M-Series
CIRCUIT BREAKER

The M-Series is a low cost, miniature, hydraulic-magnetic circuit breaker which features a compact, space saving design, front panel snap-in mounting and a vertically mounted parallel pole configuration. It features various styling options to maximize your design flexibility. Choices include rocker, illuminated rocker, paddle and baton style handle actuators, push-to-reset and push-pull pushbutton actuators, as well as Visi-Rocker two color actuators. Our exclusive Rockerguard bezel helps prevent inadvertent actuation and a wiping contact mechanism assures long-term reliability.

The M-Series circuit breakers are available with 1, 2 or parallel poles, 0.02 to 50 amp ratings, and 125 and 250VAC or 80VDC versions. With over 16 different time delays, 5 terminal styles, a variety of panel hardware, various colors, and legend imprinting, it assures suitability for most any application design.

Product Highlights:
• Parallel pole configuration fits in one rack unit
• MIL-PRF-55629
• MIL STD 202 compliant
• MIL-PRF-39019F ingress protection
• Sealed toggle actuator
• Compact design

Typical Applications:
• Telecom/Datacom
• Transportation
• Marine
• Generators
• Power Supplies
• Medical Equipment

Resources:
Configure a Complete Part
Download CAD & Sales Drawing

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**Electrical**

- **Maximum Voltage**: 125/250 VAC 50/60 Hz, 80 VDC (See Rating Tables.)
- **Current Ratings**: Standard current coils: 0.100, 0.250, 0.500, 1.00 thru 15.0 in 1 amp increments, 18.0, 20.0, 25.0, 30.0. Other ratings available - see Ordering Scheme.
- **Auxiliary Switch Rating**: SPDT; 7A 250VAC, 7A (Res) 28VDC, 4A (Ind.) 28VDC, 0.25A 80VDC (Res) (silver contacts), 0.1A 125VAC (gold contacts).
- **Insulation Resistance**: Minimum of 100 Megohms at 500 VDC.
- **Dielectric Strength**: UL, CSA 1500V, 50/60 Hz for one minute between all electrically isolated terminals. M-Series Circuit Breakers comply with the 8mm spacing and 3750 V 50/60Hz dielectric requirements from hazardous voltage to operator accessible surfaces, per Publications IEC 380, 435, 950, EN 60950 and VDE 0805.

**Resistance, Impedance** Values from Line to Load Terminal - based on Series Trip Circuit Breaker.

**Mechanical**

- **Endurance**: 10,000 ON-OFF operations @ 6 per minute with rated Current and Voltage.
- **Trip Free**: All M-Series Circuit Breakers will trip on overload, even when actuator is forcibly held in the ON position.
- **Trip Indication**: The actuator moves positively to the OFF position when an overload causes the circuit breaker to trip.

**Physical**

- **Number of Poles**: 1 or 2
- **Internal Circuit Configs.**: Series with or without Auxiliary Switch.
- **Weight**: Approximately 30 grams/pole (Approximately 1.07 ounces/pole)
- **Standard Colors**: See Ordering Scheme

**Environmental**

Designed in accordance with requirements of specification MIL PRF-55629 & MIL-STD-202G as follows:

- **Shock**: Withstands 100 Gs, 6ms, sawtooth while carrying rated current per Method 213, Cond. I. Instantaneous curves tested at 80% of rated current.
- **Vibration**: Withstands 0.060” excursion from 10-55 Hz, and 10 Gs 55-500 Hz at rated current per Method 204C, Test Condition A. Instantaneous curves tested at 80% of rated current.
- **Moisture Resistance**: Method 106D, i.e., ten 24-hour cycles @ +25°C to +65°C, 80-98% RH.
- **Salt Spray**: Method 101, Condition A (90-95% RH @ 5% NaCl Solution, 96 hrs).
- **Thermal Shock**: Method 107D, Condition A (Five cycles @ -55°C to +25°C to +85°C to +25°C).
- **Operating Temperature**: -40° C to +85° C
- **Chemical Resistance**: Only the outside surfaces of the case and the handles may be cleaned with detergents or alcohol. Organic (hydrocarbon based) solvents are not recommended because they attack plastics. Caution should be taken when solvents are used to clean and remove flux from terminals. Lubricants should not be introduced into the handle/bushing openings.

*pManufacturer reserves the right to change product specification without prior notice.*
### Electrical Tables

#### Table A: Lists UL Recognized and CSA Accepted configurations & performance capabilities as a Component Supplementary Protector.

**M-SERIES TABLE A: COMPONENT SUPPLEMENTARY PROTECTORS**

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Poles Breaking</th>
<th>Short Circuit Capacity (Amps)</th>
<th>Application Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max</td>
<td>Frequency</td>
<td>Phase</td>
<td>Full Load Amps</td>
<td>General Purpose Amps</td>
</tr>
<tr>
<td>32 DC</td>
<td>0.02 - 15</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>1000</td>
</tr>
<tr>
<td>50 2 DC</td>
<td>0.02 - 7.5</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>1000</td>
</tr>
<tr>
<td>65 DC</td>
<td>0.02 - 15</td>
<td>---</td>
<td>2</td>
<td>---</td>
<td>1000</td>
</tr>
<tr>
<td>65 1,2 DC</td>
<td>0.02 - 15</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>1000</td>
</tr>
<tr>
<td>65 DC</td>
<td>0.02 - 15</td>
<td>---</td>
<td>2</td>
<td>---</td>
<td>5000 3</td>
</tr>
<tr>
<td>80 1 DC</td>
<td>0.02 - 15</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>600</td>
</tr>
<tr>
<td>80 1 DC</td>
<td>15 - 30</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>360</td>
</tr>
<tr>
<td>125 50 / 60 1</td>
<td>0.02 - 15</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>1000</td>
</tr>
<tr>
<td>125 50 / 60 1</td>
<td>12.1 - 18</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>1000 4</td>
</tr>
<tr>
<td>250 50 / 60 1</td>
<td>0.02 - 15</td>
<td>---</td>
<td>2</td>
<td>---</td>
<td>1000</td>
</tr>
<tr>
<td>250 50 / 60 1</td>
<td>15 - 30</td>
<td>---</td>
<td>2</td>
<td>---</td>
<td>1000</td>
</tr>
</tbody>
</table>

Notes:
1 Polarity Sensitive
2 Available only with Special Catalog Number. Consult Factory.
3 Requires Branch Circuit Backup with a UL Listed type K-5 or RK-5 fuse rated 30 Amps maximum
4 Requires Branch Circuit Backup with a UL Listed type K-5 or RK-5 fuse rated 60 Amps maximum

#### Table B: Lists UL Recognized, CSA Accepted and TUV and VDE Certified configurations and performance capabilities as a Component Supplementary Protector.

**M-SERIES TABLE B: COMPONENT SUPPLEMENTARY PROTECTORS**

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Poles Breaking</th>
<th>Short Circuit Capacity (Amps)</th>
<th>Application Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max</td>
<td>Frequency</td>
<td>Phase</td>
<td>Full Load Amps</td>
<td>General Purpose Amps</td>
</tr>
<tr>
<td>32 DC</td>
<td>0.02 - 15</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>1000</td>
</tr>
<tr>
<td>50 2 DC</td>
<td>0.02 - 7.5</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>1000</td>
</tr>
<tr>
<td>65 DC</td>
<td>0.02 - 15</td>
<td>---</td>
<td>2</td>
<td>---</td>
<td>1000</td>
</tr>
<tr>
<td>65 3 DC</td>
<td>0.02 - 15</td>
<td>---</td>
<td>2</td>
<td>---</td>
<td>5000</td>
</tr>
<tr>
<td>80 1 DC</td>
<td>0.02 - 15</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>600 4</td>
</tr>
<tr>
<td>80 1 DC</td>
<td>15 - 30</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>600 4</td>
</tr>
<tr>
<td>125 50 / 60 1</td>
<td>0.02 - 15</td>
<td>---</td>
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<td>1000</td>
</tr>
<tr>
<td>125 50 / 60 1</td>
<td>15 - 30</td>
<td>---</td>
<td>1</td>
<td>---</td>
<td>360</td>
</tr>
</tbody>
</table>

Notes:
1 Polarity Sensitive
2 Available only with Special Catalog Number. Consult Factory.
3 Requires Branch Circuit Backup with a UL Listed type K-5 or RK-5 fuse rated 30 Amps maximum
4 Requires Branch Circuit Backup with a UL Listed type K-5 or RK-5 fuse rated 60 Amps maximum
5 Requires backup protection with a thermal magnetic circuit breaker rated 32 amps and having a Type C trip characteristic per EN60898/DIN VDE 0641 (C32A) for ratings greater than 15amps, and a thermal magnetic circuit breaker rated 16 amps and having a Type C trip characteristic per EN60898/DIN VDE 0641 (C16A) for ratings 15 amps and less
### Electrical Tables

**Table C:** Lists UL489A Listed and TUV Certified configurations and performance capabilities for use in Communications Equipment.

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Poles Breaking</th>
<th>Interrupting Capacity (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max</td>
<td>General Purpose</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rating</td>
<td>Amps</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Frequency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Without Backup Fuse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UL489A</td>
<td>TUV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series</td>
<td>80 DC</td>
<td>0.02 - 30</td>
<td>1</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>65 DC</td>
<td>0.02 - 30</td>
<td>1</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>80 DC</td>
<td>0.10 - 30</td>
<td>1</td>
<td>600</td>
</tr>
</tbody>
</table>

*Notes:*
1. Available only with Special Catalog Number

**Table D:** Lists UL489A Listed configurations and performance capabilities for use in Communications Equipment.

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Poles Breaking</th>
<th>Interrupting Capacity (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max</td>
<td>General Purpose</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rating</td>
<td>Amps</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Frequency</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Without Backup Fuse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>UL489A</td>
<td>TUV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Series</td>
<td>80 DC</td>
<td>31 - 50</td>
<td>2</td>
<td>600</td>
</tr>
<tr>
<td></td>
<td>65 DC</td>
<td>31 - 50</td>
<td>2</td>
<td>1000</td>
</tr>
</tbody>
</table>

*Notes:*
1. Available only with Special Catalog Number

### Agency Certifications

**UL Recognized**
UL Standard 1077

Component Recognition Program as Protectors, Supplementary (Guide CCN/QVNU2, File E75596)

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**UL Listed**
UL Standard 489A

Communications Equipment (Guide CCN/DITT, File E189195)

---

**CSA Accepted**

Component Supplementary Protector (Class 3215 30, File 047848 0 000) CSA Standard C22.2 No. 235

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**VDE Certified**

EN60934, VDE 0642 under File 10537

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**TUV Certified**

EN60934, under License No. R9671109
### M-Series Circuit Breaker - Parallel Pole Rocker – Ordering Scheme

#### 1 SERIES
M

#### 2 ACTUATOR

<table>
<thead>
<tr>
<th>Single Color</th>
<th>Two Color Visi</th>
<th>Single Color Translucent</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Angled</td>
<td>D: Indicate ON</td>
<td>F: Angled</td>
</tr>
<tr>
<td>B: Flat</td>
<td>E: Indicate OFF</td>
<td>G: Flat</td>
</tr>
</tbody>
</table>

#### 3 POLES
2 Two

#### 4 CIRCUIT/AUXILIARY SWITCH
P Series Trip Current (Parallel Pole) with Auxiliary Switch, Silver Contacts
Q Series Trip Current (Parallel Pole) with Auxiliary Switch, Gold Contacts
R Series Trip Current (Parallel Pole)

#### 5 FREQUENCY & TIME DELAY
D2 DC Short
D4 DC Medium

#### 6 CURRENT RATING (AMPERES)

<table>
<thead>
<tr>
<th>CODE</th>
<th>AMPERES</th>
</tr>
</thead>
<tbody>
<tr>
<td>631</td>
<td>31.000</td>
</tr>
<tr>
<td>635</td>
<td>35.000</td>
</tr>
<tr>
<td>640</td>
<td>40.000</td>
</tr>
<tr>
<td>645</td>
<td>45.000</td>
</tr>
<tr>
<td>650</td>
<td>50.000</td>
</tr>
</tbody>
</table>

**Notes:**
1. Reminder of Rocker same color as Visi
2. Aux Switch only available with screw terminals

#### 7 TERMINAL
A Push in Stud
5 10-32 Screw (Bus Type)

#### 8 ILLUMINATION
Non-Illuminated
A Non-Illuminated

#### 9 ACTUATOR COLOR & LEGEND

<table>
<thead>
<tr>
<th>Actuator Visi</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 White</td>
<td>Black</td>
</tr>
<tr>
<td>2 Black</td>
<td>White</td>
</tr>
<tr>
<td>3 Red</td>
<td>White</td>
</tr>
<tr>
<td>4 Green</td>
<td>White</td>
</tr>
<tr>
<td>5 Blue</td>
<td>White</td>
</tr>
<tr>
<td>6 Yellow</td>
<td>Black</td>
</tr>
<tr>
<td>7 Gray</td>
<td>Black</td>
</tr>
<tr>
<td>8 Orange</td>
<td>Black</td>
</tr>
</tbody>
</table>

#### 10 LEGEND
2 ON - OFF Vertical
3 ON - OFF Horizontal
6 Dual Vertical
7 Dual Horizontal

#### 11 BEZEL COLOR
A White without Rockerguard
B Black without Rockerguard
G Gray without Rockerguard
1 White with Rockerguard
2 Black with Rockerguard
7 Gray with Rockerguard

#### 12 AGENCY APPROVAL
T UL 489A Listed
### M-Series Circuit Breaker - Parallel Pole Handle / Pushbutton – Ordering Scheme

#### 1 SERIES
- **M**

#### 2 ACTUATOR
- **M** Paddle
- **T** Push-Pull

#### 3 POLES
- **2** Two

#### 4 CIRCUIT/AUXILIARY SWITCH
- **P** Series Trip Current (Parallel Pole) with Auxiliary Switch, Silver Contacts
- **Q** Series Trip Current (Parallel Pole) with Auxiliary Switch, Gold Contacts
- **R** Series Trip Current (Parallel Pole)

#### 5 FREQUENCY & TIME DELAY
- **D2** DC Short
- **D4** DC Medium

#### 6 CURRENT RATING (AMPERES)
- **631** 31.000
- **635** 35.000
- **640** 40.000
- **645** 45.000
- **650** 50.000

#### 7 TERMINAL
- **A** Push in Stud
- **5** 10-32 Screw (Bus Type)

#### 8 ACTUATOR COLOR & LEGEND
- **Handle**
  - 1 White
  - 2 Black
  - 3 Red
  - 4 Green
  - 5 Blue
  - 6 Yellow
  - 7 Gray
  - 8 Orange

- **Push Button**
  - A White
  - B Black
  - C Red
  - D Green
  - E Blue
  - F Yellow
  - G Gray
  - H Orange

#### 9 FRONT PANEL HARDWARE
- **Handle**
  - A No outer Panel Hardware
  - B Knurled Nut, Bright Nickel
  - C Knurled Nut, Bright Nickel with Locking Ring
  - D Knurled Nut, Black
  - E Knurled Nut, Black with Locking Ring
  - F Panel Dress, Bright Nickel
  - G Panel Dress, Bright Nickel with Locking Ring
  - H Panel Dress, Black
  - J Panel Dress, Black with Locking Ring

- **Push Button**
  - 1 No outer Panel Hardware
  - 2 Knurled Nut, Bright Nickel

#### 10 LEGEND PLATE / BUTTON MARKING
- **Handle Actuator Legend Plate**
  - B ON - OFF Vertical
  - C ON - OFF Horizontal

- **Push-Pull Actuator Legend Plate**
  - 2 Rated Amps Horizontal
  - 3 Rated Amps Line Side Down
  - 4 Rated Amps Line Side Up

#### 11 BUSHING COLOR
- **B** Black

#### 12 AGENCY APPROVAL
- **T** UL 489A Listed

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**Notes:**
- 1 Aux Switch only available with screw terminals
**Dimensional Specifications: in. [mm]**

### PARALLEL POLE TERMINAL OPTIONS

**PUSH-IN STUD**
- .912 [23.16]
- .154 [3.91]
- .393 [9.97]
- .100 [2.54]
- .750 [19.05]

**10-32 SCREW W/ BUS BAR**
- .652 [16.56]
- .838 [21.29]

### ROCKERTGUARD CONFIGURATION
- .675 [17.14]

### PANEL CUT - OUT DETAIL (ROCKER)

#### DOUBLE POLE
- PANEL THICKNESS
  - .062 [1.57]
  - .083 [2.10]
  - .125 [3.18]
- DIM. A
  - .912 [23.16]
  - 1.394 [35.41]

### ROCKERTGUARD CONFIGURATION

#### DOUBLE POLE
- PANEL THICKNESS
  - .062 [1.57]
  - .083 [2.10]
  - .125 [3.18]

### NOTES:

1. All dimensions are in inches [millimeters].
3. Dimensions apply to both rocker styles.
4. I-O, on-off or dual legends available for vertical or horizontal mounting.
5. Notice that circuit breaker line and load terminal orientation on indicate “off” is opposite that of indicate “on”.

---

Email: sales@carlingtech.com  Application Support: team2@carlingtech.com  
Phone: (860) 793–9281  Fax: (860) 793–9231  www.carlingtech.com
**Dimensional Specifications: in. [mm]**

---

**-PADLE ACTUATOR STYLE-**

1/2-32 THD.

12°

ON

OFF

FLAT

.125 [3.18]

.105 [2.67]

.125 [3.18]

1.395

.470 [11.94]

---

**-PUSH-PULL ACTUATOR STYLE-**

3/8” 8-32 THD.

.500 [12.70]

.300 [7.62]

.280 [7.11]

1.484

.400 [10.16]

---

**-MOUNTING DETAILS-**

WITH LOCKING RING

WITHOUT LOCKING RING

.355 [9.02]

.500 DIA [Ø12.70]

.265 [6.73]

.125 DIA [Ø3.18]

.500 [12.70]

---

**-LEGEND PLATES-**

A

B

C

.025 [0.64]

.340 [8.64]

.632 DIA [Ø16.05]

1.025 [26.04]

---

**-PANEL HARDWARE-**

HEX NUT

625 [15.88]

.125 [3.18]

680 DIA [Ø17.27]

.010 [0.25]

---

**-LEGEND CODE: -**

1.025 [26.04]

---

**-PANEL DRESS NUT-**

683 DIA [Ø17.27]

.105 [2.67]

.342 [8.69]

---

**-KNURLED NUT-**

.500 DIA [Ø12.70]

.300 [7.62]

.342 [8.69]

---

**-LOCKING RING-**

.001 [0.025]

---

**-SNAP-IN BUSHING-**

.280 [7.11]

.375 [9.53]

.544 [13.82]

---

**-PUSH-PULL, PUSH TO RESET-**

.025 [0.64]

.162 [4.11]

.494 [12.55]

---

**-HEX NUT-**

.494 [12.55]

.098 [2.49]

---

**-.110QC AUXILIARY SWITCH TERMINALS-**

---

**Notes:**

1. All dimensions are in inches [millimeters].
2. Tolerance ±.010 (.25) unless otherwise specified.
3. Dimensions apply to both rocker styles.
4. I-O, on-off or dual legends available for vertical or horizontal mounting.
5. Notice that circuit breaker line and load terminal orientation on indicate “off” is opposite that of indicate “on”.

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### M-Series Circuit Breaker - Rocker UL Recognized – Ordering Scheme

**1 Series 2 Actuator 3 Pole 4 Circuit 5 Frequency & Delay 6 Current Rating 7 Terminal 8 Illumination Actuator Color 9 Legend 10 Bezel Color 11 Agency Approval**

#### 2 Actuator

<table>
<thead>
<tr>
<th>Single Color</th>
<th>Rocker Actuator</th>
<th>Color Code</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Angled</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>B</td>
<td>Flat</td>
<td>Black</td>
<td>Black</td>
</tr>
</tbody>
</table>

#### 6 Current Rating (Amperes)

<table>
<thead>
<tr>
<th>Current Rating (Amperes)</th>
<th>Code</th>
</tr>
</thead>
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<td>A</td>
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<tr>
<td>0.25</td>
<td>B</td>
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<tr>
<td>0.30</td>
<td>C</td>
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<td>0.40</td>
<td>D</td>
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<td>3.00</td>
<td>M</td>
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<tr>
<td>4.00</td>
<td>N</td>
</tr>
<tr>
<td>5.00</td>
<td>O</td>
</tr>
<tr>
<td>6.00</td>
<td>P</td>
</tr>
<tr>
<td>8.00</td>
<td>Q</td>
</tr>
<tr>
<td>10.00</td>
<td>R</td>
</tr>
<tr>
<td>15.00</td>
<td>S</td>
</tr>
<tr>
<td>20.00</td>
<td>T</td>
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#### 3 Pole

<table>
<thead>
<tr>
<th>Pole</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
</tr>
<tr>
<td>3</td>
<td>C</td>
</tr>
</tbody>
</table>

#### 4 Circuit

<table>
<thead>
<tr>
<th>Circuit 1</th>
<th>Circuit 2</th>
<th>Circuit 3</th>
<th>Circuit 4</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
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</table>

#### 5 Frequency & Delay

<table>
<thead>
<tr>
<th>Voltage</th>
<th>0.50/60Hz</th>
<th>120/60Hz</th>
<th>240/60Hz</th>
<th>250/50Hz</th>
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<tbody>
<tr>
<td>DC</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>AC</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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#### 7 Terminal

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Push-On 0.250 Tab (Q.C.)</td>
<td>A</td>
</tr>
<tr>
<td>Screw-8-32 with Uplugged Lugs</td>
<td>B</td>
</tr>
<tr>
<td>Screw-8-32 (Bus Type)</td>
<td>C</td>
</tr>
</tbody>
</table>

#### 8 Rocker Illumination

<table>
<thead>
<tr>
<th>Neon</th>
<th>Color</th>
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<tbody>
<tr>
<td>A</td>
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</tr>
<tr>
<td>B</td>
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<tr>
<td>C</td>
<td>Red</td>
</tr>
<tr>
<td>D</td>
<td>Blue</td>
</tr>
<tr>
<td>E</td>
<td>Green</td>
</tr>
<tr>
<td>F</td>
<td>Orange</td>
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</table>

#### 9 Actuator & Legend Color

<table>
<thead>
<tr>
<th>Solid Color</th>
<th>Actuator</th>
<th>Legend</th>
</tr>
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</tr>
<tr>
<td>Black</td>
<td>White</td>
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<tr>
<td>Red</td>
<td>White</td>
<td></td>
</tr>
<tr>
<td>Green</td>
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<td>Black</td>
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</tr>
<tr>
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<td>Black</td>
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#### 10 Legend

<table>
<thead>
<tr>
<th>Legend</th>
<th>Code</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>I - O Vertical</td>
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<tr>
<td>5</td>
<td>I - O Horizontal</td>
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#### 11 Bezel Color / Style

<table>
<thead>
<tr>
<th>Color</th>
<th>Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>Without Rockerguard</td>
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#### 12 Agency Approval

<table>
<thead>
<tr>
<th>Agency Approval</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL Recognized &amp; CSA Accepted</td>
<td>C</td>
</tr>
</tbody>
</table>

---

Notes:

1. One actuator is located in the center of each multi-pole breaker.
2. For Switch Only circuits, select Current Coil Rating from the above chart.
3. For Switch Only circuits, select Current Coil Rating from the above chart.
4. Push-On Terminals are VDE certified only with use of ring terminal attached to wire.
5. Screw Terminals are UL Recognized & CSA accepted.
6. Screw Terminals are UL Recognized & CSA accepted.
7. TUV Certified, UL Recognized & CSA Accepted.
8. UL Recognized & CSA Accepted.
9. UL Recognized & CSA Accepted.
10. UL Recognized & CSA Accepted.

---

Contact Information:

Email: sales@carlingtech.com  Application Support: team2@carlingtech.com
Phone: (860) 793–9281  Fax: (860) 793–9231  www.carlingtech.com
### M-Series Circuit Breaker - Rocker UL489A/UL Recognized - Ordering Scheme

#### 1 Series
- M

#### 2 Actuator
- 1: Non-Illuminated
- 2: Two Color
- A: Angled
- B: Flat
- C: Indicate ON
- D: Indicate OFF
- E: Flat
- F: Angled

#### 4 Circuit
- B: Series Trip (Current)
- M: Series Trip (Current) Aux Switch
- S: Series Trip (Current)
- T: Series Trip (Current) Aux Switch Maintained
- U: Series Trip (Current) Maintained
- V: Series Trip (Current) Maintained
- W: Series Trip (Current) Maintained
- X: Series Trip (Current) Maintained

#### 5 Frequency & Delay
- One

#### 6 Current Rating
- 250mA Max

#### 7 Terminal
- A: Push-On 0.250 Tab (O.C.)
- B: Screw 8-32 with Uptumed Lugs
- C: Screw 8-32 (Bus Type)

#### 8 Rocker Illumination
- Non-Illuminated
- A: Neon
- B: Green Glow
- C: LED
- D: Red
- E: Green
- F: Amber
- G: Blue
- H: Yellow
- I: Gray
- J: Orange

#### 9 Actuator & Legend Color
- Solid
- A: White
- B: Black
- C: Red
- D: Green
- E: Yellow
- F: Blue
- G: Gray
- H: Orange

#### 10 Legend
- I: No Legend
- O: ON - OFF
- V: ON - OFF Vertical
- H: I - O Horizontal
- S: I - O Vertical

#### 11 Bezel Color / Style
- White
- B: Black
- A: Gray

#### 12 Agency Approval
- J: UL489A Listed & TUV Certified
- M: UL Recognized & CSA Accepted
- N: TUV Certified, UL Recognized & CSA Accepted
- T: UL489A Listed

---

**Notes:**
1. One actuator is located in the center of each multi-pole breaker.
2. One Auxiliary Switch is supplied per breaker. Auxiliary Switch option limited to Series Trip & Switch Only circuits, and is not available in single pole illuminated breakers, or with Black Connected Screw or Push-In Stud terminals.
3. Mates with AMP® .050” diameter pin receptacles: 60983-1 (gold plated) & 60983-1 (tin plated).
4. For neon bulb applications at 120V @ 47K, 1/4 WATT and for 250VAC applications @ 150K, 1/4 WATT, external resistors must be supplied by customer.
5. For LED (DC or rectified AC) applications, LED is mounted in the center of the rocker actuator with electrical characteristics as follows: 100 milliamperes at 20mA; Maximum power dissipation = 25mW at 25°C; Maximum forward current = 20mA; Typical forward voltage = 2.1V at 20mA; Typical reverse current = 100uA at 3V. Customer supplies the proper external resistor limiting current to these values.
6. On Visi-Rocker breakers, Visi portion of rocker cannot be the same color as the bezel.
7. Rocker color for LED’s and green neon lamp must be clear, smoke gray, white translucent or match color of LED or neon lamp.
8. Other colors available. Consult factory.
9. UL Recognized, CSA Accepted, UL489A Listed, and TUV Certified to 30 amps. Screw Terminals recommended above 20 amps.
10. UL489A Listed must have ON-OFF or Dual legends. TUV Certified approvals must have I - O or Dual legends.
11. Terminal code A available with circuit codes A & B only.
12. Printed circuit board available with UL recognized approval only.
13. Auxiliary switch (flat Q.C.) available with UL recognized approvals only.
Notes:
1. All dimensions are in inches [millimeters].
3. Schematic shown represents current trip circuit.
Notes:
1. Dimensions apply to all variations shown. Notice that circuit breaker line & load terminal orientation on indicate OFF is opposite of indicate ON.
2. I-O, ON-OFF or dual legends available for vertical or horizontal mounting. For pole orientation with horizontal legend, rotate front view clockwise 90°.
3. All dimensions are in inches [millimeters].
4. Tolerance ± 0.020 [.51] unless otherwise specified.
ONE POLE

SINGLE POLE / ROCKER BREAKERS SHOWN WITH
DOUBLE SOLDER TURRET AND ROUND QC AUX, SWITCH TERMINALS

ROCKER AND AUXILIARY SWITCH OPTIONS

VIBOFF AND SINGLE COLOR (NON-ILLUMINATED) ROCKER OPTIONS WITH AUXILIARY SWITCH

LOAD
LINE
NC
C
NO
C
NO
NC
LOAD
LINE

VISION ROCKER WITH AUXILIARY SWITCH

LOAD (VISION-ON)
LINE
C
NO
C
NO
NC
LOAD (VISION-ON)
LINE

ALL-ROCKER OPTIONS WITHOUT AUXILIARY SWITCH

LOAD (VISION-OFF AND SINGLE COLOR)
LINE
C
NO
C
NO
NC
LOAD (VISION-OFF AND SINGLE COLOR)
LINE

ILLUMINATED ROCKERS WITHOUT AUXILIARY SWITCH

LOAD (SINGLE COLOR)
LINE
C
NO
C
NO
NC
LOAD (SINGLE COLOR)
LINE

SINGLE POLE / ROCKER BREAKERS SHOWN WITH
FLAT QC AND FLAT SOLDER LUG AUX, SWITCH TERMINALS

ROCKER AND AUXILIARY SWITCH OPTIONS

VIBOFF AND SINGLE COLOR (NON-ILLUMINATED) ROCKER OPTIONS WITH AUXILIARY SWITCH

LOAD
LINE
NC
C
NO
C
NO
NC
LOAD
LINE

VISION ROCKER WITH AUXILIARY SWITCH

LOAD (VISION-ON)
LINE
C
NO
C
NO
NC
LOAD (VISION-ON)
LINE

TWO POLE

DOUBLE POLE / ROCKER BREAKERS SHOWN WITH
DOUBLE SOLDER TURRET AND ROUND QC AUX SWITCH TERMINALS

ROCKER AND AUXILIARY SWITCH OPTIONS

SINGLE COLOR AND VIB-OFF (ILLUMINATED AND NON-ILLUMINATED) ROCKER OPTIONS WITH AUXILIARY SWITCH

LOAD
LINE
C
NO
C
NO
NC
NO
C
LOAD
LINE

VISION ROCKER WITH AUXILIARY SWITCH

LOAD (VISION-ON)
LINE
C
NO
C
NO
NC
LOAD (VISION-ON)
LINE

ALL-ROCKER OPTIONS WITHOUT AUXILIARY SWITCH

LOAD (VISION-OFF AND SINGLE COLOR)
LINE
C
NO
C
NO
NC
LOAD (VISION-OFF AND SINGLE COLOR)
LINE

DOUBLE POLE / ROCKER BREAKERS SHOWN WITH
FLAT QC AND FLAT SOLDER LUG AUX, SWITCH TERMINALS

ROCKER AND AUXILIARY SWITCH OPTIONS

SINGLE COLOR AND VIB-OFF (ILLUMINATED AND NON-ILLUMINATED) ROCKER OPTIONS WITH AUXILIARY SWITCH

LOAD
LINE
C
NO
C
NO
NC
NO
C
LOAD
LINE

VISION ROCKER WITH AUXILIARY SWITCH

LOAD (VISION-ON)
LINE
C
NO
C
NO
NC
LOAD (VISION-ON)
LINE

POLE DESIGNATIONS FOR HORIZONTAL MOUNTING LEGEND:
ALL ROCKER STYLES

POLE 1
POLE 2

POLE 1
POLE 2

POLE 1
POLE 2

POLE 1
POLE 2

POLE 2
POLE 1
### M-Series Circuit Breaker - Handle/Pushbutton UL Recognized - Ordering Scheme

<table>
<thead>
<tr>
<th>1 Series</th>
<th>2 Actuator</th>
<th>3 Poles</th>
<th>4 Circuit</th>
<th>5 Frequency &amp; Delay</th>
<th>6 Current Rating (Amperes)</th>
<th>7 Terminal</th>
<th>8 Actuator Color</th>
<th>9 Front Panel Hardware</th>
<th>10 Legend Plate</th>
<th>11 Bushing Color</th>
<th>12 Agency Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**2 Actuator**

- **Handle:** Paddle
- **Push Button:** Push-Pull
- **Push Button with Snap-In Mounting:**
  - **V:** Push-Pull
  - **W:** Push To Reset

**3 Poles:**

- **1 Pole:**
- **2 Poles:**
- **3 Poles:**

**4 Circuit**

- **without Auxiliary Switch:**
  - **A:** Switch Only (no coil), Maintained Contacts
  - **B:** Series Trip (Current)
- **with Auxiliary Switch, Silver Contacts:**
  - **M:** Series Trip (Current) Aux Switch
  - **O:** Switch Only, Maintained Contacts
  - **R:** Switch On, Maintained Contacts
  - **T:** Series Trip (Current)
- **with Auxiliary Switch, Gold Contacts:**
  - **U:** Switch Only, Maintained Contacts
  - **X:** Series Trip (Current)

**5 Frequency & Delay**

- **03 DC 50/60Hz, Switch Only**
- **10 DC Instantaneous**
- **12 DC Short**
- **14 DC Medium**
- **20 50/60Hz Instantaneous**
- **22 50/60Hz Short**
- **24 50/60Hz Medium**
- **30 DC 50/60Hz Instantaneous**
- **40 DC 50/60Hz Short**

**6 Current Rating (Amperes)**

- **0.020**
- **0.025**
- **0.030**
- **0.035**
- **0.040**
- **0.045**
- **0.050**
- **0.055**
- **0.060**
- **0.065**
- **0.070**
- **0.075**
- **0.080**
- **0.085**
- **0.090**
- **0.095**
- **0.100**
- **0.105**
- **0.110**

**7 Terminal**

- **1** Push-On 0.250 Tab (O.C.)
- **2** Screw 8-32 with Upturned Lugs
- **3** Screw 8-32 (Bus Type)

**8 Actuator Color & Legend**

- **Gloss Handle: Push-Button Actuator Color**
  - **A:** White
  - **B:** Black
  - **C:** Red
  - **D:** Green
  - **E:** Blue
  - **F:** Yellow
  - **H:** Orange

**9 Front Panel Hardware**

- **No outer Panel Hardware**
  - **Handle:** Push-Button
  - **Knurled Nut:**
  - **Bright nickel:**
  - **Black:**
  - **Bright nickel with locking ring:**
  - **Black:**

**10 Legend Plate / Button Marking**

- **Handle Actuator Legend Plate (Actuator Styles M & N)**
  - **A:** No Legend Plate
  - **B:** ON - OFF Vertical
  - **C:** ON - OFF Horizontal
  - **D:** 1 - O Vertical
  - **E:** 1 - O Horizontal

**Push-Pull Actuator Button Cap (Actuator Styles T & V)**

- **No Marking**
- **Rated Amps Horizontal**
- **Rated Amps Line Side Down**
- **Rated Amps Line Side Up**

**11 Bushing Color**

- **A:** Black

**12 Agency Approval**

- **C:** UL Recognized & CSA Accepted
- **D:** VDE Certified, UL Recognized & CSA Accepted
- **E:** TUV Certified, UL Recognized & CSA Accepted
### M-Series Circuit Breaker - Handle/Pushbutton UL489A/UL Recognized – Ordering Scheme

**1 SERIES**

- **M**

**2 ACTUATOR**

- **M** - Push-to-Reset
  - **B** - Push-Pull
  - **N** - Button Cap

**3 POLES**

- **1** - One

**4 CIRCUIT**

- **B** - Series Trip (Current)
- **S** - Series Trip (Current) Aux Switch
- **T** - Series Trip (Current) Aux Switch
- **V** - Series Trip, Maintained Contacts

**5 FREQUENCY & DELAY**

- **10** - DC Instantaneous
- **12** - DC Short
- **14** - DC Medium

**6 CURRENT RATING (AMPERS)**

<table>
<thead>
<tr>
<th>Code</th>
<th>AMPERES</th>
<th>Code</th>
<th>AMPERES</th>
<th>Code</th>
<th>AMPERES</th>
<th>Code</th>
<th>AMPERES</th>
</tr>
</thead>
<tbody>
<tr>
<td>020</td>
<td>0.020</td>
<td>220</td>
<td>0.250</td>
<td>420</td>
<td>2.000</td>
<td>710</td>
<td>10.500</td>
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<tr>
<td>025</td>
<td>0.025</td>
<td>230</td>
<td>0.300</td>
<td>522</td>
<td>2.250</td>
<td>611</td>
<td>11.000</td>
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<tr>
<td>030</td>
<td>0.030</td>
<td>235</td>
<td>0.350</td>
<td>425</td>
<td>2.500</td>
<td>711</td>
<td>11.500</td>
</tr>
<tr>
<td>035</td>
<td>0.035</td>
<td>240</td>
<td>0.400</td>
<td>527</td>
<td>2.750</td>
<td>612</td>
<td>12.000</td>
</tr>
<tr>
<td>040</td>
<td>0.040</td>
<td>245</td>
<td>0.450</td>
<td>430</td>
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<td>712</td>
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<tr>
<td>045</td>
<td>0.045</td>
<td>250</td>
<td>0.500</td>
<td>435</td>
<td>3.500</td>
<td>613</td>
<td>13.000</td>
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<td>0.550</td>
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<td>265</td>
<td>0.650</td>
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<td>5.000</td>
<td>616</td>
<td>16.000</td>
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<td>0.700</td>
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<td>5.500</td>
<td>617</td>
<td>17.000</td>
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<tr>
<td>070</td>
<td>0.070</td>
<td>275</td>
<td>0.750</td>
<td>460</td>
<td>6.000</td>
<td>618</td>
<td>18.000</td>
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<tr>
<td>075</td>
<td>0.075</td>
<td>280</td>
<td>0.800</td>
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<td>470</td>
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<td>622</td>
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<td>475</td>
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<td>624</td>
<td>24.000</td>
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<td>490</td>
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<td>495</td>
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<td></td>
</tr>
<tr>
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<td>517</td>
<td>1.750</td>
<td>610</td>
<td>10.000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**7 TERMINAL**

- **4** - Push-On 0.250 Tab (Q.C.)
- **5** - Screw 8-32 with Upturned Lugs
- **6** - Screw 8-32 (Bus Type)

**8 ACTUATOR COLOR & LEGEND**

- **1** - Actuator with Auxiliary Switch, Gold Contacts
- **2** - Series Trip (Current) Aux Switch, Silver Contacts
- **3** - Series Trip (Current) Aux Switch, Gold Contacts
- **4** - Series Trip (Current) Aux Switch, Silver Contacts
- **5** - Series Trip (Current) Aux Switch, Gold Contacts

**9 FRONT PANEL HARDWARE**

- **6** - Handle Push-Button
- **1** - No outer Panel Hardware
- **2** - Knurled Nut
- **3** - Bright nickel with locking ring
- **4** - Black with locking ring
- **5** - Panel Dress Nut
- **6** - Bright nickel with locking ring
- **7** - Black with locking ring
- **8** - Black with locking ring

**10 LEGEND PLATE / BUTTON MARKING**

- **9** - Handle Actuator Legend Plate (Actuator Styles M & N)
- **A** - No Legend Plate
- **B** - ON - OFF Vertical
- **C** - ON - OFF Horizontal
- **D** - I - O Vertical
- **E** - I - O Horizontal

**11 BUSHING COLOR**

- **7** - Bushing Color
- **1** - Black

**12 AGENCY APPROVAL**

- **7** - Printed Circuit Board
- **9** - UL489A Listed
- **10** - TUV Certified
- **11** - CSA Accepted
- **12** - Listed to 30 amps

---

1. One actuator is located in the center of each multi-pole breaker. Actuator codes V & W limited to single pole breakers only.
2. One Auxiliary Switch is supplied per breaker. On two-pole breakers, standard Auxiliary Switch mounting is in pole one. Auxiliary Switch option limited to Series Trip and Switch Only circuits.
4. Screw terminals or Push-in Stud recommended above 20 amps.
5. Actuator color is only visible in the OFF position on Push-Pull actuators.
6. All units have one hex nut installed on bushing for use behind the panel.
7. Other colors available. Consult factory.
8. Not available with UL489A Listed breakers.
9. UL Recognized, CSA Accepted and UL Listed to 30 amps.
10. Terminal code A available with circuit codes A & B only.
11. Printed circuit board available with UL recognized approval only.
12. Auxiliary switch (flat Q.C.) available with UL recognized approvals only.

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Circuit & Terminal Diagrams: in. [mm]

### Series Trip

- **Load**
- **Main Terminals, (See Table A)**

### Switch Only

### Series Trip W/ Auxiliary Switch

- **Aux. Switch Terminal** (Figure A shown)

### Terminal Dimensional Detail

- **Tab (Q.C.) Terminal**
- **Screw Terminal #8-32 with Upturned Lugs**
- **Screw Terminal #8-32 Bus**
- **Push-In Stud Terminal**

### Table A

<table>
<thead>
<tr>
<th>TERMINAL DESCRIPTION</th>
<th>DEPTH BEHIND PANEL FACE</th>
</tr>
</thead>
</table>
| MAIN
| Tab (Q.C.)          | 1.890 (48.00)            |
| Screw (6-32)        | 1.930 (49.00)            |
| Push-In Stud         | 2.070 (52.00)            |
| DOUBLE SOLDER TUR TURE TYPE | 2.250 (57.15)            |
| ROUND QC TYPE       | 2.250 (57.15)            |
| FLAT QUICK CONNECT   | 2.120 (53.50)            |
| FLAT SOLDER LUG      | 2.070 (52.10)            |
| AUX. ** SWITCH
| Push-In Stud Mating Hole | 1.615 (41.00)            |

*DEPTH INCLUDES BEHIND PANEL, HEX NUT AS SUPPLIED ON ALL UNITS, **WHEN CALLED FOR ON MULTIPLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, MOUNTED AS SHOWN IN FIG. A

### Multi-Pole Identification Scheme

**Solder Turret and Round QC Aux Switch Terminals**

**Flat QC and Solder Lug Aux Switch Terminals**

### Notes:

1. All dimensions are in inches [millimeters].
Notes:
1. All dimensions are in inches [millimeters].
Dimensional Specifications: in. [mm]

**PADDLE ACTUATOR STYLE**

**SINGLE POLE**

**DOUBLE POLE**

**BATON ACTUATOR STYLE**

**MOUNTING DETAILS**

**LEGEND PLATES**

**PANEL HARDWARE**

Notes:
1. All dimensions are in inches [millimeters].
2. Tolerance ±0.020 [±0.51] unless otherwise specified.
Circuit & Terminal Diagrams: in. [mm]

TABLE A

<table>
<thead>
<tr>
<th>TERMINAL DESCRIPTION</th>
<th>DEPTH BEHIND PANEL FACE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN</td>
<td></td>
</tr>
<tr>
<td>TAB (Q.C.)</td>
<td>1.452 [47.07]</td>
</tr>
<tr>
<td>SCREW (M-32)</td>
<td>1.432 [56.65]</td>
</tr>
<tr>
<td>PUSH-IN STUD</td>
<td>2.682 [68.08]</td>
</tr>
<tr>
<td>AUX. ** SWITCH</td>
<td></td>
</tr>
<tr>
<td>DOUBLE SOLDER TURRET TYPE</td>
<td>2.067 [52.50]</td>
</tr>
<tr>
<td>ROUND QC TYPE</td>
<td>2.097 [53.21]</td>
</tr>
<tr>
<td>FLAT QUICK CONNECT</td>
<td>2.193 [55.68]</td>
</tr>
<tr>
<td>FLAT SOLDER LUG</td>
<td>2.274 [57.66]</td>
</tr>
</tbody>
</table>

*DEPTH INCLUDES BEHIND PANEL HEX NUT AS SUPPLIED ON ALL UNITS,
** WHEN CALLED FOR ON MULTIPLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, MOUNTED AS SHOWN IN FIG. A

MULTI-POLE IDENTIFICATION SCHEME

SOLDER TURRET AND ROUND QC AUX SWITCH TERMINALS

<table>
<thead>
<tr>
<th>POLE 1</th>
<th>POLE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOAD</td>
<td>LOAD</td>
</tr>
<tr>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>AUX SWITCH TERMINALS</td>
<td></td>
</tr>
</tbody>
</table>

FLAT QC AND SOLDER LUG AUX SWITCH TERMINALS

<table>
<thead>
<tr>
<th>POLE 1</th>
<th>POLE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOAD</td>
<td>LOAD</td>
</tr>
<tr>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

Notes:
1. All dimensions are in inches [millimeters].
**M-Series Circuit Breaker - Pushbutton - Dimensional Specifications**

### Dimensional Specifications: in. [mm]

#### Push-Pull Actuator Style

**SINGLE POLE**

- **FLAT**
- **ACTUATOR COLOR:**
  - **ON:** Green
  - **OFF:** Orange
- **3/8” Off-02 THD:**
  - **AX:** 0.444 [11.3 mm]
  - **AY:** 0.694 [17.6 mm]
- **Notes:**
  - All dimensions are in inches [millimeters].
  - Tolerance ± 0.20 [0.5 mm] unless otherwise specified.
  - Available with Push-Pull or Push-to-Reset Actuators.

#### Double Pole

- **FLAT**
- **ACTUATOR COLOR:**
  - **ON:** Green
  - **OFF:** Orange
- **3/8” Off-02 THD:**
  - **AX:** 0.444 [11.3 mm]
  - **AY:** 0.694 [17.6 mm]
- **Notes:**
  - All dimensions are in inches [millimeters].
  - Tolerance ± 0.20 [0.5 mm] unless otherwise specified.
  - Available with Push-Pull or Push-to-Reset Actuators.

#### Push-to-Reset Actuator Style

- **SNAP-IN BUSHING ACTUATOR STYLE**
  - **SEE NOTE 3**
  - **AX:** 0.60 [15.2 mm]
  - **AY:** 0.444 [11.3 mm]
  - **AX:** 0.60 [15.2 mm]
  - **AY:** 0.444 [11.3 mm]
- **MOUNTING DETAILS**
  - **AX:** 0.444 [11.3 mm]
  - **AY:** 0.444 [11.3 mm]
  - **AX:** 0.444 [11.3 mm]
  - **AY:** 0.444 [11.3 mm]
- **SNAP-IN BUSHING**
  - **AX:** 0.444 [11.3 mm]
  - **AY:** 0.444 [11.3 mm]
- **PANEL HARDWARE**
  - **AX:** 0.444 [11.3 mm]
  - **AY:** 0.444 [11.3 mm]
- **HEX NUT**
  - **AX:** 0.444 [11.3 mm]
  - **AY:** 0.444 [11.3 mm]

#### Button Marking Orientation (Push-Pull Only)

- **MARKING CODE:**
  - **2**
  - **3**
  - **4**

---

**Notes:**

1. All dimensions are in inches [millimeters].
2. Tolerance ± 0.20 [0.5 mm] unless otherwise specified.
3. Available with Push-Pull or Push-to-Reset Actuators.

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PC Terminal Diagrams: in. [mm]

Notes:
1 All dimensions are in inches [millimeters].
2 Tolerance ±0.020 [0.51] unless otherwise specified.
### M, MS-SERIES TIME DELAY VALUES

<table>
<thead>
<tr>
<th>TRIP TIME SECONDS</th>
<th>100%</th>
<th>135%</th>
<th>150%</th>
<th>200%</th>
<th>400%</th>
<th>800%</th>
<th>1000%</th>
<th>1000%</th>
</tr>
</thead>
<tbody>
<tr>
<td>10, 20, 30</td>
<td>No Trip</td>
<td>May Trip</td>
<td>.100 Max</td>
<td>.100 Max</td>
<td>.100 Max</td>
<td>.100 Max</td>
<td>.100 Max</td>
<td>.100 Max</td>
</tr>
<tr>
<td>12, 22, 32, 62, 72, 92</td>
<td>No Trip</td>
<td>.300 - 7.00</td>
<td>.200 - 5.00</td>
<td>.100 - 2.00</td>
<td>.030 - 5.00</td>
<td>.038 - 3.00</td>
<td>.038 - .150</td>
<td>.038 - 100</td>
</tr>
<tr>
<td>14, 24, 34, 64, 74, 94</td>
<td>No Trip</td>
<td>3.00 - 70.0</td>
<td>2.00 - 40.0</td>
<td>1.00 - 15.0</td>
<td>.100 - 4.00</td>
<td>.038 - 2.00</td>
<td>.038 - 800</td>
<td>.005 - 350</td>
</tr>
</tbody>
</table>

Notes:
1. Delay Curves 12,14, 22, 24, 32, 34, 62, 72, 74, 92, 94: Breakers to hold 100% and must trip at 135% of rated current and greater within the time limit shown in this curve.
2. Delay Curves 10, 20, 30: Breakers to hold 100% and must trip at 150% of rated current and greater within the time limit shown in this curve.
3. All Curves: Curve data shown represents breaker response at ambient temperature of 77°F (25°C) with no preloading. Breakers are mounted in standard wall-mount position.
4. The minimum inrush pulse tolerance handling capability is 12 times the rated current on standard delays and 18 times the rated current on high inrush delays. These values are based on a 60 Hz 1/2 cycle, 8.33 ms pulse. High inrush delays should be specified for applications with high initial surge currents of short duration, such as switching power supplies, highly capacitive loads and transformer loads.

### Dual Rated AC/DC

**Instantaneous**

![Instantaneous Curve](image1.png)

**Short**

![Short Curve](image2.png)

**Short D2**

![Short D2 Curve](image3.png)

**Medium**

![Medium Curve](image4.png)

**Medium D4**

![Medium D4 Curve](image5.png)
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