

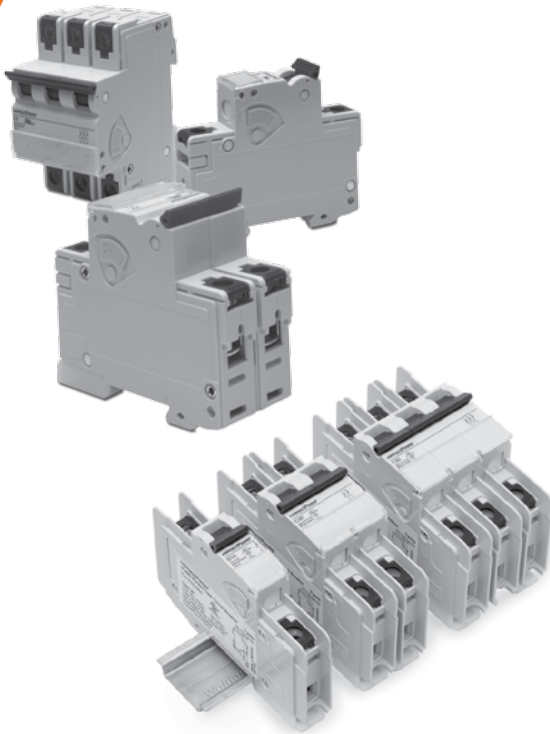
Datasheet

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.

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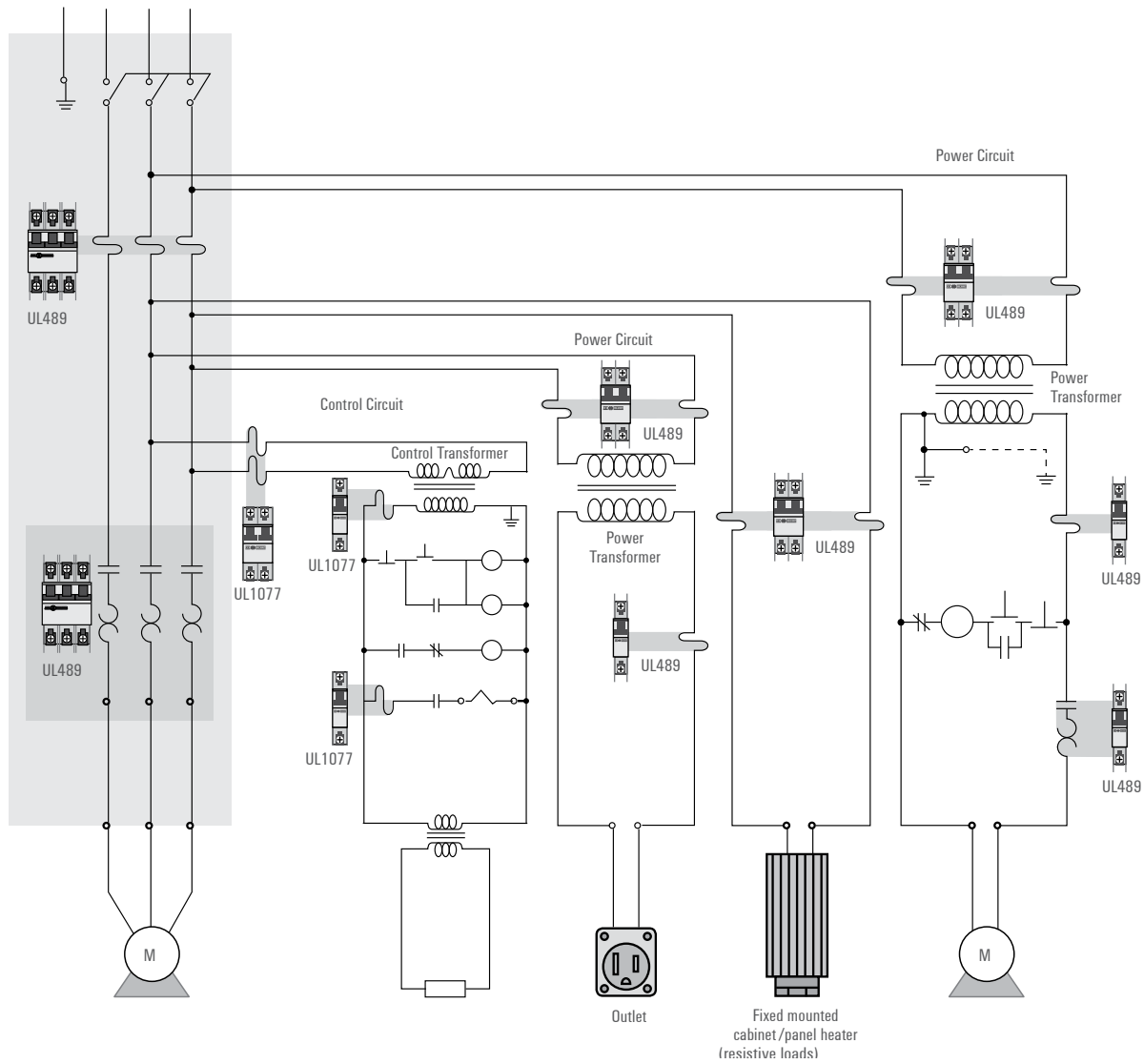
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Application Schematic



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	BR1D05AC	Branch / 1P Cct Brkr / D Curve / 0.5A	BR1C05AC	Branch / 1P Cct Brkr / C Curve / 0.5A
1	BR1D1AC	Branch / 1P Cct Brkr / D Curve / 1A	BR1C1AC	Branch / 1P Cct Brkr / C Curve / 1A
2	BR1D2AC	Branch / 1P Cct Brkr / D Curve / 2A	BR1C2AC	Branch / 1P Cct Brkr / C Curve / 2A
3	BR1D3AC	Branch / 1P Cct Brkr / D Curve / 3A	BR1C3AC	Branch / 1P Cct Brkr / C Curve / 3A
5	BR1D5AC	Branch / 1P Cct Brkr / D Curve / 5A	BR1C5AC	Branch / 1P Cct Brkr / C Curve / 5A
10	BR1D10AC	Branch / 1P Cct Brkr / D Curve / 10A	BR1C10AC	Branch / 1P Cct Brkr / C Curve / 10A
15	BR1D15AC	Branch / 1P Cct Brkr / D Curve / 15A	BR1C15AC	Branch / 1P Cct Brkr / C Curve / 15A
20	BR1D20AC	Branch / 1P Cct Brkr / D Curve / 20A	BR1C20AC	Branch / 1P Cct Brkr / C Curve / 20A
25	BR1D25AC	Branch / 1P Cct Brkr / D Curve / 25A	BR1C25AC	Branch / 1P Cct Brkr / C Curve / 25A
30	BR1D30AC	Branch / 1P Cct Brkr / D Curve / 30A	BR1C30AC	Branch / 1P Cct Brkr / C Curve / 30A
40	BR1D40AC	Branch / 1P Cct Brkr / D Curve / 40A	BR1C40AC	Branch / 1P Cct Brkr / C Curve / 40A
50	BR1D50AC	Branch / 1P Cct Brkr / D Curve / 50A	BR1C50AC	Branch / 1P Cct Brkr / C Curve / 50A
60	BR1D60AC	Branch / 1P Cct Brkr / D Curve / 60A	BR1C60AC	Branch / 1P Cct Brkr / C Curve / 60A



Double Pole - D Curve

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



Triple Pole - D Curve

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



Accessories for Branch Circuit Breakers

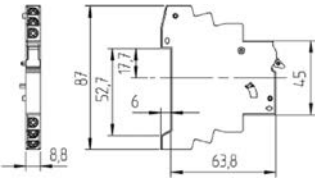


Module	Type of Contact	Contacts	Weight g / Each	Packing Unit	Part No.
Auxiliary contact, for mounting on the right					
1/2	1 auxiliary contact	1NO	35	6	BAU10
1/2	2 auxiliary contacts	1NO + 1NC	40	6	BAU11



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 ² (AWG18)	2.5 mm ² (AWG14)
Stranded wire	1.0 mm ² (AWG18)	1.5 mm ² (AWG16)
Stranded wire with ferrule	1.0 mm ² (AWG18)	1.5 mm ² (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 g / Each	Packing Unit	Part No.
2	10	LD10



Accessories for Branch Circuit Breakers

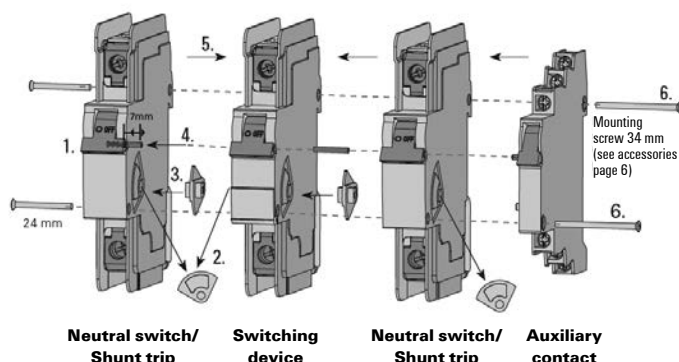
Mounting Instructions of Accessories

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)

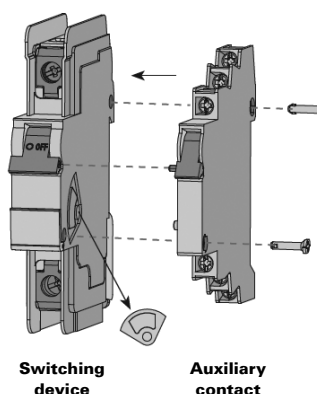


Applies to BAU...

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

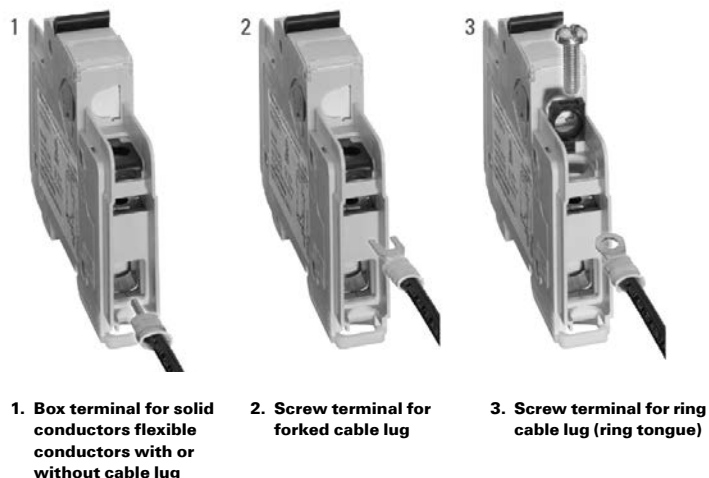


Applies to all switching devices BNS..., BST and BAU...

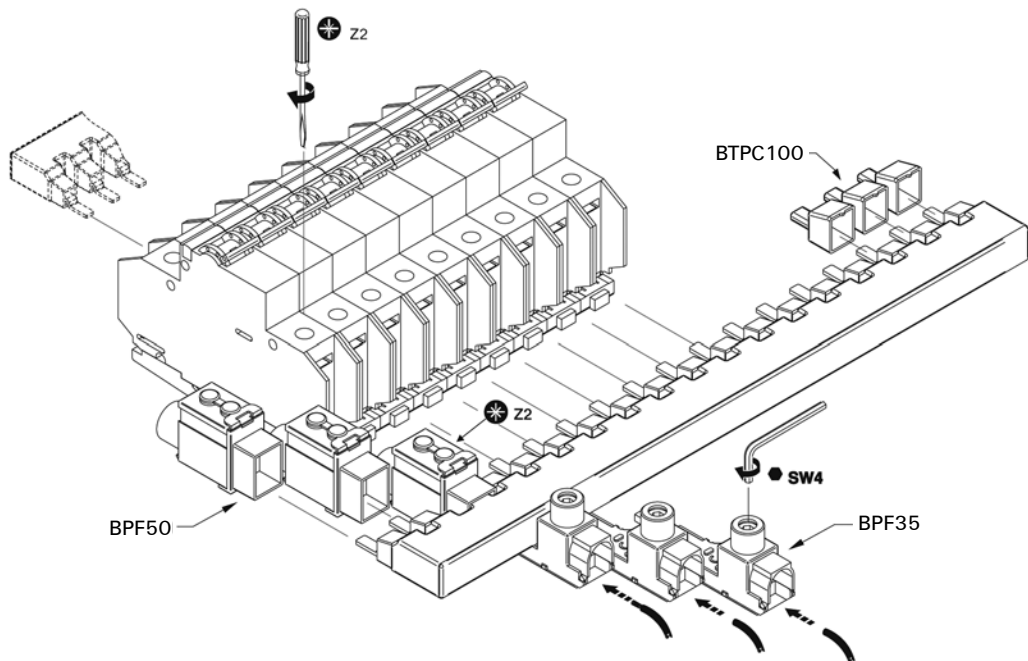
The load and mains can be connected into either the top or bottom (Line/Load Reversible).

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



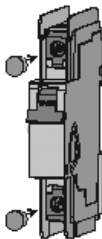
Mounting screw 34 mm
to connect the auxiliary contact and shunt trip or neutral switch to the switching devices

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 Wiring protection Control circuits Business equipment Appliances Motors low inrush	Transformers Power supplies Heaters Motors high inrush 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 $I_1 (A) > 1 \text{ h}$	$1.05 \times I_N$	$1.05 \times I_N$
	Thermal tripping $I_2 (A) < 1 \text{ h}$	$1.35 \times I_N$	$1.35 \times I_N$
	Electromagnetic not tripping $I_4 (A) > 0.1 \text{ s}$	$5 \times I_N$	$10 \times I_N$
	Electromagnetic tripping $I_5 (A) < 0.1 \text{ s}$	$10 \times I_N$	$16 \times I_N$
Reference calibration temperature of the thermal tripping		40 °C 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 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 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

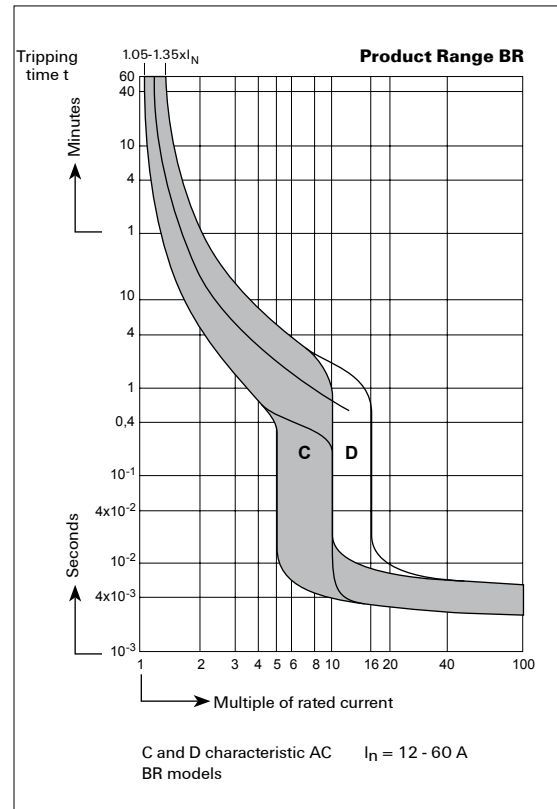
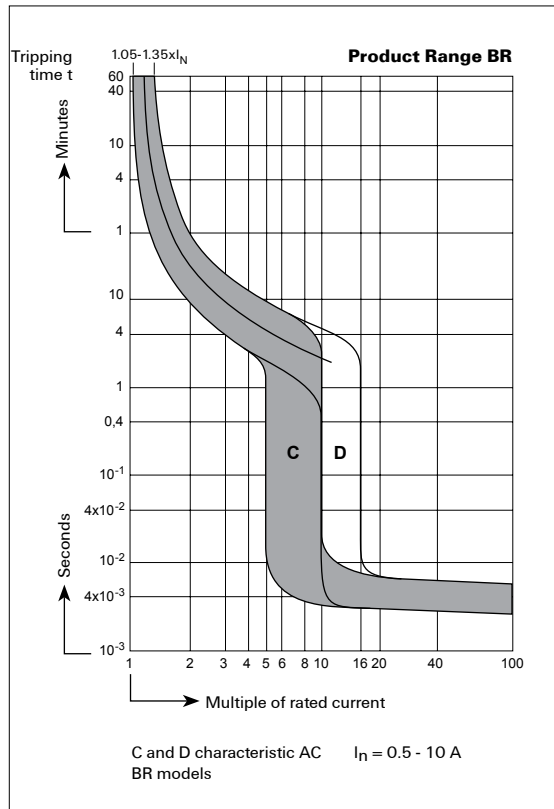
Interrupting capacity acc. to IEC 60947-2, DIN EN 60947-2

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

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	SU1D05AC	Suppl / 1P Cct Brkr / D Curve / 0.5A	SU1C05AC	Suppl / 1P Cct Brkr / C Curve / 0.5A
1	SU1D1AC	Suppl / 1P Cct Brkr / D Curve / 1A	SU1C1AC	Suppl / 1P Cct Brkr / C Curve / 1A
2	SU1D2AC	Suppl / 1P Cct Brkr / D Curve / 2A	SU1C2AC	Suppl / 1P Cct Brkr / C Curve / 2A
3	SU1D3AC	Suppl / 1P Cct Brkr / D Curve / 3A	SU1C3AC	Suppl / 1P Cct Brkr / C Curve / 3A
5	SU1D5AC	Suppl / 1P Cct Brkr / D Curve / 5A	SU1C5AC	Suppl / 1P Cct Brkr / C Curve / 5A
10	SU1D10AC	Suppl / 1P Cct Brkr / D Curve / 10A	SU1C10AC	Suppl / 1P Cct Brkr / C Curve / 10A
15	SU1D15AC	Suppl / 1P Cct Brkr / D Curve / 15A	SU1C15AC	Suppl / 1P Cct Brkr / C Curve / 15A
20	SU1D20AC	Suppl / 1P Cct Brkr / D Curve / 20A	SU1C20AC	Suppl / 1P Cct Brkr / C Curve / 20A
25	SU1D25AC	Suppl / 1P Cct Brkr / D Curve / 25A	SU1C25AC	Suppl / 1P Cct Brkr / C Curve / 25A
30	SU1D30AC	Suppl / 1P Cct Brkr / D Curve / 30A	SU1C30AC	Suppl / 1P Cct Brkr / C Curve / 30A
40	SU1D40AC	Suppl / 1P Cct Brkr / D Curve / 40A	SU1C40AC	Suppl / 1P Cct Brkr / C Curve / 40A
50	SU1D50AC	Suppl / 1P Cct Brkr / D Curve / 50A	SU1C50AC	Suppl / 1P Cct Brkr / C Curve / 50A
60	SU1D60AC	Suppl / 1P Cct Brkr / D Curve / 60A	SU1C60AC	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	SU2D05AC	Suppl / 2P Cct Brkr / D Curve / 0.5A	SU2C05AC	Suppl / 2P Cct Brkr / C Curve / 0.5A
1	SU2D1AC	Suppl / 2P Cct Brkr / D Curve / 1A	SU2C1AC	Suppl / 2P Cct Brkr / C Curve / 1A
2	SU2D2AC	Suppl / 2P Cct Brkr / D Curve / 2A	SU2C2AC	Suppl / 2P Cct Brkr / C Curve / 2A
5	SU2D5AC	Suppl / 2P Cct Brkr / D Curve / 5A	SU2C5AC	Suppl / 2P Cct Brkr / C Curve / 5A
10	SU2D10AC	Suppl / 2P Cct Brkr / D Curve / 10A	SU2C10AC	Suppl / 2P Cct Brkr / C Curve / 10A
15	SU2D15AC	Suppl / 2P Cct Brkr / D Curve / 15A	SU2C15AC	Suppl / 2P Cct Brkr / C Curve / 15A
20	SU2D20AC	Suppl / 2P Cct Brkr / D Curve / 20A	SU2C20AC	Suppl / 2P Cct Brkr / C Curve / 20A
25	SU2D25AC	Suppl / 2P Cct Brkr / D Curve / 25A	SU2C25AC	Suppl / 2P Cct Brkr / C Curve / 25A
30	SU2D30AC	Suppl / 2P Cct Brkr / D Curve / 30A	SU2C30AC	Suppl / 2P Cct Brkr / C Curve / 30A
40	SU2D40AC	Suppl / 2P Cct Brkr / D Curve / 40A	SU2C40AC	Suppl / 2P Cct Brkr / C Curve / 40A
50	SU2D50AC	Suppl / 2P Cct Brkr / D Curve / 50A	SU2C50AC	Suppl / 2P Cct Brkr / C Curve / 50A
60	SU2D60AC	Suppl / 2P Cct Brkr / D Curve / 60A	SU2C60AC	Suppl / 2P Cct Brkr / C Curve / 60A





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



Switching Devices Supplementary Protector

Rated Current I _n A	Rated Voltage Volt AC	Weight g/Each	Packing Unit	Test Currents * Electromagnetic		Part No.
				Not Tripping I ₄ A	Tripping I ₅ A	
Neutral switch						
0.5 - 60	277/480	150	5	400	700	SNS63A

* additional electromagnetic protection

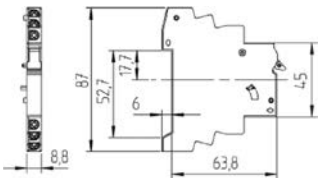


Accessories for Supplementary Circuit Breakers



Auxiliary contact

Module	Type of Contact	Contacts	Part No.	Weight g / Each	Packing 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 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 ² (AWG18)	2.5 mm ² (AWG14)
Stranded wire	1.0 mm ² (AWG18)	1.5 mm ² (AWG16)
Stranded wire with ferrule	1.0 mm ² (AWG18)	1.5 mm ² (AWG16)
Torque	max. 0.8 Nm (7 lb.in)	

*) Stripped length 8 - 9 mm



Shunt trip

Module	Rated Operating Voltage	Max. Operating Current at Un (t < 10 ms)	Part No.	Weight g / Each	Packing 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 0.5 A at 240 V 0.58 A at 277 V	SST110V	105	5



Lock-off/Lock-on device

Packing Unit	Weight g / Each	Part No.
10	2	LD10

Accessories for Supplementary Circuit Breakers



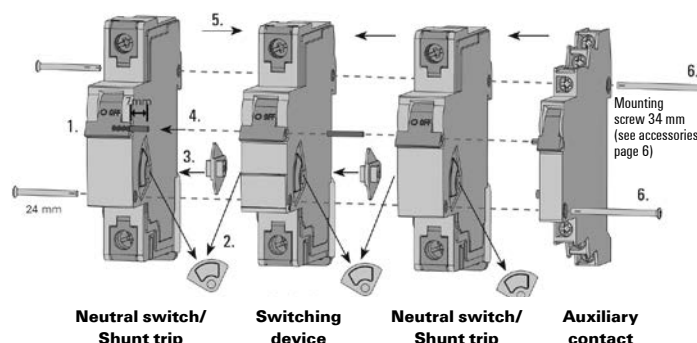
Mounting Instructions of Accessories

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)

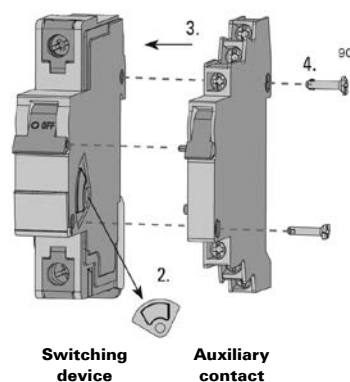


Applies to SAU...:

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

Installation:

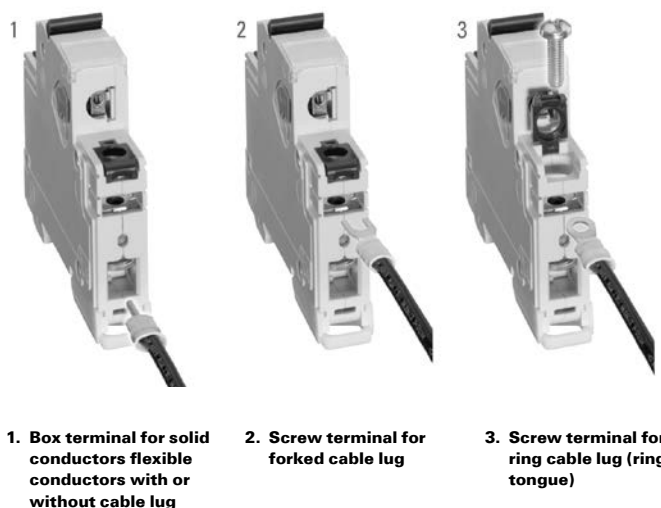
1. Flick the blue switches of all devices to the "OFF" position
2. Remove the grey cover from the switching device
3. Combine switching device and SAU...
4. Insert connection screws and connect the two devices by turning the screws by 90°
5. After installation close and open to check operation



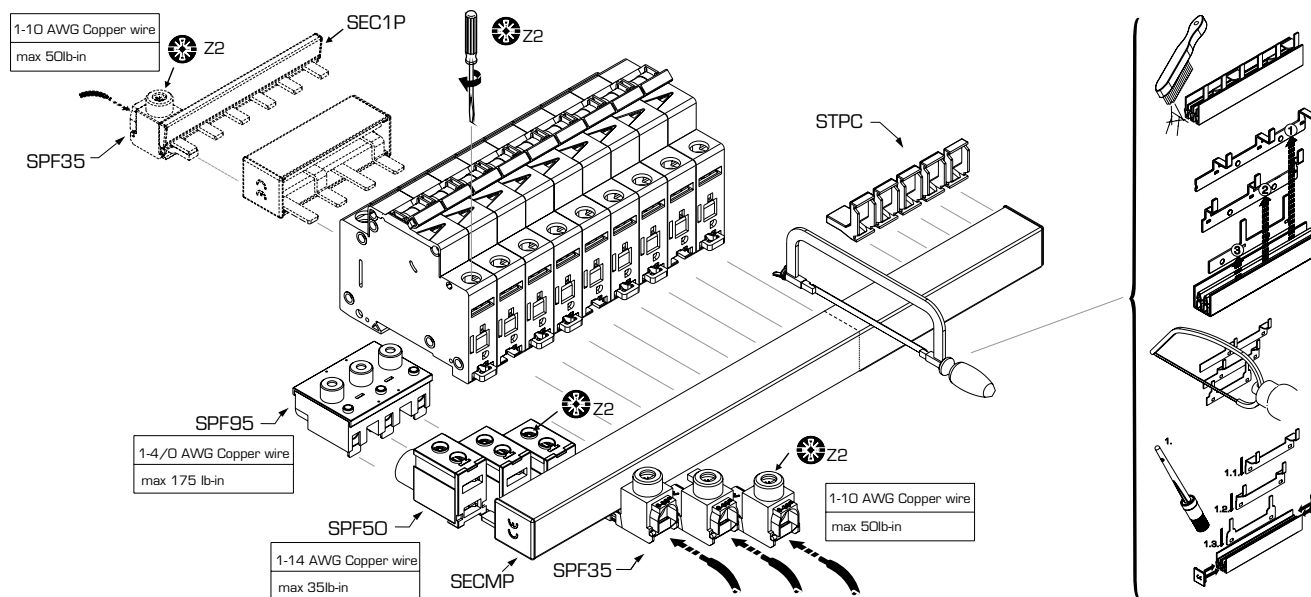
Applies to all switching devices SAU..., SNS and SST...

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



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	SB106
Busbar/Supplementary Protection/1ph/12Poles	SB112
Busbar/Supplementary Protection/Aux/1ph/37Poles	SB1A37
Busbar/Supplementary Protection/2ph/12Poles	SB212
Busbar/Supplementary Protection/2ph/18Poles	SB218
Busbar/Supplementary Protection/Aux/2ph/38Poles	SB2A38
Busbar/Supplementary Protection/3ph/12Poles	SB312
Busbar/Supplementary Protection/3ph/39Poles	SB339
Busbar/Supplementary Protection/Aux/3ph/48Poles	SB3A48P
PwrFeed Term - 35mm²	SPF35
PwrFeed Term - 50mm²	SPF50
PwrFeed Term - 95mm²	SPF95
Touch Protection 5Caps	STPC
Endcap/1P busbars	SEC1P
Endcap/multi-P busbars	SECMP

Technical Data for Supplementary Circuit Breakers



Characteristic		C	D
Application		Lighting, Control circuits Wiring protection, Business equipment Appliances	Control transformers Power supplies 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 $I_1 (A) > 1 \text{ h}$	$1.13 \times I_N$	$1.13 \times I_N$
	Thermal tripping $I_2 (A) < 1 \text{ h}$	$1.45 \times I_N$	$1.45 \times I_N$
	Electromagnetic not tripping $I_4 (A) > 0,1 \text{ s}$	$5 \times I_N$	$10 \times I_N$
	Electromagnetic tripping $I_5 (A) < 0,1 \text{ s}$	$10 \times I_N$	$16 \times I_N$
Reference calibration temperature of the thermal tripping		30° C + 5° C 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 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 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 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

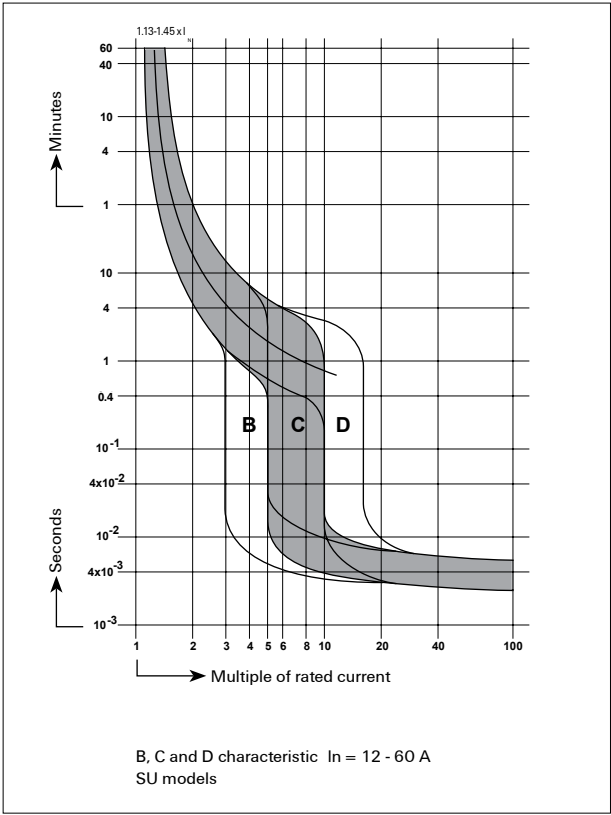
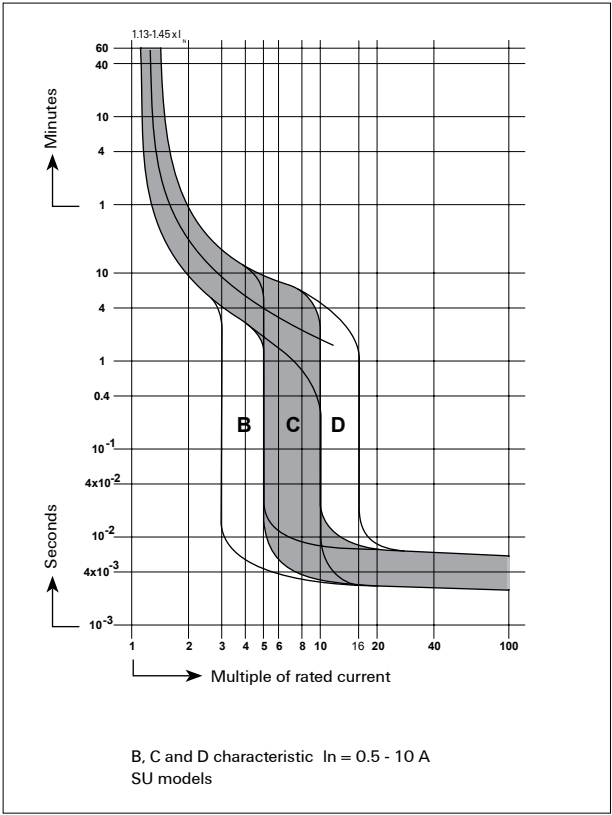
Interrupting capacity and maximum back-up fuse for use in the USA and Canada

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 Ambient temperature 40 °C	1 / 1 + N	277	0.5 - 10	10	70 A
	1 / 1 + N	277	12 - 60	10	4 x I _N
	2 / 3 / 3 + N	480	0.5 - 10	10	70 A
	2 / 3 / 3 + N	480	12 - 60	10	4 x I _N

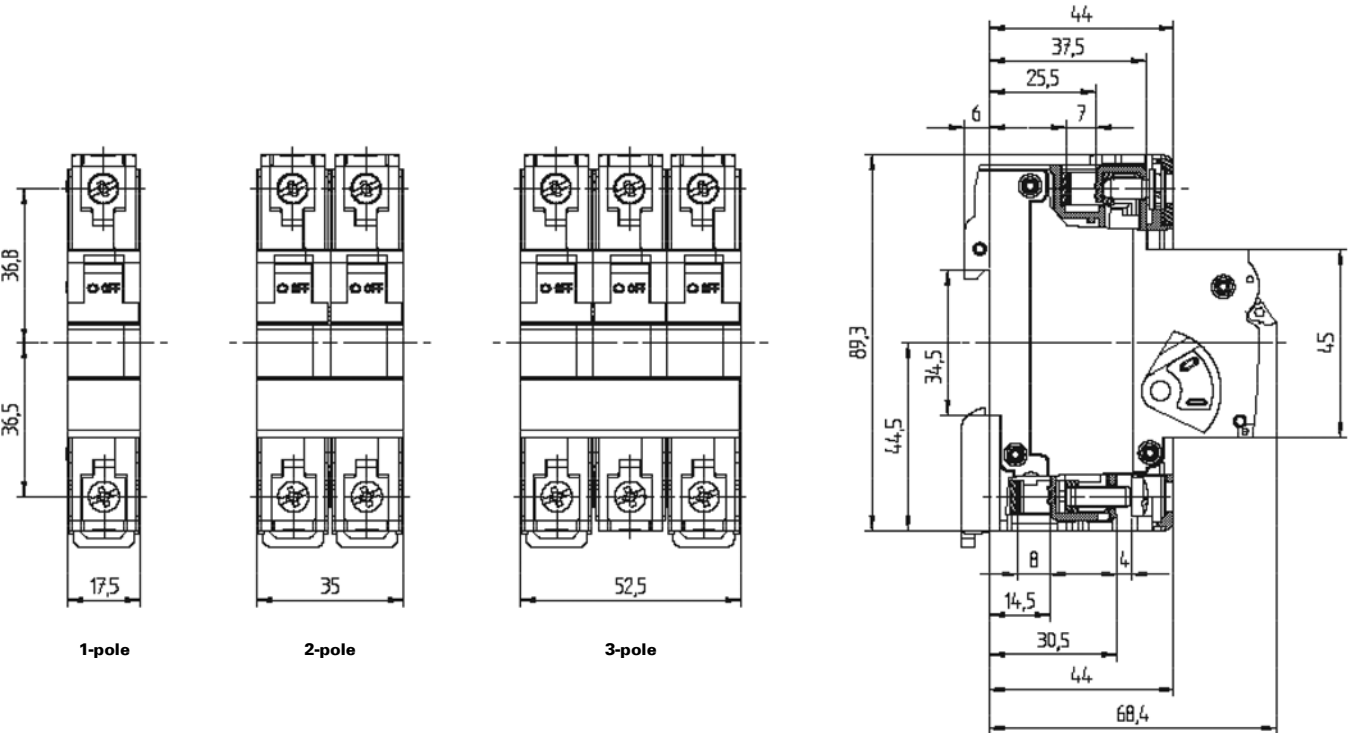
Internal resistance for Product Range SU

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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