

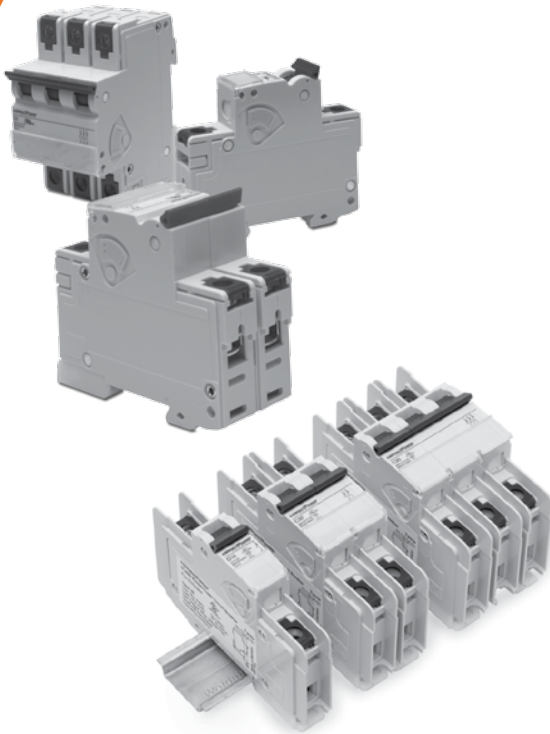
## Datasheet

### BR & SU Series

#### UL489/CSA C22.2 No.5-02 (Branch rated) Circuit Breakers

#### UL1077/CSA C22.2 No.235 Supplementary Protectors

**NEW**



Compared to traditional fuse installation, the UL489/CSA C22.2 No.5-02, UL1077/CSA C22.2 No.235 compliant circuit breakers listed here assist with the complex task of selecting correct types and characteristics and offer a less bulky installation solution. Our range of miniature, molded-case circuit breakers, in combination with our accessories for factory or on-site installation, offer enhanced control and monitoring capabilities. Installation kits include all parts and instructions to make the on-site job easy.

We supply UL489/CSA C22.2 No.5-02 and UL1077/CSA C22.2 No.235 compliant 1, 2 and 3-pole-type circuit breakers from 0.5 to 60 Ampere and with type C and D characteristics.

Attachments such as neutral switches, auxiliary contacts and shunt trips are also available for this system. All accessories for modern busbar installations are available in compliance with the relevant UL standards.

#### **Weidmuller, Canada**

10 Spy Court  
Markham, Ontario L3R 5H6  
Telephone: (800) 268-4080  
Facsimile: (877) 300-5635  
Email: [info1@weidmuller.ca](mailto:info1@weidmuller.ca)  
Website: [www.weidmuller.ca](http://www.weidmuller.ca)

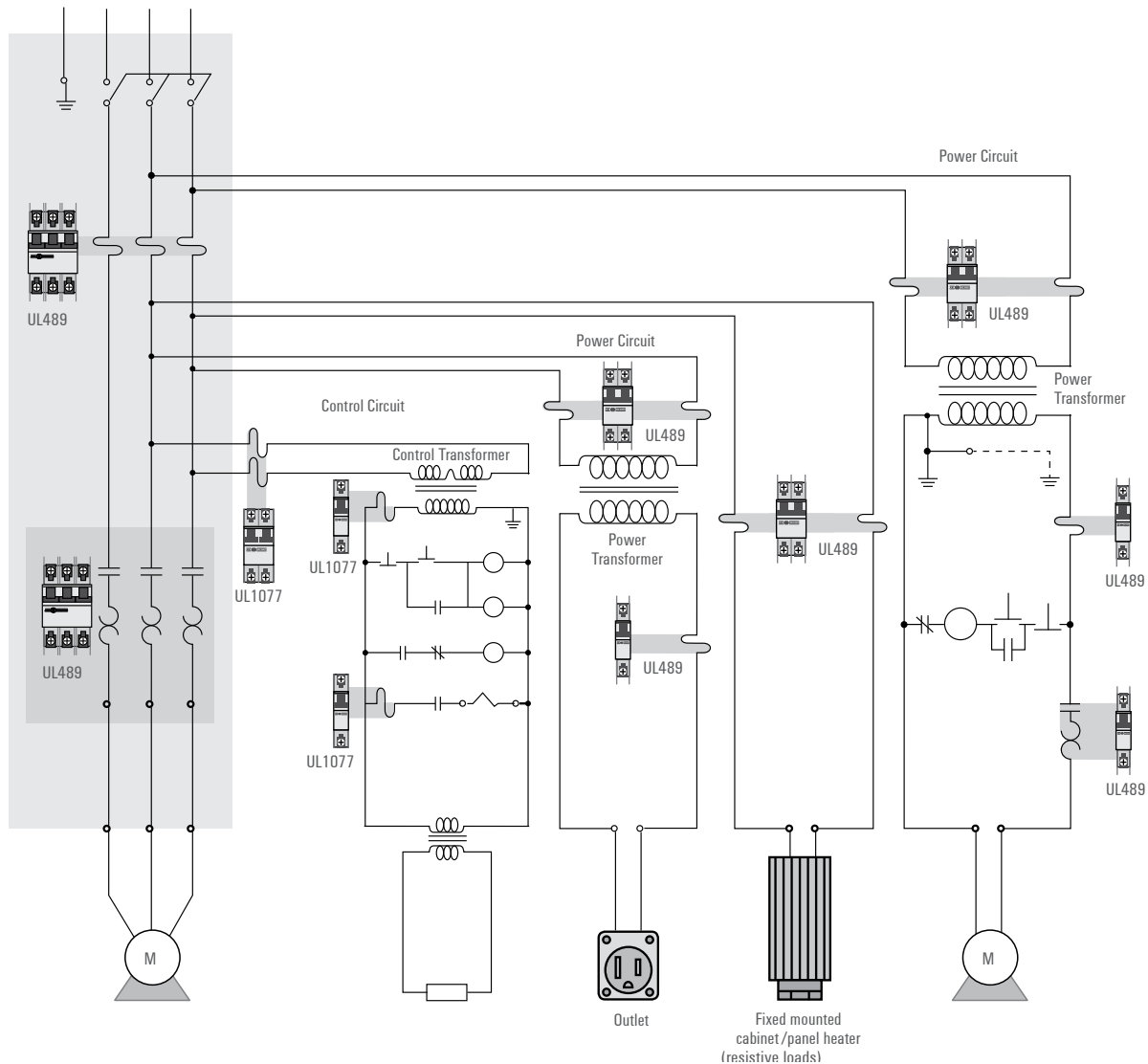
#### **Weidmuller, Mexico**

Blvd. Hermanos Serdán 698,  
Col. San Rafael Oriente  
Puebla, Puebla, Mexico  
C.P. 72029  
Telephone: 01 222 2686267  
Facsimile: 01 222 2686219  
Email: [clientes@weidmuller.com.mx](mailto:clientes@weidmuller.com.mx)  
Website: [www.weidmuller.com.mx](http://www.weidmuller.com.mx)

#### **Weidmuller, United States**

821 Southlake Blvd.  
Richmond, Virginia 23236  
Telephone: (800) 849-9343  
Facsimile: (804) 379-2593  
Email: [info@weidmuller.com](mailto:info@weidmuller.com)  
Website: [www.weidmuller.com](http://www.weidmuller.com)

## Application Schematic



Sizing of main branch circuit protector according to table 430.52 in NEC®

- **Dual Element (Time Delay) Fuse**

Maximum fuse = largest motor FLA x 175 %  
+ FLA of all other motors and general loads in group

- **Inverse Time Breaker**

Maximum circuit breaker = largest motor FLA x 250 %  
+ FLA of all other motors and general loads in group  
(for other fuse/breaker types see table 430.52)

## Branch Circuit Breakers

### AC Version, C and D Characteristics



#### Single Pole - D Curve

| Current Ratings (amps) | Part No.        | Description                           | Part No.        | Description                           |
|------------------------|-----------------|---------------------------------------|-----------------|---------------------------------------|
| 0.5                    | <b>BR1D05AC</b> | Branch / 1P Cct Brkr / D Curve / 0.5A | <b>BR1C05AC</b> | Branch / 1P Cct Brkr / C Curve / 0.5A |
| 1                      | <b>BR1D1AC</b>  | Branch / 1P Cct Brkr / D Curve / 1A   | <b>BR1C1AC</b>  | Branch / 1P Cct Brkr / C Curve / 1A   |
| 2                      | <b>BR1D2AC</b>  | Branch / 1P Cct Brkr / D Curve / 2A   | <b>BR1C2AC</b>  | Branch / 1P Cct Brkr / C Curve / 2A   |
| 3                      | <b>BR1D3AC</b>  | Branch / 1P Cct Brkr / D Curve / 3A   | <b>BR1C3AC</b>  | Branch / 1P Cct Brkr / C Curve / 3A   |
| 5                      | <b>BR1D5AC</b>  | Branch / 1P Cct Brkr / D Curve / 5A   | <b>BR1C5AC</b>  | Branch / 1P Cct Brkr / C Curve / 5A   |
| 10                     | <b>BR1D10AC</b> | Branch / 1P Cct Brkr / D Curve / 10A  | <b>BR1C10AC</b> | Branch / 1P Cct Brkr / C Curve / 10A  |
| 15                     | <b>BR1D15AC</b> | Branch / 1P Cct Brkr / D Curve / 15A  | <b>BR1C15AC</b> | Branch / 1P Cct Brkr / C Curve / 15A  |
| 20                     | <b>BR1D20AC</b> | Branch / 1P Cct Brkr / D Curve / 20A  | <b>BR1C20AC</b> | Branch / 1P Cct Brkr / C Curve / 20A  |
| 25                     | <b>BR1D25AC</b> | Branch / 1P Cct Brkr / D Curve / 25A  | <b>BR1C25AC</b> | Branch / 1P Cct Brkr / C Curve / 25A  |
| 30                     | <b>BR1D30AC</b> | Branch / 1P Cct Brkr / D Curve / 30A  | <b>BR1C30AC</b> | Branch / 1P Cct Brkr / C Curve / 30A  |
| 40                     | <b>BR1D40AC</b> | Branch / 1P Cct Brkr / D Curve / 40A  | <b>BR1C40AC</b> | Branch / 1P Cct Brkr / C Curve / 40A  |
| 50                     | <b>BR1D50AC</b> | Branch / 1P Cct Brkr / D Curve / 50A  | <b>BR1C50AC</b> | Branch / 1P Cct Brkr / C Curve / 50A  |
| 60                     | <b>BR1D60AC</b> | Branch / 1P Cct Brkr / D Curve / 60A  | <b>BR1C60AC</b> | Branch / 1P Cct Brkr / C Curve / 60A  |



#### Double Pole - D Curve

| Current Ratings (amps) | Part No.        | Description                           | Part No.        | Description                           |
|------------------------|-----------------|---------------------------------------|-----------------|---------------------------------------|
| 0.5                    | <b>BR2D05AC</b> | Branch / 2P Cct Brkr / D Curve / 0.5A | <b>BR2C05AC</b> | Branch / 2P Cct Brkr / C Curve / 0.5A |
| 1                      | <b>BR2D1AC</b>  | Branch / 2P Cct Brkr / D Curve / 1A   | <b>BR2C1AC</b>  | Branch / 2P Cct Brkr / C Curve / 1A   |
| 2                      | <b>BR2D2AC</b>  | Branch / 2P Cct Brkr / D Curve / 2A   | <b>BR2C2AC</b>  | Branch / 2P Cct Brkr / C Curve / 2A   |
| 5                      | <b>BR2D5AC</b>  | Branch / 2P Cct Brkr / D Curve / 5A   | <b>BR2C5AC</b>  | Branch / 2P Cct Brkr / C Curve / 5A   |
| 10                     | <b>BR2D10AC</b> | Branch / 2P Cct Brkr / D Curve / 10A  | <b>BR2C10AC</b> | Branch / 2P Cct Brkr / C Curve / 10A  |
| 15                     | <b>BR2D15AC</b> | Branch / 2P Cct Brkr / D Curve / 15A  | <b>BR2C15AC</b> | Branch / 2P Cct Brkr / C Curve / 15A  |
| 20                     | <b>BR2D20AC</b> | Branch / 2P Cct Brkr / D Curve / 20A  | <b>BR2C20AC</b> | Branch / 2P Cct Brkr / C Curve / 20A  |
| 25                     | <b>BR2D25AC</b> | Branch / 2P Cct Brkr / D Curve / 25A  | <b>BR2C25AC</b> | Branch / 2P Cct Brkr / C Curve / 25A  |
| 30                     | <b>BR2D30AC</b> | Branch / 2P Cct Brkr / D Curve / 30A  | <b>BR2C30AC</b> | Branch / 2P Cct Brkr / C Curve / 30A  |
| 40                     | <b>BR2D40AC</b> | Branch / 2P Cct Brkr / D Curve / 40A  | <b>BR2C40AC</b> | Branch / 2P Cct Brkr / C Curve / 40A  |
| 50                     | <b>BR2D50AC</b> | Branch / 2P Cct Brkr / D Curve / 50A  | <b>BR2C50AC</b> | Branch / 2P Cct Brkr / C Curve / 50A  |
| 60                     | <b>BR2D60AC</b> | Branch / 2P Cct Brkr / D Curve / 60A  | <b>BR2C60AC</b> | Branch / 2P Cct Brkr / C Curve / 60A  |



#### Triple Pole - D Curve

| Current Ratings (amps) | Part No.        | Description                          | Part No.        | Description                          |
|------------------------|-----------------|--------------------------------------|-----------------|--------------------------------------|
| 1                      | <b>BR3D1AC</b>  | Branch / 3P Cct Brkr / D Curve / 1A  | <b>BR3C1AC</b>  | Branch / 3P Cct Brkr / C Curve / 1A  |
| 2                      | <b>BR3D2AC</b>  | Branch / 3P Cct Brkr / D Curve / 2A  | <b>BR3C2AC</b>  | Branch / 3P Cct Brkr / C Curve / 2A  |
| 5                      | <b>BR3D5AC</b>  | Branch / 3P Cct Brkr / D Curve / 5A  | <b>BR3C5AC</b>  | Branch / 3P Cct Brkr / C Curve / 5A  |
| 10                     | <b>BR3D10AC</b> | Branch / 3P Cct Brkr / D Curve / 10A | <b>BR3C10AC</b> | Branch / 3P Cct Brkr / C Curve / 10A |
| 15                     | <b>BR3D15AC</b> | Branch / 3P Cct Brkr / D Curve / 15A | <b>BR3C15AC</b> | Branch / 3P Cct Brkr / C Curve / 15A |
| 20                     | <b>BR3D20AC</b> | Branch / 3P Cct Brkr / D Curve / 20A | <b>BR3C20AC</b> | Branch / 3P Cct Brkr / C Curve / 20A |
| 25                     | <b>BR3D25AC</b> | Branch / 3P Cct Brkr / D Curve / 25A | <b>BR3C25AC</b> | Branch / 3P Cct Brkr / C Curve / 25A |
| 30                     | <b>BR3D30AC</b> | Branch / 3P Cct Brkr / D Curve / 30A | <b>BR3C30AC</b> | Branch / 3P Cct Brkr / C Curve / 30A |
| 40                     | <b>BR3D40AC</b> | Branch / 3P Cct Brkr / D Curve / 40A | <b>BR3C40AC</b> | Branch / 3P Cct Brkr / C Curve / 40A |
| 50                     | <b>BR3D50AC</b> | Branch / 3P Cct Brkr / D Curve / 50A | <b>BR3C50AC</b> | Branch / 3P Cct Brkr / C Curve / 50A |
| 60                     | <b>BR3D60AC</b> | Branch / 3P Cct Brkr / D Curve / 60A | <b>BR3C60AC</b> | Branch / 3P Cct Brkr / C Curve / 60A |



Accessories for Branch Circuit Breakers

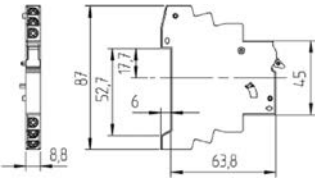


| Module                                       | Type of Contact      | Contacts  | Weight<br>g / Each | Packing<br>Unit | Part No. |
|----------------------------------------------|----------------------|-----------|--------------------|-----------------|----------|
| Auxiliary contact, for mounting on the right |                      |           |                    |                 |          |
| 1/2                                          | 1 auxiliary contact  | 1NO       | 35                 | 6               | BAU10    |
| 1/2                                          | 2 auxiliary contacts | 1NO + 1NC | 40                 | 6               | BAU11    |



| Standards                  | UL489 and CSA C22.2 No. 5-02 |                             |
|----------------------------|------------------------------|-----------------------------|
| Rated operating currents   | 10 A /240 V AC               |                             |
|                            | 3 A / 110 V DC               |                             |
|                            | 1 A / 220 V DC               |                             |
| Minimum contact load       | 1 mA at 24 V DC              |                             |
| Conductor cross sections   |                              |                             |
| Type of conductor *)       | min.                         | max.                        |
| Single wire                | 1.0 mm <sup>2</sup> (AWG18)  | 2.5 mm <sup>2</sup> (AWG14) |
| Stranded wire              | 1.0 mm <sup>2</sup> (AWG18)  | 1.5 mm <sup>2</sup> (AWG16) |
| Stranded wire with ferrule | 1.0 mm <sup>2</sup> (AWG18)  | 1.5 mm <sup>2</sup> (AWG16) |
| Torque                     | max. 0.8 Nm (7 lb.in)        |                             |

\*) Stripped length 8 - 9 mm ( ) values in brackets = measurement units for North America



| Lock-off/Lock-on device |                 |             |
|-------------------------|-----------------|-------------|
| Weight<br>g / Each      | Packing<br>Unit | Part<br>No. |
| 2                       | 10              | LD10        |



## Accessories for Branch Circuit Breakers

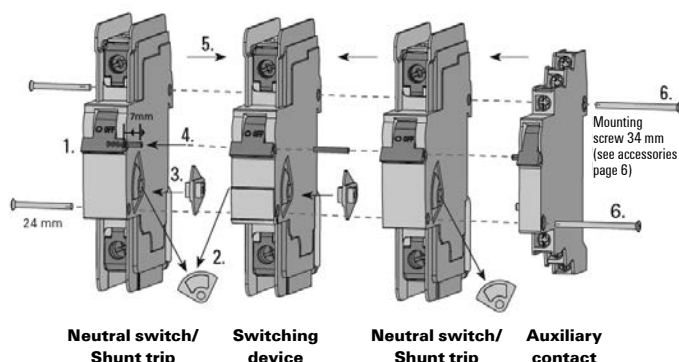
### Mounting Instructions of Accessories

#### Applies to BNS... and BST:

The accessory devices BNS... and BST can be installed on the right or left.

#### Mounting

1. Bring the blue knobs of all devices into the "OFF" position
2. Remove grey cover from the switching device and attachment
3. Insert drive plate between the switching device and BNS... or BST
4. Insert connecting pin into the knob (insertion depth approx. 7 mm)
5. Combine switching device and BNS... or BST
6. Screw the devices together (observe correct screw length)

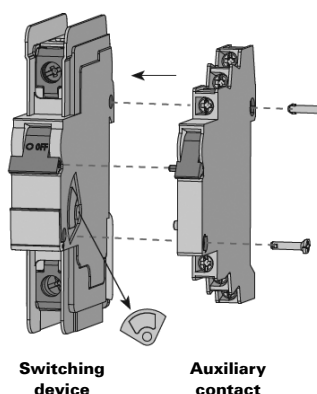


#### Applies to BAU...

The auxiliary contact BAU... can only be installed on the right.

#### Installation

1. Flick the blue switches of all devices to the "OFF" position
2. Remove the grey cover from the switching device and attachment
3. Combine switching device and BAU...
4. Insert connection screws and connect the two devices by turning the screws 90°
5. After installation, close and open to check correct operation

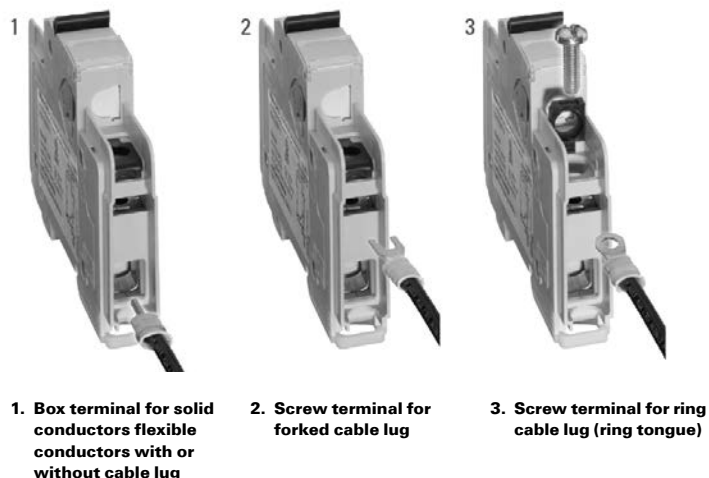


#### Applies to all switching devices BNS..., BST and BAU...

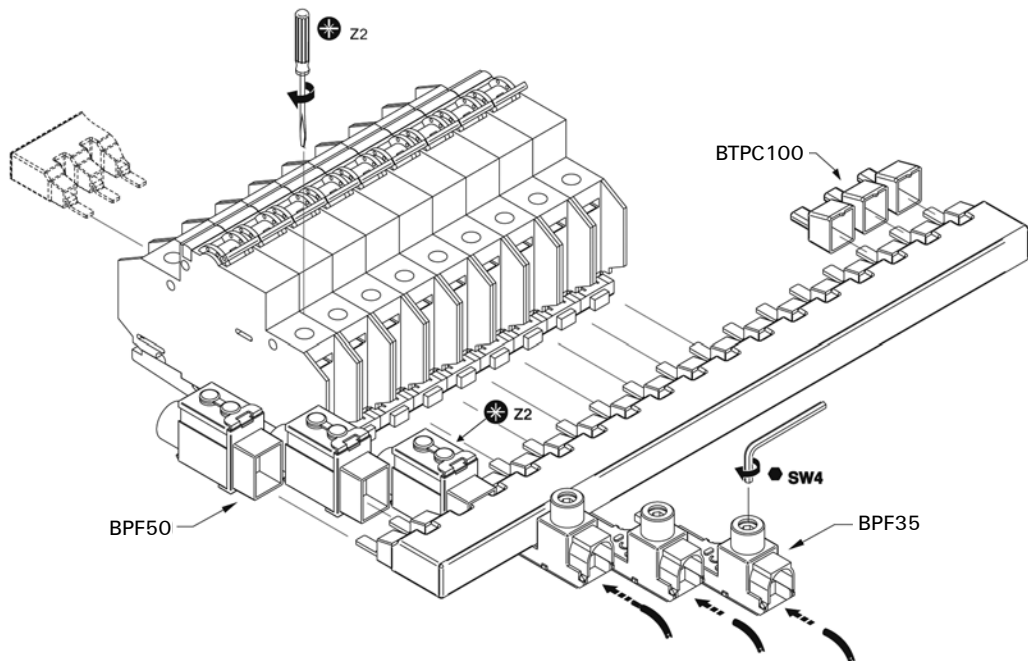
The load and mains can be connected into either the top or bottom (Line/Load Reversible).

#### Design of the terminals

- Optical detection of screw position
- Increased breaking resistance if the screwdriver becomes jammed
- Universal connecting terminals, suitable for connecting all known cable lugs such as ring or forked cable lugs and pin terminals
- Ring cable lugs can be connected by opening the flap and removing the connecting screw
- Can also be used for applications that require ring cable lugs (e.g. nuclear power stations)
- DIN EN 50274, VDE 0660-514 compliant protection against contact with live parts is fully guaranteed



Busbar and Accessories for Branch Circuit Breakers (UL489/CSA C22.2 No.5-02)



- Designed for a load up to 115A
- suitable accessories as connection terminals and contact protection
- Busbars may not be shortened

| Description                          | Part No. |
|--------------------------------------|----------|
| Busbar/Branch Protection/1ph/6Poles  | BB106    |
| Busbar/Branch Protection/1ph/12Poles | BB112    |
| Busbar/Branch Protection/1ph/18Poles | BB118    |
| Busbar/Branch Protection/1ph/12Poles | BB206    |
| Busbar/Branch Protection/2ph/12Poles | BB212    |
| Busbar/Branch Protection/2ph/18Poles | BB218    |
| Busbar/Branch Protection/3ph/6Poles  | BB306    |
| Busbar/Branch Protection/3ph/12Poles | BB312    |
| Busbar/Branch Protection/3ph/18Poles | BB318    |
| PwrFeed Term - 35mm²                 | BPF35    |
| PwrFeed Term - 50mm²                 | BPF50    |
| Touch Protection 3Caps               | BTPC100  |



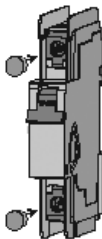
**Mounting screw 34 mm**  
to connect the auxiliary contact and shunt trip or neutral switch to the switching devices

| Packing Unit | Part No. |
|--------------|----------|
| 10 pieces    | MS34     |



**Touch-protection caps**  
to cover the connecting caps on the switching devices, neutral switches and shunt trips for increased touch protection

| Packing Unit | Part No. |
|--------------|----------|
| 100 pieces   | TPC      |





## Technical Data for Branch Circuit Breakers (AC)

| Characteristic *                                          |                                                           | C                                                                                                                                                                                                                                  | D                                                                                |
|-----------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Application                                               |                                                           | Lighting<br>Wiring protection<br>Control circuits<br>Business equipment<br>Appliances<br>Motors low inrush                                                                                                                         | Transformers<br>Power supplies<br>Heaters<br>Motors high inrush<br>Reactive load |
| Number of poles                                           |                                                           | 1 - 3; 1 + N; 3 + N                                                                                                                                                                                                                |                                                                                  |
| Standards                                                 |                                                           | UL489 and CSA-22.2 Nr. 5-09                                                                                                                                                                                                        |                                                                                  |
| Interrupting capacity                                     |                                                           | 10 kA                                                                                                                                                                                                                              |                                                                                  |
| Back-up fuse ≤ 10 kA interrupting capacity                |                                                           | none                                                                                                                                                                                                                               |                                                                                  |
| Rated voltage AC 50/60 Hz 0.3 - 32 A                      |                                                           | 277 / 480 V                                                                                                                                                                                                                        |                                                                                  |
| Rated voltage AC 50/60 Hz 40 - 63 A                       |                                                           | 240 V                                                                                                                                                                                                                              |                                                                                  |
| Rated current range                                       |                                                           | 0.5 - 60 A                                                                                                                                                                                                                         | 0.5 - 60 A                                                                       |
| Test currents                                             | Thermal not tripping<br>$I_1 (A) > 1 \text{ h}$           | $1.05 \times I_N$                                                                                                                                                                                                                  | $1.05 \times I_N$                                                                |
|                                                           | Thermal tripping<br>$I_2 (A) < 1 \text{ h}$               | $1.35 \times I_N$                                                                                                                                                                                                                  | $1.35 \times I_N$                                                                |
|                                                           | Electromagnetic not tripping<br>$I_4 (A) > 0.1 \text{ s}$ | $5 \times I_N$                                                                                                                                                                                                                     | $10 \times I_N$                                                                  |
|                                                           | Electromagnetic tripping<br>$I_5 (A) < 0.1 \text{ s}$     | $10 \times I_N$                                                                                                                                                                                                                    | $16 \times I_N$                                                                  |
| Reference calibration temperature of the thermal tripping |                                                           | 40 °C<br>Influence of the ambient temperature on the thermal release: Decrease of the current values with higher ambient temperature and increase with lower temperatures of approximately 5 % per 10 °C difference in temperature |                                                                                  |
| Frequency range of the electromagnetic trip               |                                                           | 16 ⅔ to 60 Hz<br>With higher frequencies, the electromagnetic tripping values increase by approximately a factor of 1.1 at 100 Hz; 1.2 at 200 Hz; 1.3 at 300 Hz; 1.4 at 400 Hz; 1.5 for DC                                         |                                                                                  |
| Ambient temperature                                       |                                                           | -25 °C to +55 °C                                                                                                                                                                                                                   |                                                                                  |
| Storage temperature                                       |                                                           | -40 °C to +70 °C                                                                                                                                                                                                                   |                                                                                  |
| Device depth according to DIN 43880                       |                                                           | 68 mm                                                                                                                                                                                                                              |                                                                                  |
| Mechanical life                                           |                                                           | 10,000 switching cycles (ON / OFF)                                                                                                                                                                                                 |                                                                                  |
| Protection cover                                          |                                                           | Finger safe and safe to back of hand according to DIN EN 50274, VDE 0660-514                                                                                                                                                       |                                                                                  |
| Degree of protection acc. EN / IEC 60529                  |                                                           | IP20                                                                                                                                                                                                                               |                                                                                  |
| Installation position                                     |                                                           | any                                                                                                                                                                                                                                |                                                                                  |
| Mounting                                                  |                                                           | DIN-rail according to DIN EN 60715 35 mm                                                                                                                                                                                           |                                                                                  |
| Lockability                                               |                                                           | The handle can be secured against manual switching in the on and off position by a lead seal                                                                                                                                       |                                                                                  |
| Climatic resistance                                       |                                                           | Humid heat constant according to DIN EN 60068-2-78<br>Humid heat cycle according to DIN EN 60068-2-30                                                                                                                              |                                                                                  |
| Vibration resistance                                      |                                                           | > 15 g according to DIN EN 60068-2-59 during a load with $I_1$                                                                                                                                                                     |                                                                                  |
| Resistance to mechanical shocks                           |                                                           | 25 g 11 ms                                                                                                                                                                                                                         |                                                                                  |
| Approvals - BR... items                                   |                                                           | cULus marking, UL file E359964, ref standards UL489 and CAN/CSA-C22.2 No. 5 (2002)                                                                                                                                                 |                                                                                  |
| Approvals - BAU..., BNS..., BST... items                  |                                                           | cULus marking, UL file E362204, ref standards UL489 and CAN/CSA-C22.2 No. 5 (2002)                                                                                                                                                 |                                                                                  |
| Approvals - BB..., BPF..., BTPC... items                  |                                                           | pending                                                                                                                                                                                                                            |                                                                                  |

\* Other switching devices in B and Z characteristics available on request

### Interrupting capacity acc. to IEC 60947-2, DIN EN 60947-2

| Characteristic * | C, D       |       |       |
|------------------|------------|-------|-------|
| 1pole            | 0.5 - 60 A | 240 V | 15 kA |
| 2pole / 3pole    | 0.5 - 60 A | 415 V | 15 kA |
| 2pole / 3pole    | 40 - 60 A  | 415 V | 10 kA |

## Technical Data for Branch Circuit Breakers

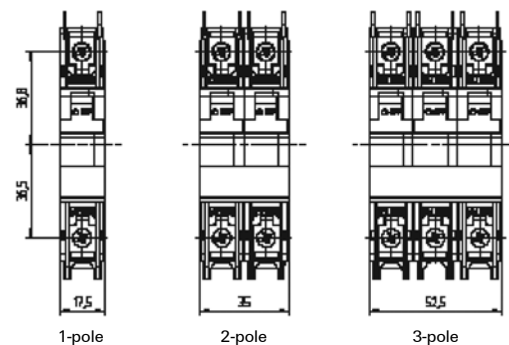


| Conductor Cross Sections                    |                                       |                 |                        |                 |
|---------------------------------------------|---------------------------------------|-----------------|------------------------|-----------------|
|                                             | Box Terminal Bottom                   |                 | Box Terminal Top       |                 |
| Type of conductor *)                        | max.                                  | min.            | max.                   | min.            |
| Single wire                                 | 35 mm² (AWG2)                         | 1.0 mm² (AWG18) | 25 mm² (AWG3)          | 1.0 mm² (AWG18) |
| Multiple wire                               | 35 mm² (AWG2)                         | 16 mm² (AWG6)   | 25 mm² (AWG3)          | 16 mm² (AWG6)   |
| Stranded wire                               | 25 mm² (AWG3)                         | 1.0 mm² (AWG18) | 16 mm² (AWG6)          | 1.0 mm² (AWG18) |
| Stranded wire with ferrule                  | 16 mm² (AWG6)                         | 1.0 mm² (AWG18) | 16 mm² (AWG6)          | 1.0 mm² (AWG18) |
| Busbar cable lug                            | up to 3 mm thickness                  |                 | up to 1.5 mm thickness |                 |
| Combined, conductor and busbar or cable lug | up to 35 mm² and up to 2 mm thickness |                 | not possible           |                 |
| Torque                                      | max. 2.5 Nm (22.2 lb.in)              |                 |                        |                 |

\*) Stripped lengths: 12 - 14 mm at the bottom, 10 - 12 mm at the top

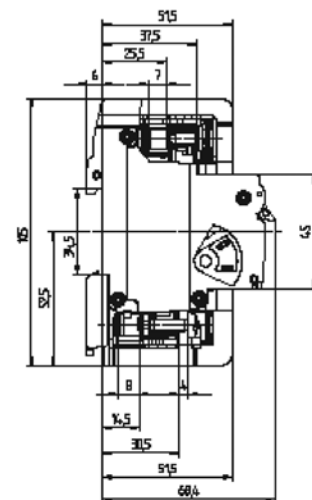
( ) values in brackets = measurement units for North America Copper conductor with sheath insulation for 60/75 °C

Dimension drawings product range BR



## Internal Resistance for Product Range BR

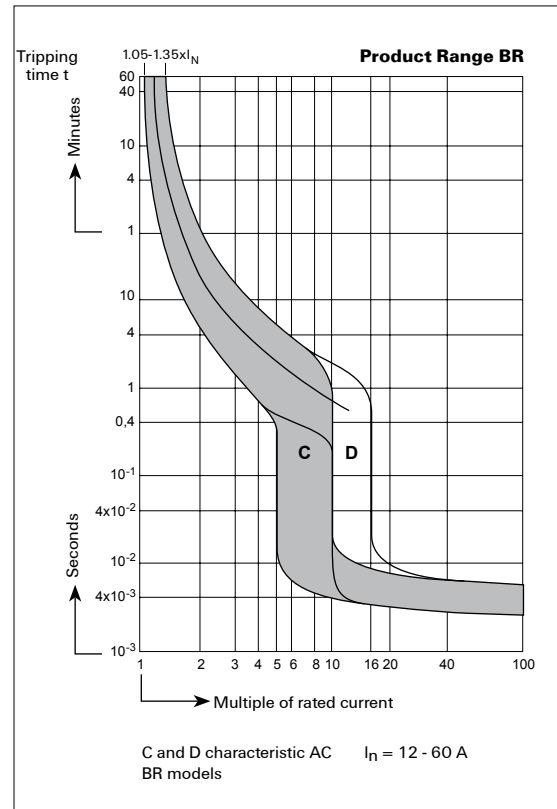
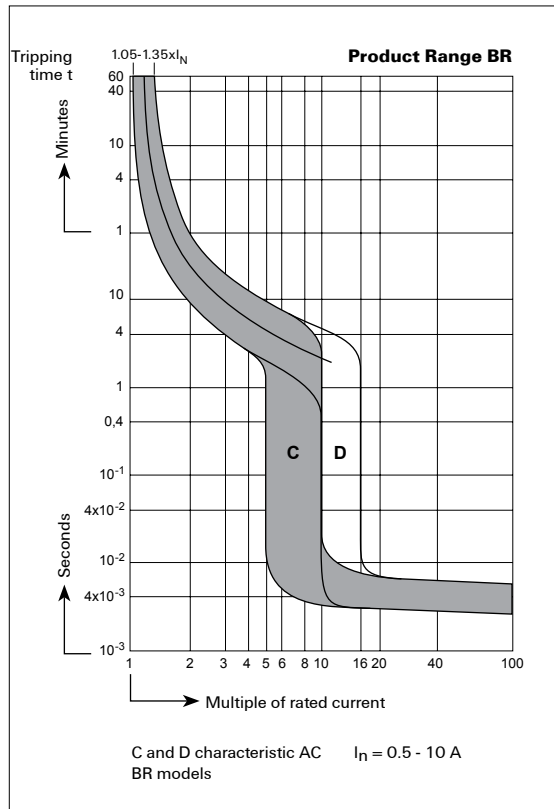
| Rated Current<br>[A] | Trip Characteristic |         |
|----------------------|---------------------|---------|
|                      | C [Ohm]             | D [Ohm] |
| 0.3                  | 16.8620             | 16.8620 |
| 0.5                  | 6.8540              | 6.0009  |
| 1.0                  | 1.7000              | 1.7560  |
| 1.6                  | 0.5870              | 0.5870  |
| 2.0                  | 0.4190              | 0.4190  |
| 3.0                  | 0.2020              | 0.2020  |
| 4.0                  | 0.1090              | 0.1090  |
| 5.0                  | 0.0654              | 0.0654  |
| 6.0                  | 0.0528              | 0.0491  |
| 8.0                  | 0.0278              | 0.0240  |
| 10                   | 0.0216              | 0.0187  |
| 12                   | 0.0084              | 0.0085  |
| 13                   | 0.0084              | 0.0085  |
| 15/16                | 0.0085              | 0.0076  |
| 20                   | 0.0067              | 0.0064  |
| 25                   | 0.0050              | 0.0041  |
| 30/32                | 0.0032              | 0.0027  |
| 40                   | 0.0025              | 0.0022  |
| 50                   | 0.0019              | 0.0018  |
| 60                   | 0.0018              | 0.0017  |



## Curves for Branch Circuit Breakers



AC



## Supplementary Circuit Breakers

Our range of UL1077/CSA C22.2 No.235 supplementary protectors can be used where additional protection is required in control circuits. Combined with the accessories it also offers enhanced monitoring and control capabilities.

| Single Pole - D Curve  |                 |                                      | Single Pole - C Curve |                                      |
|------------------------|-----------------|--------------------------------------|-----------------------|--------------------------------------|
| Current Ratings (amps) | Part No.        | Description                          | Part No.              | Description                          |
| 0.5                    | <b>SU1D05AC</b> | Suppl / 1P Cct Brkr / D Curve / 0.5A | <b>SU1C05AC</b>       | Suppl / 1P Cct Brkr / C Curve / 0.5A |
| 1                      | <b>SU1D1AC</b>  | Suppl / 1P Cct Brkr / D Curve / 1A   | <b>SU1C1AC</b>        | Suppl / 1P Cct Brkr / C Curve / 1A   |
| 2                      | <b>SU1D2AC</b>  | Suppl / 1P Cct Brkr / D Curve / 2A   | <b>SU1C2AC</b>        | Suppl / 1P Cct Brkr / C Curve / 2A   |
| 3                      | <b>SU1D3AC</b>  | Suppl / 1P Cct Brkr / D Curve / 3A   | <b>SU1C3AC</b>        | Suppl / 1P Cct Brkr / C Curve / 3A   |
| 5                      | <b>SU1D5AC</b>  | Suppl / 1P Cct Brkr / D Curve / 5A   | <b>SU1C5AC</b>        | Suppl / 1P Cct Brkr / C Curve / 5A   |
| 10                     | <b>SU1D10AC</b> | Suppl / 1P Cct Brkr / D Curve / 10A  | <b>SU1C10AC</b>       | Suppl / 1P Cct Brkr / C Curve / 10A  |
| 15                     | <b>SU1D15AC</b> | Suppl / 1P Cct Brkr / D Curve / 15A  | <b>SU1C15AC</b>       | Suppl / 1P Cct Brkr / C Curve / 15A  |
| 20                     | <b>SU1D20AC</b> | Suppl / 1P Cct Brkr / D Curve / 20A  | <b>SU1C20AC</b>       | Suppl / 1P Cct Brkr / C Curve / 20A  |
| 25                     | <b>SU1D25AC</b> | Suppl / 1P Cct Brkr / D Curve / 25A  | <b>SU1C25AC</b>       | Suppl / 1P Cct Brkr / C Curve / 25A  |
| 30                     | <b>SU1D30AC</b> | Suppl / 1P Cct Brkr / D Curve / 30A  | <b>SU1C30AC</b>       | Suppl / 1P Cct Brkr / C Curve / 30A  |
| 40                     | <b>SU1D40AC</b> | Suppl / 1P Cct Brkr / D Curve / 40A  | <b>SU1C40AC</b>       | Suppl / 1P Cct Brkr / C Curve / 40A  |
| 50                     | <b>SU1D50AC</b> | Suppl / 1P Cct Brkr / D Curve / 50A  | <b>SU1C50AC</b>       | Suppl / 1P Cct Brkr / C Curve / 50A  |
| 60                     | <b>SU1D60AC</b> | Suppl / 1P Cct Brkr / D Curve / 60A  | <b>SU1C60AC</b>       | Suppl / 1P Cct Brkr / C Curve / 60A  |



| Double Pole - D Curve  |                 |                                      | Double Pole - C Curve |                                      |
|------------------------|-----------------|--------------------------------------|-----------------------|--------------------------------------|
| Current Ratings (amps) | Part No.        | Description                          | Part No.              | Description                          |
| 0.5                    | <b>SU2D05AC</b> | Suppl / 2P Cct Brkr / D Curve / 0.5A | <b>SU2C05AC</b>       | Suppl / 2P Cct Brkr / C Curve / 0.5A |
| 1                      | <b>SU2D1AC</b>  | Suppl / 2P Cct Brkr / D Curve / 1A   | <b>SU2C1AC</b>        | Suppl / 2P Cct Brkr / C Curve / 1A   |
| 2                      | <b>SU2D2AC</b>  | Suppl / 2P Cct Brkr / D Curve / 2A   | <b>SU2C2AC</b>        | Suppl / 2P Cct Brkr / C Curve / 2A   |
| 5                      | <b>SU2D5AC</b>  | Suppl / 2P Cct Brkr / D Curve / 5A   | <b>SU2C5AC</b>        | Suppl / 2P Cct Brkr / C Curve / 5A   |
| 10                     | <b>SU2D10AC</b> | Suppl / 2P Cct Brkr / D Curve / 10A  | <b>SU2C10AC</b>       | Suppl / 2P Cct Brkr / C Curve / 10A  |
| 15                     | <b>SU2D15AC</b> | Suppl / 2P Cct Brkr / D Curve / 15A  | <b>SU2C15AC</b>       | Suppl / 2P Cct Brkr / C Curve / 15A  |
| 20                     | <b>SU2D20AC</b> | Suppl / 2P Cct Brkr / D Curve / 20A  | <b>SU2C20AC</b>       | Suppl / 2P Cct Brkr / C Curve / 20A  |
| 25                     | <b>SU2D25AC</b> | Suppl / 2P Cct Brkr / D Curve / 25A  | <b>SU2C25AC</b>       | Suppl / 2P Cct Brkr / C Curve / 25A  |
| 30                     | <b>SU2D30AC</b> | Suppl / 2P Cct Brkr / D Curve / 30A  | <b>SU2C30AC</b>       | Suppl / 2P Cct Brkr / C Curve / 30A  |
| 40                     | <b>SU2D40AC</b> | Suppl / 2P Cct Brkr / D Curve / 40A  | <b>SU2C40AC</b>       | Suppl / 2P Cct Brkr / C Curve / 40A  |
| 50                     | <b>SU2D50AC</b> | Suppl / 2P Cct Brkr / D Curve / 50A  | <b>SU2C50AC</b>       | Suppl / 2P Cct Brkr / C Curve / 50A  |
| 60                     | <b>SU2D60AC</b> | Suppl / 2P Cct Brkr / D Curve / 60A  | <b>SU2C60AC</b>       | Suppl / 2P Cct Brkr / C Curve / 60A  |



## Triple Pole - D Curve

## Triple Pole - C Curve

| Current Ratings<br>(amps) | Part No.        | Description                         | Part No.        | Description                         |
|---------------------------|-----------------|-------------------------------------|-----------------|-------------------------------------|
| 1                         | <b>SU3D1AC</b>  | Suppl / 3P Cct Brkr / D Curve / 1A  | <b>SU3C1AC</b>  | Suppl / 3P Cct Brkr / C Curve / 1A  |
| 2                         | <b>SU3D2AC</b>  | Suppl / 3P Cct Brkr / D Curve / 2A  | <b>SU3C2AC</b>  | Suppl / 3P Cct Brkr / C Curve / 2A  |
| 5                         | <b>SU3D5AC</b>  | Suppl / 3P Cct Brkr / D Curve / 5A  | <b>SU3C5AC</b>  | Suppl / 3P Cct Brkr / C Curve / 5A  |
| 10                        | <b>SU3D10AC</b> | Suppl / 3P Cct Brkr / D Curve / 10A | <b>SU3C10AC</b> | Suppl / 3P Cct Brkr / C Curve / 10A |
| 15                        | <b>SU3D15AC</b> | Suppl / 3P Cct Brkr / D Curve / 15A | <b>SU3C15AC</b> | Suppl / 3P Cct Brkr / C Curve / 15A |
| 20                        | <b>SU3D20AC</b> | Suppl / 3P Cct Brkr / D Curve / 20A | <b>SU3C20AC</b> | Suppl / 3P Cct Brkr / C Curve / 20A |
| 25                        | <b>SU3D25AC</b> | Suppl / 3P Cct Brkr / D Curve / 25A | <b>SU3C25AC</b> | Suppl / 3P Cct Brkr / C Curve / 25A |
| 30                        | <b>SU3D30AC</b> | Suppl / 3P Cct Brkr / D Curve / 30A | <b>SU3C30AC</b> | Suppl / 3P Cct Brkr / C Curve / 30A |
| 40                        | <b>SU3D40AC</b> | Suppl / 3P Cct Brkr / D Curve / 40A | <b>SU3C40AC</b> | Suppl / 3P Cct Brkr / C Curve / 40A |
| 50                        | <b>SU3D50AC</b> | Suppl / 3P Cct Brkr / D Curve / 50A | <b>SU3C50AC</b> | Suppl / 3P Cct Brkr / C Curve / 50A |
| 60                        | <b>SU3D60AC</b> | Suppl / 3P Cct Brkr / D Curve / 60A | <b>SU3C60AC</b> | Suppl / 3P Cct Brkr / C Curve / 60A |



## Switching Devices Supplementary Protector

| Rated<br>Current<br>i <sub>n</sub> A | Rated<br>Voltage<br>Volt AC | Weight<br>g /Each | Packing<br>Unit | Test Currents *<br>Electromagnetic |                           | Part No. |
|--------------------------------------|-----------------------------|-------------------|-----------------|------------------------------------|---------------------------|----------|
|                                      |                             |                   |                 | Not Tripping<br>I <sub>Δ</sub> A   | Tripping I <sub>Δ</sub> A |          |
| Neutral switch                       |                             |                   |                 |                                    |                           |          |
| 0.5 - 60                             | 277/480                     | 150               | 5               | 400                                | 700                       | SNS63A   |



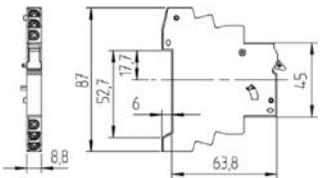
\* additional electromagnetic protection

Accessories for Supplementary Circuit Breakers



Auxiliary contact

| Module | Type of Contact      | Contacts  | Part No. | Weight<br>g/ Each | Packing<br>Unit |
|--------|----------------------|-----------|----------|-------------------|-----------------|
| 1/2    | 1 auxiliary contact  | 1NO       | SAU10    | 35                | 10              |
| 1/2    | 2 auxiliary contacts | 1NO + 1NC | SAU11    | 40                | 10              |



| Standards                  | Acc. to IEC 60947-5-1, DIN EN 60947-5-1, VDE 0660-200, UL508 |                             |
|----------------------------|--------------------------------------------------------------|-----------------------------|
| Rated operating currents   | 10 A /240 V AC<br>3 A / 110 V DC<br>1 A / 220 V DC           |                             |
| Minimum contact load       | 1 mA at 24 V DC                                              |                             |
| Conductor cross sections   |                                                              |                             |
| Type of conductor *)       | min.                                                         | max.                        |
| Single wire                | 1.0 mm <sup>2</sup> (AWG18)                                  | 2.5 mm <sup>2</sup> (AWG14) |
| Stranded wire              | 1.0 mm <sup>2</sup> (AWG18)                                  | 1.5 mm <sup>2</sup> (AWG16) |
| Stranded wire with ferrule | 1.0 mm <sup>2</sup> (AWG18)                                  | 1.5 mm <sup>2</sup> (AWG16) |
| Torque                     | max. 0.8 Nm (7 lb.in)                                        |                             |

\*) Stripped length 8 - 9 mm



Shunt trip

| Module | Rated Operating Voltage  | Max. Operating Current at<br>Un (t < 10 ms)          | Part No. | Weight<br>g/ Each | Packing<br>Unit |
|--------|--------------------------|------------------------------------------------------|----------|-------------------|-----------------|
| 1      | 24 V UC                  | 0.6 A                                                | SST24V   | 105               | 5               |
| 1      | 110 - 240 V UC, 415 V AC | 0.25 A at 110 V<br>0.5 A at 240 V<br>0.58 A at 277 V | SST110V  | 105               | 5               |



Lock-off/Lock-on device

| Packing<br>Unit | Weight<br>g/ Each | Part<br>No. |
|-----------------|-------------------|-------------|
| 10              | 2                 | LD10        |

## Accessories for Supplementary Circuit Breakers



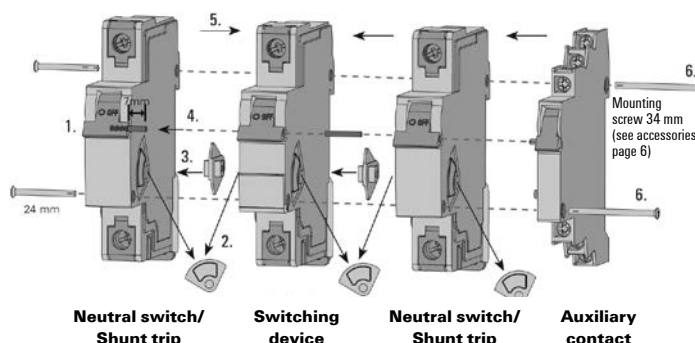
### Mounting Instructions of Accessories

#### Applies to SNS63A and SAU...:

The accessory devices SNS63A and SAU... can be installed on the right or left. The auxiliary contact H... UM can only be installed on the right.

#### Mounting:

1. Flick the blue switches of all devices to the "OFF" position
2. Remove the grey cover from the switching device and attachment
3. Insert the drive plate between the switching device and SNS63A and SAU...
4. Insert the connecting pin into the switch (insertion depth approx. 7 mm)
5. Combine switching device and SNS63A and SAU...
6. Screw devices together (observe correct screw length)

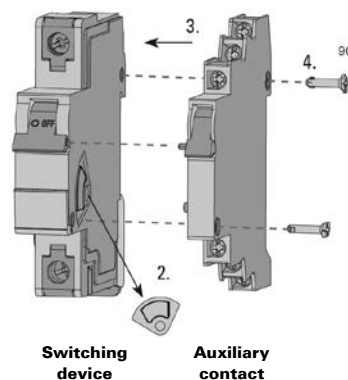


#### Applies to SAU...:

The auxiliary contact SAU... can only be installed on the right.

#### Installation:

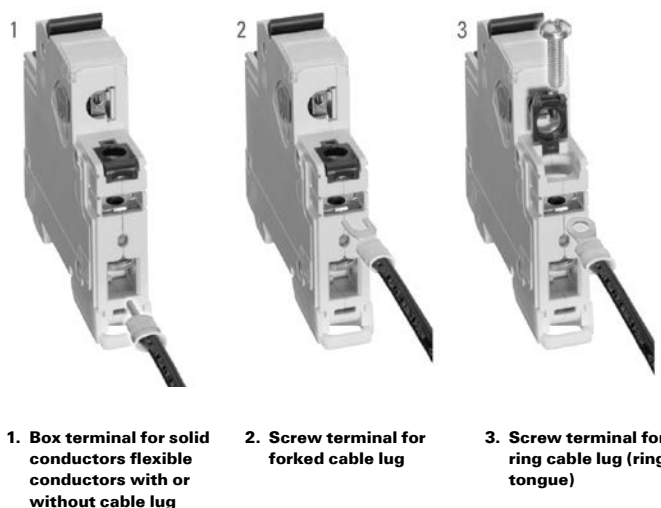
1. Flick the blue switches of all devices to the "OFF" position
2. Remove the grey cover from the switching device
3. Combine switching device and SAU...
4. Insert connection screws and connect the two devices by turning the screws by 90°
5. After installation close and open to check operation



#### Applies to all switching devices SAU..., SNS and SST...

#### Design of the terminals

- Optical detection of screw position
- Increased breaking resistance if the screwdriver becomes jammed
- Universal connecting terminals, suitable for connecting all known cable lugs such as ring or forked cable lugs and pin terminals
- Ring cable lugs can be connected by opening the flap and removing the connecting screw
- Can also be used for applications that require ring cable lugs (e.g. nuclear power stations)
- DIN EN 50274, VDE 0660-514 compliant protection against contact with live parts is fully guaranteed

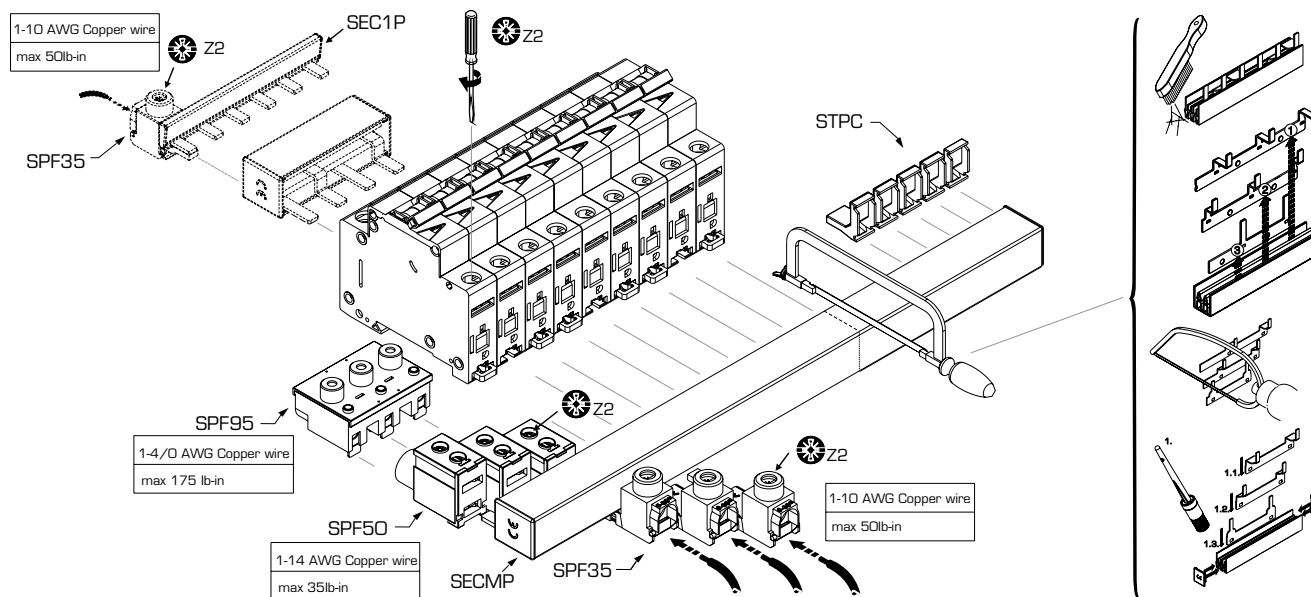


1. Box terminal for solid conductors flexible conductors with or without cable lug

2. Screw terminal for forked cable lug

3. Screw terminal for ring cable lug (ring tongue)

# Busbar and Accessories for Supplementary Circuit Breakers (UL1077/CSA C22.2 No.235 )



## General Data

|                                    |                       |
|------------------------------------|-----------------------|
|                                    | SPF35                 |
| $U_e$                              | 1000 V AC/DC          |
| $f$                                | 50/60 Hz              |
| $U_{imp}$                          | –                     |
| $I_e$                              | 115 A                 |
|                                    | # 1-10 AWG 60°C Cu    |
|                                    | 0.56 in               |
|                                    | All SB models         |
| $U_e$                              | 1P 600 V AC 1000V DC  |
| $f$                                | 2/3P 600V AC          |
| $U_{imp}$                          | 50/60 Hz              |
| $I_e$                              | –                     |
|                                    | 18mm² / 25mm²         |
| Infeed at the start of the busbar  | 80A@40 °C / 100A@30°C |
| Infeed at the center of the busbar | 160A@40°C / 200A@30°C |

|           |                     |
|-----------|---------------------|
|           | SPF50               |
| $U_e$     | 1000V AC/DC         |
| $f$       | 50/60 Hz            |
| $U_{imp}$ | –                   |
| $I_e$     | 115 A               |
|           | # 1-14 AWG 75°C Cu  |
|           | 0.56 in             |
|           | SPF95               |
| $U_e$     | 600V AC/DC          |
| $f$       | 50/60 Hz            |
| $U_{imp}$ | –                   |
| $I_e$     | 200 A               |
|           | # 1-4/0 AWG 75°C Cu |
|           | 1 in                |

| Description                                     | Part No.       |
|-------------------------------------------------|----------------|
| Busbar/Supplementary Protection/1ph/6Poles      | <b>SB106</b>   |
| Busbar/Supplementary Protection/1ph/12Poles     | <b>SB112</b>   |
| Busbar/Supplementary Protection/Aux/1ph/37Poles | <b>SB1A37</b>  |
| Busbar/Supplementary Protection/2ph/12Poles     | <b>SB212</b>   |
| Busbar/Supplementary Protection/2ph/18Poles     | <b>SB218</b>   |
| Busbar/Supplementary Protection/Aux/2ph/38Poles | <b>SB2A38</b>  |
| Busbar/Supplementary Protection/3ph/12Poles     | <b>SB312</b>   |
| Busbar/Supplementary Protection/3ph/39Poles     | <b>SB339</b>   |
| Busbar/Supplementary Protection/Aux/3ph/48Poles | <b>SB3A48P</b> |
| PwrFeed Term - 35mm²                            | <b>SPF35</b>   |
| PwrFeed Term - 50mm²                            | <b>SPF50</b>   |
| PwrFeed Term - 95mm²                            | <b>SPF95</b>   |
| Touch Protection 5Caps                          | <b>STPC</b>    |
| Endcap/1P busbars                               | <b>SEC1P</b>   |
| Endcap/multi-P busbars                          | <b>SECMP</b>   |

## Technical Data for Supplementary Circuit Breakers



| Characteristic                                               |                                                           | C                                                                                                                                                                                                                                             | D                                                       |
|--------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Application                                                  |                                                           | Lighting, Control circuits<br>Wiring protection,<br>Business equipment<br>Appliances                                                                                                                                                          | Control transformers<br>Power supplies<br>Reactive load |
| Number of poles                                              |                                                           | 1 - 3; 1 + N; 3 + N                                                                                                                                                                                                                           |                                                         |
| Standards                                                    |                                                           | UL1077 and CSA-22.2 No.235                                                                                                                                                                                                                    |                                                         |
| Interrupting capacity                                        |                                                           | see data sheet for use in the USA and Canada                                                                                                                                                                                                  |                                                         |
| Current limiting class                                       |                                                           | 3                                                                                                                                                                                                                                             |                                                         |
| Max. back-up fuse                                            |                                                           | see data sheet for use in the USA and Canada                                                                                                                                                                                                  |                                                         |
| Rated voltage AC                                             |                                                           | 277 / 480 V                                                                                                                                                                                                                                   |                                                         |
| Rated current range                                          |                                                           | 0.5 - 60 A                                                                                                                                                                                                                                    | 0.5 - 60 A                                              |
| Test currents                                                | Thermal not tripping<br>$I_1 (A) > 1 \text{ h}$           | $1.13 \times I_N$                                                                                                                                                                                                                             | $1.13 \times I_N$                                       |
|                                                              | Thermal tripping<br>$I_2 (A) < 1 \text{ h}$               | $1.45 \times I_N$                                                                                                                                                                                                                             | $1.45 \times I_N$                                       |
|                                                              | Electromagnetic not tripping<br>$I_4 (A) > 0,1 \text{ s}$ | $5 \times I_N$                                                                                                                                                                                                                                | $10 \times I_N$                                         |
|                                                              | Electromagnetic tripping<br>$I_5 (A) < 0,1 \text{ s}$     | $10 \times I_N$                                                                                                                                                                                                                               | $16 \times I_N$                                         |
| Reference calibration temperature<br>of the thermal tripping |                                                           | 30° C + 5° C<br>Influence of the ambient temperature on the thermal release: Decrease of the current values<br>with higher ambient temperature and increase with lower temperatures of approximately<br>5% per 10°C difference in temperature |                                                         |
| Frequency range of the<br>electromagnetic trip               |                                                           | 16 2/3 to 60 Hz                                                                                                                                                                                                                               |                                                         |
| Ambient temperature                                          |                                                           | -25 °C to +55 °C                                                                                                                                                                                                                              |                                                         |
| Storage temperature                                          |                                                           | -40 °C to +70 °C                                                                                                                                                                                                                              |                                                         |
| Device depth according to DIN 43880                          |                                                           | 68 mm                                                                                                                                                                                                                                         |                                                         |
| Mechanical life                                              |                                                           | 10,000 cycles (ON / OFF)                                                                                                                                                                                                                      |                                                         |
| Protection cover                                             |                                                           | Finger safe and safe to back of hand according to DIN EN 50274/ VDE0660-514                                                                                                                                                                   |                                                         |
| Insulation group acc. to DIN/VDE 0110                        |                                                           | C at 250 V AC<br>B at 400 V AC                                                                                                                                                                                                                |                                                         |
| Degree of protection acc. to EN/IEC 60529                    |                                                           | IP20                                                                                                                                                                                                                                          |                                                         |
| Installation position                                        |                                                           | any                                                                                                                                                                                                                                           |                                                         |
| Mounting                                                     |                                                           | DIN-rail according to DIN EN 60715 35 mm                                                                                                                                                                                                      |                                                         |
| Lockability                                                  |                                                           | The handle can be secured against manual switching in the on and off position by a lead seal                                                                                                                                                  |                                                         |
| Climatic resistance                                          |                                                           | Humid heat constant according to DIN EN 60068-2-78<br>Humid heat cycle according to DIN EN 60068-2-30                                                                                                                                         |                                                         |
| Vibration resistance                                         |                                                           | > 15 g according to DIN EN 60068-2-59 during a load with $I_1$                                                                                                                                                                                |                                                         |
| Resistance to mechanical shocks                              |                                                           | 25g 11ms                                                                                                                                                                                                                                      |                                                         |
| Approvals - SU... items                                      |                                                           | cRUus marking, UL file E359481, ref standards UL1077 and CSA-C22.2 No. 235                                                                                                                                                                    |                                                         |
| Approvals - SAU..., SNS..., SST... items                     |                                                           | UL marking, UL file E362205, ref standards UL1077 and CSA-C22.2 No. 14                                                                                                                                                                        |                                                         |
| Approvals - SB..., SPF..., STPC..., SEC... items             |                                                           | pending                                                                                                                                                                                                                                       |                                                         |

## Technical Data for Supplementary Circuit Breakers



### Conductor cross sections

| Box Terminal Bottom        |                        |               | Box Terminal Top       |               |
|----------------------------|------------------------|---------------|------------------------|---------------|
| Type of conductor *)       | max.                   | min.          | max.                   | min.          |
| Single wire                | 35 mm2 (AWG2)          | 1 mm2 (AWG18) | 25 mm2 (AWG3)          | 1 mm2 (AWG18) |
| Multiple wire              | 35 mm2 (AWG2)          | 16 mm2 (AWG6) | 25 mm2 (AWG3)          | 16 mm2 (AWG6) |
| Stranded wire              | 25 mm2 (AWG3)          | 1 mm2 (AWG18) | 16 mm2 (AWG6)          | 1 mm2 (AWG18) |
| Stranded wire with ferrule | 16 mm2 (AWG6)          | 1 mm2 (AWG18) | 16 mm2 (AWG6)          | 1 mm2 (AWG18) |
| Busbar cable lug           | up to 3 mm thickness   |               | up to 1.5 mm thickness |               |
| Torque                     | max. 2.3 Nm (20 lb.in) |               |                        |               |

\*) Stripped length: bottom 12 - 14 mm, top 10 - 12 mm

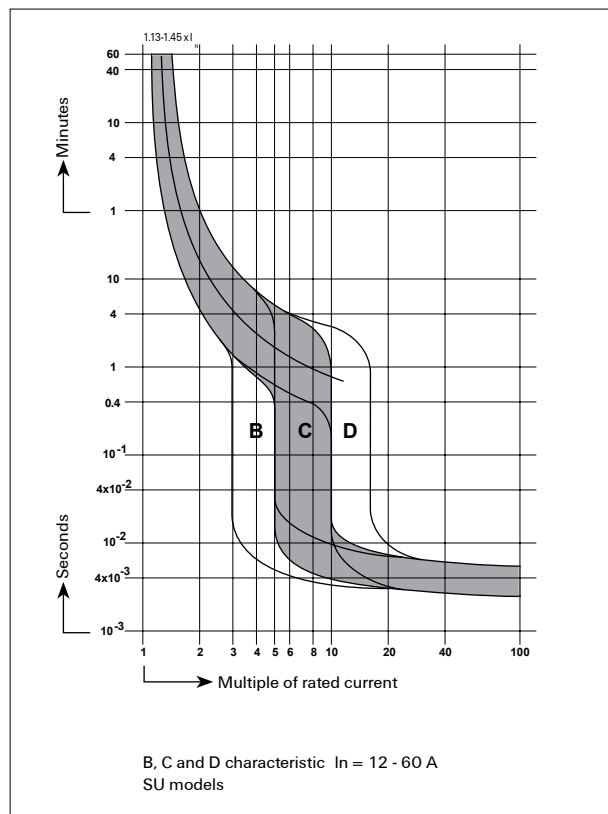
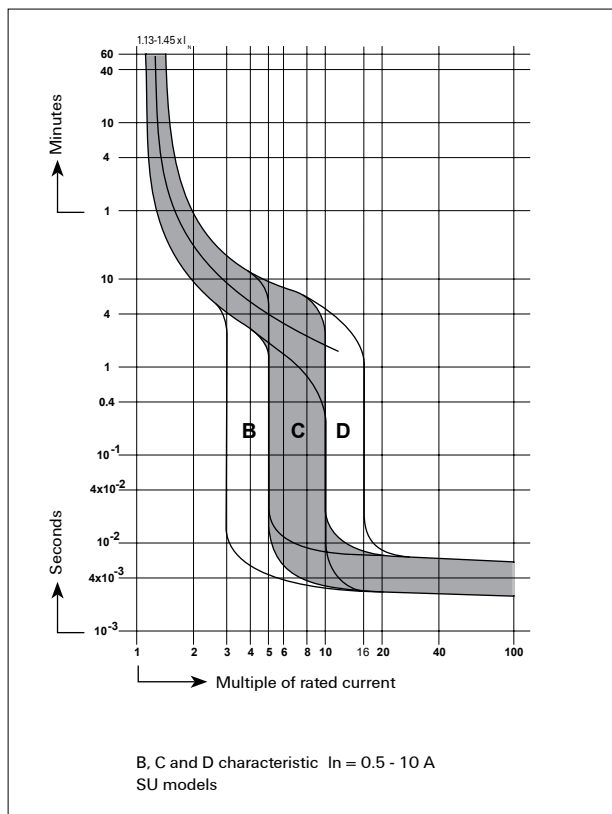
### Interrupting capacity and maximum back-up fuse for use in the USA and Canada

| Characteristic                                                      |                 | C and D                    |                   |                            |                          |
|---------------------------------------------------------------------|-----------------|----------------------------|-------------------|----------------------------|--------------------------|
| Standards                                                           |                 | UL1077 and CSA-22.2 No.235 |                   |                            |                          |
|                                                                     | Number of poles | Maximum rated voltage [V]  | Rated current [A] | Interrupting capacity [kA] | Maximum back-up fuse [A] |
| Interrupting capacity at rated voltage<br>Ambient temperature 40 °C | 1 / 1 + N       | 277                        | 0.5 - 10          | 10                         | 70 A                     |
|                                                                     | 1 / 1 + N       | 277                        | 12 - 60           | 10                         | 4 x I <sub>N</sub>       |
|                                                                     | 2 / 3 / 3 + N   | 480                        | 0.5 - 10          | 10                         | 70 A                     |
|                                                                     | 2 / 3 / 3 + N   | 480                        | 12 - 60           | 10                         | 4 x I <sub>N</sub>       |

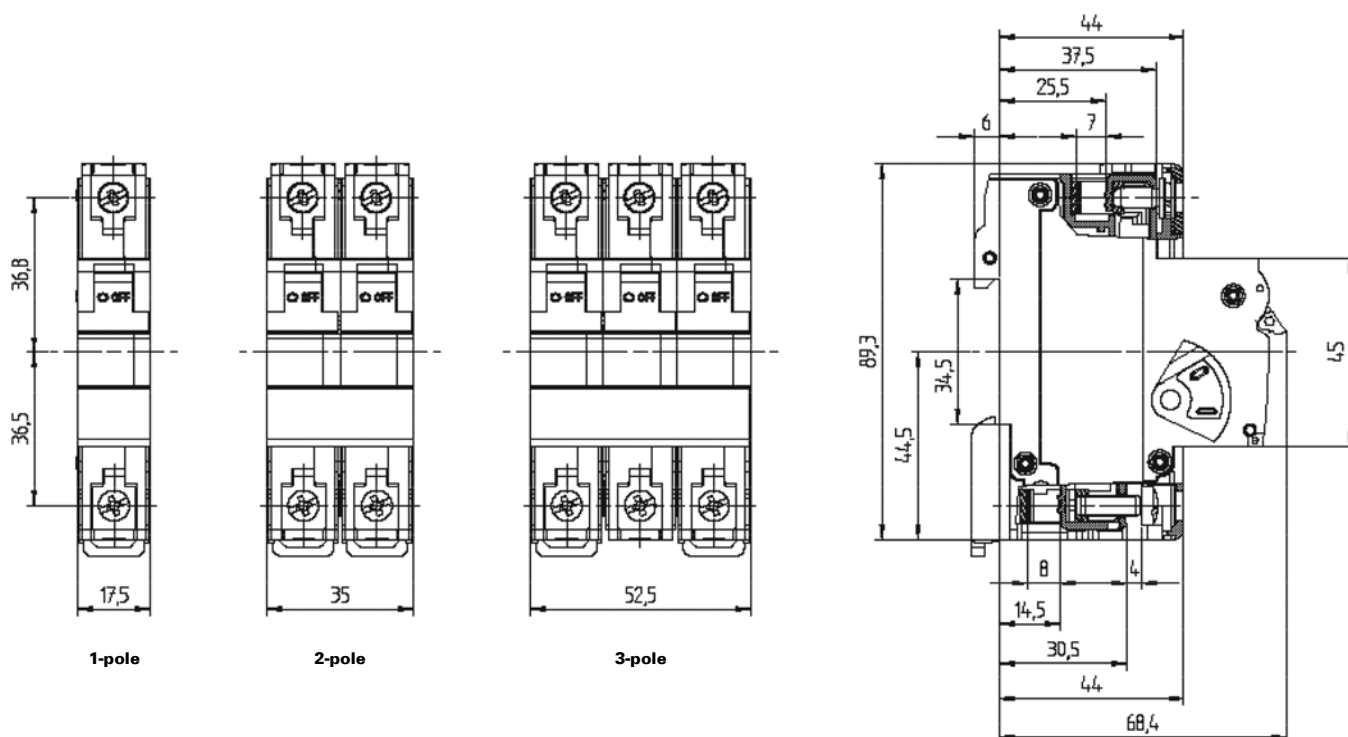
### Internal resistance for Product Range SU

| Rated Current [A] | Trip Characteristic |         |
|-------------------|---------------------|---------|
|                   | C [Ohm]             | D [Ohm] |
| 0.5               | 6.8540              | 6.0009  |
| 1.0               | 1.7000              | 1.7560  |
| 2.0               | 0.4190              | 0.4190  |
| 3.0               | 0.2020              | 0.2020  |
| 4.0               | 0.1090              | 0.1090  |
| 5.0               | 0.0654              | 0.0654  |
| 6.0               | 0.0528              | 0.0491  |
| 8.0               | 0.0278              | 0.0240  |
| 10                | 0.0216              | 0.0187  |
| 12/13             | 0.0084              | 0.0085  |
| 15/16             | 0.0085              | 0.0076  |
| 20                | 0.0067              | 0.0064  |
| 25                | 0.0050              | 0.0041  |
| 30/32             | 0.0032              | 0.0027  |
| 40                | 0.0025              | 0.0022  |
| 50                | 0.0019              | 0.0018  |
| 60                | 0.0018              | 0.0017  |

## Curves for Supplementary Circuit Breakers



## Dimension Drawings for SU models



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