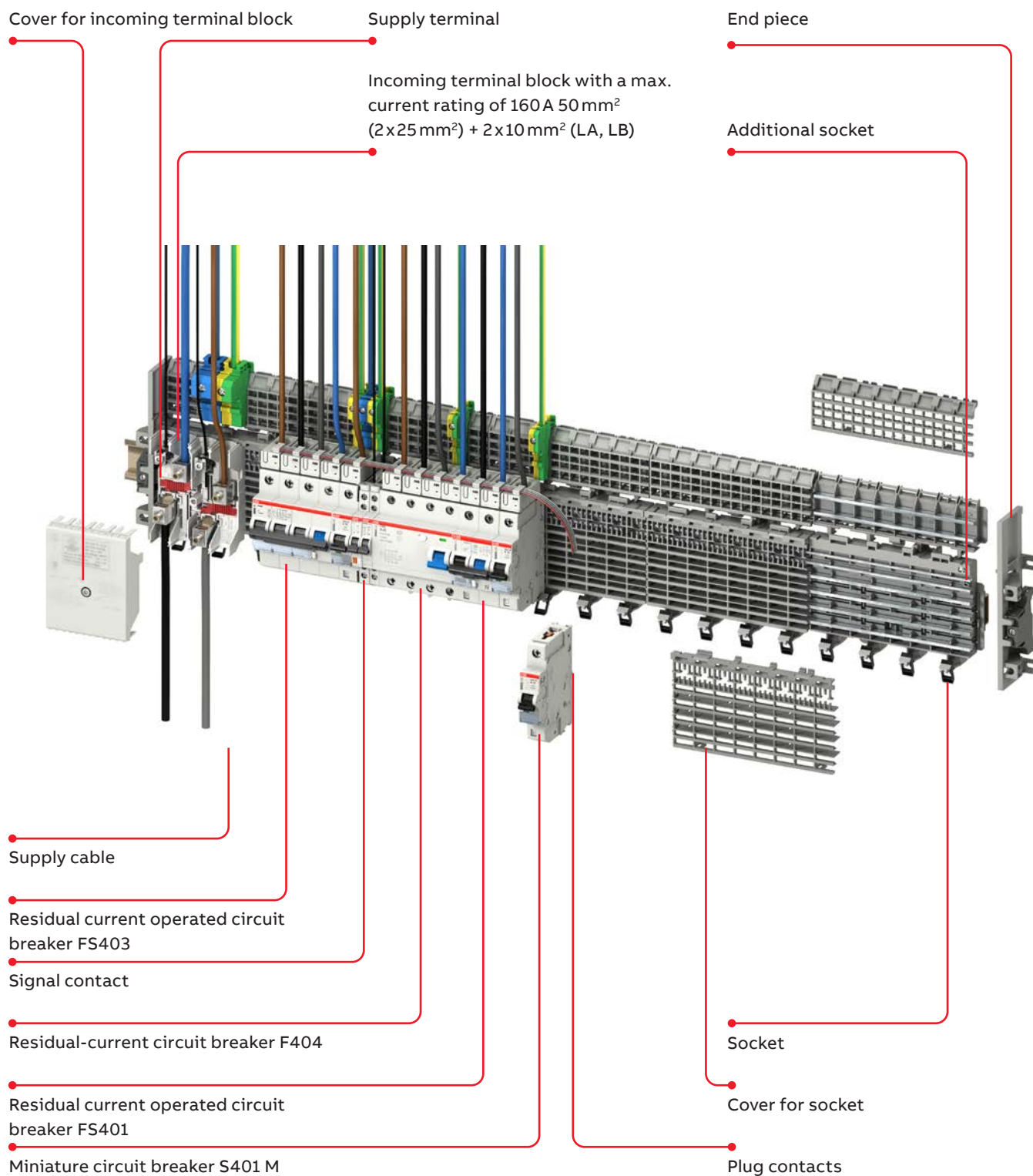


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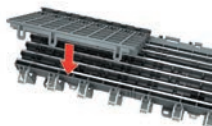
# Smissline TP technical details

## Busbar system 125A Overview



## Smissline TP technical details

### Busbar system 125 A



#### Socket bases ZLS906, ZLS908

The smissline socket system is a totally new kind of assembly and connection technology for the construction of distributions. Besides the classic method of snapping the devices onto 35-mm mounting rails, the new family of devices can be directly attached to the socket bases with integrated busbars. The time-consuming process of connecting up the supply is thereby no longer needed. In addition, in the event of rearrangement or expansion, the replacement of devices in existing systems is made significantly easier.



The socket sections and the wide range of accessories make it possible to plan with the capability for expansion and to construct distribution systems of any desired size in a short period of time.

6- and 8-module sockets are installed either by screwing them onto any flat surface or by snapping them onto a 35 mm DIN mounting rail. Lateral movement or detachment of the sockets again is possible before final fixing.

- In order to determine the required socket length, the space necessary for
- the devices required
- the incoming terminal block and
- any reserve spaces needed must be determined.



#### Snap mounting

Pull down the slide with a screwdriver until it latches (socket can be moved).

Press on front of slid:

Fixed position

(Sockets fixed)



#### The key features

- System of any desired length (even number of poles)
- Integrated busbars
- Simple device change
- Long-term planning and problem free extension possible
- Significant time savings during assembly and connection



#### Busbars for the sockets and additional socket ZLS200

The busbars of size 10x3mm can be loaded with currents up to 125A. They are plated for perfect contact with the devices plug-in contacts. The maximum available busbar length is 1979 mm. The same busbar type is used, regardless whether it is fitted in the socket (L1, L2, L3, N) or in the additional socket (N, PE). The busbars are inserted in to the socket from the front.

#### Auxiliary busbars for the socket ZLS202

The 5x2mm auxiliary busbars are intended for a common power supply of auxiliary switches and signal contacts. They are also plated and their max. delivery length is 1979 mm.

Like the main busbars, the auxiliary busbars are inserted in holders LA and LB from the front. Of course, only on auxiliary busbar can be fitted.

## Smissline TP technical details

### Busbar system 125 A Incoming



#### Incoming terminal blocks ZLS260 to 262

Compact terminal block with the construction width of 18 mm for 2 poles. The maximum rated current is 63 A for L1, L2, L3N and 6 A for LA, LB.

#### General

The incoming terminal block is used to connect cables directly to the busbars. The terminals act directly on the busbars and therefore fix the incoming terminal block. Removable terminal tops permit the connection of continuous conductors (risers) while horizontal or vertical cable entry is also possible.

Instead of using the incoming terminal block, the power supply can also be realized via a device (e.g. residual current operated circuit breaker, miniature circuit breaker or switch disconnector).



#### Incoming terminal blocks ZLS924

A standard incoming terminal block whose cover provides protection against accidental contact.

Construction height 50 mm. The base plate can be fitted with a maximum of 4 main terminals L1, L2, L3 and N for the busbars, and 2 auxiliary terminals LA and LB for the auxiliary busbars.



#### Feed block left and right

In order to prevent the cables from crossing when two sockets rows are connected it is a good solution to use a left and a right incoming block (see photo).



#### Incoming terminal component ZLS250 to 255

The incoming terminal component, with an installation width of 36 mm is available as a single-pole component for the line conductors L1, L2, L3 and as neutral. The terminals act directly on the busbars and thereby fix the incoming terminal component. The incoming terminal component, L1, L2, L3 and N can be combined to meet specific needs. A maximum cable cross-section of 95 mm<sup>2</sup> can be connected to the incoming terminal component.



#### Incoming bolt-on solution M8 50 mm<sup>2</sup> up to 150 mm or 4/0AWG up to 250 kcmil

This Incoming block can be used for side feed Incoming with 250 A for IEC and UL applications. It is an bolt-on solution for a connection up to 150 mm<sup>2</sup>. For a safe and strong connection to Incoming molded case circuit breaker upstream. Can only be used for the 250 A Power Bar System.



## Smissline TP technical details

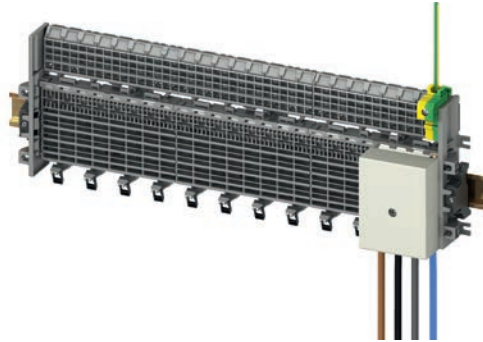
### Busbar system 125A Incoming IEC

—  
01 and 02 Power supply left or right, maximum 125A.

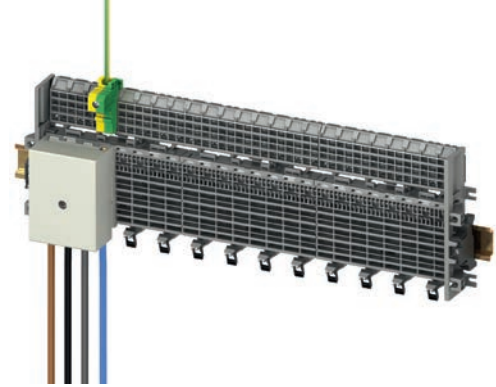
—  
03 Power supply in centre, maximum 160A. A maximum of 125A is permitted on either side. A total of 160A must not be exceeded.

—  
04 Incoming maximum 63A for this incoming block.

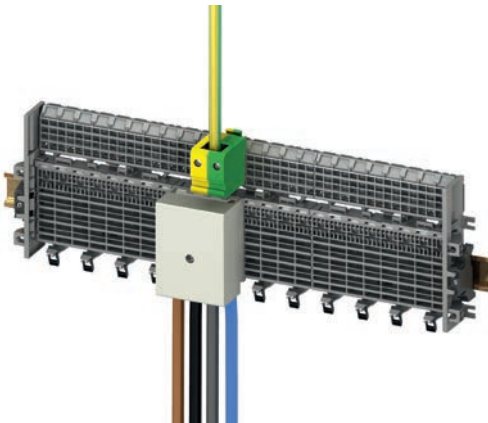
—  
05 Incoming terminal component, in centre, maximum 200A. But on each side not more than 125A.



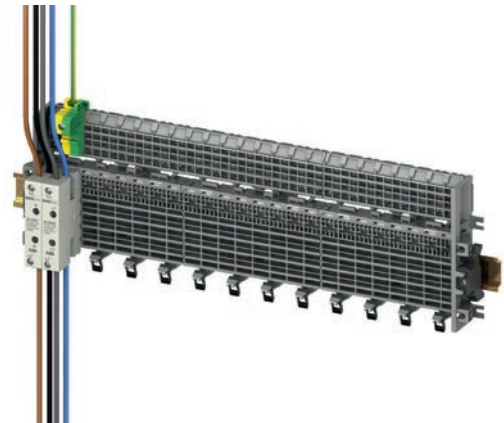
01



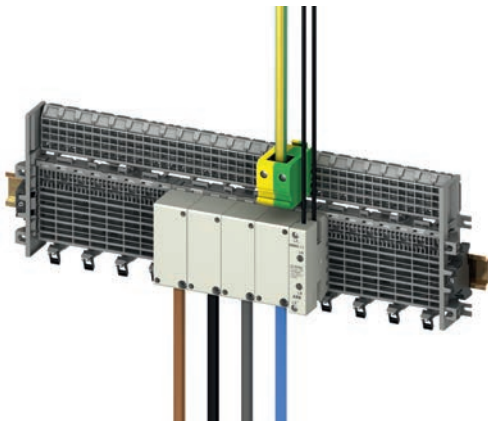
02



03



04

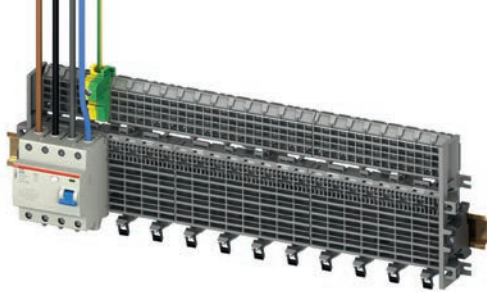


05



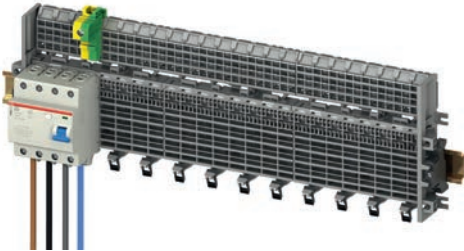
## Technical details

### Busbar system power supply



#### Indirect supply via residual current operated circuit breaker (RCCB) (or switch disconnector)

The supply cable is connected at the top of the RCCB. This supply variant gives the busbars and therefore all subsequent devices RCCB protection. If several RCCB groups are planned, the busbars should be separated and spaced using the dark grey busbar insulator ZLS938. Attention must then be paid to the regulations governing protection of the residual current circuit breaker by subsequent miniature circuit breakers. The supply can also be fed in through the switch disconnector.



#### Direct supply to residual current operated circuit breaker (or switch disconnector)

Instead of using the incoming terminal block, the power can also be supplied via a device.

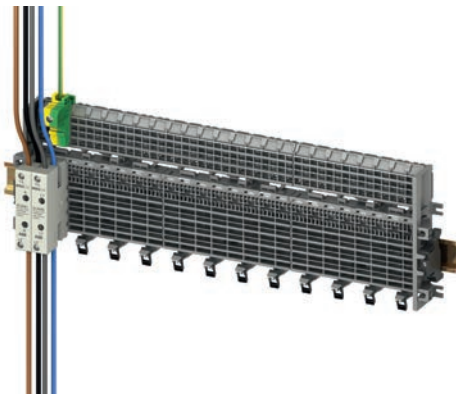
In this case, the supply cable is connected to the lower terminal of the device. The residual current operated circuit breaker or switch disconnector can be supplied with 63 A regardless of its rated current, since the plug-in connection arrangement of the device is suitable for this amount of current.

For current in excess of 63 A, the incoming terminal block or the incoming terminal component should be used.



#### Supply of auxiliary busbars LA and LB

The two auxiliary busbars LA and LB can be supplied using the additional terminal ZLS 233 via an incoming terminal block. The maximum operating current of the auxiliary busbars is 40 A.



#### Incoming block for two auxiliary busbars LA, LB

The pluggable incoming block is especially for the two auxiliary busbars LA, LB. The maximum rated current is 6 A.

## Power supply SMISLINE TP Power Bar System 250 A

IEC/EN 61439-6

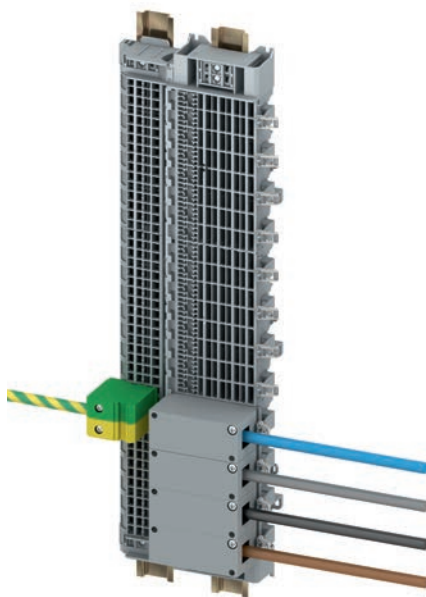
01 Power supply side feed, (ZLSP25X, ZLSP95X) with terminals for 50 mm<sup>2</sup> up to 120 mm<sup>2</sup> litze wire with ferrule, max. 1 wire, 10 mm<sup>2</sup> – 25 mm<sup>2</sup> two wires, 250 A

02 Ring terminal solution M8, 50 mm<sup>2</sup> up to 150 mm<sup>2</sup> are possible. It is possible to run the connection cable through several SMISLINE socket rows.

03 Central feed 400 A total. The cables in the connections must have the same length. For 400 A Incoming for upstream protection are two fuses or XT breaker necessary.

### Two power supply solution are possible for the 250A SMISLINE TP System:

- Solution one is the 144 mm (8PLE) wide ring terminal solution (ZLSP934). This is directly attached to the Power Bar socket ZLSP908. The connection is made via ring terminal M8. It is possible to run the connection cable through several SMISLINE socket rows.
- Solution two are the incoming terminal component (ZLSP25X, ZLSP95X) with terminals for 50 mm<sup>2</sup> up to 120 mm<sup>2</sup>



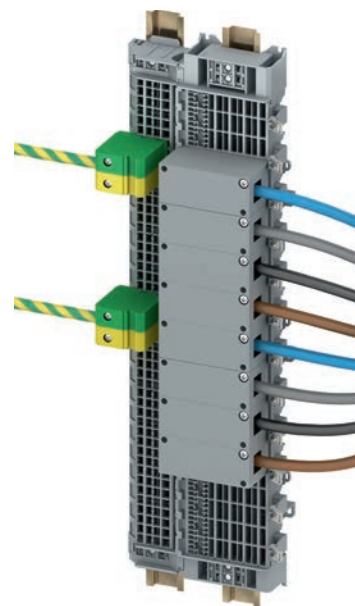
01



02



03

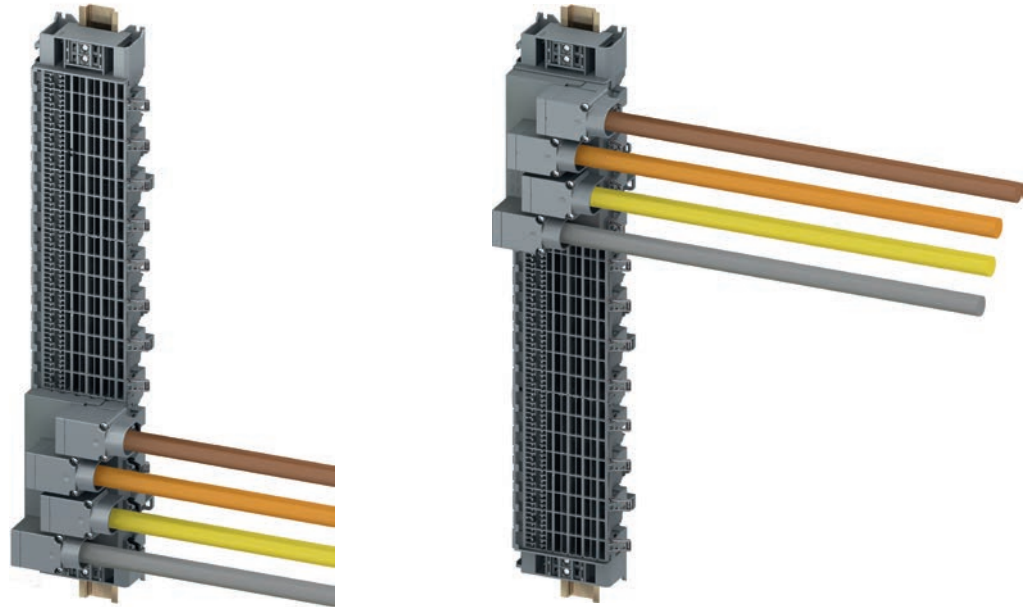


## Power supply SMISSLINE TP Power Bar System 250 A

SMISSLINE TP for UL 508 – Industrial Control Equipment

—  
01 Incoming with Incoming solution ZLSP934 bolt on M8 max. 4/0 AWG – 250 kcmil. 250A side feed

—  
01



## Power supply: overload and short-circuit protection

### Overload and short-circuit protection of the plug-in socket system

#### Protection of the busbar system without upstream overcurrent protection

An important factor for the protection of the busbar system (sockets, incoming terminal block, incoming terminal component, adapter, combi module or terminals) is the characteristic of the rated peak withstand current  $I_{pk}$ . The rated peak withstand current  $I_{pk}$  of the SMISLINE busbar system is 30 kA.

#### Protection of the busbar system with upstream overcurrent protection

The rated short-circuit current  $I_{cf}$  of the SMISLINE busbar system is 50 kA. If, on the power supply side, a circuit breaker of the type Sace Tmax 200A, a high performance circuit breaker S800 or a NH fuse is positioned upstream of the busbar system, then due to the short-circuit current limiting effect of this protection device, a larger prospective short-circuit current of up to 50 kA for the plug-in socket system is permissible.

### Overload and short-circuit protection of devices on the busbar system

The rated short-circuit breaking capacity (or rated breaking capacity) of the protective devices, together with the maximum short-circuit current at the installation location of the devices on the busbar system, must be taken into consideration.

This is not only relevant for the SMISLINE busbar system, but is also applicable to the distribution construction.

#### Miniature circuit breaker

If the prospective short-circuit current at the installation location of a miniature circuit breaker is not greater than its rated breaking capacity, no back-up protection via an upstream overcurrent protection device is necessary.

If the prospective short-circuit current at the installation location of a miniature circuit breaker is greater than its rated short-circuit breaking capacity, the current ratings of the upstream overcurrent protection device must not exceed the table values in the back-up tables (catalogue, page 90 onwards).

#### Residual-current circuit breaker

A back-up fuse with max. 100A gL/gG or a high performance circuit breaker S800 100A is required for short-circuit protection upstream or downstream (see Coordination table, page 34). A back-up fuse is not required up to the level of the internal short-circuit withstand rating. Thermal protection can be ensured by means of downstream miniature circuit breakers, but only if the rated currents do not exceed the value of the current rating of the residual-current circuit breaker in consideration of a utilisation factor.

#### Surge arrester OVR

An upstream overcurrent protection device with max. 160A gL/gG is necessary for short-circuit protection (in the case of non-independent interruptions of the secondary current).

#### Back-up fuses for devices with a DIN Rail adapter

In principle, the same requirements apply as for directly plugged-in devices.

## Smissline TP technical details

### Busbar system 125 A accessories



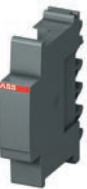
#### Socket end piece ZLS920

To prevent displacement of sockets and busbars (particularly when installed vertically) end pieces can be fitted at the start and finish of each row of sockets. These simultaneously ensure electrically protected covering of the busbar end faces and mechanical fixing of the sockets on the mounting rail.



#### Intermediate piece ZLS725

The light grey intermediate piece matches the device profile and fills empty module spaces.



#### Busbar insulator ZLS938

The dark grey busbar insulator electrically isolates the separated busbar ends from each other (e.g. when using several RCD protected groups) and also identifies the isolation point from outside. It conforms with the device profile and its space requirement is 1 module.



#### Busbar cover ZLS100

If component modules or spare modules are not required, the busbar cover ensures electrically protected covering of the main and auxiliary busbars. The cover (4 modules) can be divided anywhere. The openings allow voltage measurements on the busbars without removing the cover.



#### Extension adapter ZLS101

The extension adapter, single or several side by side, can be plugged into the busbar cover via the built-in holding device. This enables conventional DIN devices with 45 mm cap size to be snapped onto the SMISSLINE socket. By plugging in several extension adapters one on top of the other, heights can be adjusted in multiples of 7 mm.

## Definitions

### **Rated short-circuit breaking capacity $I_{cn}$**

#### **According to EN 60898-1**

The maximum current which a switching device can switch off without damage at a rated operational voltage and rated operational frequency. It is specified as an effective value.

### **Rated ultimate short-circuit breaking capacity $I_{cu}$**

#### **According to EN 60947-2**

Ultimate short-circuit breaking capacity that a circuit breaker can switch off without damage at a rated operational voltage and rated operational frequency. It is specified as an effective value.

### **Rated service short-circuit breaking capacity $I_{cs}$**

#### **According to EN 60947-2**

Service short-circuit breaking capacity that a circuit breaker can switch off without damage at a rated operational voltage and rated operational frequency. It is specified as an effective value.

### **Rated insulation voltage $U_i$**

The rated insulation voltage ( $U_i$ ) is the voltage to which dielectric checks and creepage distances refer. The maximum rated operational voltage must not exceed its rated insulation voltage.

### **Rated impulse withstand voltage $U_{imp}$**

Peak of a withstand voltage of a specified form and polarity with which the circuit can be loaded under specified test conditions without a breakdown and to which clearances relate.

The rated impulse withstand voltage must be equal to or greater than the values of the withstand over-voltages (transient overvoltages) which occur in the system in which the device is used.

### **Rated short-time withstand current $I_{cw}$**

The rated short-time withstand current is the effective value of the short-circuit current, as specified by the manufacturer for this circuit, that the circuit can conduct without damage. Unless otherwise specified, a time of 1 s shall apply.

### **Rated conditional short-circuit current $I_{cc}$**

The rated conditional short-circuit current is the value of the prospective short-circuit current, as specified by the manufacturer, for a switching device combination that the latter can conduct during the total break time. The information about the specified short-circuit device must be given by the manufacturer.

### **Rated fused short-circuit current $I_{cf}$**

The rated fused short-circuit current is the conditional rated short-circuit current if the short-circuit device is a fuse in accordance with IEC 60269 [IEV 441-17-21, modified].

### **Rated peak withstand current $I_{pk}$**

The rated peak withstand current is the peak value of the withstand current of the circuit of a combination of switching devices, as specified by the manufacturer.

### **Back-up protection**

Assignment of two overcurrent protective devices in series, where the protective device, generally but not necessarily on the supply side, effects the overcurrent protection with or without the assistance of the other protective device and prevents excessive stress on the latter [IEC 60947-1, definition 2.5.24].

### **Total selectivity**

Overcurrent discrimination where, in the presence of two overcurrent protective devices in series, the protective device on the load side effects the protection without causing the other protective device to operate [IEC 60947-2, definition 2.17.2].

### **Partial selectivity**

Overcurrent discrimination where, in the presence of two overcurrent protective devices in series, the protective device on the load side effects the protection up to a given level of overcurrent, without causing the other protective device to operate [IEC 60947-2, definition 2.17.3].



# Miniature circuit breaker (MCB)

## Properties



1 N  
S000400100001



1 N  
3 N  
S000400100001



1 N  
2 N  
4 N  
S000400100001



1 N  
2 N  
3 N  
4 N  
S000400100001



1 N  
2 N  
3 N  
4 N  
5 N  
7 N  
8 N  
S000400100001

### General Information

The SMISSLINE miniature circuit-breaker is an energy-restricting circuit-breaker that has high performance values and that is equally suitable for the industrial sector, for commercial use and for installation at home.

If a short-circuit occurs, it guarantees excellent selectivity conditions to upstream overcurrent circuit breakers while the load on equipment that is connected downstream is limited to a minimum amount.

### The most important features

- High rated breaking capacity of 6 kA and 10 kA acc. IEC/EN60989-1 and 25 kA, 30 kA and 40 kA acc. IEC/EN 60947-2
- Optimum ease of installation and connection
- The pole conductors are protected against accidental contact
- Tripping characteristic on B, C, D, K, UCZ/UCC

### Miniature circuit-breaker in accordance with standard EN 60898-1

This standard is for electrical installation material for household installations and for similar purposes. It regulates the use of miniature circuit-breakers by the layman up to a maximum of 125 A, a voltage of 440 VAC and up to a maximum of 25 kA.

### Miniature circuit-breaker in accordance with standard EN60947-2

This standard is for low-voltage material used for industrial purposes. It regulates the use of circuit-breakers (and not miniature circuit-breakers) by qualified personnel up to a maximum voltage of 1000 VAC or 1500 VDC. This standard does not recognise any maximum values when it comes to current and breaking capacity. In practice, the standard is also applied to miniature circuit-breakers.

### Miniature Circuit Breaker SUP400 for branch circuit protection acc. to UL 489 File E312425

The miniature circuit breaker SUP400 is ABB's solution for UL 489 branch circuit protection up to 480Y/277V AC. This circuit breaker is an all-round device applications for universal use in North American and global markets due to its approvals according standards UL489.

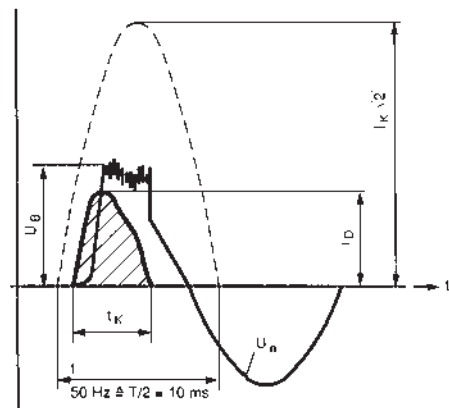
### Brief description of tripping

The SMISSLINE miniature circuit breakers have a current-limiting operation. They have two different releases acting on the mechanism.

1. Thermal release, operating with a time delay, for overload protection
2. Electro-magnetic release plunger operated for short-circuit protection.

They offer: – high short-circuit breaking capacity  
– high selectivity to the back-up fuse  
– In the event of short-circuits, low electrodynamic and heating effects on the cable and the point of fault location due to the drastically limited let through energy  $\int i^2 dt$ .

### Oscillogram of a short-circuit current interruption

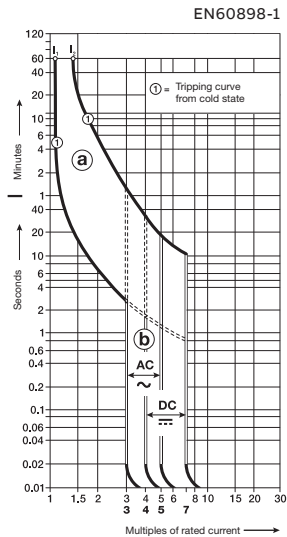


$I_K \cdot \sqrt{2}$  = peak value of prospective short-circuit current  
 $i_0$  = Max. peak let through current of circuit breaker S 400  
 $U_n$  = Supply voltage  
 $U_a$  = Arc voltage of circuit breaker  
 $t_K$  = Total interruption time



## MCBs technical details

### Trip characteristics



#### Trip characteristics: B

Thermal trip

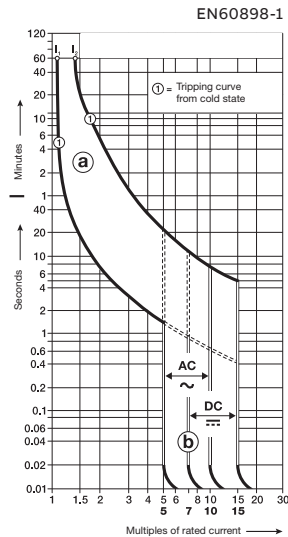
$1.13...1.45 \times I_n$

Electromagnetic trip

$3...5 \times I_n$  AC

$4...7 \times I_n$  DC

Calibration temperature  $30^\circ\text{C}$



#### Trip characteristics: C

Thermal trip

$1.13...1.45 \times I_n$  acc. to EN60898-1

Thermal trip

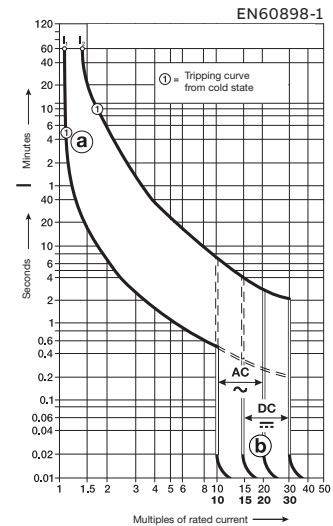
$1.05...1.3 \times I_n$  acc. to EN60947-2

Electromagnetic trip

$5...10 \times I_n$  AC

$7...14 \times I_n$  DC

Calibration temperature  $30^\circ\text{C}$



#### Trip characteristics: D

Thermal trip

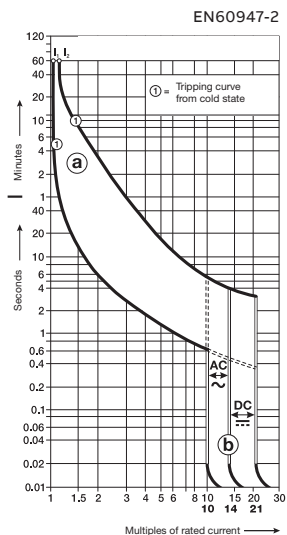
$1.13...1.45 \times I_n$

Electromagnetic trip

$10...20 \times I_n$  AC

$15...30 \times I_n$  DC

Calibration temperature  $30^\circ\text{C}$



#### Trip characteristics: K

Thermal trip

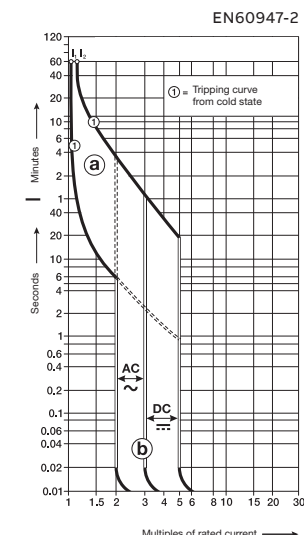
$1.05...1.3 \times I_n$

Electromagnetic trip

$10...14 \times I_n$  AC

$14...20 \times I_n$  DC

Calibration temperature  $40^\circ\text{C}$



#### Trip characteristics: UC

Z C

$1.05...1.35 \times I_n$

$1.13...1.35 \times I_n$

$3...5 \times I_n$  DC

$7...14 \times I_n$  DC

$2...3 \times I_n$  AC

$5...10 \times I_n$  AC

Calibration temperature  $40^\circ\text{C}$

## MCBs technical details

### Trip characteristics

#### Trip characteristics example of trip curve interpretation of B-characteristics

##### a Thermal trip characteristics:

Lower test current  $I_1$  = defined as non-tripping current.

The circuit breaker withstands 1.13 times the rated current for at least 60 minutes.

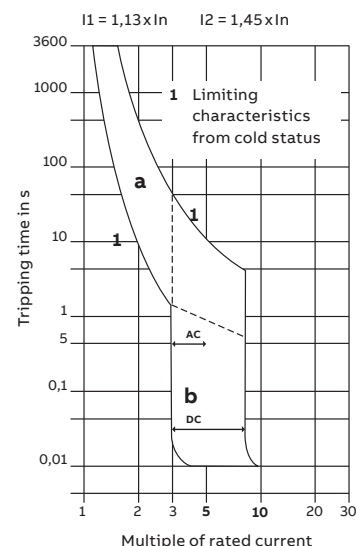
Upper test current  $I_2$  = defined as trip current.

The circuit breaker trips at 1.45 times the rated current within 60 minutes.

##### b Electro-magnetic trip characteristics AC:

The circuit breaker withstands 3 times the rated current for more than 0.1 sec. (in this example, up to around 2 sec.).

The circuit breaker trips in less than 0.1 sec. at 5 times the rated current.



#### Trip behaviour of different trip characteristics

| Trip characteristics and current ratings |            | Thermal release            |                                                          | Trip time                                                                  | Electromagnetic release           |                    | Trip time                              |
|------------------------------------------|------------|----------------------------|----------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------|--------------------|----------------------------------------|
|                                          |            | Test currents: lower $I_1$ | upper test current $I_2$                                 |                                                                            | Test currents: lower test current | upper test current |                                        |
| B                                        | 4 to 63A   | $1.13 \times I_n$          | $1.45 \times I_n$                                        | $> 1 \text{ h}$<br>$< 1 \text{ h}$                                         | $3 \times I_n$                    | $5 \times I_n$     | $> 0.1 \text{ s}$<br>$< 0.1 \text{ s}$ |
| C                                        | 0.5 to 63A | $1.13 \times I_n$          | $1.45 \times I_n$                                        | $> 1 \text{ h}$<br>$< 1 \text{ h}$                                         | $5 \times I_n$                    | $10 \times I_n$    | $> 0.1 \text{ s}$<br>$< 0.1 \text{ s}$ |
| D                                        | 6 to 63A   | $1.13 \times I_n$          | $1.4 \times I_n$                                         | $> 1 \text{ h}$<br>$< 1 \text{ h}$                                         | $10 \times I_n$                   | $20 \times I_n$    | $> 0.1 \text{ s}$<br>$< 0.1 \text{ s}$ |
| K                                        | 0.5 to 63A | $1.05 \times I_n$          | $1.2 \times I_n$<br>$1.5 \times I_n$<br>$6.0 \times I_n$ | $> 2 \text{ h}$<br>$< 2 \text{ h}$<br>$< 2 \text{ min}$<br>$> 2 \text{ s}$ | $10 \times I_n$                   | $14 \times I_n$    | $> 0.2 \text{ s}$<br>$< 0.2 \text{ s}$ |

#### Application characteristics: B

Miniature circuit breaker for circuits supplying loads generating no or only minor inrush currents (boilers, electric heaters, cookers).

#### Application characteristics: C

The 'standard' miniature circuit breaker for circuits supplying loads producing inrush currents particular to inductive loads (TV sets, fluorescent and discharge lamps) and for socket outlets.

#### Application characteristics: D

Miniature circuit breaker for circuits supplying loads producing very high inrush currents (transformers, capacitor banks). Main circuit breaker for the back-up protection of downstream connected circuit breakers.

#### Application characteristics: K

Circuit breaker for equipment: The characteristics of these types enable the close protection requirements for equipment to be met.

#### Application characteristics: UC

Device protection in DC systems of up to 250V = with a time constant of  $< 15 \text{ ms}$  (emergency networks, electroplating, etc.).

## MCBs technical details

### Internal resistances at rated voltage and power losses

Internal resistances and power loss per pole (cold resistance at room temperature)

#### S400E, S400M

B, C tripping characteristics

| $I_n$ [A] | $R_i$ [mΩ] | $P_v$ [W] |
|-----------|------------|-----------|
| 0.5       | 5023       | 1.3       |
| 1         | 1424       | 1.4       |
| 1.6       | 677        | 1.7       |
| 2         | 338        | 1.4       |
| 3         | 146        | 1.3       |
| 4         | 109        | 1.7       |
| 6         | 50         | 1.8       |
| 8         | 22         | 1.4       |
| 10        | 17         | 1.7       |
| 13        | 12         | 2.0       |
| 16        | 8.4        | 2.2       |
| 20        | 5.1        | 2.0       |
| 25        | 3.9        | 2.4       |
| 32        | 3.1        | 3.2       |
| 40        | 2.3        | 3.7       |
| 50        | 1.5        | 3.8       |
| 63        | 1.4        | 5.6       |

#### S400M-UC

C, Z tripping characteristics

| $I_n$ [A] | $R_i$ [mΩ] | $P_v$ [W] |
|-----------|------------|-----------|
| 0.5       | 8173       | 2.0       |
| 1         | 2174       | 2.2       |
| 1.6       | 1039       | 2.7       |
| 2         | 521        | 2.1       |
| 3         | 235        | 2.1       |
| 4         | 132        | 2.1       |
| 6         | 67         | 2.4       |
| 8         | 29         | 1.8       |
| 10        | 20         | 2.0       |
| 13        | 15         | 2.5       |
| 16        | 10         | 2.6       |
| 20        | 5.6        | 2.2       |
| 25        | 4.3        | 2.7       |
| 32        | 3.7        | 3.8       |
| 40        | 2.6        | 4.2       |
| 50        | 1.7        | 4.2       |
| 63        | 1.4        | 5.6       |

#### S400E, S400M

D, K tripping characteristics

| $I_n$ [A] | $R_i$ [mΩ] | $P_v$ [W] |
|-----------|------------|-----------|
| 0.5       | 4419       | 1.1       |
| 1         | 1311       | 1.3       |
| 1.6       | 627        | 1.6       |
| 2         | 326        | 1.3       |
| 3         | 135        | 1.2       |
| 4         | 85         | 1.4       |
| 6         | 46         | 1.7       |
| 8         | 20         | 1.3       |
| 10        | 16         | 1.6       |
| 13        | 11         | 1.9       |
| 16        | 7.8        | 2.0       |
| 20        | 5.0        | 2.0       |
| 25        | 3.8        | 2.4       |
| 32        | 3.0        | 3.1       |
| 40        | 2.3        | 3.7       |
| 50        | 1.5        | 3.8       |
| 63        | 1.4        | 5.6       |

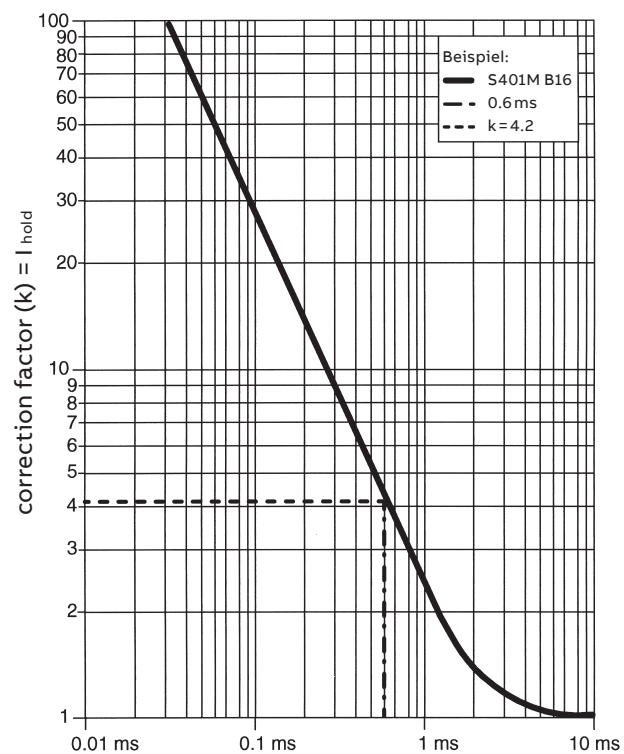
#### S400P, SU400M, SUP400M

B, C, K tripping characteristics

| $I_n$ [A] | $R_i$ [mΩ] | $P_v$ [W] |
|-----------|------------|-----------|
| 2         | 333        | 1.3       |
| 3         | 137        | 1.2       |
| 4         | 83         | 1.3       |
| 5         | 45         | 1.1       |
| 6         | 45         | 1.6       |
| 8         | 19         | 1.2       |
| 10        | 13         | 1.3       |
| 13        | 10         | 1.7       |
| 15        | 7.6        | 1.7       |
| 16        | 7.6        | 1.9       |
| 20        | 5.0        | 2.0       |
| 25        | 3.7        | 2.3       |
| 30        | 3.0        | 2.7       |
| 32        | 2.9        | 3.0       |
| 40        | 2.3        | 3.6       |
| 50        | 1.5        | 3.7       |
| 63        | 1.4        | 5.5       |

## MCBs technical details

### Pulse triggering



#### Example 1:

Non tripping  
(Electromagnetic tripping)

S 401-B16

$I_{hold} = k \times \text{non tripping}$

$I_{hold} = 4,2 \times 3 \times 16$

$I_{hold} = 201,6 \text{ A}$

B-Characteristic =  $3 \times I_n$

C-Characteristic =  $5 \times I_n$

K-Characteristic =  $10 \times I_n$

Z-Characteristic =  $2 \times I_n$

The MCB S 401-B16 hold is keeping by an Impulse of 0.6 ms up to a current of 201.6 A.

#### Example 2:

S 401-K25

$I_{hold} = k \times \text{non tripping}$

$I_{hold} = 4,2 \times 10 \times 25$

$I_{hold} = 1050 \text{ A}$

The MCB S 401-K25 is keeping by an Impulse of 0.6 ms up to a current of 1050 A.

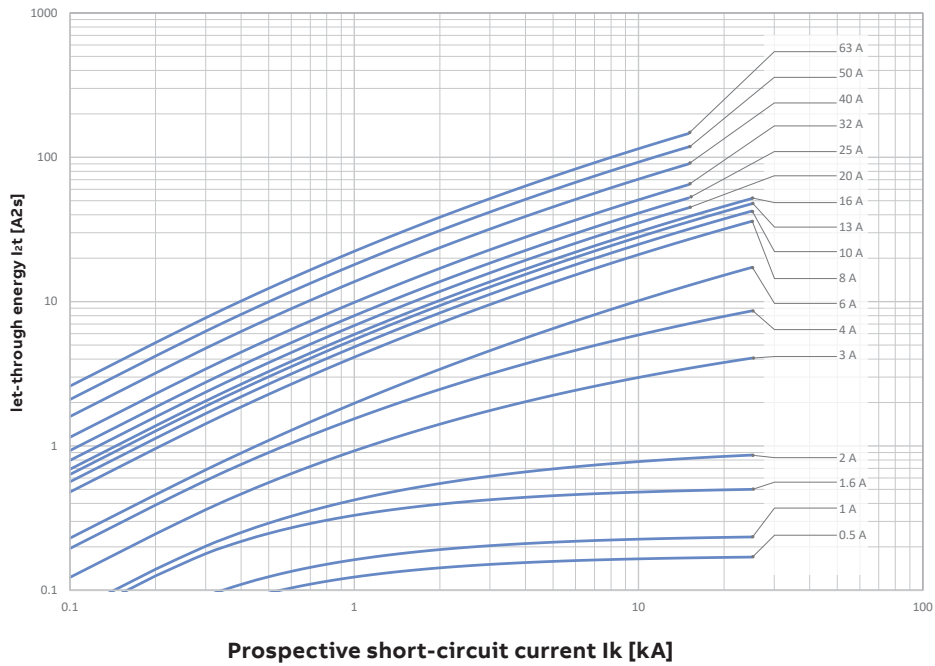
## MCBs technical details

### Limitation of specific let-through energy $I^2t$

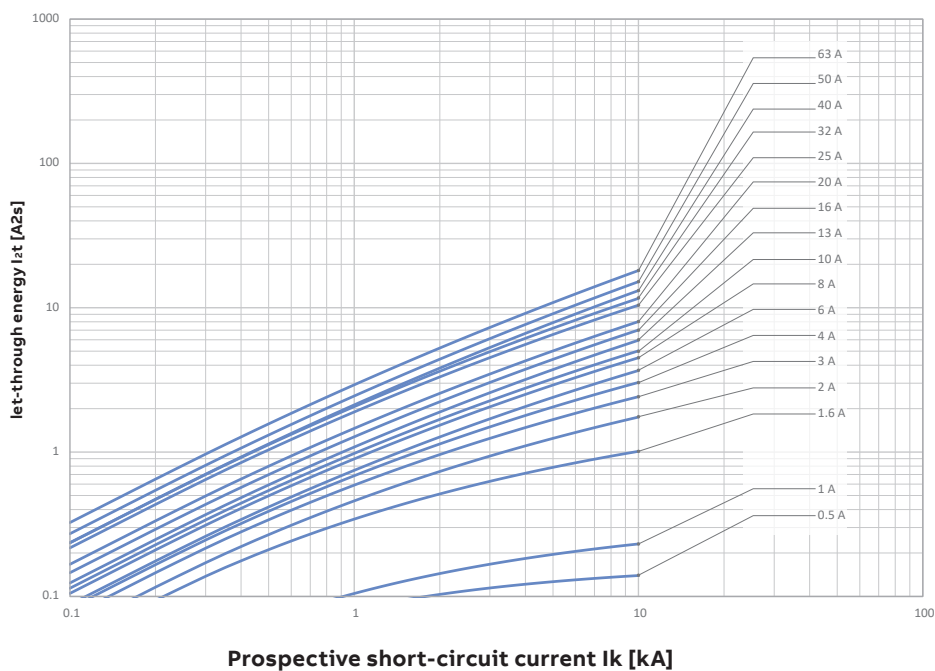
#### $I^2t$ diagrams - Specific let-through energy value $I^2t$

The  $I^2t$  curves give the values of the specific let-through energy expressed in  $A^2s$  (A=amps; s=seconds) in relation to the perspective short-circuit current ( $I_{rms}$ ) in kA.

#### S400M; B, C, D, K



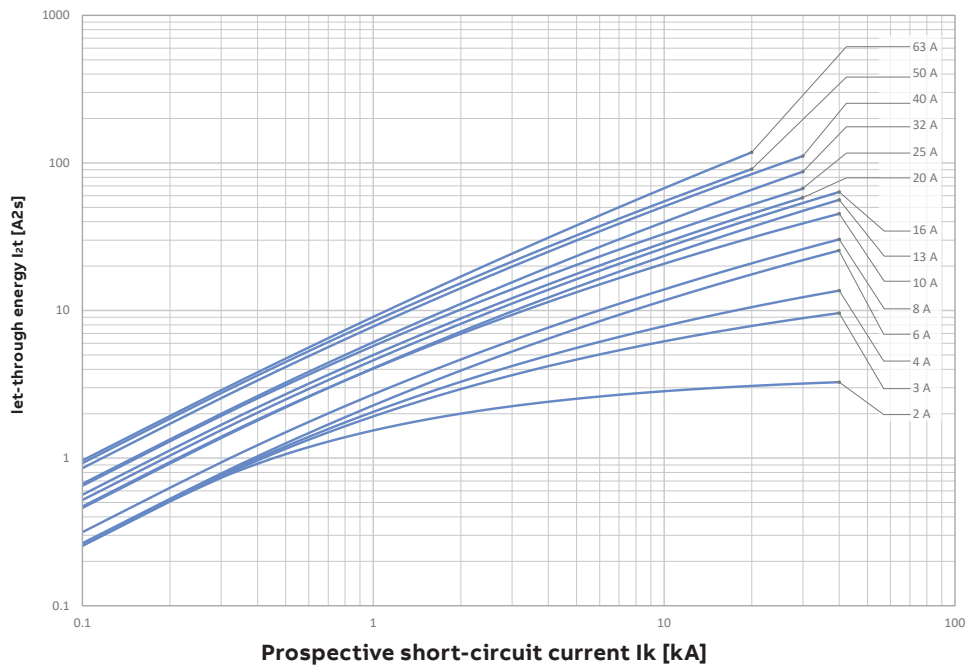
#### S400UC, S400UCZ



## MCBs technical details

Limitation of specific let-through energy  $I^2t$

S400P; B, C, K, SU401 and SUP400



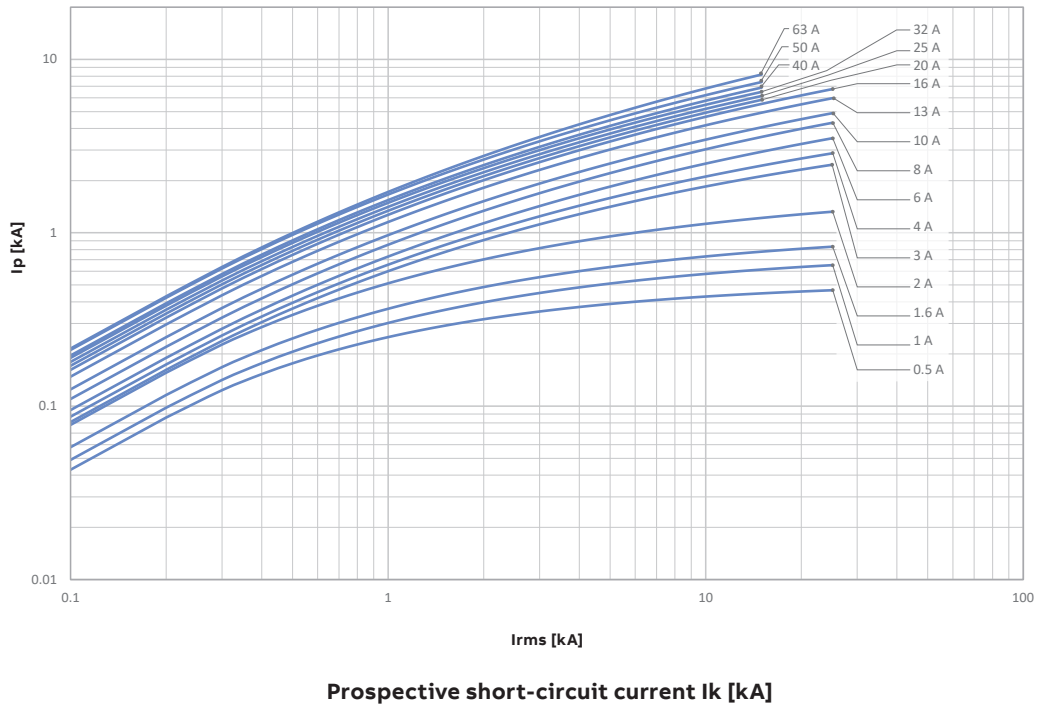
## MCBs technical details

Peak current  $I_p$

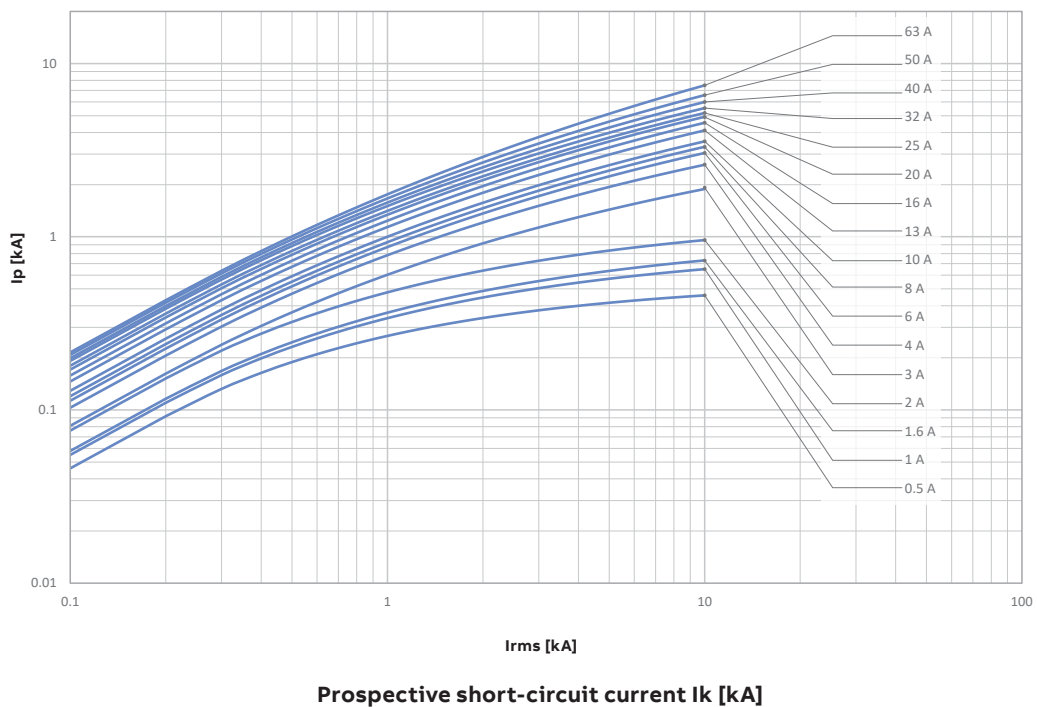
### Limitation curves – Peak current values

The  $I_p$  curves give the values of the peak current, expressed in kA, in relation to the prospective symmetrical short-circuit current (kA).

**S400M; B, C, D, K**



**S400UC, S400UCZ**





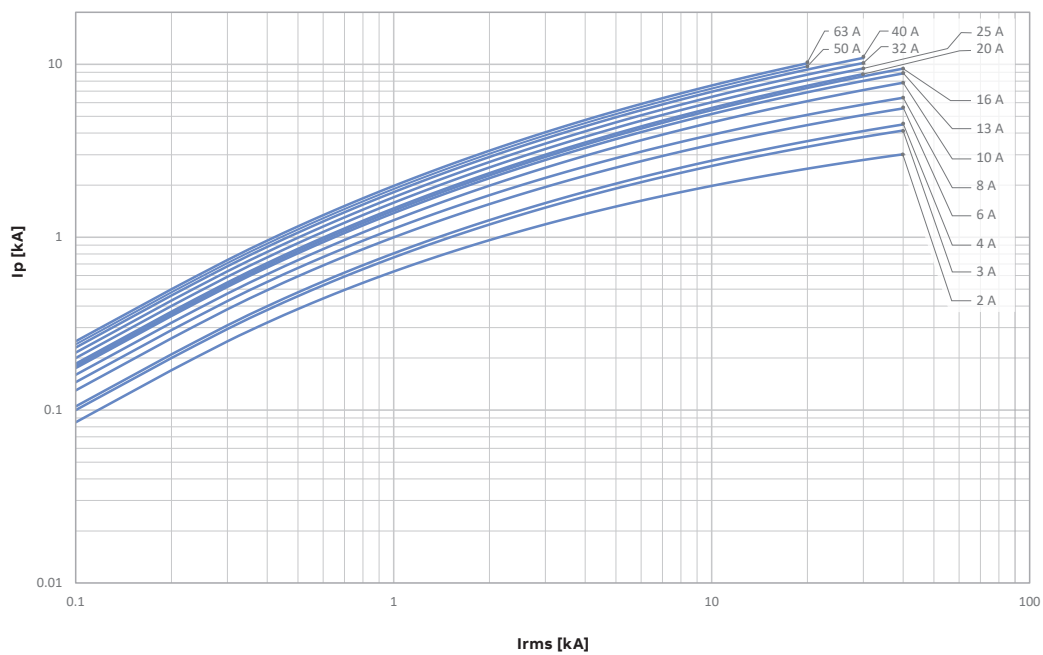
## MCBs technical details

Limitation of specific let-through energy  $I^2t$

### Limitation curves – Peak current values

The  $I_p$  curves give the values of the peak current, expressed in kA, in relation to the perspective symmetrical short-circuit current (kA).

**S400P; B, C, K, SU401 and SUP400**



**Prospective short-circuit current  $I_k$  [kA]**

## Back-up and selectivity dates: Online on ABB webpage SOC

Back-up and selectivity dates

### SOC - Selected Optimized Coordination

See as well ABB on <https://www.lowvoltage-tools.abb.com/soc/>



SOC - SELECTED OPTIMIZED COORDINATION

Power and productivity  
for a better world™ **ABB**

 Motor protection

 Selectivity

 Back-up

 Other devices protection

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## MCBs technical details

### Influence of ambient temperature

**Allowable current of miniature circuit breakers depending on ambient temperature and max. load current for row mounted miniature circuit breakers.**

#### Practical procedure

Conditions often arise which allow for simple consideration of the ambient temperature and thermal influences of row mounted circuit breakers according to IEC/EN 60898 and IEC/EN 60947-2. The following procedure has proven to be effective:

1. Selection of circuit breaker according to the rated current of the equipment or the current carrying capacity of the cable depending on which of these is the lower value.
2. Consideration of thermal factors
  - for an ambient temperature
  - for thermal influence of row mounted circuit breakers
3. This results in the rated current of the circuit breaker to be selected for the relevant current

This procedure considers all thermal influence factors and results in an optimum choice of the rated current for the circuit breaker.

#### Basis for the simplified procedure

##### 1. Different ambient temperature

The thermal releases are set to a reference ambient temperature. For trip characteristic K, this is 40°C, for trip characteristics B, C and D, this is 30°C. At different ambient temperatures, the specified current values.

##### 2. Influence of row mounted devices at continuous load

If the circuit breakers are lined up close to one another and have equally high load levels, a correction factor must be taken. This influence can be reduced if fillers and/or spacers (9 mm wide) are used.

#### Influence of adjacent poles

##### Correction factor $F_m$

| Number of adjacent poles | correction factor |
|--------------------------|-------------------|
| 1...4                    | 1                 |
| 5...8                    | 0.95              |
| 9...12                   | 0.76              |
| more than 12             | 0.76              |

## MCBs technical details

### Influence of ambient temperature

Max. operating currents depending on ambient temperature for S400E, S400M, S400M-UC, S400P miniature circuit breakers  
B, C, D and Z tripping characteristics

| I <sub>n</sub> (A) | Ambient temperature T (°C) |       |       |       |       |      |       |       |       |       |       |       |
|--------------------|----------------------------|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
|                    | 0                          | 10    | 15    | 20    | 25    | 30*  | 35    | 40    | 45    | 50    | 55    | 60    |
| 0.5                | 0.58                       | 0.55  | 0.53  | 0.52  | 0.51  | 0.5  | 0.48  | 0.47  | 0.46  | 0.44  | 0.43  | 0.42  |
| 1                  | 1.15                       | 1.09  | 1.07  | 1.04  | 1.02  | 1.0  | 0.97  | 0.94  | 0.91  | 0.89  | 0.86  | 0.83  |
| 1.6                | 1.85                       | 1.75  | 1.71  | 1.67  | 1.63  | 1.6  | 1.55  | 1.50  | 1.46  | 1.42  | 1.38  | 1.34  |
| 2                  | 2.31                       | 2.19  | 2.13  | 2.08  | 2.03  | 2.0  | 1.93  | 1.88  | 1.83  | 1.77  | 1.72  | 1.67  |
| 3                  | 3.50                       | 3.32  | 3.24  | 3.16  | 3.09  | 3.0  | 2.93  | 2.85  | 2.77  | 2.69  | 2.61  | 2.53  |
| 4                  | 4.60                       | 4.37  | 4.27  | 4.17  | 4.07  | 4.0  | 3.86  | 3.76  | 3.66  | 3.56  | 3.45  | 3.34  |
| 6                  | 6.90                       | 6.59  | 6.44  | 6.29  | 6.14  | 6.0  | 5.83  | 5.68  | 5.53  | 5.37  | 5.22  | 5.07  |
| 8                  | 9.20                       | 8.84  | 8.63  | 8.42  | 8.22  | 8.0  | 7.81  | 7.60  | 7.39  | 7.19  | 6.98  | 6.77  |
| 10                 | 11.50                      | 10.90 | 10.70 | 10.40 | 10.20 | 10.0 | 9.65  | 9.39  | 9.14  | 8.88  | 8.63  | 8.38  |
| 13                 | 15.00                      | 14.40 | 14.00 | 13.70 | 13.30 | 13.0 | 12.70 | 12.30 | 12.00 | 11.60 | 11.30 | 11.00 |
| 16                 | 18.50                      | 17.60 | 17.20 | 16.80 | 16.40 | 16.0 | 15.60 | 15.20 | 14.70 | 14.30 | 13.90 | 13.50 |
| 20                 | 23.10                      | 22.10 | 21.60 | 21.00 | 20.50 | 20.0 | 19.50 | 19.00 | 18.50 | 18.00 | 17.50 | 17.00 |
| 25                 | 28.90                      | 27.50 | 26.90 | 26.30 | 25.60 | 25.0 | 24.30 | 23.70 | 23.00 | 22.40 | 21.80 | 21.20 |
| 32                 | 37.00                      | 35.30 | 34.50 | 33.70 | 32.80 | 32.0 | 31.20 | 30.40 | 29.50 | 28.70 | 27.90 | 27.10 |
| 40                 | 46.20                      | 44.10 | 43.00 | 42.00 | 41.00 | 40.0 | 39.00 | 37.90 | 36.90 | 35.90 | 34.90 | 33.90 |
| 50                 | 57.70                      | 55.00 | 53.70 | 52.40 | 51.10 | 50.0 | 48.60 | 47.30 | 46.00 | 44.70 | 43.40 | 42.10 |
| 63                 | 72.70                      | 69.30 | 67.70 | 66.10 | 64.50 | 63.0 | 61.30 | 59.70 | 58.10 | 56.40 | 54.80 | 53.20 |

\* Reference ambient air temperature for overload tripping

Max. operating currents depending on ambient temperature for S400M, S400P, SU400M, SUP400M miniature circuit breakers  
K tripping characteristic

| I <sub>n</sub> (A) | Ambient temperature T (°C) |       |       |       |       |       |       |      |       |       |       |       |
|--------------------|----------------------------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
|                    | 0                          | 10    | 15    | 20    | 25    | 30    | 35    | 40*  | 45    | 50    | 55    | 60    |
| 0.5                | 0.56                       | 0.54  | 0.52  | 0.51  | 0.50  | 0.49  | 0.47  | 0.5  | 0.45  | 0.43  | 0.42  | 0.41  |
| 1                  | 1.16                       | 1.14  | 1.12  | 1.09  | 1.07  | 1.05  | 1.02  | 1.0  | 0.96  | 0.94  | 0.91  | 0.88  |
| 1.6                | 1.89                       | 1.85  | 1.81  | 1.77  | 1.73  | 1.70  | 1.65  | 1.6  | 1.56  | 1.52  | 1.48  | 1.44  |
| 2                  | 2.35                       | 2.29  | 2.23  | 2.18  | 2.13  | 2.10  | 2.03  | 2.0  | 1.93  | 1.87  | 1.82  | 1.77  |
| 3                  | 3.56                       | 3.48  | 3.40  | 3.32  | 3.25  | 3.20  | 3.09  | 3.0  | 2.93  | 2.85  | 2.77  | 2.69  |
| 4                  | 4.68                       | 4.58  | 4.48  | 4.38  | 4.28  | 4.20  | 4.07  | 4.0  | 3.87  | 3.77  | 3.66  | 3.55  |
| 5                  | 6.06                       | 5.91  | 5.76  | 5.61  | 5.46  | 5.30  | 5.15  | 5.0  | 4.85  | 4.69  | 4.54  | 4.39  |
| 6                  | 7.06                       | 6.91  | 6.76  | 6.61  | 6.46  | 6.30  | 6.15  | 6.0  | 5.85  | 5.69  | 5.54  | 5.39  |
| 8                  | 9.45                       | 9.24  | 9.03  | 8.82  | 8.62  | 8.40  | 8.21  | 8.0  | 7.79  | 7.59  | 7.38  | 7.17  |
| 10                 | 11.80                      | 11.50 | 11.20 | 11.00 | 10.70 | 10.50 | 10.20 | 10.0 | 9.69  | 9.43  | 9.18  | 8.93  |
| 13                 | 15.50                      | 15.10 | 14.70 | 14.40 | 14.00 | 13.70 | 13.40 | 13.0 | 12.70 | 12.30 | 12.00 | 11.70 |
| 15                 | 17.80                      | 17.40 | 17.00 | 16.60 | 16.20 | 15.80 | 15.40 | 15.0 | 14.60 | 14.20 | 13.80 | 13.40 |
| 16                 | 18.80                      | 18.40 | 18.00 | 17.60 | 17.20 | 16.80 | 16.40 | 16.0 | 15.60 | 15.20 | 14.80 | 14.40 |
| 20                 | 23.50                      | 23.00 | 22.50 | 22.00 | 21.50 | 20.90 | 20.40 | 20.0 | 19.40 | 18.90 | 18.40 | 17.90 |
| 25                 | 29.50                      | 28.90 | 28.30 | 27.60 | 27.00 | 26.30 | 25.70 | 25.0 | 24.40 | 23.80 | 23.10 | 22.40 |
| 30                 | 35.70                      | 34.90 | 34.10 | 33.30 | 32.40 | 31.60 | 30.80 | 30.0 | 29.10 | 28.30 | 27.50 | 26.70 |
| 32                 | 37.70                      | 36.90 | 36.10 | 35.30 | 34.40 | 33.60 | 32.80 | 32.0 | 31.10 | 30.30 | 29.50 | 28.70 |
| 40                 | 47.30                      | 46.20 | 45.10 | 44.10 | 43.10 | 42.10 | 41.10 | 40.0 | 39.00 | 38.00 | 37.00 | 36.00 |
| 50                 | 59.00                      | 57.70 | 56.40 | 55.10 | 53.80 | 52.50 | 51.30 | 50.0 | 48.70 | 47.40 | 46.10 | 44.80 |
| 63                 | 74.10                      | 72.50 | 70.90 | 69.30 | 67.70 | 66.10 | 64.50 | 63.0 | 61.30 | 59.60 | 58.00 | 56.40 |

\* Reference ambient air temperature for overload tripping

## MCBs technical details

### Protection of circuits with fluorescent lamps

#### Protection of circuits with fluorescent lamps

The following table gives the maximum permissible number of fluorescent lamps which can be protected by a single-pole circuit breaker of characteristic. The figure for multi-pole circuit breakers is reduced by 20%.

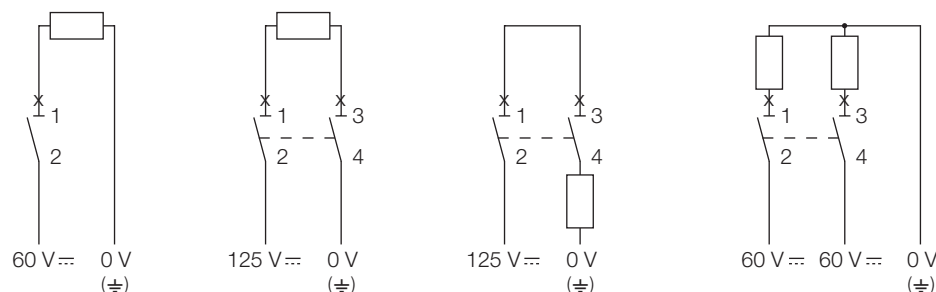
| Rated current | FL not compensated |         |         | FL compensated in parallel |         |         | FL with electronic ballast |         |         |
|---------------|--------------------|---------|---------|----------------------------|---------|---------|----------------------------|---------|---------|
|               | KVG                |         |         | KVG                        |         |         | EVG <sup>1)</sup>          |         |         |
|               | 18/20 W            | 36/40 W | 58/65 W | 18/20 W                    | 36/40 W | 58/65 W | 18/20 W                    | 36/40 W | 58/65 W |
| 13            | 35                 | 30      | 19      | 41                         | 41      | 27      | 21                         | 21      | 10      |
| 16            | 43                 | 37      | 24      | 51                         | 51      | 33      | 26                         | 26      | 12      |
| 20            | 53                 | 46      | 30      | 64                         | 64      | 41      | 33                         | 33      | 15      |
| 25            | 66                 | 58      | 37      | 82                         | 82      | 53      | 42                         | 42      | 19      |

<sup>1)</sup> EVG: Two-lamp version, lamps switched together, electronic ballast  
KVG: Conventional ballast

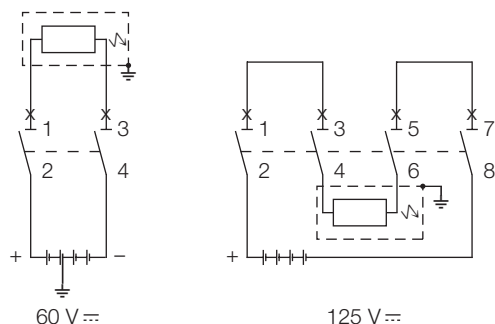
#### Use of miniature circuit breakers S400 M for DC systems

A standard miniature circuit breaker type S400 M can be used in a DC system by observing the following conditions: Single pole miniature circuit breaker max. 60 VDC. 2-pole miniature circuit breaker with 2-poles in series max. 125 VDC. The polarity needs not to be taken into account. Load connection can either be at the top or at the bottom of the MCB.

#### Example of permissible DC voltages depending on the number of poles and the circuit configuration in earthed DC systems:



#### Examples for different voltages between a conductor and earth where voltages between conductors are identical:





MCBs technical details

S400UC

UC = Universal Current = AC/DC

S400UC MCBs can be used in the one-pole version as 250Vd.c., and in the 2-pole version with series connection of two poles up to 440Vd.c..

For DC incoming supply from above

S400 UC-... MCBs have, in the area of arc chutes, permanent magnets, it is therefore necessary to take into account the polarity during the installation process. Doing so ensures that in the case of a short circuit the magnetic field of the permanent magnets corresponds with the electromagnetic field of the short-circuit current, therefore safely leading the short circuit into the arc chute. Incorrect polarities may cause damage to the MCB.

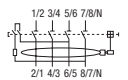
This is why – in the case of top-fed devices – terminal 1 must be connected to (-) and terminal 3 (+).

Example for permissible voltages between the conductors depending on the number of poles and circuit layout:

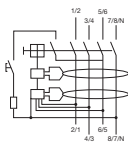
|                                                 |          |          |          |          |
|-------------------------------------------------|----------|----------|----------|----------|
| voltage $U_N$<br>between<br>conductors          | 250Vd.c. | 440Vd.c. | 440Vd.c. | 440Vd.c. |
| voltage $U_N$<br>between<br>conductor and earth | 250Vd.c. | 250Vd.c. | 440Vd.c. | 250Vd.c. |
| supply                                          |          |          |          |          |

# RCDs technical details

## Properties



Type A



Type B

### General information about residual current operated circuit breakers

The residual current operated circuit breaker prevents personal injury and damage to property caused by electric current. Use of this circuit breaker is required in various national and international standards for electrical installations.

Modern residual current operated circuit breakers respond to small residual currents. Interruption occurs in a fraction of a second even before a hazardous situation for people, animals and property can arise.

The principle of magnetic tripping independent of the supply voltage ensures perfect and safe operation even in the event of undervoltage and neutral interruptions.

### The key features

- High short-circuit resistance 10 kA
- Sensitive for alternating and pulsating DC residual currents
- 2- and 4-pole types
- Nominal residual trip currents 10, 30, 100, 300 mA
- Snap-on auxiliary switches and signal contacts
- Nominal currents 25, 40, 63 A
- Double terminals

According to the wave form of the earth leakage currents they are sensitive to, the RCDs may be classed as:

- AC type (for alternating current only) AC are not in the Smissline portfolio
- A type (for alternating and/or pulsating current with DC components)
- B type (for alternating and/or pulsating current with DC components and continuous fault current).

### Selectivity

RCDs raise similar issue to those surrounding the installation of MCBs, and in particular the need to reduce to a minimum the parts of the system out of order in the event of a fault.

For RCBOs the problem of selectivity in the case of short-circuit currents may be handled with the same specific criteria as for MCBs.

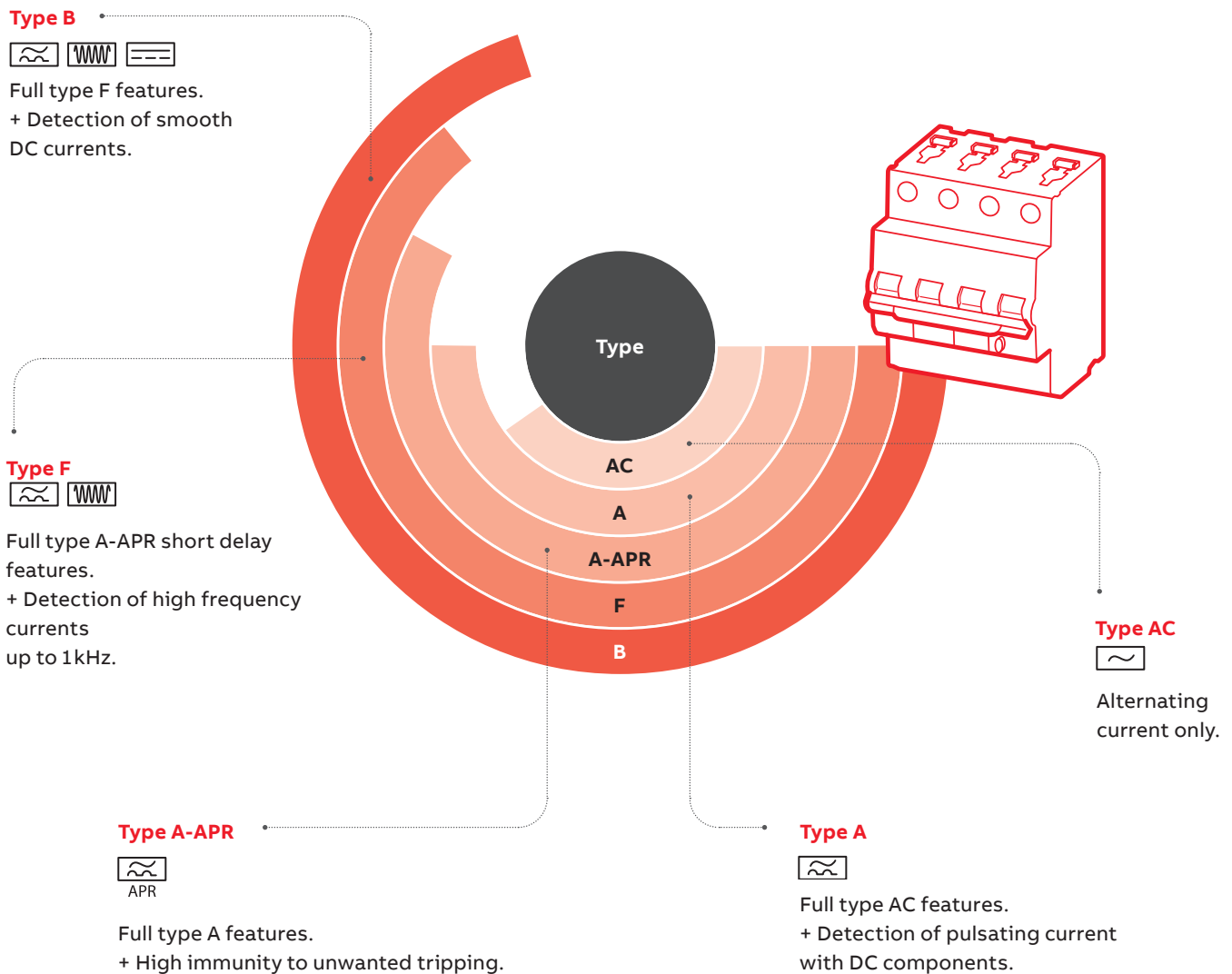
However, for correct residual current protection, the more important aspects are linked to tripping times. Protection against contact voltages is only effective if the maximum times indicated on the safety curve are not exceeded.

## RCDs technical details

### Properties

The variety of residual current devices has continuously increased in last decades following the technology evolution and the massive introduction of electronics in all fields of applications. According to the capability to detect different waveforms of residual current and the relative

sophisticated type testing, today the spectrum of RCDs types covers from pure AC loads up to high frequency and DC related applications with an increasing level of protection passing from AC types up to F and B types.







RCDs technical details

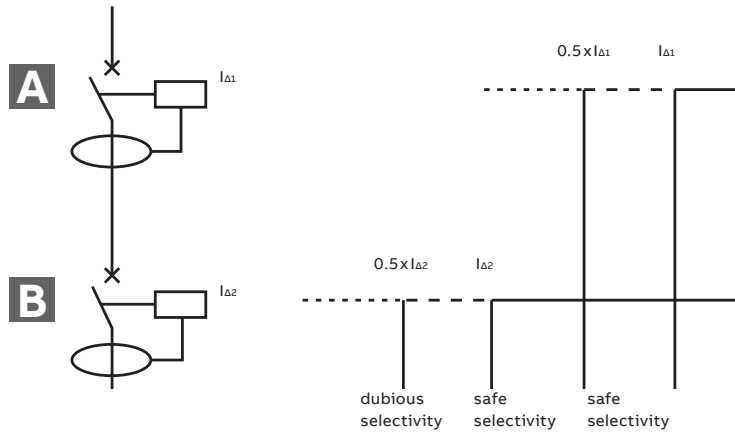
Properties

| Release current                                                                                                                                                                                                                                             |                                  | RCD type |        |        |        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|----------|--------|--------|--------|
| Proper functioning of residual current protective devices of type                                                                                                                                                                                           |                                  | Type AC  | Type A | Type F | Type B |
|                                                                                                                                                                            | 0,5 ... 1 I <sub>Δn</sub>        | ■        | ■      | ■      | ■      |
|                                                                                                                                                                            | 0,35 ... 1,4 I <sub>Δn</sub>     | –        | ■      | ■      | ■      |
|                                                                                                                                                                            | 0,25 ... 1,4 I <sub>Δn</sub>     | –        | ■      | ■      | ■      |
|                                                                                                                                                                                                                                                             | 0,11 ... 1,4 I <sub>Δn</sub>     |          |        |        |        |
|                                                                                                                                                                            | max. 1,4 I <sub>Δn</sub> + 6 mA  | –        | ■      | ■      | ■      |
|                                                                                                                                                                            | max. 1,4 I <sub>Δn</sub> + 10 mA | –        | –      | ■      | ■      |
|                                                                                                                                                                            | 0,5 ... 1,4 I <sub>Δn</sub>      | –        | –      | ■      | ■      |
|    | 0,5 ... 2 I <sub>Δn</sub>        | –        | –      | –      | ■      |
|                                                                                                                                                                          | 0,5 ... 2,4 I <sub>Δn</sub>      | –        | –      | –      | ■      |
|                                                                                                                                                                                                                                                             | 0,5 ... 6 I <sub>Δn</sub>        |          |        |        |        |
|                                                                                                                                                                                                                                                             | 0,5 ... 14 I <sub>Δn</sub>       |          |        |        |        |

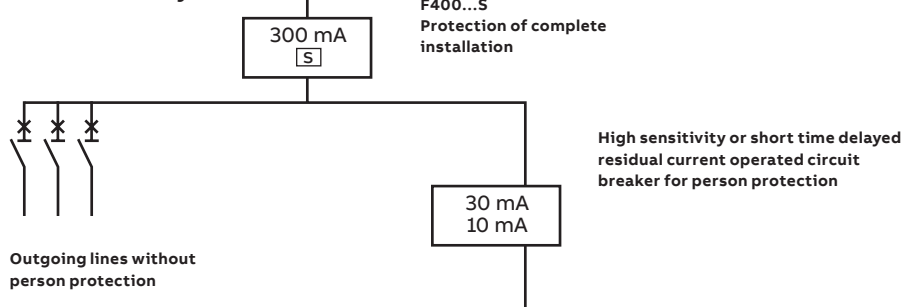
## RCDs technical details

### Properties

#### Partial selectivity



#### Total selectivity



#### Amperometric (partial) selectivity

Selectivity may be created by placing low-sensitivity RCDs upstream and higher-sensitivity RCDs downstream.

An essential condition which must be satisfied in order to achieve selective co-ordination is that the  $I_{\Delta 1}$  value of the breaker upstream (main breaker) is more than double the  $I_{\Delta 2}$  value of the breaker downstream. The operative rule to obtain an amperometric (partial) selectivity is  $I_{\Delta n}$  of the upstream breaker =  $3 \times I_{\Delta n}$  of the downstream breaker (e.g.: F404, 300 mA upstream; F402, 100 mA downstream).

In this case, selectivity is partial and only the downstream breaker trips for earth fault currents  $I_{\Delta 2} < I_{\Delta m} < 0,5 \times I_{\Delta 1}$ .

#### Chronometric (total) selectivity

To achieve total selectivity, delayed or selective RCDs must be installed.

The tripping times of the two devices connected in series must be co-ordinated so that the total interruption time  $t_2$  of the downstream breaker is less than the upstream breaker's no-response limit time  $t_1$ , for any current value. In this way, the downstream breaker completes its opening before the upstream one.

To completely guarantee total selectivity, the  $I_{\Delta}$  value of the upstream device must also be more than double that of the downstream device in accordance with IEC 64-8/563.3, comments. The operative rule to obtain an amperometric (partial) selectivity is  $I_{\Delta n}$  of the upstream breaker =  $3 \times I_{\Delta n}$  of the downstream breaker (e.g.: F404, S type, 300 mA upstream).

For safety reasons, the delayed tripping times of the upstream breaker must always be below the safety curve.

## RCDs technical details

### Standard, short-time delayed and selective type

The use of multiple electronic reactors for the supply of fluorescent lamps instead generates permanent leakage currents and inrush currents that can provoke nuisance tripping of a standard residual current breaker.

IT system loads and other electronic equipment (e.g. dimmers, computers, inverters) with capacitive input filters connected between the phases and ground can also generate permanent earth leakage currents whose sum may provoke the nuisance tripping of a standard residual current breaker.

For these situations, the SHORT-TIME DELAY breakers allow a greater number of devices to be connected to the installation.

Soft-starters for motors are loads which can generate high-frequency capacitive currents (provoked by the harmonics) toward ground or fed into the network. Also in this case, the use of SHORT-TIME DELAY residual breakers reduces the sensibility to nuisance tripping.

Compared with standard type breakers, SHORT-TIME DELAY residual current breakers are therefore characterised, for any given sensibility, by:

- Higher residual trip current
- Tripping time delay
- Better resistance to overvoltages, harmonics and impulse disturbances.

### Regulations

The tests set out in the IEC 61008 and IEC 61009 standards verify the resistance of residual current breakers to unwanted tripping provoked by operation overvoltages, using a ring wave impulse shape of  $0.5\mu\text{s}/100\text{kHz}$ . All residual current circuit-breakers are required to pass this test with a peak current value of 200A.

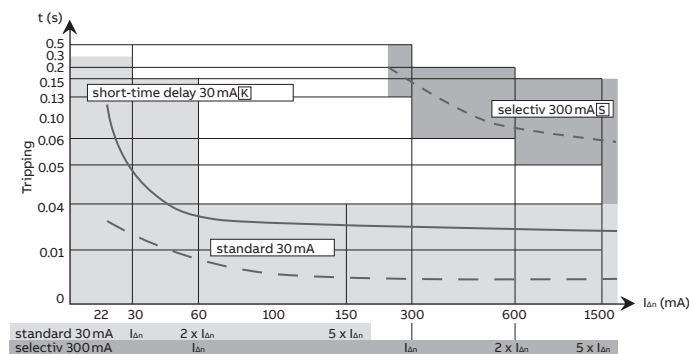
For what concerns atmospheric overvoltages, the IEC 61008 and 61009 standards prescribe the 8/20  $\mu\text{s}$  surge test with a 3000A peak current, but limit the requirement to residual current devices classified as selective; no test is required for other types.

The ABB range of SHORT-TIME DELAY anti- nuisance tripping breakers and blocks pass the general  $0.5\mu\text{s}/100\text{kHz}$  ring wave test and also withstand the 8/20  $\mu\text{s}$  impulse test with the same peak current of 3000A prescribed for selective devices.

The F402 K and F404 K should therefore be used to prevent unwanted tripping.

### Three different types of Residual current operated circuit breaker

- standard RCD 30 mA
- selective RCD 300 mA[S]
- short-time delay RCD 30 mA[K]



- The standard RCD 30 mA tripp after circa 22 mA and a release time of  $\leq 35\text{ms}$ .
- The selectiv RCD 300 mA tripp after circa 200 mA and a release time of circa 180 ms.
- The short-time delay RCD 30 mA tripp after circa 25 mA and a release time of 100 ... 120 ms.

## RCDs technical details

Standard, short-time delayed and selective type

### Unwanted tripping

In the event of disturbance in the mains, the RCDs normally present in the system are tripped, breaking the circuit even in the absence of a true earth fault.

Disturbances of this kind are most often caused by:

- operation overvoltages caused by inserting or removing loads (opening or closing protection of control devices, starting and stopping motors, switching fluorescent lighting systems on and off, etc.)
- overvoltages of atmospheric origin, caused by direct or indirect discharges on the electrical line.

Under these circumstances, breaker tripping is unwanted, since it does not satisfy the need to avoid the risks due to direct and indirect contacts. On the contrary, the sudden and unjustified interruption of the power supply may result in very serious problems.

### SHORT-TIME DELAY RCDs

The ABB range of SHORT-TIME DELAY anti-disturbance residual current circuitbreakers and blocks was designed to overcome the problem of unwanted tripping due to overvoltages of atmospheric or operation origin.

The electronic circuit in these devices can distinguish between temporary leakage caused by disturbances on the mains and permanent leakage due to actual faults, only breaking the circuit in the latter case.

SHORT-TIME DELAY residual current circuit-breakers and blocks have a slight delay into the tripping time, but this does not compromise the safety limits set by the Standards in force (release time at  $2 I_{\Delta n} \approx 150$  ms).

Guaranteeing conventional residual current protection, their installation in the electrical circuit therefore allows any unwanted tripping to be avoided in domestic and industrial systems in which service continuity is essential.

This delay makes the SHORT-TIME DELAY residual current devices especially suited for installations involving motor starters/variable speed drives, fluorescent lamps or IT/electronic equipment.

Table of RDC selectivity

| Upstream $I_{\Delta n}$           |      | 10<br>[mA]<br>inst | 30<br>inst | 100<br>inst | 300<br>inst | 300<br>S | 500<br>inst |
|-----------------------------------|------|--------------------|------------|-------------|-------------|----------|-------------|
| Downstream $I_{\Delta n}$<br>[mA] |      |                    |            |             |             |          |             |
| 10                                | inst |                    | ■          | ■           | ■           | ■        | ■           |
| 30                                | inst |                    |            | ■           | ■           | ■        | ■           |
| 100                               | inst |                    |            |             | ■           | ■        |             |
| 300                               | inst |                    |            |             |             |          |             |
| 300                               | S    |                    |            |             |             |          |             |
| 500                               | inst |                    |            |             |             |          |             |
| 500                               | S    |                    |            |             |             |          |             |

inst = instantaneous S = selective ■ = amperometric (partial) selectivity ■ = chronometric (total) selectivity

## RCDs technical details

### Technical data

#### Coordination tables between Short Circuit Protection Devices (SCPD) and F404 RCCBs

If you are using an RCCB you must verify that the Short Circuit Protection Device (SCPD) protects it from the effects of high current that arise under short-circuit conditions. The IEC/EN 61008 provides some tests to verify the behaviour of RCCB in short-circuit conditions. The tables below provide the maximum withstanding short-circuit current expressed in eff. kA for which the RCCBs are protected thanks to the coordination with the SCPD with a rated current (thermal protection) less than or equal to the rated current of the associated RCCB.

|               | F404 25 A | F404 40 A | F404 63 A |
|---------------|-----------|-----------|-----------|
| gG fuse 25 A  | 100       |           |           |
| gG fuse 40 A  | 60        | 60        |           |
| gG fuse 63 A  | 20        | 20        | 20        |
| gG fuse 100 A | 10        | 10        | 10        |
| S403M         | 10        | 10        | 10        |
| S803N         | 20        | 20        | 20        |
| S803S         | 25        | 25        | 25        |

#### Internal resistances and power losses of RCCBs and RCBOs

For RCDs internal resistance and power loss are intended per device (cold resistance at room temperature)

##### F402

| In [A] | Ri [mΩ] | Pv [W] |
|--------|---------|--------|
| 25     | 6.1     | 3.8    |
| 40     | 5.8     | 9.3    |

##### F404

| In [A] | Ri [mΩ] | Pv [W] |
|--------|---------|--------|
| 25     | 6.1     | 3.8    |
| 40     | 5.8     | 9.3    |
| 63     | 1.1     | 4.4    |

## RCBO Type F technical details

### Properties

Nowadays single phase inverters are present in many household and industrial loads, such as washing machines, hoovers, dishwashers, ventilation, pumps etc.... Inverter technology is a “plus” in domestic equipment, since it helps to reach better performance reducing power consumption and improving energy efficiency.

#### Working principle

A single phase frequency converter, also named inverter, is a commonly used electric drive which regulates the speed of an electric motor, operating on supply voltage and frequency.

During normal operation, the current generated by a single phase inverter in the downstream section is the result of the overlapping of mixed frequency components which varies from 10 Hz (motor frequency), to 50 Hz (rated frequency) and 1000 Hz (switching frequency).

RCDs type F have been specifically designed for single phase inverters applications in order to meet the requirement to assure adequate protection level in case of an earth fault with such harmonic content, offering at the same time an increased resistance to nuisance tripping.

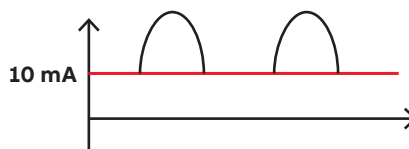
On the other side only RCD type B remain the only devices which are suitable to detect smooth DC components in the residual current caused by insulation faults in the DC section of a three phase frequency converter.

#### Type F features at a glance:

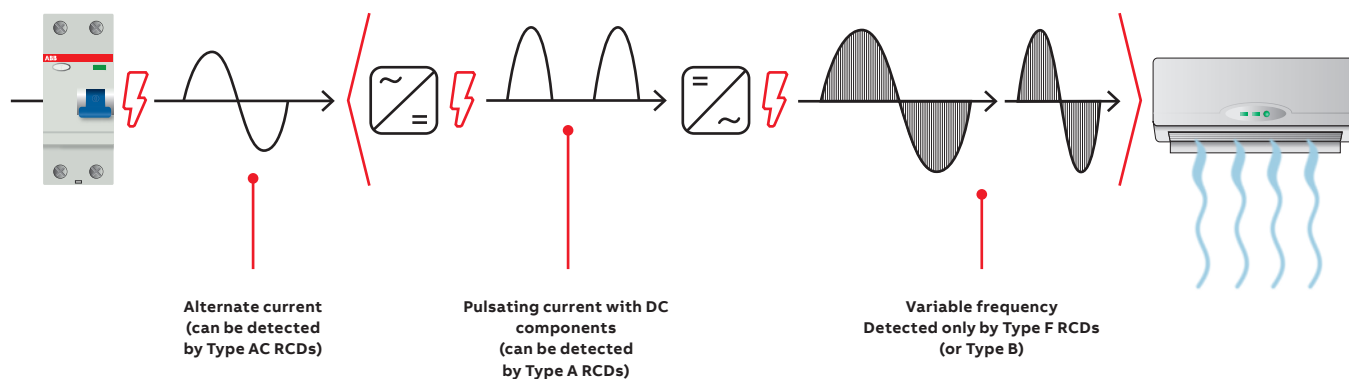
Type F RCDs offer the same range of protection and functionality as an RCD Type A APR; this means that they detect sinusoidal AC currents as well as pulsating DC currents. In addition to this, they are also tested according to IEC/EN 62423 which foresees the application of a simulated multi-frequency residual current with appropriate coefficient associated to the each level of frequency up to 1 kHz.

The intervention characteristic has a short-time delayed which prevents unwanted tripping in case pulsed leakage currents of up to ten milliseconds occur at activation of filters.

The RCDs Type F have a surge current withstand capacity of more than 3 kA and can accept superimposed smooth DC residual currents of up to 10 mA without affecting their standard functionality.



#### Typical residual current waves that can occur in a circuit that supplies a single phase inverter:



## RCBO technical details

Internal resistances and power losses, Derating

### Internal resistances and power losses

For RCBO internal resistance and power loss are intended per device (cold resistance at room temperature)

#### FS401E, FS401M

B, C tripping characteristics

| $I_n$ [A] | $R_i$ [mΩ] | $P_v$ [W] |
|-----------|------------|-----------|
| 6         | 53         | 1.9       |
| 10        | 19         | 1.9       |
| 13        | 14         | 2.3       |
| 16        | 11         | 2.7       |
| 20        | 7.6        | 3.0       |
| 25        | 7.0        | 4.4       |
| 32        | 5.5        | 5.6       |

#### FS403E, FS403M

B, C tripping characteristics

| $I_n$ [A] | $R_i$ [mΩ] | $P_v$ [W] |
|-----------|------------|-----------|
| 6         | 146        | 5.3       |
| 10        | 49         | 4.9       |
| 13        | 32         | 5.4       |
| 16        | 26         | 6.6       |
| 20        | 19         | 7.5       |
| 25        | 16         | 10.1      |
| 32        | 12         | 12.6      |

NOTE 1. For RCBO internal resistance and power loss are intended per device

#### FS400E, FS400M, FS400MK

B, C tripping characteristics

| $I_n$ [A] | Ambient temperature T (°C) |       |       |       |       |       |       |       |       |       |       |       |
|-----------|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|           | 0                          | 10    | 15    | 20    | 25    | 30*   | 35    | 40    | 45    | 50    | 55    | 60    |
| 6         | 7.10                       | 6.70  | 6.55  | 6.40  | 6.20  | 6.00  | 5.80  | 5.60  | 5.40  | 5.20  | 5.00  | 4.80  |
| 10        | 11.00                      | 10.70 | 10.50 | 10.30 | 10.15 | 10.00 | 9.85  | 9.70  | 9.55  | 9.40  | 9.25  | 9.10  |
| 13        | 14.40                      | 14.00 | 13.75 | 13.50 | 13.25 | 13.00 | 12.75 | 12.50 | 12.25 | 12.00 | 11.75 | 11.50 |
| 16        | 17.40                      | 17.00 | 16.75 | 16.50 | 16.25 | 16.00 | 15.75 | 15.50 | 15.25 | 15.00 | 14.75 | 14.50 |
| 20        | 21.70                      | 21.10 | 20.85 | 20.60 | 20.30 | 20.00 | 19.70 | 19.40 | 19.10 | 18.80 | 18.50 | 18.20 |
| 25        | 28.20                      | 27.10 | 26.60 | 26.10 | 25.55 | 25.00 | 24.45 | 23.90 | 23.35 | 22.80 | 22.25 | 21.70 |
| 32        | 36.00                      | 34.70 | 34.00 | 33.30 | 32.65 | 32.00 | 31.35 | 30.70 | 30.05 | 29.40 | 28.75 | 28.10 |

\* Reference ambient air temperature for overload tripping

### Influence of adjacent poles Correction factor $F_m$

| No. of adjacent poles | correction factor |
|-----------------------|-------------------|
| 1...3 poles           | 1                 |
| 5...6 poles           | 0.86              |
| 6                     | 0.8               |
| 7                     | 0.78              |
| 8                     | 0.77              |
| 9                     | 0.76              |
| 10                    | 0.76              |

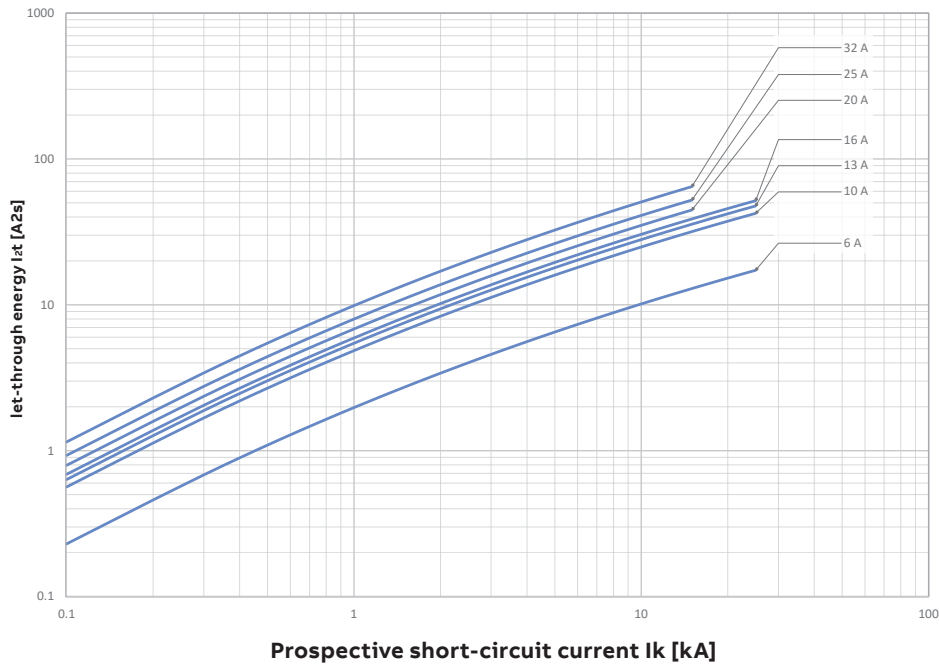
## RCBO technical details

Limitation of specific let-through energy  $I^2t$ , peak current  $I_p$

### $I^2t$ diagrams - Specific let-through energy value $I^2t$

The  $I^2t$  curves give the values of the specific let-through energy expressed in  $\text{kA}^2\text{s}$  (A=amps; s=seconds) in relation to the perspective short-circuit current ( $I_{rms}$ ) in kA.

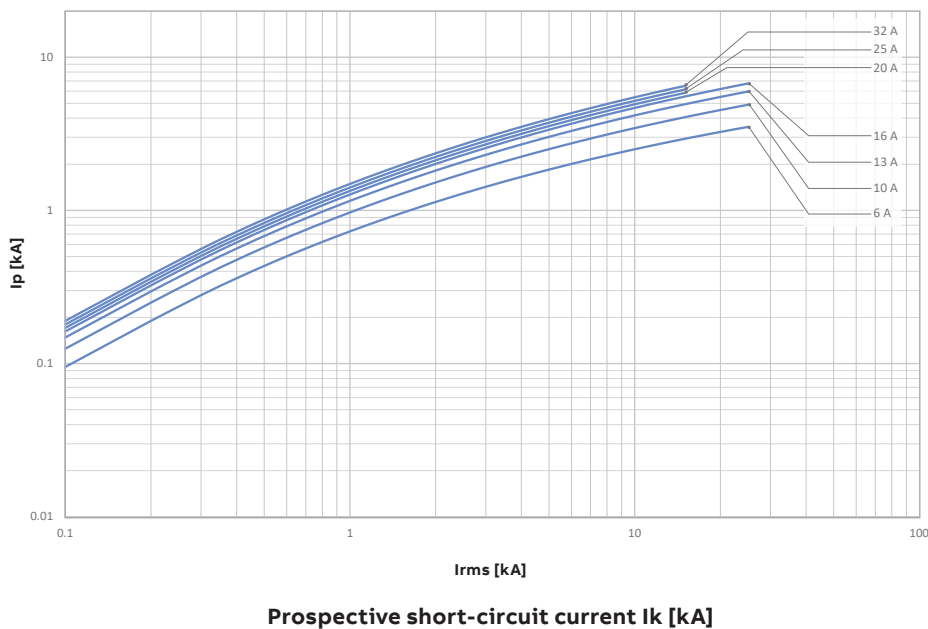
#### FS400M characteristics B-C



### Limitation curves – Peak current values

The  $I_p$  curves give the values of the peak current, expressed in kA, in relation to the perspective symmetrical short-circuit current (kA).

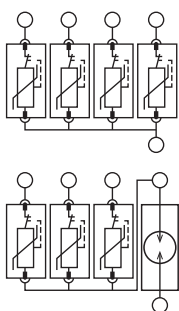
#### FS400M Characteristics B-C





## OVR technical details

### Surge arrester OVR



The type 2 surge arresters in the QuickSafe product range are suitable for protecting electrical low voltage systems and terminals in the 240/415 V system. The devices can be used as type 2 surge arresters within the scope of the lightning protection zone concept at zone transition 0B-1 and higher. The high nominal discharge capability of 20 kA makes it possible for the equipment to have a longer service life in comparison to the minimum requirements of the standard. The devices consist of a basic unit and pluggable protection modules, which can be removed extremely easily to carry out insulation measurement. They are fully compatible with SMISSLINE installation devices and the surge arresters in the ABB System pro M model series. The surge arresters are tested as type 2 arresters in accordance with the EN/IEC 61643-11 test standard.

#### Mounting

##### Installation and electrical connection

The over voltage protection device "OVR" will be installed near the front of the protected consumers conditioning.

The surge arrester is to be mounted right after the Incoming block of the socket system.

The OVR404 is snapped directly onto the SMISSLINE bus bar system.

## Surge and lightning protection solutions

### Products Standards, IEC 61643

The New IEC 61643-11:2011 is similar to the EN 61643-11:2012 and are the standards for Low-Voltage Surge Protective Devices. These standards exist since the nineties and have gone through different releases improving them. In the last release not only the evaluation of the product performances is under focus, but the stress on safety evaluation.

Regarding performances, this new edition recognizes the possibility to evaluate and certify a SPD under multiple categories, option not considered in the previous editions. So in order to certify an SPD under the Type 1 and Type 2 category, two different tests need to be performed to validate the features under each one of them.

Until now, the safety of the SPD was verified reproducing situations that represent the working conditions of the SPD, as for example, the short-circuit test or the temporary over-voltage test. According to the new edition of the standard, new tests reproducing the potential interruption of the Neutral conductor and the different modes of end of life of the SPD are performed.

These two additional tests are a real Plus on safety management and they are a guarantee for the final user that the installation will not suffer any stress in case of the end of life of the SPD. The new QuickSafe® range has been specially developed to answer to these new requirements. All this reducing the stress on the back-up protection device.

The new QuickSafe® technology allows to comply with the end of life tests thanks to a patented internal disconnection system, this systems disconnects the internal circuit before the internal components (MOVs) go into short-circuit.

The advantage for the customer is that the product is self-protected up to higher values of current and this allows to install back-up protection elements with higher rated current, as these elements will only intervene in the rear case of a short-circuit on site together with a sudden End of Life of the SPD (this happens when for example the SPD is hit by a current higher than its  $I_{max}$ ).

You will find the tables on page 36 indicating the maximum back-up rated current MCB or fuse to use to guarantee the coordination.

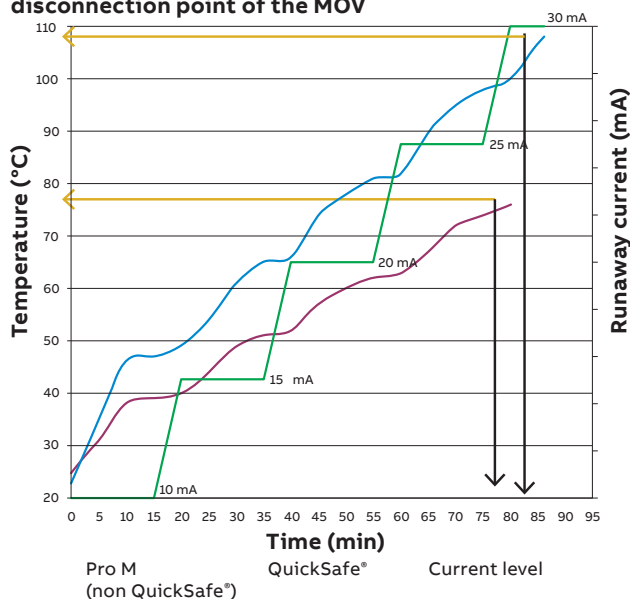
This new technology allows as well to increase the prospective withstand short-circuit current at the point of the installation up to  $I_{scrr} = 100\text{ kA}$  with a back up protection of maximum rated current of 125 A (for OVR T2 QS and OVR T2-T3 QS) and 160 A (for OVR T1-T2s QS and OVR T2s QS).

#### What's new in IEC/EN 61643-11:2012?

- New test procedure which takes into account the failure behavior of protective equipment in the event of an overload, or when the service life has expired
- The Type 1 operating duty test is conducted with a higher current than that specified in the previous standard
- Recognition of the mixed types, as Type 1+2 and Type 2+3, this allows as to certify the product with more than one category.

In simple words, the new OVR QuickSafe® can be used in 99.9% of standard installations and becomes an easy replacement to any other SPD ranges.

#### Thermal Disconnection – Temperatures measured at the disconnection point of the MOV



Here we can see 2 different curves representing the behavior of the actual range (blue curve) and the new QuickSafe® range (red curve), for the same level of current (the green line represent the evolution of the current with the time, as specified by the IEC 61643-11).

- These curves represent the temperature INCREASE that the MOV suffers when being tested under these values of current for the indicated time. These are NOT absolute temperature, but relatives ones
- As you can see with the black arrows, the time to guarantee the disconnection for the same level of current has been reduced by 6 minutes
- And even better, as you can see with the orange arrows, the maximum reached temperature required to guarantee the disconnection is lower, from 108 °C.

## OVR technical details

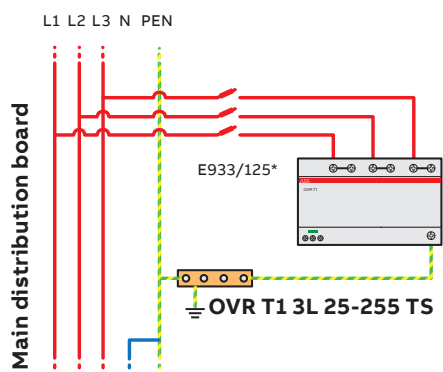
### Coordination

#### Coordination of surge protection devices

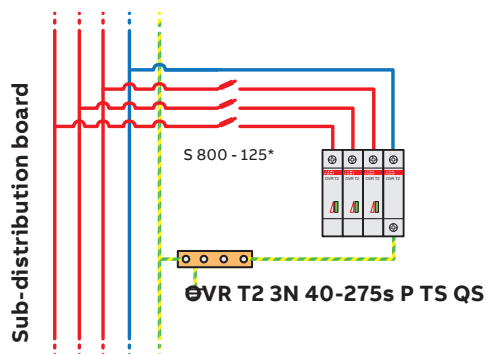
The first over voltage protection device does not provide effective protection for the entire power system. Therefore, a coordination of the over voltage protection devices with each other is required.

#### Configuration 1

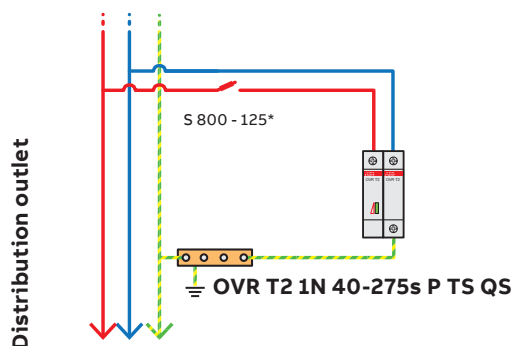
$15 \text{ kA} \leq I_p \leq 50 \text{ kA}$



> 10 meters cable

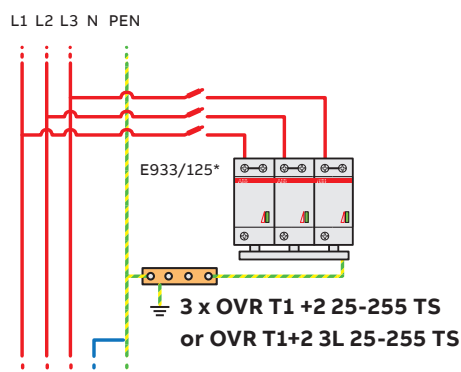


> 10 meters cable

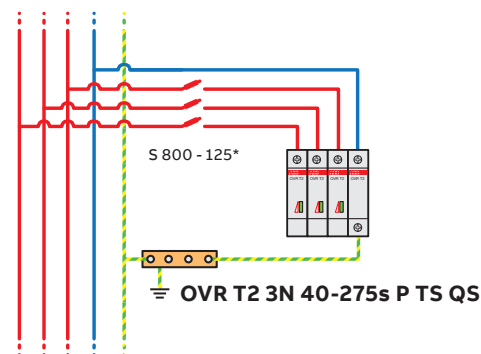


#### Configuration 2

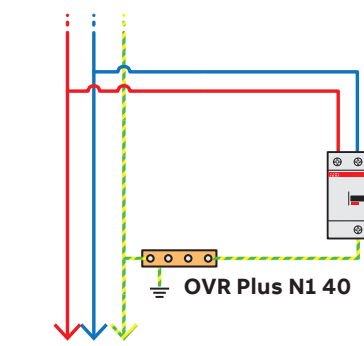
$7 \text{ kA} \leq I_p \leq 15 \text{ kA}$



> 10 meters cable



> 10 meters cable



## Surge and lightning protection solutions

### Selection of surge protective devices

#### End of life indicator of the standard surge protective device

This option enables indication of the surge protective device state via a mechanical indicator which changes from green to red as the surge protective device comes to end-of-life. When this occurs, the surge protective device must be changed as protection is no longer guaranteed.

#### Technical features of the integrated auxiliary contact

- Contacts information: Normally-opened (NO)/Normally-closed (NC)
- Min. load: 12 VDC – 10 mA
- Max. load: 250 VAC – 1 A
- Connection cross-section: 1.5 mm<sup>2</sup>.

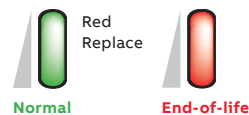
#### Pluggable

The pluggable feature of ABB surge protective devices facilitates maintenance. Should one or more worn cartridges need to be replaced, the electrical circuit does not have to be isolated nor do the wires have to be removed.

#### Auxiliary contact (TS)

This function, achieved by wiring a 3-point 1 A volt-free contact, enables the operational state of the surge protective device to be checked remotely (maintenance premises). For standard products, the TS changes status when the cartridge needs to be replaced, protection is not guaranteed. On products fitting the Safety Reserve (s) system, it indicates that one component of the cartridge is damaged, but the protection is still guaranteed.

#### End-of-life indicator standard SPD



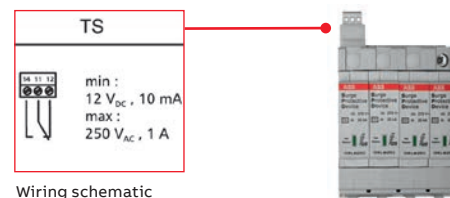
#### NOTE:

A faulty surge protective device does not interrupt continuity of service (if wired such that priority is given to continuity of service), it simply disconnects itself. But, the equipment is no longer protected.



#### NOTE:

Pluggable surge protective device cartridges have a foolproof system (Neutral cartridges different to Phase cartridges) preventing incorrect operations when replacing a cartridge.



Wiring schematic

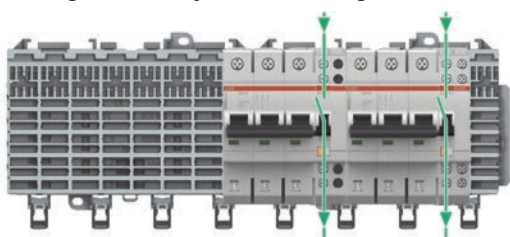
#### Surge protective device fitted with the auxiliary contact option

## Auxiliary switches and signal contacts

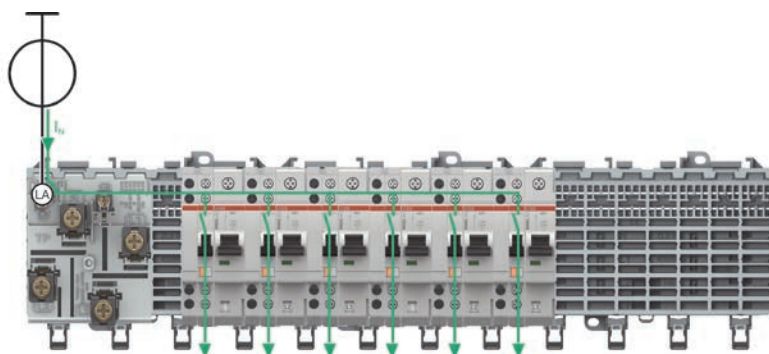
### Wiring variants

#### 1. Wiring without auxiliary busbars LA, LB

Wiring of auxiliary switch and signal contact blocks without contact to the auxiliary busbars LA and LB.

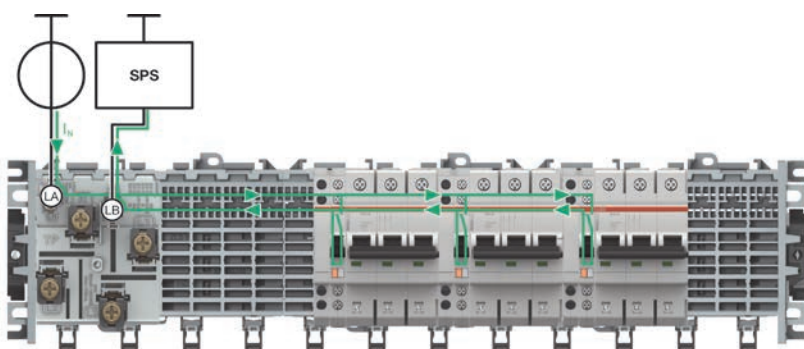


#### 2. Input contacts the auxiliary busbars LA, LB. Standard output wiring.

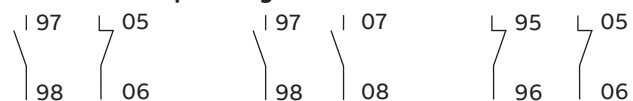


#### 3. Collective alarm, signal contact contacts the auxiliary busbars LA, LB

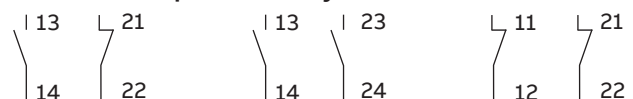
A cost-effective collective alarm solution can be implemented without additional wiring by using this arrangement.



#### Contact description signal contact



#### Contact description auxiliary contact



## Auxiliary switches and signal contacts

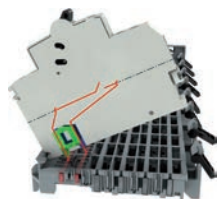
### Contact arrangements to auxiliary busbars



#### Left/right mounting of auxiliary switch/signal contact for miniature circuit breaker

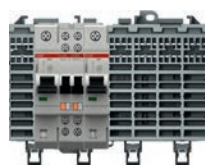
##### Space-saving on the socket system

By mounting the auxiliary switches/signal contacts alternately on the left and right, the installation width on the SMISLINE socket system can be reduced. A dummy housing is therefore not needed when just using auxiliary switches or signal contacts.

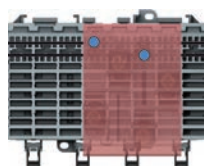


S400 miniature circuit breakers with auxiliary switches mounted on left and right:  
25% space saving

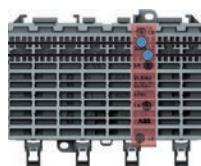
S400 miniature circuit breakers with NT40163 9 mm on the right and S400 with auxiliary switch on the left:  
20% space saving



#### Supply options for auxiliary busbars LA and LB



Supply option for auxiliary busbars using incoming terminal block.

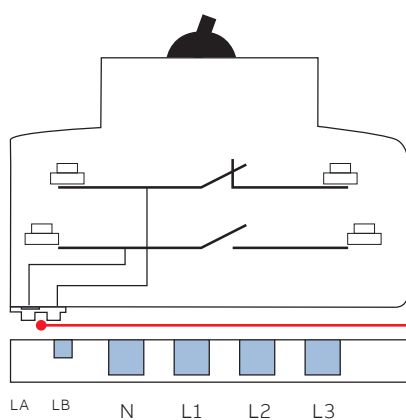


Supply option for auxiliary busbars using incoming terminal block.

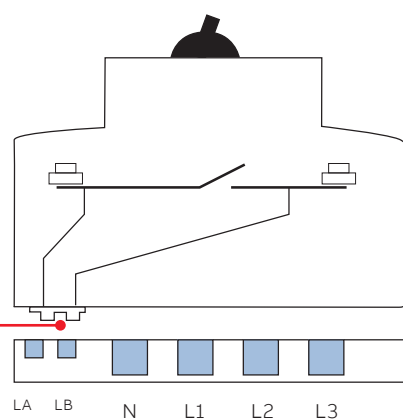
#### Positioning of contacting piece ZLS632 on auxiliary switch and signal contact

The small auxiliary switch/signal contact contacting piece can be simply and quickly changed from the position of the LA to the LB auxiliary busbar by reversing it by 180 degree.

#### HK/SK 1NO, 1NC



#### Signal or auxiliary contact Collective alarm

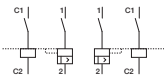


# Shunt trip for S400

## Technical details



**Shunt trips**  
Function: remote opening of the device when a voltage is applied suitable for MCB S400.



**Shunt trip**

|                        |        |                 | S2C-A1      |       |       |       |       |       | S2C-A2      |        |        |        |        |
|------------------------|--------|-----------------|-------------|-------|-------|-------|-------|-------|-------------|--------|--------|--------|--------|
| Rated voltage          | AC     | V               | 12 ... 60   |       |       |       |       |       | 110 ... 415 |        |        |        |        |
|                        | DC     | V               | 12 ... 60   |       |       |       |       |       | 110 ... 250 |        |        |        |        |
| Max. release duration  |        | ms              | < 10        |       |       |       |       |       | < 10        |        |        |        |        |
| Min. release voltage   | AC     | V               | 7           |       |       |       |       |       | 55          |        |        |        |        |
|                        | DC     | V               | 10          |       |       |       |       |       | 80          |        |        |        |        |
| Consumption on release | Ub     | V               | 12 DC       | 12 AC | 24 DC | 24 AC | 60 DC | 60 AC | 110 DC      | 110 AC | 220 DC | 230 AC | 415 AC |
|                        | Ib max | A               | 2.2         | 2.5   | 4.5   | 5     | 14    | 8.8   | 0.35        | 0.5    | 1.1    | 1.0    | 2.7    |
| Coil resistance        |        | Ω               | 3.7         |       |       |       |       |       | 225         |        |        |        |        |
| Terminals              |        | mm <sup>2</sup> | 16          |       |       |       |       |       | 16          |        |        |        |        |
| Tightening torque      |        | Nm              | 2           |       |       |       |       |       | 2           |        |        |        |        |
| Dimensions (HxDxW)     |        | mm              | 100x69x17.5 |       |       |       |       |       | 100x69x17.5 |        |        |        |        |



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| <b>01. Dimension of SMISLINE</b> | 140 |
|----------------------------------|-----|



## SMISSLINE dimensions (in mm)

—  
01 1-, 2-, 3- and 4-pole  
miniature circuit  
breakers S400

—  
02 Residual current  
operated circuit breaker

—  
03 4-pole residual  
current operated  
circuit breaker, switch  
disconnecter

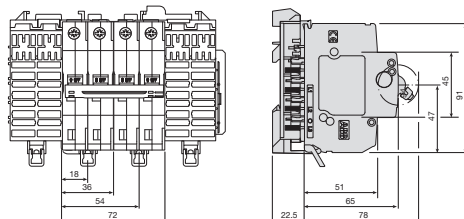
—  
04 Auxiliary switch  
and signal contact

—  
05 Residual current  
circuit-breakers with  
overcurrent protec-  
tion (RCBO) FS401

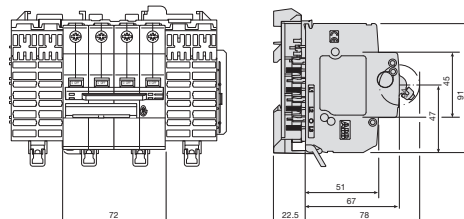
—  
06 Surge Arrester

—  
07 2-pole residual  
current operated  
circuit breaker F402

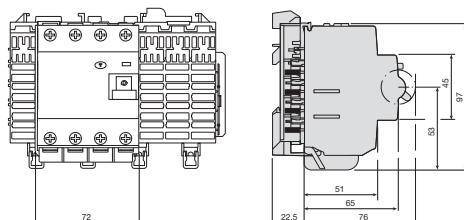
—  
08 Neutral disconnector



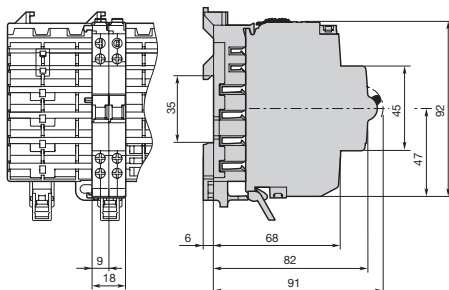
01



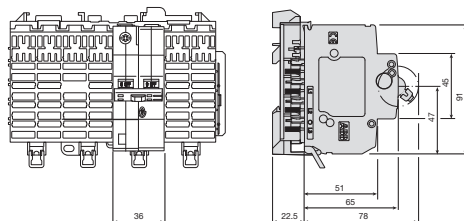
02



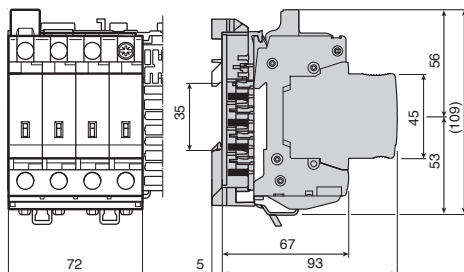
03



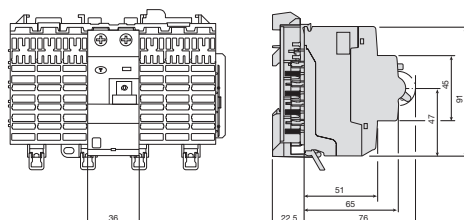
04



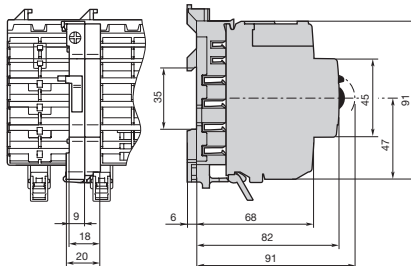
05



06



07



08

## SMISLINE dimensions (in mm)

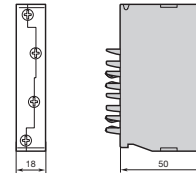
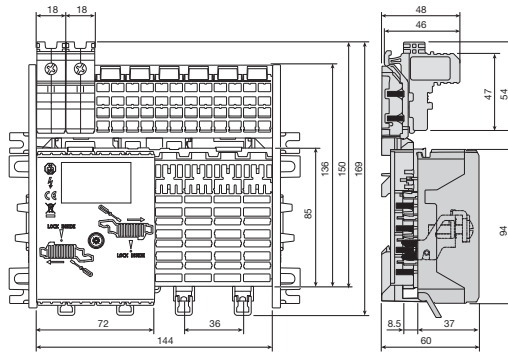
—  
01 Incoming terminal  
blocks 125A/160A

—  
02 Incoming terminal  
blocks 63A  
Incoming termi-  
nal block LA, LB

—  
03 Incoming  
terminal component  
250A ZLSP 25X

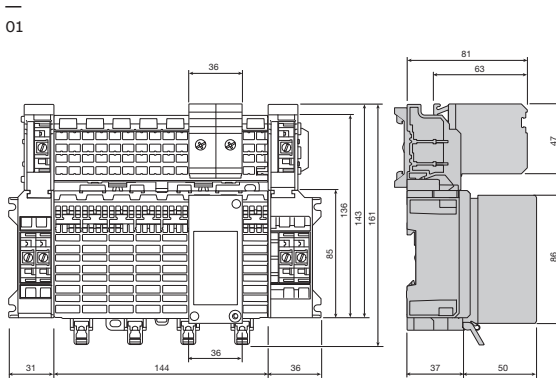
—  
04 Incoming terminal  
component 250A  
ZLSP 934 on ZLS908

—  
05 Socket base  
ZLS9P08 Power Bar

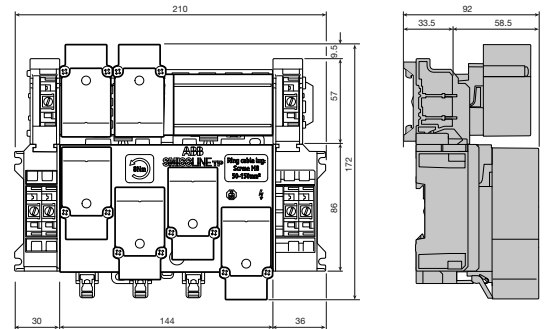


ZLS 260-262

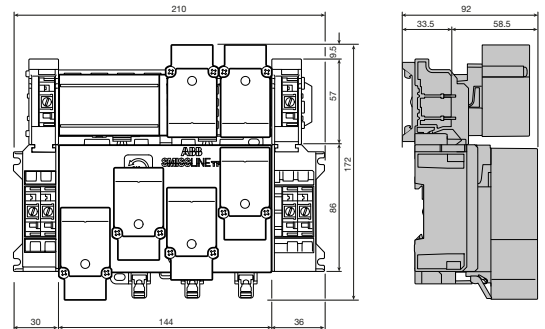
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02



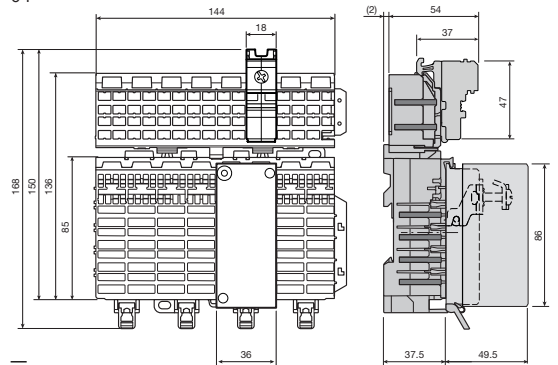
03



04



—  
04



—  
05

## SMISSLINE dimensions (in mm)

01 Socket base ZLS908

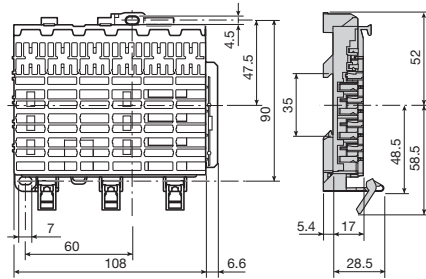
02 Miniature circuit  
breakers SUP400

03 Intermediate  
piece ZLS 725

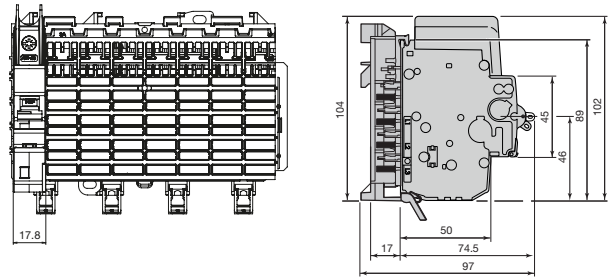
04 Combi module  
ZMS132, Adapter  
MS116/132

05 Busbar cover ZLS100

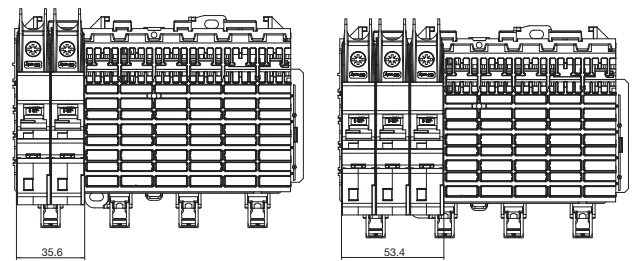
06 Extension  
adapter ZLS101



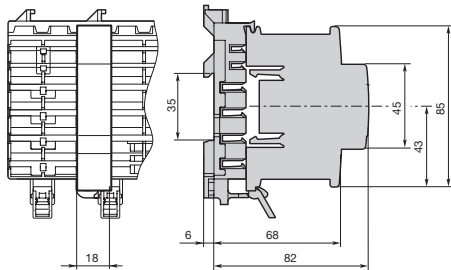
ZLS906



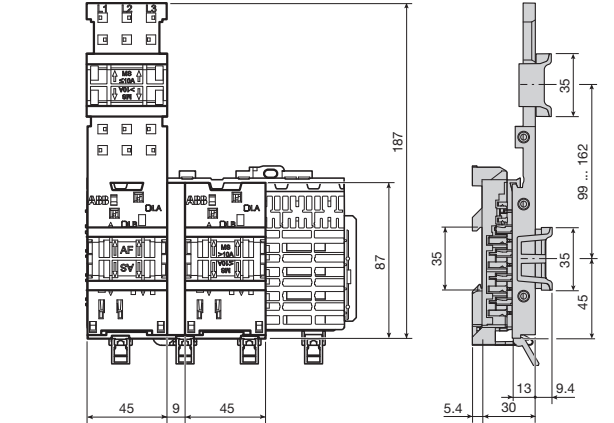
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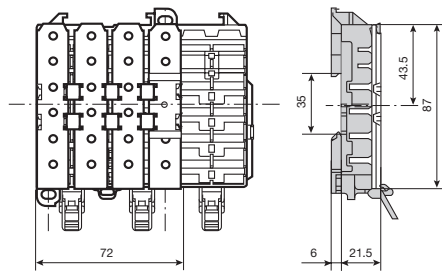
02



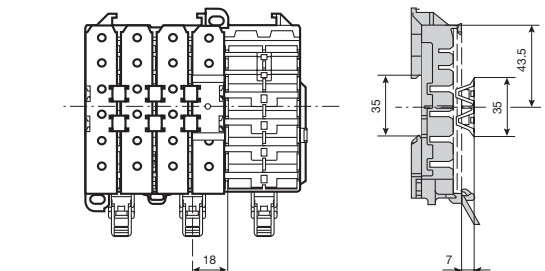
03



04



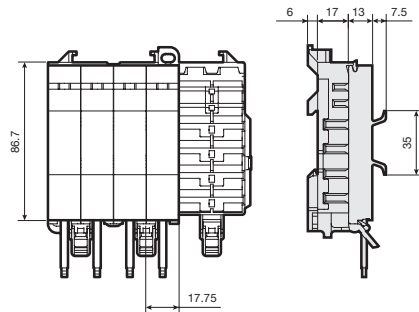
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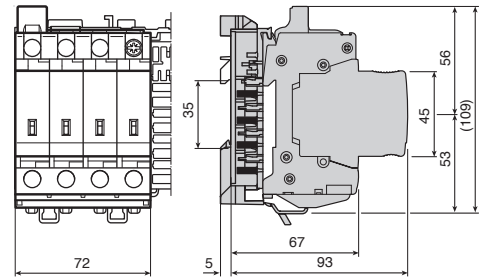
06

## SMISLINE dimensions (in mm)

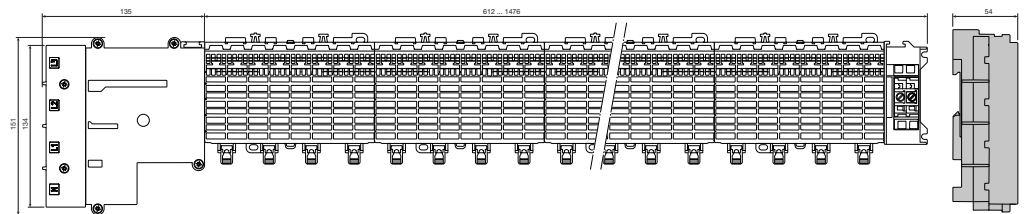
- 01 DIN Rail adapter  
32A, 63A
- 02 Surge Arrester  
OVR404
- 03 Direct feed  
Left version
- 04 Direct feed  
Right version



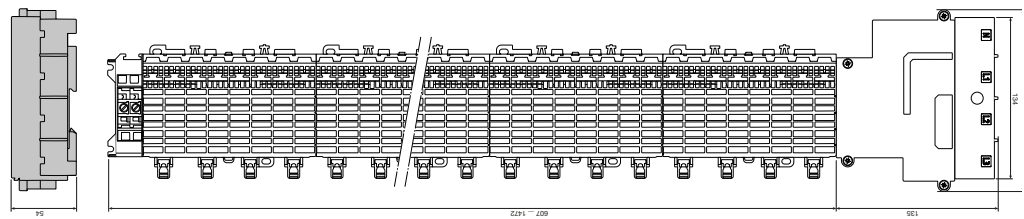
01



02



03



04





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\_\_\_\_\_

- Approved
- In preparation

- In preparation







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