The 3P series provides branch and feeder circuit protection in industrial control panels.

- UL 489
- Up to 600 amps
- 65kA @ 240 VAC interrupting rating

Eaton FAZ-NA Series UL 489 Miniature Circuit Breakers

The FAZ-NA series is DIN-rail mountable and can be used in branch circuit applications up to 40 amps and are available with C or D trip characteristics.

- UL 489
- DIN-rail mounted
- Up to 40 amps
- 1, 2, or 3-pole available
- 10kAIC @ 277/480VAC

### Which type of Circuit Protection are you looking for?

<table>
<thead>
<tr>
<th>Circuit Protection Selection</th>
<th>Molded Case and DIN rail mounted UL 489 Circuit Breakers</th>
<th>Current Limiting Fuses UL 248</th>
<th>Disconnect Switches UL 98</th>
<th>Manual Motor Starters (MMS) UL 508</th>
<th>Load Switches UL 508</th>
<th>Supplementary Protectors UL 1077</th>
<th>General Fuses UL 248</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short circuit for feeder and branch circuits</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Motor disconnecting means (NEC 430.101-430.113)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Motor branch-circuit short circuit protection (NEC 430.51-430.35)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Motor controller (NEC 430.81-430.91)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>Motor overload protection (NEC 430.21-430.44)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>OSHA Lockout/tagout disconnect (NEC 430.81-430.91)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>
Socomec UL 98 and UL 508 Disconnects

Socomec rotary disconnect switches are available in many varieties to match any application. Socomec offers fused and non-fused switches in either small compact frames or larger heavy duty switches for more demanding uses. All of the Socomec rotary disconnects provide a high short circuit current rating, and are rated to make or break while under load to provide safe isolation.

**FUSERBLOC Series Fused Disconnects** (30-600 Amps)
- UL 98 and UL 489 ratings
- 30A to 600A compact and large heavy duty frame
- 100kA-200kA SCCR @ 600VAC
- Front or side operated UL 98 Class J fusible rotary switch

**SIRCO and SIRCO M Series Non-Fused Disconnects** (16-600 Amps)
- UL 98, UL 98B, and UL 508 ratings
- 65kA-200kA SCCR (AC switches)
- 20kA @ 600VDC (DC switches)
- 3 and 4-pole
- 16A to 600A ratings
- Enclosed, DIN rail, panel mount options

**Gladiator CFS Series UL 98 and UL 508 Rated Fusible Disconnect Switches**
- UL 98 version, Class CC fuse, 30A, DIN rail mount
- UL 508 version, Midget class fuse, 30A, DIN rail mount
- 1, 2 and 3-pole models
- Provide open fuse indication for faster troubleshooting and reduced downtime
- Lockout / Tagout capability and finger safe construction
- Positive visible circuit isolation via the disconnect switch
- Uses only 1/3 the space of a molded circuit breaker and 2/3 the space of a traditional fusible switch

**SD Series UL 508 Rated Load Switches**
The SD series of load switches are used for making and breaking equipment loads. These switches can be used as a motor controller meeting NEC® 430, Part VII. Typical applications include local motor isolation.
- 35mm DIN rail mountable or direct mountable
- Loads from 16 to 125 amps
- IP20 degree of protection

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For Control Circuit - Supplementary Protection see next page
Supplementary FAZ series Protectors UL1077
Supplementary protectors are UL 1077 recognized and are used in applications where branch circuit protection is not required or is already provided.

**FAZ Series**
- DIN rail mountable
- Full line of auxiliary switches, alarm switches and padlock lockout accessories
- B trip curve 1 to 63 amps
- C trip curve 0.5 to 63 amps
- D trip curve 0.5 to 40 amps

Edison Single and Dual-element Fuses
Industry standard extremely fast-acting, single element Class T and dual element time delay Class RK5, RK1, and Class J current limiting short circuit protection is available up to 600 amps.

NEW! High-speed Class J (JHL) combines electronic and motor branch circuit protection in one fuse.

These fuses are recommended for AC power distribution feeder and branch circuits; they provide ideal protection for motors and all general purpose applications including lighting, heating, inductive and non-inductive loads.

New Class L fast-acting current limiting fuses are particularly suited for protection of circuit breakers with lower interrupting ratings, non-inductive loads such as lighting and heating circuits and drive protection applications.

Edison Current-limiting Fuses
We carry industry standard current limiting class CC, general purpose class M (Midget) and small dimension glass and ceramic circuit protection, fuse holders and accessories.

They provide ideal supplementary protection up to 30 amps to branch circuits and end of line equipment.

Modular and Power Distribution Fuse Blocks

**Modular Class J & Class R Fuse Blocks**
- Class R, 250V & 600V, 100-600A; Class J 600V, 100-600A
- Modular snap-together design
- New blocks have phase barriers between phases
- Covers with and without blown fuse indication
- Snap-on covers have lock out capability

**Modular Class J Power Distribution Fuse Blocks**
- Class J, 600V, 100-600A
- Combines power distribution block into fuse block body
- Saves space and labor
UL489 or UL1077?

What are your Circuit Protection Requirements?

An understanding of circuit types and circuit protection products is critical to ensure their proper application. See NEC Sections 100, 430 and 409 for definitions.

The proper sizing of an overcurrent protection device is the responsibility of the customer and should be determined using the application standards of the NEC (National Electric Code), CEC (Canadian Electrical Code) or other applicable standards. Per fine print note of 2008 NEC Section 100 “A current in excess of rating may be accommodated by certain equipment and conductors for a given set of conditions. Therefore, the rules for overcurrent protection are specific for particular situations.”

UL489
Branch Protection

UL1077
Supplementary Protection

What You Need to Know and Look For In Specifications
Certifications – Standards – Acceptance

UL489
Branch Protection
• UL489 Listed or Recognized
• CSA C22.2 No. 5
• International ratings available depending on breaker type

Function
• Opens automatically on Overload and Short Circuit when properly applied within its ratings
• Protects wire and cable against Overload and Short Circuit

Applications
• Branch circuit protection in control panels, panelboards, switchboards and motor control centers
• Motor overload and motor short circuit protection (UL489 Recognized motor circuit protectors) for control panels and motor control centers

Features
• Bolted down or DIN-rail mounted
• External handle mechanisms available
• Field mounted accessories
• Stand alone branch circuit protection
• Various levels of protection (curve type)
• High voltage and interruption levels (up to 100 kAIC @ 480V)

kAIC = thousands of Amps interrupt capacity

UL1077
Supplementary Protection
• UL Recognized under UL1077
• CSA 22.2 No. 285
• IEC 60947-2 or IEC 898

Function
• Opens automatically on Overload and Short Circuit
• Provides additional equipment protection where branch circuit protection is already provided or not required
• Not suitable for the protection of branch circuit conductors

Applications
• Used within appliances or other electrical equipment such as control circuits, control power transformers, relays, PLC I/O points and lighting circuits
• Ideal replacement for fuses that are applied as supplementary protection

Features
• DIN-Rail mounted
• Field mounted accessories
• Various levels of protection (curve type)
• 10 kAIC @ 240 VAC
• 10 kAIC @ 277 VAC and 5 kAIC @ 480VAC
• 10 kAIC @ 48VDC

Summary
A Supplementary Protector can’t be used for Branch Circuit Protection.
Understanding the difference between Branch Circuit Protection and Supplementary Protection helps to ensure their proper use.
Fuji Molded Case Circuit Breakers – Wire Range Specifications

Wiring
- When connecting the wires, follow NEC (National Electric Code, USA) or CEC (Canadian Electrical Code Part 1, Canada) instructions.
- Use copper wire rated for 75°C for connecting. UL or CSA approved wire is recommended.
- Tighten the wire connections adequately, as a very large electromagnetic force will be generated when short circuit current is generated.
- Perform additional tightening of the terminal screws periodically.

Allowable Wire Specifications for Lug Terminals

<table>
<thead>
<tr>
<th>Wire Size AWG or MCM (mm$^2$)</th>
<th>Number of Wire Strands</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 to 2 (2.1 to 33.6)</td>
<td>7</td>
</tr>
<tr>
<td>1 to 4/0 (42.4 to 107.2)</td>
<td>19</td>
</tr>
<tr>
<td>250 to 500 (127 to 250)</td>
<td>37</td>
</tr>
</tbody>
</table>

Maximum Wire Sizes and Tightening Torque

<table>
<thead>
<tr>
<th>Type</th>
<th>Rated Current (A)</th>
<th>Wire Size AWG or MCM (mm$^2$)</th>
<th>Tightening Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>BW125</td>
<td>15</td>
<td>14 AWG (2.1mm$^2$)</td>
<td>51 lb.-in. (5.8 N-m)</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>12 AWG (3.3mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>10 AWG (5.3mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>8 AWG (8.4mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>8 AWG (8.4mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>6 AWG (13.3mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>4 AWG (21.1mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>4 AWG (21.1mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80</td>
<td>4 AWG (21.1mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>3 AWG (26.7mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>3 AWG (26.7mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>125</td>
<td>1 AWG (42.4mm$^2$)</td>
<td></td>
</tr>
<tr>
<td>BW250</td>
<td>125</td>
<td>1 AWG (42.4mm$^2$)</td>
<td>204 lb.-in. (23 N-m)</td>
</tr>
<tr>
<td></td>
<td>150</td>
<td>1/0 AWG (53.5mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>175</td>
<td>2/0 AWG (67.4mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>3/0 AWG (85.0mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>225</td>
<td>4/0 AWG (107.2mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>250</td>
<td>250 MCM (127mm$^2$)</td>
<td></td>
</tr>
<tr>
<td>BW400</td>
<td>250</td>
<td>250 MCM (127mm$^2$)</td>
<td>385 lb.-in. (43.5 N-m)</td>
</tr>
<tr>
<td></td>
<td>300</td>
<td>350 MCM (177mm$^2$)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>350</td>
<td>500 MCM (253mm$^2$)</td>
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<tr>
<td></td>
<td>400</td>
<td>3/0 AWGx2 (85.0mm$^2$x2)</td>
<td>282 lb.-in. (31.9 N-m)</td>
</tr>
<tr>
<td>BW630</td>
<td>500</td>
<td>250 MCMx2</td>
<td>275 lb.-in. (31.07 N-m)</td>
</tr>
<tr>
<td></td>
<td>600</td>
<td>350 MCMx2</td>
<td></td>
</tr>
<tr>
<td>BW800</td>
<td>700</td>
<td>500 MCMx2</td>
<td>275 lb.-in. (31.07 N-m)</td>
</tr>
<tr>
<td></td>
<td>800</td>
<td>300 MCMx3</td>
<td></td>
</tr>
</tbody>
</table>

*Lug terminals are supplied as standard.
Note: Terminals are factory-installed only for BW400, BW630 and BW800 series. No replacement terminals available.