

UL 489 DIN rail branch circuit breakers

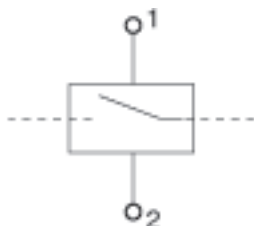
FAZ-NA circuit breakers

ACCESSORY TECHNICAL DATA

Shunt trip release FAZ-XAA-NA

- Remote release for subsequent mounting onto FAZ-NA/RT
- Additional installation of standard auxiliary switch is possible
- Position indicator red–green

Connection Diagram



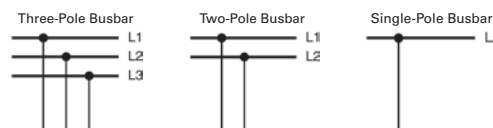
Shunt Trip Release FAZ-XAA-NA

Description	FAZ-XAA-NA12-110VAC	FAZ-XAA-NA110-415VAC
Electrical		
Can be mounted onto	FAZ-NA / FAZ-NA-DC / FAZ-RT	FAZ-NA / FAZ-NA-DC / FAZ-RT
Operational voltage range	12–110 Vac 12–60 Vdc	110–415 Vac 110–230 Vdc
Frequency	50/60 Hz	50/60 Hz
Mechanical		
Frame size	45 mm	45 mm
Device height	105 mm	105 mm
Device width	17.5 mm	17.5 mm
Mounting	Quick fastening with two lock-in positions on EN 50022	
Degree of protection, built-in	IP40	IP40
Terminal protection	Finger and hand touch safe according to BGV A3, ÖVE-EN 6	
Terminals	Open mouthed/lift	Open mouthed/lift
Terminal capacity One and two wires	18–10 AWG	18–10 AWG

Busbar block UL 489 (pin)

- Tested according to UL 489
- Do not cut
- Extension terminal 35 mm² Z-EK/35/UL for copper conductors
- Incoming terminal 50 mm² Z-EB/50/UL
- For covering of not used pins, use busbar tag shrouds ZV-BS-UL

Connection Diagram



Busbar Block UL 489 (Pin)

Description	UL 489	IEC/EN 60947-2
Electrical		
Rated operational voltage	480/277 Vac 96 Vdc	—
Rated frequency	50/60 Hz	—
Rated voltage	480 Vac	690 Vac
Overtoltage category	—	III
Rated impulse withstand voltage U _{imp}	—	9.5 kV
Rated current	80A at 40°C	80A at 30°C
Rated conditional short-circuit current AC with 350A gG	—	15 kA
Short-circuit current	10 kA	—
Mechanical		
Busbar cross section	—	16 mm ² Cu
Flame class according to UL 94	V0	—
Pollution degree	—	2
Comparative tracking index	—	CTI 600
Minimum clearance (internal/external)	—	> 9.5/25.4 mm
Minimum creepage distance (internal/external)	—	> 12.7/50.8 mm
Resistance to climatic conditions	—	According to DIN/EN 60068

UL 1077 DIN rail supplementary protectors

FAZ circuit breakers

PRODUCT OVERVIEW

Optimum and efficient protection



Optimum product quality, tested reliability and safety stand for best protection of personnel, installations and plant. Eaton's FAZ DIN rail mountable circuit breaker is designed for use in control panel applications.

Powerful offering for machine and system builders

The FAZ is available with B, C, D, K, S, and Z characteristics in accordance with UL 1077, CSA C22.2 No.235 and IEC 60947-2. These devices are CE marked.

Typical applications

Supplementary protection

- Control circuits
- Lighting
- Business equipment
- Appliances

Features

- Complete range of UL 1077 recognized DIN rail mounted miniature circuit breakers up to 63A current rating
- Standard ratings of 10 kAIC up to 277/480 Vac
- Current limiting design provides fast short-circuit interruption that reduces the let-through energy, which can damage the circuit
- Suitable for supplementary protection
- Thermal-magnetic overcurrent protection
 - Six levels of short-circuit protection, categorized by B, C, D, K, S, and Z curves
- Trip-free design—breaker can not be defeated by holding the handle in the ON position
- Captive screws cannot be lost
- Fulfill UL 1077, CSA C22.2 No.235 and also IEC 60947-2 Standard
- Field-installable shunt trip and auxiliary switch subsequent mounting
- Module width of only 17.7 mm (per pole)
- Contact position indicator (red/green)
- Easy installation on DIN rail
- Possibility for sealing the toggle in ON or OFF position

FAZ complies with the latest national and international standards

Standards—Supplementary Protection

UL 1077, CSA C22.2 No. 235

Apply to supplementary protectors intended for use as overcurrent, or overvoltage or undervoltage protection within an appliance or other electrical equipment where branch circuit protection is already provided, or is not required.



RoHS

These devices are RoHS compliant.



VDE

Devices with B, C, and D curves are VDE compliant.



CCC

Devices with B, C, and D curves are CCC compliant.



ABS

These devices are ABS compliant.



UL 1077 DIN rail supplementary protectors

FAZ circuit breakers

PRODUCT OVERVIEW

Discover these advanced features

Breakers install on standard DIN rail

Available in one-, two-, three-, four-pole, 1+N and 3+N models

Color-coded indicator provides breaker status for easy troubleshooting



Captive Posidrive terminal screws with finger and back-of-hand protection (IP20)

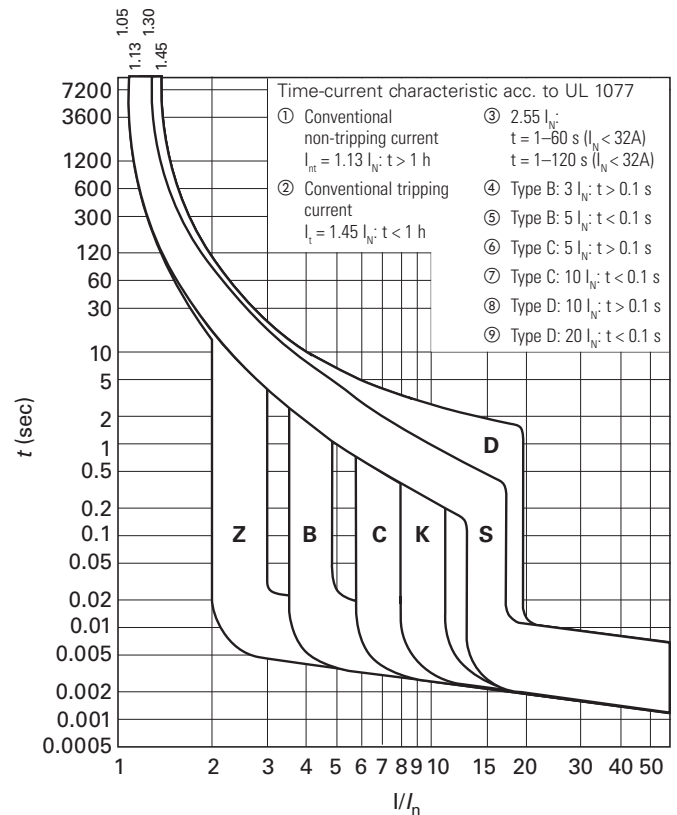
Trip-free design; breaker cannot be defeated by holding the handle in the ON position

Breaker information printed on the front of the device for quick identification

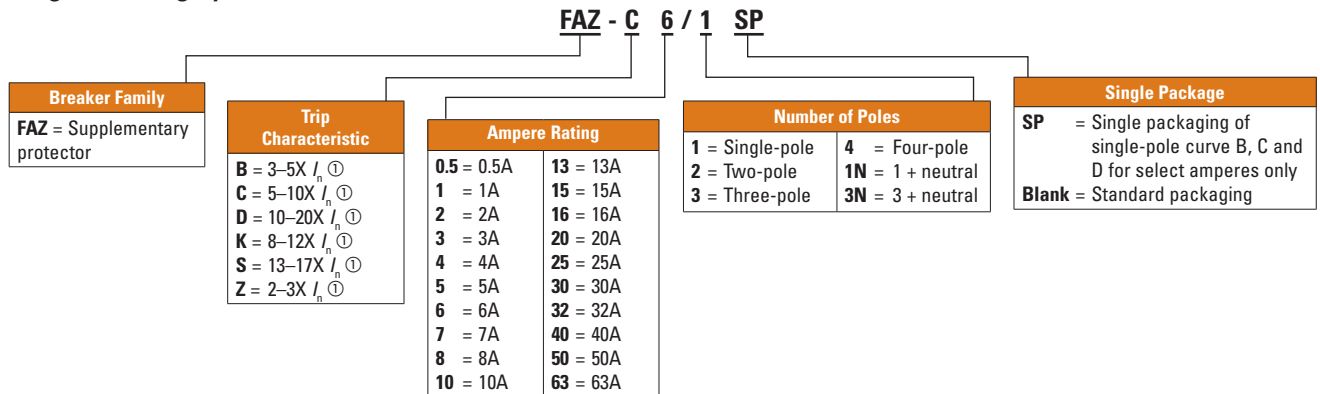
Six tripping curves to choose from

Eaton FAZ supplementary protectors are available with six different tripping characteristics, including Type B, C, D, K, S, and Z. Definitions for each trip curve are contained on the ordering pages and can be used to determine the optimal characteristic for your application. For example, low-level short-circuit faults in control wiring, such as PLCs, are best protected by devices with Type B trip characteristics (3–5X continuous rating of the device (I_n)).

Even though not required by NEC or CEC for supplementary protectors, Eaton's FAZ devices are current limiting, which means that they interrupt fault currents within one half cycle. Current limiting devices offer superior protection by reducing peak let-through current and energy.



Catalog Numbering System



① I_n = Rated current for instantaneous trip characteristics.

UL 1077 DIN rail supplementary protectors

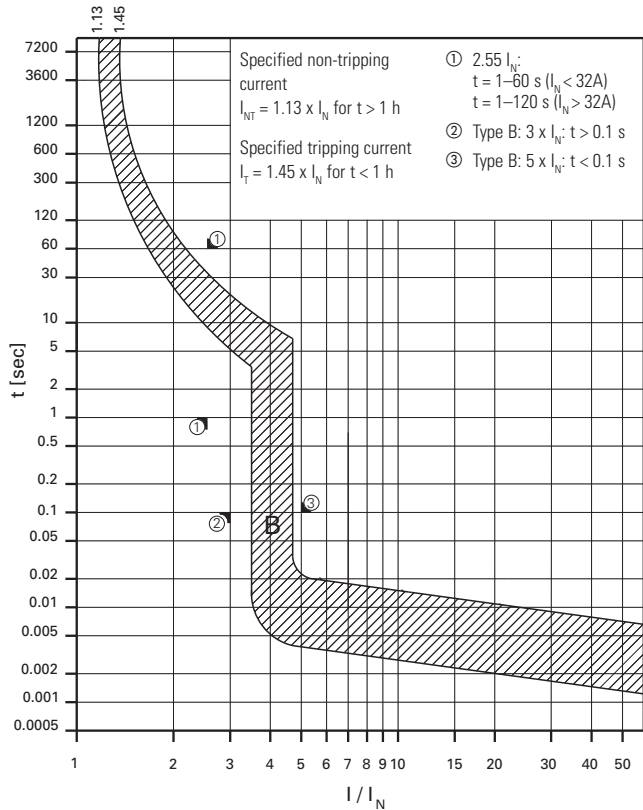
FAZ circuit breakers

PRODUCT SELECTION

FAZ product selection—B curve (3–5X I_n current rating)

- Designed for resistive or slightly inductive loads
- Response time of instantaneous trip: 3–5X I_n current rating
- UL recognized and CSA Certified as supplementary protectors
- For international and domestic use (conform to IEC 60947-2)
- UL file number 177451

Suitable for applications where protection against low-level short-circuit faults in control wiring is desired. Instantaneous trip is 3–5X continuous rating of device (I_n). Applications include PLC wiring, business equipment, lighting, appliances and some motors. Low magnetic trip point.



B Curve (3–5X I_n Current Rating)—designed for resistive or slightly inductive loads ①



	Single-pole ②	Two-pole	Three-pole	Four-pole	Single-pole + Neutral	Three-pole + Neutral
Amperes	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
1	FAZ-B1/1-SP	FAZ-B1/2	FAZ-B1/3	FAZ-B1/4	FAZ-B1/1N	FAZ-B1/3N
2	FAZ-B2/1-SP	FAZ-B2/2	FAZ-B2/3	FAZ-B2/4	FAZ-B2/1N	FAZ-B2/3N
3	FAZ-B3/1-SP	FAZ-B3/2	FAZ-B3/3	FAZ-B3/4	FAZ-B3/1N	FAZ-B3/3N
4	FAZ-B4/1-SP	FAZ-B4/2	FAZ-B4/3	FAZ-B4/4	FAZ-B4/1N	FAZ-B4/3N
5	FAZ-B5/1-SP	FAZ-B5/2	FAZ-B5/3	FAZ-B5/4	FAZ-B5/1N	FAZ-B5/3N
6	FAZ-B6/1-SP	FAZ-B6/2	FAZ-B6/3	FAZ-B6/4	FAZ-B6/1N	FAZ-B6/3N
7	FAZ-B7/1-SP	FAZ-B7/2	FAZ-B7/3	FAZ-B7/4	FAZ-B7/1N	FAZ-B7/3N
8	FAZ-B8/1-SP	FAZ-B8/2	FAZ-B8/3	FAZ-B8/4	FAZ-B8/1N	FAZ-B8/3N
10	FAZ-B10/1-SP	FAZ-B10/2	FAZ-B10/3	FAZ-B10/4	FAZ-B10/1N	FAZ-B10/3N
12	FAZ-B12/1-SP	FAZ-B12/2	FAZ-B12/3	FAZ-B12/4	FAZ-B12/1N	FAZ-B12/3N
13	FAZ-B13/1-SP	FAZ-B13/2	FAZ-B13/3	FAZ-B13/4	FAZ-B13/1N	FAZ-B13/3N
15	FAZ-B15/1-SP	FAZ-B15/2	FAZ-B15/3	FAZ-B15/4	FAZ-B15/1N	FAZ-B15/3N
16	FAZ-B16/1-SP	FAZ-B16/2	FAZ-B16/3	FAZ-B16/4	FAZ-B16/1N	FAZ-B16/3N
20	FAZ-B20/1-SP	FAZ-B20/2	FAZ-B20/3	FAZ-B20/4	FAZ-B20/1N	FAZ-B20/3N
25	FAZ-B25/1-SP	FAZ-B25/2	FAZ-B25/3	FAZ-B25/4	FAZ-B25/1N	FAZ-B25/3N
30	FAZ-B30/1-SP	FAZ-B30/2	FAZ-B30/3	FAZ-B30/4	FAZ-B30/1N	FAZ-B30/3N
32	FAZ-B32/1-SP	FAZ-B32/2	FAZ-B32/3	FAZ-B32/4	FAZ-B32/1N	FAZ-B32/3N
40	FAZ-B40/1-SP	FAZ-B40/2	FAZ-B40/3	FAZ-B40/4	FAZ-B40/1N	FAZ-B40/3N
50	FAZ-B50/1-SP	FAZ-B50/2	FAZ-B50/3	FAZ-B50/4	FAZ-B50/1N	FAZ-B50/3N
63	FAZ-B63/1-SP	FAZ-B63/2	FAZ-B63/3	FAZ-B63/4	FAZ-B63/1N	FAZ-B63/3N

① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.

② Option for single packaging on single-pole B, C and D curves only; add suffix SP when ordering.

UL 1077 DIN rail supplementary protectors

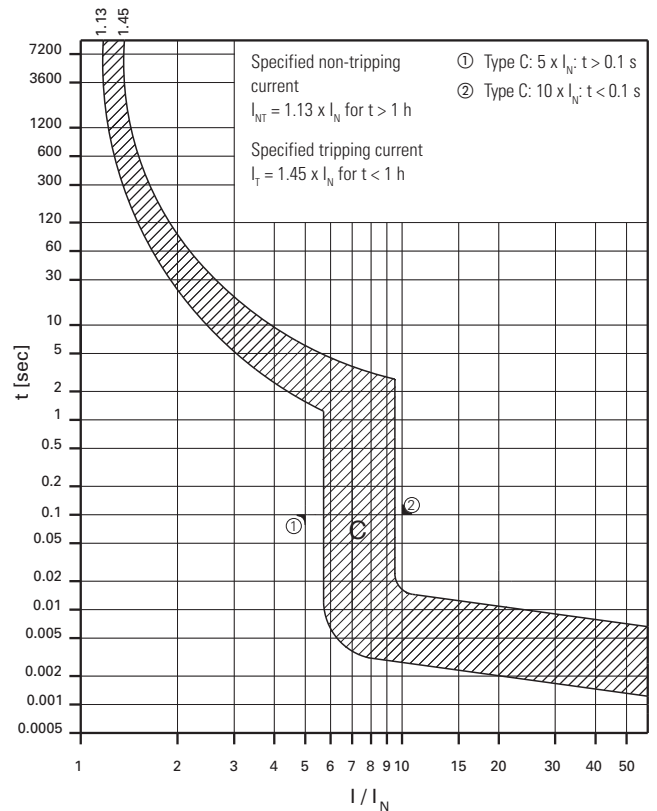
FAZ circuit breakers

PRODUCT SELECTION

FAZ product selection—C curve (5–10X I_n current rating)

- Designed for inductive loads
- Response time of instantaneous trip: 5–10X I_n current rating
- UL recognized and CSA Certified as supplementary protectors
- For international and domestic use (conform to IEC 60947-2)
- UL file number 177451

Suitable for applications where medium levels of inrush current are expected. Instantaneous trip is 5–10X rating of device (I_n). Applications include small transformers, lighting, pilot devices, control circuits, and coils. Medium magnetic trip point.



C Curve (5–10X I_n current rating)—designed for inductive loads ①



	Single-pole ②	Two-pole	Three-pole	Four-pole	Single-pole + Neutral	Three-pole + Neutral
Amperes	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
0.5	FAZ-C0.5/1-SP	FAZ-C0.5/2	FAZ-C0.5/3	FAZ-C0.5/4	FAZ-C0.5/1N	FAZ-C0.5/3N
1	FAZ-C1/1-SP	FAZ-C1/2	FAZ-C1/3	FAZ-C1/4	FAZ-C1/1N	FAZ-C1/3N
1.6	FAZ-C1.6/1-SP	FAZ-C1.6/2	FAZ-C1.6/3	FAZ-C1.6/4	FAZ-C1.6/1N	FAZ-C1.6/3N
2	FAZ-C2/1-SP	FAZ-C2/2	FAZ-C2/3	FAZ-C2/4	FAZ-C2/1N	FAZ-C2/3N
3	FAZ-C3/1-SP	FAZ-C3/2	FAZ-C3/3	FAZ-C3/4	FAZ-C3/1N	FAZ-C3/3N
4	FAZ-C4/1-SP	FAZ-C4/2	FAZ-C4/3	FAZ-C4/4	FAZ-C4/1N	FAZ-C4/3N
5	FAZ-C5/1-SP	FAZ-C5/2	FAZ-C5/3	FAZ-C5/4	FAZ-C5/1N	FAZ-C5/3N
6	FAZ-C6/1-SP	FAZ-C6/2	FAZ-C6/3	FAZ-C6/4	FAZ-C6/1N	FAZ-C6/3N
7	FAZ-C7/1-SP	FAZ-C7/2	FAZ-C7/3	FAZ-C7/4	FAZ-C7/1N	FAZ-C7/3N
8	FAZ-C8/1-SP	FAZ-C8/2	FAZ-C8/3	FAZ-C8/4	FAZ-C8/1N	FAZ-C8/3N
10	FAZ-C10/1-SP	FAZ-C10/2	FAZ-C10/3	FAZ-C10/4	FAZ-C10/1N	FAZ-C10/3N
13	FAZ-C13/1-SP	FAZ-C13/2	FAZ-C13/3	FAZ-C13/4	FAZ-C13/1N	FAZ-C13/3N
15	FAZ-C15/1-SP	FAZ-C15/2	FAZ-C15/3	FAZ-C15/4	FAZ-C15/1N	FAZ-C15/3N
16	FAZ-C16/1-SP	FAZ-C16/2	FAZ-C16/3	FAZ-C16/4	FAZ-C16/1N	FAZ-C16/3N
20	FAZ-C20/1-SP	FAZ-C20/2	FAZ-C20/3	FAZ-C20/4	FAZ-C20/1N	FAZ-C20/3N
25	FAZ-C25/1-SP	FAZ-C25/2	FAZ-C25/3	FAZ-C25/4	FAZ-C25/1N	FAZ-C25/3N
30	FAZ-C30/1-SP	FAZ-C30/2	FAZ-C30/3	FAZ-C30/4	FAZ-C30/1N	FAZ-C30/3N
32	FAZ-C32/1-SP	FAZ-C32/2	FAZ-C32/3	FAZ-C32/4	FAZ-C32/1N	FAZ-C32/3N
40	FAZ-C40/1-SP	FAZ-C40/2	FAZ-C40/3	FAZ-C40/4	FAZ-C40/1N	FAZ-C40/3N
50	FAZ-C50/1-SP	FAZ-C50/2	FAZ-C50/3	FAZ-C50/4	FAZ-C50/1N	FAZ-C50/3N
63	FAZ-C63/1-SP	FAZ-C63/2	FAZ-C63/3	FAZ-C63/4	FAZ-C63/1N	FAZ-C63/3N

① In North America, these switches are UL recognized and CSA Certified as supplementary protection devices. Per the intent of NEC (National Electrical Code), Article 240, and CEC (Canadian Electrical Code), Part 1 C22.1, supplementary breakers cannot be used as a substitute for the branch circuit protective device. They can be used to provide overcurrent protection within an appliance or other electrical equipment where branch circuit overcurrent protection is already provided, or is not required.

② Option for single packaging on single-pole B, C and D curves only; add suffix SP when ordering.

UL 1077 DIN rail supplementary protectors

FAZ circuit breakers

TECHNICAL DATA

Technical Data

Description	B Curve	C Curve	D Curve
Electrical			
Approvals	UR (UL 1077), CSA (CSA 22.2 No. 235), CE		
Standards	IEC/EN 60947-2		
Short-circuit trip response	3–5 I_n	5–10 I_n	10–20 I_n
Supplementary Protectors—UL/CSA			
Current range	1–63A	0.5–63A	0.5–40A
Maximum voltage ratings—UL/CSA			
Single-pole, single-pole + neutral	277 Vac 48 Vdc	277 Vac 48 Vdc	277 Vac 48 Vdc
Two-, three-pole, four-pole and three-pole + neutral	480Y/277 Vac	480Y/277 Vac	480Y/277 Vac
Two poles in series	96 Vdc	96 Vdc	96 Vdc
Thermal tripping characteristics			
Single-pole	1.35 x I_n @ 40°C	1.35 x I_n @ 40°C	1.35 x I_n @ 40°C
Multi-pole	1.45 x I_n @ 40°C	1.45 x I_n @ 40°C	1.45 x I_n @ 40°C
Short-circuit ratings (at max. voltage)			
Single-pole	10 kA (5 kA for 40–63A device)	10 kA (5 kA for 40–63A device)	5 kA
Two-, three-pole	10 kA (5 kA for 40–63A device)	10 kA (5 kA for 40–63A device)	5 kA
Single-pole	10 kA @ 48 Vdc	10 kA @ 48 Vdc	10 kA @ 48 Vdc
Two poles in series	10 kA @ 96 Vdc	10 kA @ 96 Vdc	10 kA @ 96 Vdc
Miniature Circuit Breaker—IEC			
Current range	1–63A	0.5–63A	0.5–63A
Maximum voltage ratings—IEC 68898-1			
Single-pole	230 Vac	230 Vac	230 Vac
Two-, three-pole	230/400 Vac	230/400 Vac	230/400 Vac
Maximum voltage ratings—IEC 60947-2			
Single-pole	240 Vac 48 Vdc	240 Vac 48 Vdc	240 Vac 48 Vdc
Two-, three-pole	240/415 Vac	240/415 Vac	240/415 Vac
Two poles in series	96 Vdc	96 Vdc	96 Vdc
Thermal tripping characteristics			
Single-pole	> 1 hour @ 1.05 x I_n	> 1 hour @ 1.05 x I_n	> 1 hour @ 1.05 x I_n
Multi-pole	< 1 hour @ 1.3 x I_n	< 1 hour @ 1.3 x I_n	< 1 hour @ 1.3 x I_n
Interrupt ratings (at max. voltage)			
IEC 60947-2	15 kA	15 kA	15 kA (10 kA for 50 and 63A)
IEC 60898	10 kA	10 kA	10 kA (50 and 63A not available)
Operational switching capacity	7.5 kA	7.5 kA	7.5 kA
Max. backup fuse [gL/gG]	125A	125A	125A
Rated impulse withstand— U_{imp}	4000 Vac	4000 Vac	4000 Vac
Rated insulation voltage— U_i	440 Vac	440 Vac	440 Vac
Environmental/General			
Selectivity class	3	3	3
Lifespan (operations)	> 10,000 (1 operation = ON/OFF)	> 10,000 (1 operation = ON/OFF)	> 10,000 (1 operation = ON/OFF)
Shock (IEC 68-2-22)	10g–120 ms	10g–120 ms	10g–120 ms
Operating temperature range	–40 to +167°F (–40 to +75°C)	–40 to +167°F (–40 to +75°C)	–40 to +167°F (–40 to +75°C)
Shipment and short-term storage	–40 to +185°F (–40 to +85°C)	–40 to +185°F (–40 to +85°C)	–40 to +185°F (–40 to +85°C)
Housing material	Nylon	Nylon	Nylon
Mechanical			
Standard front dimension	80 mm	80 mm	80 mm
Device height	80 mm	80 mm	80 mm
Terminal protection	Finger and back-of-hand proof to IEC 536	Finger and back-of-hand proof to IEC 536	Finger and back-of-hand proof to IEC 536
Mounting width per pole	17.5 mm	17.5 mm	17.5 mm
Mounting	IEC/EN 60715 top-hat rail	IEC/EN 60715 top-hat rail	IEC/EN 60715 top-hat rail
Degree of protection	IP20	IP20	IP20
Terminals top and bottom	Twin-purpose terminals	Twin-purpose terminals	Twin-purpose terminals
Supply connection	Line or load side	Line or load side	Line or load side
Terminal capacity [mm ²]	1 x 25 (AWG 4–18)/2 x 10 (AWG 8–18)	1 x 25 (AWG 4–18)/2 x 10 (AWG 8–18)	1 x 25 (AWG 4–18)/2 x 10 (AWG 8–18)
Torque	2.4 Nm	2.4 Nm	2.4 Nm
Imperial torque	21 lb-in (AWG 18–12), 25 lb-in (AWG 10–8), 36 lb-in (AWG 6–4)	21 lb-in (AWG 18–12), 25 lb-in (AWG 10–8), 36 lb-in (AWG 6–4)	21 lb-in (AWG 18–12), 25 lb-in (AWG 10–8), 36 lb-in (AWG 6–4)
Thickness of busbar material	0.8–2 mm	0.8–2 mm	0.8–2 mm
Mounting position	As required	As required	As required