

### FAZ-NA and FAZ-NA-L Circuit Breakers



*Optimum and Efficient Protection for Every Application*

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## FAZ-NA and FAZ-NA-L Circuit Breakers

### Product Overview

Optimum product quality, tested reliability and safety stand for best protection of personnel, installations and plant. Eaton's FAZ-NA and FAZ-NA-L DIN rail mountable circuit breakers are designed for use in branch service applications.

### Powerful Offering for Machine and System Builders

FAZ-NA and FAZ-NA-L are available with B, C and D characteristics in accordance with UL® 489, CSA® C22.2 No.5; UL 1077, CSA C22.2 No.235 and IEC 60947-2. These devices are CE marked.

### Application Description

Feeder and branch circuit protection for:

- Convenience receptacle circuits (internal/external)
- Motor control circuits
- Load circuits leaving the equipment (external)
- HACR internal/external equipment (heating, air conditioning, refrigeration)
- PLC I/O points
- Computers
- Power supplies
- Control instrumentation
- Relays
- UPS
- Power conditioners

### Features

- Complete range of UL 489 listed DIN rail mounted miniature circuit breakers up to 63A current rating
- Two distinct UL 489 FAZ-NA offerings available to provide the best solution for the application—FAZ-NA at 277/480 Vac and FAZ-NA-L at 240 Vac
- Standard ratings of 10 kAIC available at both 240 Vac and 277/480 Vac
- Select amperages available at 14 kAIC for both the 240 Vac and 277/480 Vac offerings and 10 kAIC up to 125 Vdc per pole
- Current limiting design provides fast short-circuit interruption that reduces the let-through energy, which can damage the circuit
- Suitable for branch circuit device protection
- Thermal-magnetic overcurrent protection
  - Three levels of short-circuit protection, categorized by B, C and D curves
- Trip-free design—breaker can not be defeated by holding the handle in the ON position
- Captive screws cannot be lost
- SWD (switching duty)—suitable for switching fluorescent lighting loads ( $I_n \leq 20A$ )
- Fulfill UL 489, CSA C22.2 No.5 and also IEC 60947-2 Standard
- For use in applications for which UL 1077 or CSA C22.2 No.235 are also allowed
- Field-installable shunt trip and auxiliary switch subsequent mounting
- Separate version for ring-tongue connection (Type FAZ-RT), terminal screws can be removed (on both sides)
- 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
- Single-, two-, three- and four-pole configurations

### Device Printing on Front and Side Installation options

These branch circuit breakers are available in two terminal configurations: standard box terminals that accept multiple conductors and ring-tongue terminals, ideally suited to demanding requirements of the semi-conductor industry. All breakers mount on standard 35 mm DIN rail. Bus connectors and feeder terminal facilitate mounting and wiring of multiple miniature circuit breaker arrays in control panel assemblies. These circuit breakers can also be reverse feed.

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## Miniature Circuit Breakers and Supplementary Protectors

### UL 489 DIN Rail Miniature Circuit Breakers

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#### Standards and Certifications

##### FAZ-NA

FAZ-NA complies with the latest national and international standards.

- UL 489
  - Standard for molded case circuit breakers (MCCB) for feeder and branch circuit protection
  - Products meet the requirements of the National Electrical Code® (NEC®)

- CSA C22.2 No.5
  - Standard for molded case circuit breakers (MCCB) for feeder and branch circuit protection (corresponds closely to UL 489 Standard)
  - Products meet the requirements of the Canadian Electrical Code (CEC)

- RoHS compliant
- VDE compliant
- ABS compliant



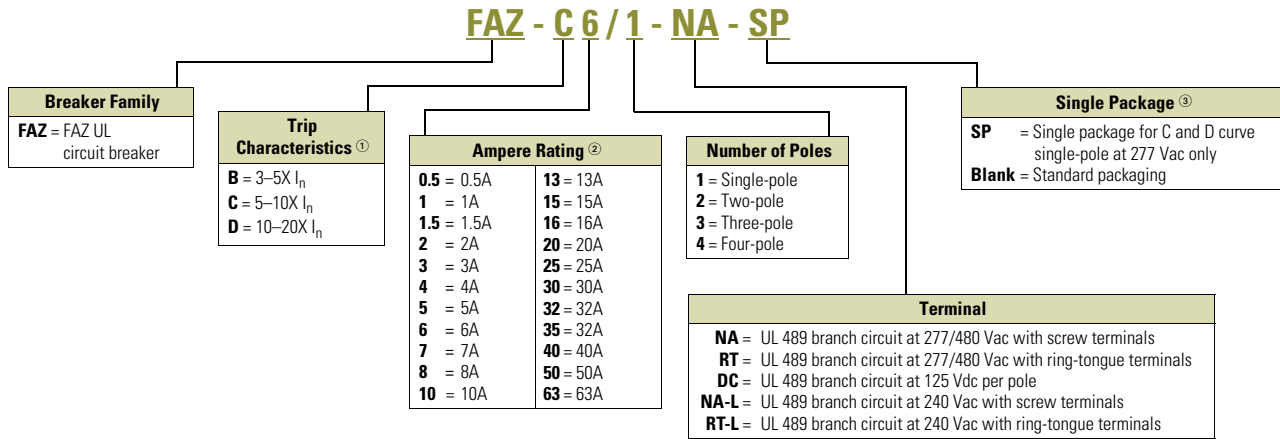
##### FAZ-NA-L

FAZ-NA-L 0.5–63A at 240 Vac comply with the following standards.

- UL 489 listed
- CSA C22.2 No. 5-02
- IEC rated
- RoHS compliant
- CCC compliant
- OVE compliant
- EAC compliant
- ABS compliant
- VDE compliant



#### Catalog Number Selection

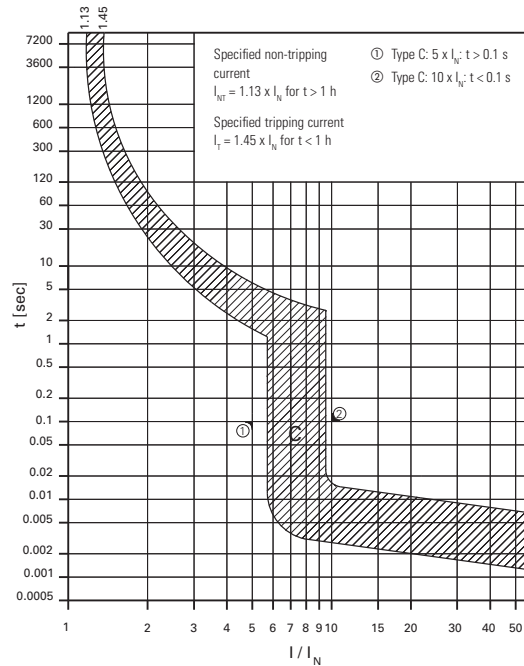


#### Notes

- ① I<sub>n</sub> = Rated current for instantaneous trip characteristics.
- ② B curve starts at 1 ampere.
- ③ Single package only available for 277 Vac offering—not an option for 240 Vac line.

### FAZ-NA C Curve 277/480 Vac Rated Offering

- UL approved (UL 489) and CSA Certified (CSA C22.2 No.5-02) as branch circuit breakers
- Interrupting capacity: 10 kA UL/CSA; 15 kA IEC 60947-2
- Current limiting device
- UL file number E235139



#### Single-Pole



#### Two-Pole



#### Three-Pole



#### Four-Pole



### FAZ-NA UL 489 Circuit Breakers at 277/480 Vac— 10 kAIC, 14 kAIC C Curve (15–25A)

Amps	Single-Pole ① Catalog Number	Two-Pole Catalog Number	Three-Pole Catalog Number	Four-Pole Catalog Number
<b>C Curve (5–10X I<sub>n</sub> Current Rating)</b>				
0.5	FAZ-C0.5/1-NA-SP	FAZ-C0.5/2-NA	FAZ-C0.5/3-NA	FAZ-C0.5/4-NA
1	FAZ-C1/1-NA-SP	FAZ-C1/2-NA	FAZ-C1/3-NA	FAZ-C1/4-NA
1.5	FAZ-C1.5/1-NA-SP	FAZ-C1.5/2-NA	FAZ-C1.5/3-NA	FAZ-C1.5/4-NA
2	FAZ-C2/1-NA-SP	FAZ-C2/2-NA	FAZ-C2/3-NA	FAZ-C2/4-NA
3	FAZ-C3/1-NA-SP	FAZ-C3/2-NA	FAZ-C3/3-NA	FAZ-C3/4-NA
4	FAZ-C4/1-NA-SP	FAZ-C4/2-NA	FAZ-C4/3-NA	FAZ-C4/4-NA
5	FAZ-C5/1-NA-SP	FAZ-C5/2-NA	FAZ-C5/3-NA	FAZ-C5/4-NA
6	FAZ-C6/1-NA-SP	FAZ-C6/2-NA	FAZ-C6/3-NA	FAZ-C6/4-NA
7	FAZ-C7/1-NA-SP	FAZ-C7/2-NA	FAZ-C7/3-NA	FAZ-C7/4-NA
8	FAZ-C8/1-NA-SP	FAZ-C8/2-NA	FAZ-C8/3-NA	FAZ-C8/4-NA
10	FAZ-C10/1-NA-SP	FAZ-C10/2-NA	FAZ-C10/3-NA	FAZ-C10/4-NA
13	FAZ-C13/1-NA-SP	FAZ-C13/2-NA	FAZ-C13/3-NA	FAZ-C13/4-NA
15	FAZ-C15/1-NA-SP	FAZ-C15/2-NA	FAZ-C15/3-NA	FAZ-C15/4-NA
16	FAZ-C16/1-NA-SP	FAZ-C16/2-NA	FAZ-C16/3-NA	FAZ-C16/4-NA
20	FAZ-C20/1-NA-SP	FAZ-C20/2-NA	FAZ-C20/3-NA	FAZ-C20/4-NA
25	FAZ-C25/1-NA-SP	FAZ-C25/2-NA	FAZ-C25/3-NA	FAZ-C25/4-NA
30	FAZ-C30/1-NA-SP	FAZ-C30/2-NA	FAZ-C30/3-NA	FAZ-C30/4-NA
32	FAZ-C32/1-NA-SP	FAZ-C32/2-NA	FAZ-C32/3-NA	FAZ-C32/4-NA

#### Note

① Option for single packaging on single-pole C and D curves only; add suffix SP when ordering.

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### Technical Data and Specifications

#### Trip Curve Chart

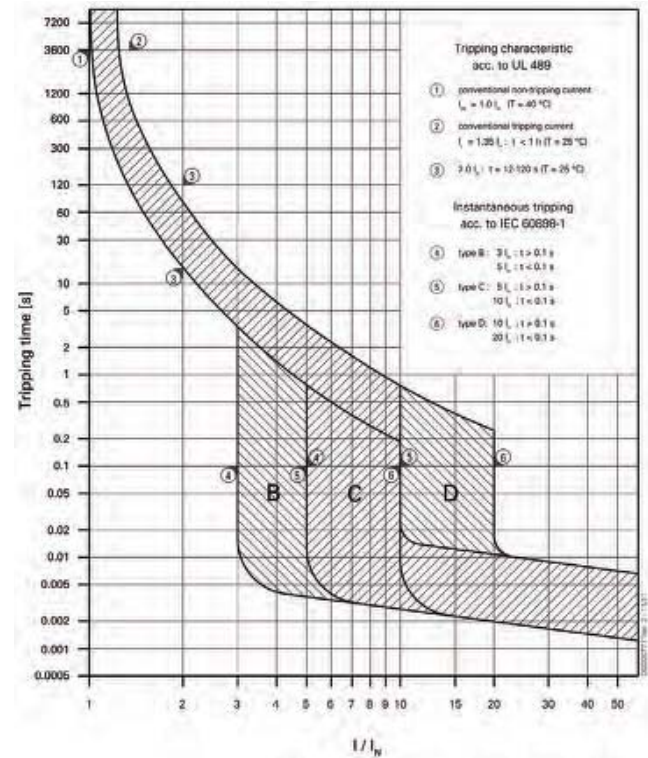
Eaton FAZ-NA and FAZ-NA-L branch circuit breakers are available with "B," "C" and "D" tripping characteristics. B-curve devices are suitable for applications where low levels of inrush current are expected.

C-curve devices are suitable for applications where medium levels of inrush current are expected. Applications include small transformers, lighting, pilot devices, control circuits and coils. C-curve devices provide a medium magnetic trip point.

D-curve devices are suitable for applications where high levels of inrush current are expected. The high magnetic trip point prevents nuisance tripping in high inductive applications such as motors, transformers and power supplies.

Eaton FAZ-NA and FAZ-NA-L devices are current limiting, which means they interrupt fault currents within one half cycle of the fault. Current limiting devices offer superior protection by reducing peak let-through current and energy.

### Tripping Characteristics

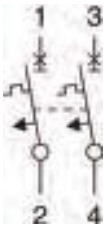


### Connection Diagrams

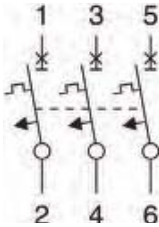
Single-Pole



Two-Pole



Three-Pole



### UL 489 Miniature Circuit Breakers Technical Data

Description	FAZ-NA	FAZ-NA-DC	FAZ-NA-L	
<b>Electrical</b>				
Design according to	UL 489, CSA C22.2 No.5, IEC 60947-2	UL 489, CSA C22.2 No.5, IEC 60947-2	UL 489, CSA C22.2 No.5, IEC 60947-2	
Rated voltage	Single-pole: 277 Vac 2-, 3- or 4-pole: 277/480 Vac	125 Vdc per pole 250 Vdc with 2-poles in connected series	Single-pole: 240 Vac 2-, 3- or 4-pole: 240 Vac	
	Single-pole: 48 Vdc per pole 2-pole in series: 96 Vdc	—	Single-pole: 48 Vdc per pole 2-pole in series: 96 Vdc	
Rated current	B: 1–32 A C & D: 0.5–32 A	C: 2–40 A	B: 1–63 A C: 0.5–63 A D: 0.5–40 A	
Characteristic	B, C, D	C	B, C, D	
Current interrupting rating	B curve—10 kA: 1–13 A, 30–32 A C curve—10 kA: 0.5–13 A, 30–32 A B & C curve—14 kA: 15–25 A D curve—10 kA: 0.5–10 A, 25–32 A D curve—14 kA: 13–20 A	10 kA	B curve—10 kA: 1–13 A, 30–32 A C curve—10 kA: 0.5–13 A, 30–32 A B & C curve—14 kA: 15–25 A D curve—10 kA: 0.5–10 A, 25–32 A D curve—14 kA: 13–20 A	
	Rated frequency	50/60 Hz	50/60 Hz	50/60 Hz
	Endurance	≥ 20,000 operations	≥ 20,000 operations	≥ 20,000 operations
	Line voltage connection	Suitable for reverse feed	Suitable for reverse feed	Suitable for reverse feed
	<b>Mechanical</b>			
Frame size	45 mm	45 mm	45 mm	
Device height	105 mm	105 mm	105 mm	
Device width	17.7 mm per pole	17.7 mm per pole	17.7 mm per pole	
Terminal protection	Finger and hand touch safe according to BGV A3, OVE-EN 6	Finger and hand touch safe according to BGV A3, OVE-EN 6	Finger and hand touch safe according to BGV A3, OVE-EN 6	
Mounting	Quick fastening with two lock-in positions on IEC/EN 60715	Quick fastening with two lock-in positions on IEC/EN 60715	Quick fastening with two lock-in positions on IEC/EN 60715	
Upper and lower terminals	Open mouth/lift terminals	Open mouth/lift terminals	Open mouth/lift terminals	
Terminal capacity	One wire: AWG 18–6 Two wires: AWG 18–10	One wire: AWG 18–6 Two wires: AWG 18–10	One wire: AWG 18–6 Two wires: AWG 18–10	
Terminal fastening torque	AWG 18–21: 21 lb-in AWG 10–8: 25 lb-in AWG 6: 36 lb-in	AWG 18–21: 21 lb-in AWG 10–8: 25 lb-in AWG 6: 36 lb-in	AWG 18–21: 21 lb-in AWG 10–8: 25 lb-in AWG 6: 36 lb-in	
Mounting	Independent of position	Independent of position	Independent of position	
Calibration temperature	UL 489, CSA C22.2 No.5	40°C	40°C	
	IEC 60947-2	30°C	30°C	

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## Miniature Circuit Breakers and Supplementary Protectors

### UL 489 DIN Rail Miniature Circuit Breakers

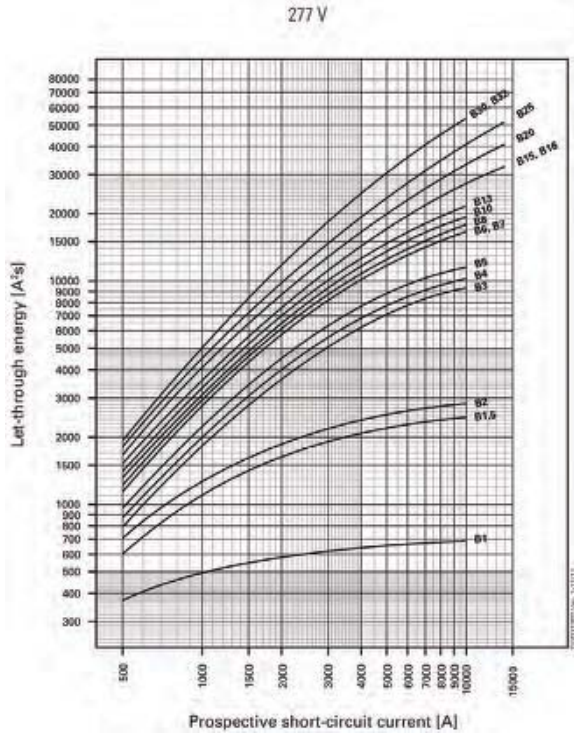
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#### Power Loss at $I_n$

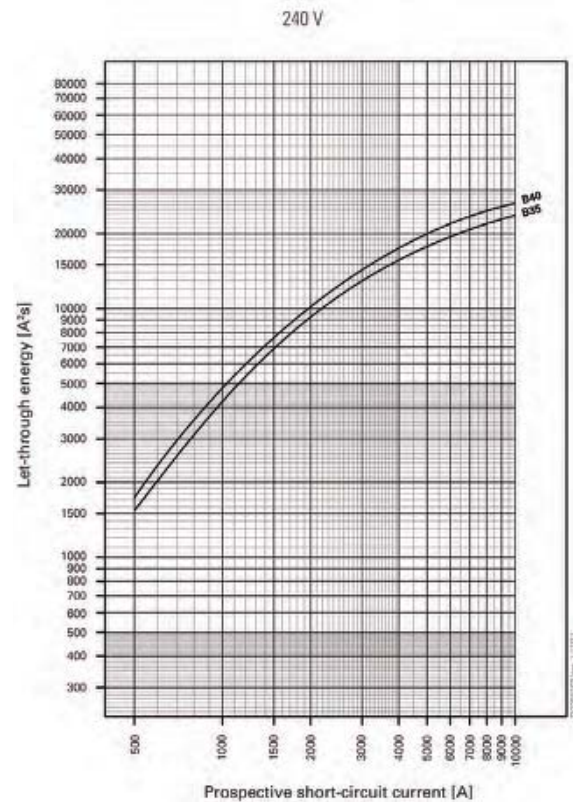
$I_n$ [A]	Characteristic B			Characteristic C			Characteristic D		
	Single-Pole P [W]	Two-Pole P [W]	Three-Pole P [W]	Single-Pole P [W]	Two-Pole P [W]	Three-Pole P [W]	Single-Pole P [W]	Two-Pole P [W]	Three-Pole P [W]
0.5	—	—	—	1.6	3.2	4.7	1.6	3.2	4.8
1.0	1.1	2.2	3.4	1.1	2.2	3.4	0.8	1.5	2.3
1.5	2.2	4.4	6.6	1.3	2.6	3.9	1.0	2.1	3.1
2.0	1.4	2.8	4.3	1.4	2.8	4.3	1.0	2.1	3.1
3.0	2.1	4.2	6.4	1.2	2.4	3.6	1.2	2.4	3.6
4.0	1.4	2.9	4.3	1.4	2.9	4.3	1.4	2.9	4.3
5.0	1.8	3.7	5.5	1.9	3.7	5.6	1.5	2.9	4.4
6.0	1.7	3.5	5.2	1.2	2.3	3.5	1.2	2.3	3.5
7.0	2.0	4.0	6.0	1.4	2.8	4.3	1.4	2.8	4.3
8.0	2.0	3.9	5.9	1.4	2.8	4.2	1.2	2.4	3.7
10.0	1.8	3.6	5.3	1.8	3.6	5.3	1.5	3.0	4.5
13.0	2.4	4.7	7.1	2.4	4.7	7.1	2.0	4.1	6.1
15.0	1.9	3.8	5.6	1.9	3.8	5.6	1.5	3.1	4.6
16.0	2.1	4.3	6.4	2.1	4.3	6.4	1.7	3.5	5.2
20.0	2.9	5.8	8.7	2.9	5.8	8.7	1.8	3.7	5.5
25.0	3.1	6.2	9.3	3.1	6.2	9.3	2.6	5.1	7.7
30.0	3.0	6.0	9.0	3.0	6.0	9.0	2.7	5.4	8.1
32.0	3.4	6.8	10.2	3.4	6.8	10.2	3.1	6.2	9.3
35.0	4.0	8.1	12.1	3.7	7.4	11.0	3.8	7.6	11.3
40.0	4.0	8.1	12.1	4.0	8.1	12.1	3.9	7.8	11.6

### Let-Through Energy

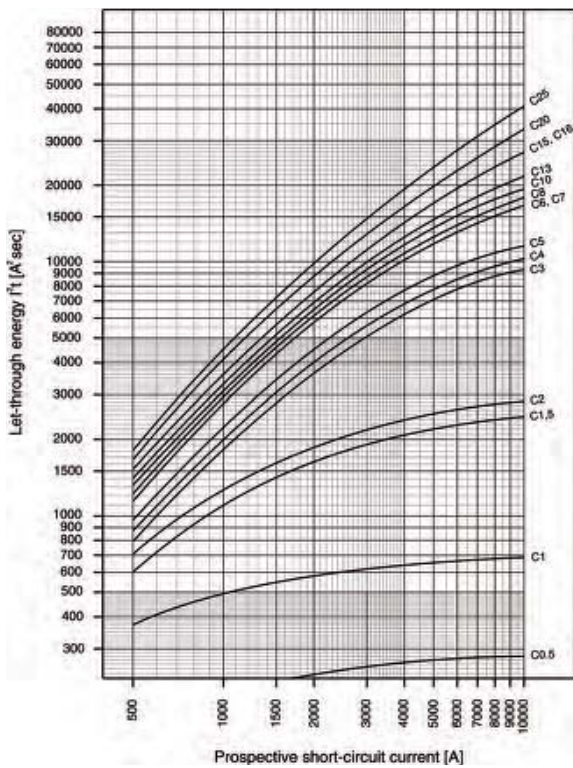
Characteristic B (1–32A), 277V



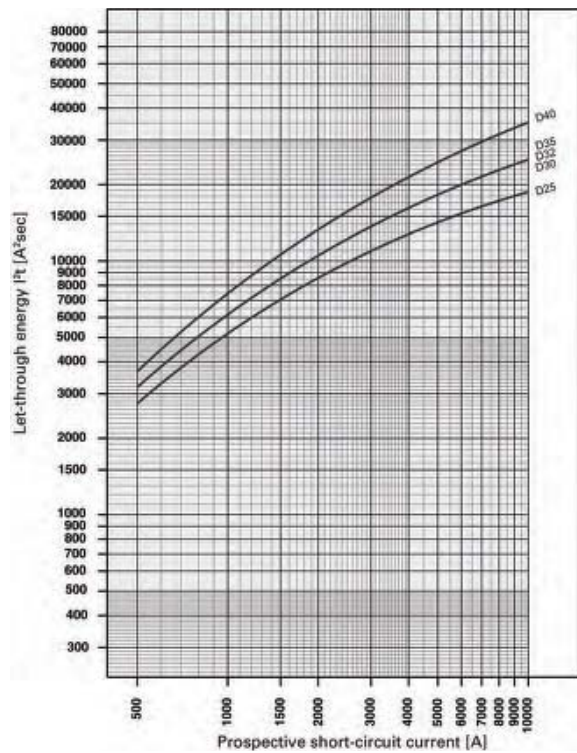
Characteristic B (35–63A), 240V



Characteristic C (0.5–32A), 277V



Characteristic C (35–63A), 240V



# 1.2

## Miniature Circuit Breakers and Supplementary Protectors

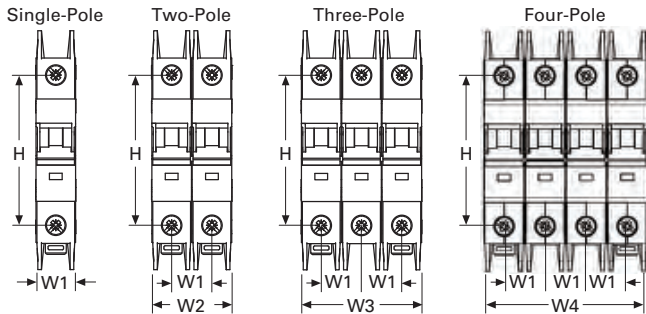
### UL 489 DIN Rail Miniature Circuit Breakers

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#### Dimensions

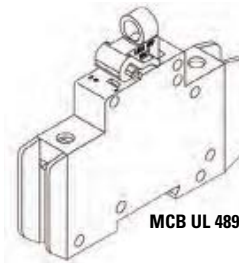
Approximate Dimensions in Inches (mm)

#### Miniature Circuit Breakers

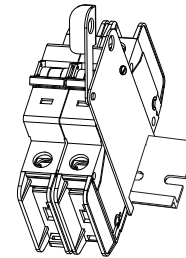


H	W1	W2	W3	W4
4.13 (105.0)	0.70 (17.7)	1.39 (35.3)	2.09 (53.1)	2.79 (70.8)

#### Lockout Attachment—Z-IS/SPE-1TE

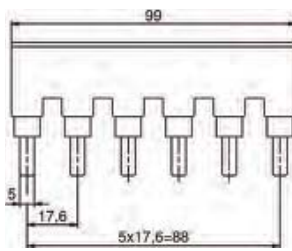


#### UL Lockoff Device—FAZPLOFF

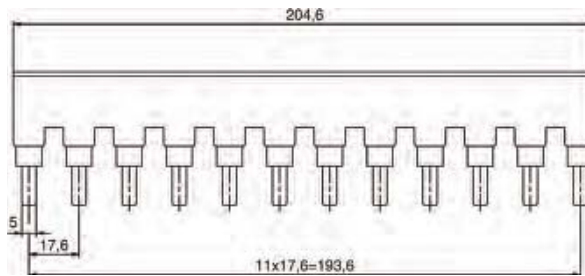


#### Accessories

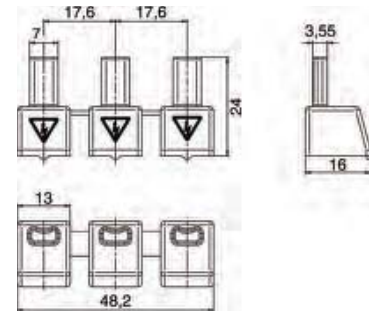
##### Z-SV/UL-16/6



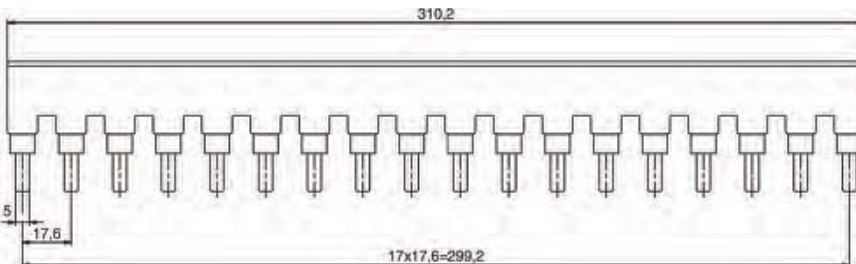
##### Z-SV/UL-18...12



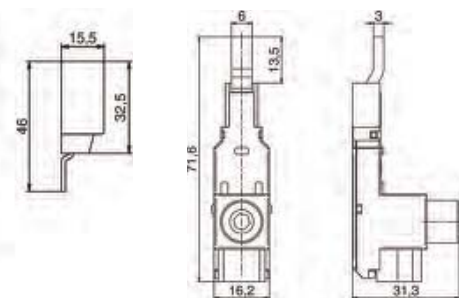
##### ZV-BS-UL



##### Z-SV/UL-16.../18



##### Z-EK/35/UL



#### Z-EK/35/UL

Description	UL 489	IEC/EN 60947-2
$U_e$	480 Vac/96 Vdc	240/415 Vac
f	50/60 Hz	50/60 Hz
$U_{imp}$	—	9.5 kV
$I_e$	80A at 40°C	80A at 30°C
	10–1/0 AWG 60/75°C Cu	2.5–35 mm <sup>2</sup> Cu
	0.56 in	14 mm

#### Z-EB/50/UL

Description	UL 489	IEC/EN 60947-2
$U_e$	480 Vac/96 Vdc	240/415 Vac
f	50/60 Hz	50/60 Hz
$U_{imp}$	—	9.5 kV
$I_e$	115A at 40°C	160A at 30°C
	#1–14 AWG 60/75°C Cu	1.5–50 mm <sup>2</sup> Cu
	0.56 in	14 mm