Since its founding, Carling Technologies has continually forged a tradition of leadership in quality and product innovation.

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<td>Rotary</td>
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- Hydraulic-Magnetic
- Thermal
- GFCI / ELCI
- Multiwire

There are few products that Carling Technologies hasn’t turned “ON” and fewer industries that haven’t turned to Carling for solutions. With ISO and TS registered manufacturing facilities and technical sales offices worldwide, Carling ranks among the world’s largest manufacturers of circuit breakers, switches, power distribution units, digital switching systems and electronic controls.

**STRAATEGIC MARKETS SERVED:**
- On/Off Highway
- Marine
- Telecom/Datacom
- Military
- Renewable Energy

**GLOBAL LOCATIONS:**
- Carling Technologies, World Headquarters
  - Malville, CT, USA
  - ISO 9001:2008
  - ISO/TS 16949:2009
- Maretrol
  - Phoenix, AZ, USA
- Carling Technologies, Europe
  - Burleson, TX, USA
  - ISO 9001:2008
  - ISO/TS 16949:2009
- Carling Technologies, Mexico
  - Mexico City, Mexico
  - ISO 9001:2008
  - ISO/TS 16949:2009
- Carling Technologies, China
  - Zhejiang, China
  - ISO 9001:2008
  - ISO/TS 16949:2009

**COMPETITIVE ADVANTAGES**
- Vertical Integration
- Reliable & On-Time Delivery
- Excellent Customer Service
- Innovative & Eco-Friendly Products

**OTHER SERVED INDUSTRIES:**
- Medical
- Industrial Control
- Audio / Visual
- Commercial Food
- HVAC
- Floor Care
- Generators
- Small Appliances
- Security Systems
- Test & Measurement

**WORLDWIDE NUMBERS:**
- 2000+ EMPLOYEES
- 150+ ENGINEERS
- 70+ DISTRIBUTORS
- 50+ REP FIRMS
Renewable Energy
Circuit Breakers & Disconnects

When you integrate Carling Technologies circuit protection products into your renewable energy generating systems, you are guaranteed maximum protection against harmful overcurrent. Our product line is guaranteed to not only protect the power system itself, but it also safeguards the structure where these systems are installed by eliminating the fire hazard that can be caused by overcurrent.

Within This Catalog, you will find comprehensive product information for each product series including applications, specifications and ordering schemes.

Available Online are tools such as part configurator, product selectors and stock checks. For the latest information on all our products, please visit www.carlingtech.com

Application Solution Engineers are readily available to assist you in selecting the appropriate product for your application. For further assistance, please email us at custservice@carlingtech.com

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Available Online

www.carlingtech.com

Typical Photovoltaic System

CX-SERIES

E-SERIES

F-SERIES

C-SERIES

Combiner

Main Disconnect

AC Breaker Panel

Power Inverter

AC Generator

Battery Bank 1000 Ah

Charge Controller

Circuit Breaker
<table>
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<th>1-5</th>
<th>1-6 (handle)</th>
<th>1-6</th>
<th>1-3</th>
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<td>handle</td>
<td>handle</td>
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<td>Max Current &amp; Voltage Ratings</td>
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<td>UL Listed: 0.02-100A@240VAC, 80VDC, 125VDC</td>
<td>UL Listed: 0.02-100A@277VAC, 160VDC, 1 pole 0.02-100A@600VAC, 2 Pole 10, 3 Pole 30 0.02-100A@120V/240VAC, 65VDC</td>
<td>UL Listed: 50-250A@125VDC 100-250A@120/240VAC 100-250A@277VAC 100-250A@208Y/120, 30VAC</td>
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<td>Max Interrupting Capacity</td>
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<td>UL Listed: 50000A@80VDC, 1P only 10000A@125VDC 5000A@125VDC/240VAC</td>
<td>UL Listed: 50000A@80VDC &amp; 240VAC-5KA</td>
<td>UL Listed: 50000A@125VDC 10000A@120/240, 277, 208Y/120VAC</td>
</tr>
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<td>Auxiliary Switch Rating</td>
<td>20A@80VDC (GO circuit) 10.1A@250VAC 0.1A@125VAC (gold contacts) 0.5A@80VDC</td>
<td>10.1A@250VAC 1.0A@65VDC 0.1A@80VDC</td>
<td>10.1A@250VAC 0.5A@65VDC 0.1A@80VDC</td>
<td></td>
</tr>
<tr>
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<td>series trip</td>
<td>series, shunt, relay, switch only, series with remote shutdown, relay &amp; shunt trip dual coil, mid-trip with alarm switch</td>
<td>series, shunt, relay, switch only, series with remote shutdown</td>
<td>series &amp; switch only with or without metering shunt</td>
</tr>
<tr>
<td>Terminal Options</td>
<td>10-32 or M5 screw terminals 1/4-20 or M6 threaded stud</td>
<td>10-32 stud, 1/4-20 stud, 10-32 screw with saddle clamp, 7/16 clip &amp; push-ln</td>
<td>10-32 stud, 1/4-20 stud, 0-32 screw, 1/4-20 screw, box wire connector</td>
<td>3/8-16 stud, 3/8-16 screw &amp; box wire connector</td>
</tr>
<tr>
<td>Mounting Method</td>
<td>threaded insert: #6-32 UNC-2B, or M3X0.5-6H B ISO (2 per pole)</td>
<td>threaded inserts</td>
<td>rear or front panel</td>
<td>rear or front panel</td>
</tr>
<tr>
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<td>UL489, UL1077, TUV (EN60954-2) UL, CSA, VDE, TUV, UL1500, UL489, UL489A</td>
<td>UL, CSA, VDE, UL1500, UL489</td>
<td>UL, CSA, VDE, UL1500, UL489</td>
<td>UL, TUV, UL489, UL489A</td>
</tr>
</tbody>
</table>

*Options and approvals shown may apply to specific construction combinations only, consult factory for clarification. Manufacturer reserves the right to change product specifications without prior notice.*
CX-Series
CIRCUIT BREAKER

The CX-Series circuit breaker features a unique and innovative arc-quenching configuration that allows the breaker to safely handle high amperage and high DC voltage applications in a compact package. By using a patent pending magnetic flux boosting terminal configuration, a strong magnetic field is created thus motivating the arc into an enhanced arc chamber improving the breaker’s overall performance and reliability. The permanent magnets located at the entrance of the arc chamber combined with the upper and lower arc runner increase the magnetic blow out force and aid in motivating the arc off of the contacts and into the arc chamber. An enhanced arc chamber features arc splitter retainers with integrated pressurizing walls, which facilitates heat transfer from the arc thereby providing additional cooling and quick transition into the magnetically induced splitter plates. In turn, the twelve (12) splitter plates attract, segment and cool the arc for full extinction. Combined, these innovative features make the CX-Series breaker the best in class, providing stable performance even in the most demanding applications.

Product Highlights:
- UL 489 & UL 489B Listed
- TUV Certified IEC/EN 60947-2
- Temperature stable hydraulic-magnetic overcurrent sensing technology
- Optional relay trip circuit permitting remote operator system shut down
- Perfect fit for 380VDC Applications
CX-Series
DESIGN FEATURES

HYDRAULIC/MAGNETIC
SENSING COIL

UPPER ARC RUNNER
Aids in motivating arc off of movable contact and into arc chamber

MAGNETS

ARC SPLITTER RETAINER
with integrated pressurizing walls

PATENT PENDING MAGNETIC FLUX BOOSTING TERMINAL CONFIGURATION
Design enhances motivation of arc into arc chamber

LOWER ARC RUNNER
Aids in motivating arc off of stationary contact and into arc chamber

LARGE ARC GAP
To generate high arc voltages

(12) ARC DEIONIZING SPLITTER PLATES
**Electrical Tables**

**Table A:** Lists UL Listed (UL489) configuration and performance capabilities as a Molded Case Circuit Breaker

<table>
<thead>
<tr>
<th>SERIES</th>
<th>MAX. RATING</th>
<th>FREQUENCY</th>
<th>MAX CURRENT RATING AMPS</th>
<th>INTERRUPTING CAPACITY (AMPS)</th>
<th>NUMBER OF POLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 D.C.</td>
<td>15</td>
<td></td>
<td>5,000</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>250 / 500 D.C.</td>
<td>15</td>
<td></td>
<td>10,000</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>410 / 205 D.C.</td>
<td>50</td>
<td></td>
<td>10,000</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Table B:** Lists UL Recognized configurations and performance capabilities as a Component Supplementary Protector

<table>
<thead>
<tr>
<th>SERIES</th>
<th>MAX. RATING</th>
<th>FREQUENCY</th>
<th>MAX CURRENT RATING AMPS</th>
<th>INTERRUPTING CAPACITY (AMPS)</th>
<th>NUMBER OF POLES</th>
<th>APPLICATION CODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>300 D.C.</td>
<td>1 - 75</td>
<td></td>
<td>5,000</td>
<td></td>
<td>1</td>
<td>TC1, OL0, U3</td>
</tr>
<tr>
<td>300 D.C.</td>
<td>76 - 125</td>
<td></td>
<td>3,000</td>
<td></td>
<td>1</td>
<td>TC1, OL0, U3</td>
</tr>
<tr>
<td>440 D.C.</td>
<td>1 - 30</td>
<td></td>
<td>10,000</td>
<td></td>
<td>2</td>
<td>TC1, OL0, U3</td>
</tr>
<tr>
<td>440 D.C.</td>
<td>31 - 63</td>
<td></td>
<td>5,000</td>
<td></td>
<td>2</td>
<td>TC1, OL0, U3</td>
</tr>
<tr>
<td>600 D.C.</td>
<td>1 - 75</td>
<td></td>
<td>5,000</td>
<td></td>
<td>2</td>
<td>TC1, OL0, U3</td>
</tr>
<tr>
<td>600 D.C.</td>
<td>76 - 115</td>
<td></td>
<td>3,000</td>
<td></td>
<td>2</td>
<td>TC1, OL0, U3</td>
</tr>
<tr>
<td>SWITCH ONLY†</td>
<td>600 D.C.</td>
<td>1 - 115</td>
<td>---</td>
<td></td>
<td>2 or 3</td>
<td>---</td>
</tr>
</tbody>
</table>

Notes:
1. Requires inclusion of a relay trip voltage coil

**Table C:** Lists UL Listed (UL489B) configuration and performance capabilities as a Molded Case Switch

<table>
<thead>
<tr>
<th>SERIES</th>
<th>MAX. RATING</th>
<th>FREQUENCY</th>
<th>POLES</th>
<th>CURRENT RATING (AMPS)</th>
<th>INTERRUPTING RATING (AMPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>600 D.C.</td>
<td>50 - 100</td>
<td>2‡</td>
<td></td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>600 D.C.</td>
<td>110 - 175</td>
<td>4‡</td>
<td></td>
<td>600</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1. Two poles in series.
2. Two poles in series in parallel with 2 poles in series.

**Table D:** TUV Certified Configuration to IEC / EN 60947-2. Low Voltage Switch gear and Control gear - Circuit Breakers

<table>
<thead>
<tr>
<th>SERIES</th>
<th>MAX. RATING</th>
<th>FREQUENCY</th>
<th>POLES</th>
<th>CURRENT RATING (AMPS)</th>
<th>INTERRUPTING CAPACITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>440 D.C.</td>
<td>1-63</td>
<td>2</td>
<td></td>
<td>4,000</td>
<td></td>
</tr>
</tbody>
</table>

*Manufacturer reserves the right to change product specification without prior notice.*
**Electrical**

**Maximum Voltage**
- 600 VDC

**Overload**
- 50 operations at 600% of rated current for UL489, and at 150% of rated current for UL1077.

**Current (amps)**

<table>
<thead>
<tr>
<th>CURRENT (AMPS)</th>
<th>TOLERANCE (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.10 - 5.0</td>
<td>15</td>
</tr>
<tr>
<td>5.1 - 20.0</td>
<td>25</td>
</tr>
<tr>
<td>20.1 - 50.0</td>
<td>35</td>
</tr>
</tbody>
</table>

**Resistance per Pole Values**

- Values based on Series Trip Circuit Breaker

**Mechanical**

**Endurance**
- Max 10,000 ON-OFF operations @ 6 per minute; 6000 with rated current & voltage, and 4,000 cycles mechanical.
- Trip Free
- Trips on overload even when actuator is forcibly held in the “On” position.
- Trip Indication
- The operating handle moves positively to the “Off” position when an overload causes the breaker to trip.

**Environmental**

**Shock**
- Withstands 100 Gs, 6ms saw tooth while carrying rated current per MILPRF-55629 and MIL-STD-202G, Method 213G, Test Condition “I”. Instantaneous and ultra short curves tested at 90% of rated current.

**Vibration**
- Withstands 0.060” excursion from 10-55 Hz & 10 Gs 55-500 Hz, at rated current per MIL-PRF-55629 and MILSTD-202G, Method 240D, Test Cond. A. Instantaneous & ultrashort curves tested at 90% of rated current.

**Moisture Resistance**
- MIL-PRF-55629 and MIL-STD-202G, Method 106G, i.e., Ten 24-hour cycles at +25°C to +65°C, 80-98% RH.
- Salt Spray
- Method 101, Condition A (90-95% RH at 5% NaCl Solution, 96 hrs).
- Thermal Shock
- Operating Temperature
- -40°C to +85°C.

**Physical**

Number of Poles: 1-2 poles, + Auxiliary Switch Pole.

Termination: 10-32 or M5 Screw Terminals
- 1/4-20 or M6 Threaded Stud Terminals

Termination Barrier: Standard with multi-pole constructions

Mounting: Threaded insert: #6-32 UNC-2B, or M3X0.5-6H B ISO (2 per pole)

Actuator: Handle, 1 per pole.

Internal Circuit Config.:
- Series Trip
- Housing - Glass filled Polyester
- Handle - Glass filled Polyester
- Line/Load Terminals - Copper Alloy.
- ~150 Grams (~5.3 Ounces).

Weight:
- ~150 Grams (~5.3 Ounces).

Standard Color:
- Housing - Gray.
- Handle - White, Black, Red, Green, Blue, Yellow, Gray.
**CX-Series Circuit Breaker - UL489 – Ordering Scheme**

<table>
<thead>
<tr>
<th>1 SERIES</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ACTUATOR</td>
<td>X</td>
</tr>
<tr>
<td>3 POLES</td>
<td>One</td>
</tr>
<tr>
<td></td>
<td>Two</td>
</tr>
<tr>
<td>4 CIRCUIT</td>
<td>Series Trip (current)</td>
</tr>
<tr>
<td>5 AUXILIARY/ALARM SWITCH</td>
<td>Without Aux Switch</td>
</tr>
<tr>
<td>6 FREQUENCY &amp; DELAY</td>
<td>12 AGENCY APPROVAL</td>
</tr>
<tr>
<td></td>
<td>11 MAX. APPLICATION RATING</td>
</tr>
</tbody>
</table>

### Terminal (Terminal Code) & Color


### Terminal Color & Legend

<table>
<thead>
<tr>
<th>Actuator Color</th>
<th>I-O</th>
<th>ON-OFF</th>
<th>Dual Legend Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>A</td>
<td>B</td>
<td>1</td>
</tr>
<tr>
<td>Black</td>
<td>C</td>
<td>D</td>
<td>2</td>
</tr>
<tr>
<td>Red</td>
<td>F</td>
<td>G</td>
<td>3</td>
</tr>
<tr>
<td>Green</td>
<td>H</td>
<td>J</td>
<td>4</td>
</tr>
<tr>
<td>Blue</td>
<td>K</td>
<td>L</td>
<td>5</td>
</tr>
<tr>
<td>Yellow</td>
<td>M</td>
<td>N</td>
<td>6</td>
</tr>
<tr>
<td>Gray</td>
<td>P</td>
<td>Q</td>
<td>7</td>
</tr>
<tr>
<td>Orange</td>
<td>R</td>
<td>S</td>
<td>8</td>
</tr>
<tr>
<td>Black</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Frequency & Delay


### Current Rating (Amperes)

<table>
<thead>
<tr>
<th>CODE</th>
<th>AMPERES</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.20</td>
<td>295</td>
</tr>
<tr>
<td>0.25</td>
<td>410</td>
</tr>
<tr>
<td>0.30</td>
<td>512</td>
</tr>
<tr>
<td>0.35</td>
<td>615</td>
</tr>
<tr>
<td>0.40</td>
<td>718</td>
</tr>
<tr>
<td>0.45</td>
<td>820</td>
</tr>
<tr>
<td>0.50</td>
<td>922</td>
</tr>
<tr>
<td>0.55</td>
<td>1024</td>
</tr>
<tr>
<td>0.60</td>
<td>1126</td>
</tr>
<tr>
<td>0.65</td>
<td>1228</td>
</tr>
<tr>
<td>0.70</td>
<td>1330</td>
</tr>
<tr>
<td>0.75</td>
<td>1432</td>
</tr>
<tr>
<td>0.80</td>
<td>1535</td>
</tr>
<tr>
<td>0.85</td>
<td>1637</td>
</tr>
<tr>
<td>0.90</td>
<td>1740</td>
</tr>
</tbody>
</table>

### Code & Rating


### Notes

1. Only Available with 250/500 VDC up to 15 amps.
### CX-Series Circuit Breaker - UL489B – Ordering Scheme

- **Series** (1): C
- **Actuator** (2): X
- **Poles** (3): 2
- **Circuit** (4): S
- **Relay Trip** (5): 0
- **Frequency & Delay** (6): 03
- **Current Rating** (7): 810
- **Terminal** (8): 3
- **Actuator Color & Legend** (9): 2
- **Mounting Inserts** (10): A
- **Rating** (11): 06
- **Agency Approval** (12): 14

#### 1 SERIES
- C

#### 2 ACTUATOR
- X: Handle, one per pole

#### 3 POLES 1,2
- 2: Two
- 3: Three
- 4: Four
- 5: Five

#### 4 CIRCUIT
- S: Switch Only

#### 5 RELAY TRIP VOLTAGE COIL RATING 1,2
- 0: Without Relay Trip Voltage Coil
- A: 12 VDC
- B: 24 VDC
- C: 32 VDC
- D: 48 VDC

#### 6 FREQUENCY & DELAY
- 03: DC Switch Only

#### 7 CURRENT RATING (AMPERES) 1,3
- 2-Pole Section:
  - 810: 50A - 100A
- 4-Pole Section:
  - 917: 110A - 175A

#### 8 TERMINAL 4,5
- 3: Stud, 1/4-20
- 6: Stud, M6
- A: Stud, 1/4-20, with 10-32 Screw Terminals on Voltage Pole
- B: Stud, M6, with M5 Screw Terminals on Voltage Pole

#### 9 HANDLE COLOR & LEGEND
- | Actuator Color | ON-OFF | Dual | Legend Color |
- |---------------|--------|------|--------------|
- | White         | A      | B    | 1            | Black        |
- | Black         | C      | D    | 2            | White        |
- | Red           | F      | G    | 3            | White        |
- | Green         | H      | J    | 4            | White        |
- | Blue          | K      | L    | 5            | White        |
- | Yellow        | M      | N    | 6            | Black        |
- | Gray          | P      | Q    | 7            | Black        |
- | Orange        | R      | S    | 8            | Black        |

#### 10 MOUNTING INSERTS
- A: 6-32 Thread
- B: M3 Thread

#### 11 MAX. APPLICATION RATING
- 06: 600VDC

#### 12 AGENCY APPROVAL
- A: Without Approvals
- 14: UL489B Listed

**Notes:**
1. 2 Pole Unit is required for ratings between 50A - 100A.
2. 4 Pole Unit is required for ratings between 110A - 175A.
3. A Relay Trip Voltage Coil Pole may be added to either the 2 or 4 Pole construction. The addition of this extra pole dictates a change in the designation for the number of poles in selection 3.
4. For Current Ratings between 50A - 100A select current code 810 (100A). For Current Ratings between 110A - 175A select current code 917 (175A).
5. Voltage Pole must have screw terminals. Switch Pole must have stud terminals.
6. On 3 Pole Unit, Voltage Pole to be located at P1 as standard.
7. On 5 Pole Unit, Voltage Pole to be located at P3 as standard.
### 1 SERIES
- C

### 2 ACTUATOR
- X: Handle, one per pole

### 3 POLES
- 1: One
- 2: Two
- 3: Three
- 4: Four

### 4 CIRCUIT
- A: Switch Only (no coil) 1, 9
- B: Series Trip (current)
- G: Relay Trip (voltage) 1, 2, 3, 9

### 5 AUXILIARY SWITCH
- 0: Without Aux Switch

### 6 FREQUENCY & DELAY
- 03: DC 50/60Hz, Switch Only
- 10: DC Instantaneous
- 11: DC Ultra Short
- 12: DC Short
- 14: DC Medium
- 16: DC Long

### 7 CURRENT RATING (AMPERES)
<table>
<thead>
<tr>
<th>CODE</th>
<th>AMPERES</th>
</tr>
</thead>
<tbody>
<tr>
<td>220</td>
<td>0.200</td>
</tr>
<tr>
<td>225</td>
<td>0.250</td>
</tr>
<tr>
<td>230</td>
<td>0.300</td>
</tr>
<tr>
<td>235</td>
<td>0.350</td>
</tr>
<tr>
<td>240</td>
<td>0.400</td>
</tr>
<tr>
<td>245</td>
<td>0.450</td>
</tr>
<tr>
<td>250</td>
<td>0.500</td>
</tr>
<tr>
<td>255</td>
<td>0.550</td>
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<tr>
<td>260</td>
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<td>265</td>
<td>0.650</td>
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<td>270</td>
<td>0.700</td>
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<tr>
<td>275</td>
<td>0.750</td>
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<tr>
<td>280</td>
<td>0.800</td>
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<tr>
<td>285</td>
<td>0.850</td>
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<tr>
<td>295</td>
<td>0.950</td>
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<tr>
<td>300</td>
<td>1.000</td>
</tr>
<tr>
<td>312</td>
<td>1.250</td>
</tr>
<tr>
<td>410</td>
<td>1.000</td>
</tr>
<tr>
<td>512</td>
<td>1.250</td>
</tr>
</tbody>
</table>

Notes:
1. Only available when tied to a protected pole
2. Requires special P/N consult factory for details
3. Requires P/T rated for continuous duty - use instantaneous delay code 10
4. 440VDC Rating available in two different wiring configurations. See next page for more details
5. 600VDC only available with factory installed terminal bus (see next page for more details)
6. Single pole units available up to 125A, multi pole units limited to 115A Max. (see next page for more details)
7. 3 Pole units must include one Auxiliary switch pole (circuit code A or G) - Requires Special Part Number. See next page for more details
8. Screw Terminals are limited to 50A Max.
9. Agency approval code W only available with 440VDC rating & circuit code B.
10. 4 Pole 600VDC units only available up to 75A Max. (see next page for more details)

### 8 TERMINAL
- 2: Screw, 10-32
- 3: Stud, 1/4-20
- 5: Screw, M5
- 6: Stud, M6

### 9 ACTUATOR COLOR & LEGEND
<table>
<thead>
<tr>
<th>Actuator Color</th>
<th>I-O</th>
<th>ON-OFF</th>
<th>Dual</th>
<th>Legend Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>A</td>
<td>B</td>
<td>1</td>
<td>Black</td>
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<tr>
<td>Black</td>
<td>C</td>
<td>D</td>
<td>2</td>
<td>White</td>
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<tr>
<td>Red</td>
<td>F</td>
<td>G</td>
<td>3</td>
<td>White</td>
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<td>Green</td>
<td>H</td>
<td>J</td>
<td>4</td>
<td>Red</td>
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</tr>
<tr>
<td>Yellow</td>
<td>M</td>
<td>N</td>
<td>6</td>
<td>Yellow</td>
</tr>
<tr>
<td>Gray</td>
<td>P</td>
<td>Q</td>
<td>7</td>
<td>Black</td>
</tr>
<tr>
<td>Orange</td>
<td>R</td>
<td>S</td>
<td>8</td>
<td>Orange</td>
</tr>
</tbody>
</table>

### 10 MOUNTING INSERTS
- A: 6-32 Thread
- B: M3 Thread

### 11 MAX. APPLICATION RATING
- 10: 300VDC
- 11: 440 VDC without factory installed terminal bus 4
- 14: 440VDC with factory installed terminal bus 4
- 06: 600VDC 5

### 12 AGENCY APPROVAL
- A: Without Approvals
- C: UL 1077 Recognized
- W: UL 1077 Recognized & TUV Certified IEC/ EN 60947-2

Notes:
- 1: Only available when tied to a protected pole
- 2: Voltage trip circuit coil not rated for continuous duty - use instantaneous delay code 10
- 3: Contacts Rated for 20A @ 80 VDC
- 4: 440VDC Rating available in two different wiring configurations. See next page for more details
- 5: 600VDC only available with factory installed terminal bus (see next page for more details)
- 6: Single pole units available up to 125A, multi pole units limited to 115A Max. (see next page for more details)
- 7: 3 Pole units must include one Auxiliary switch pole (circuit code A or G) - Requires Special Part Number. See next page for more details
- 8: Screw Terminals are limited to 50A Max.
- 9: Agency approval code W only available with 440VDC rating & circuit code B.
- 10: 4 Pole 600VDC units only available up to 75A Max. (see next page for more details)
### Dimensional Specifications: in. [mm]

#### 1 POLE

**CX1**

- 1 Pole Circuit Breaker
- (250 VDC)
- SHOWN WITH STUD TERMINAL CONFIGURATION

- 0.755 [19.18] MAXIMUM
- 0.380 [9.65]

**TERMINAL CONFIGURATION**

- 2.062±0.020 [52.37±0.50]
- 78.59 ±0.50
- 0.124 [3.16]
- 0.579 [14.72]
- 0.502 [12.75]

- 1.719 [43.66]
- 0.078 TYP [1.98]

#### 2 POLE

**CX2**

- 2 Pole Circuit Breaker
- (250/500 VDC)
- (205/410 VDC)
- SHOWN WITH SCREW TERMINAL CONFIGURATION

- 1.515 [38.61] MAXIMUM
- 0.746 [18.90]

**TERMINAL CONFIGURATION**

- 2.736 [69.49] (WITH SCREW TERMINAL)
- 2.259 [57.38]
- 3.672 [93.268]

- 2.946 [74.83] (WITH STUD TERMINAL)
- 3.276 [83.21] (UNFOLDED BARRIER)

**Panel Cutout Detail**

- 0.760 [19.30]
- 1.062 [26.97]
- 2.062 [52.37]
- 0.625 [15.88]
- 0.750 TYP [19.05]

- 0.078 TYP [1.98]
- 1.520 [38.61]

**TOLERANCES ±.005 [.12]**

**Notes:**
1. All dimensions are in inches [millimeters].
2. Tolerance ±0.005 [.12] unless otherwise specified.
Note 1: All dimensions are in inches [millimeters].

Note 2: Pole configuration supplied with voltage coil in center pole. (Pole 3)

Note 3: Line & Load connections require bus connection as shown. Minimum cross selection .127 in² (81.94 mm²)
Dimensional Specifications: in. [mm]

Notes:
1. All dimensions are in inches [millimeters].
2. 600V Rating requires minimum of 2 protected poles.
C-Series
CIRCUIT BREAKER

The C-Series hydraulic-magnetic circuit breakers are ideal for applications that require higher amperage and voltage handling capability in a smaller package. They are available in 1-6 poles, 0.02-100amps, UL Recognized up to 480VAC or 150VDC, UL489 Listed up to 240VAC or 125VDC, with choice of time delays, terminal options, actuator styles and colors. The C-Series employs a unique arc chute design which allows for higher interrupting capacities of up to 10,000 amps. Thermoset glass filled polyester half shell construction provides for increased mechanical and electrical strength. The wiping contacts mechanical linkage, with two step actuation, cleans contacts providing high, positive contact pressure and longer contact life. Available with American Standard or Metric Threaded Stud terminals, or Saddle Clamp screw terminals. The optional mid-trip handle style actuator allows a visual indication of electrical overload with or without alarm feature.

Product Highlights:
- Extensive list of Agency Approvals
- Available with Standard or Metric Stud terminals, or Saddle Clamp screw terminals
- Optional mid-trip handle style actuator
- Unique arc chute design which allows for higher interrupting capacities of up to 10,000 amps
- Exclusive Rockerguard and Push-To-Reset bezel
- Available with new solid color and two-color Visirocker® actuators
- New thermoset glass filled polyester half shell construction

Only Renewable Energy applicable ordering schemes and drawings are shown in this catalog. For complete product details, please visit www.carlingtech.com
C-Series Circuit Breaker - General Specifications

**Electrical**

- **Maximum Voltage**: AC, 480 WYE/277 VAC, 50/60 Hz (see Table A.) UL489: AC, 240 VAC. (See Table D), 50/60 Hz, 125 VDC
- **Current Rating**: Standard current coils: 0.100, 0.250, 0.500, 0.750, 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 25.0, 30.0, 35.0, 40.0, 50.0, 60.0, 70.0, 80.0, 90.0 and 100 amps. Other ratings available, see Ordering Scheme.
- **Standard Voltage Coils**: DC - 6V, 12V; AC - 120V; other ratings available, see Ordering Scheme.
- **Auxiliary Switch Rating**: SPDT; 1.0A, 65 VDC. 0.5A, 80VDC; 1/4 HP, 125VAC, VDE & TUV 1.0 125 VAC.
- **Insulation Resistance**: Minimum of 100 Megohms at 500 VDC.
- **Dielectric Strength**: UL, CSA: 1960 V 50/60 Hz for one minute between all electrically isolated terminals. C-Series Circuit Breakers comply with the 8mm dielectric requirements from hazardous voltage to operator accessible surfaces, between adjacent poles and from main circuits to auxiliary circuits per Publications EN 60950 and VDE 0805.
- **Resistivity, Impedance**: Values from Line to Load Terminal - based on Series Trip Circuit Breaker.

**Pulse Tolerance Curves**

- **Henry Series**: <0.001
- **Ohm Series**: <0.00001
- **Ampere Rating**: <0.001

**Mechanical**

- **Endurance**: 10,000 ON-OFF operations @ 6 per minute; with rated current & voltage.
- **Trip Free**: All C-Series circuit breakers will trip on overload, even when actuator is forcibly held in the ON position.
- **Trip Indication**: When an overload causes the breaker to trip. With mid-trip, handle moves to the mid position on electrical trip of the circuit breaker. With mid prop handle with alarm switch, handle moves to the mid position and the alarm switch actuates when the circuit breaker is electrically tripped.

**Physical**

- **Number of Poles**: 1-6 poles ≤ 50A; 1-4 poles ≤ 51-70A; 1-2 poles 71-100A. UL489 Handle: 1 pole ≤ 100A, 2 pole ≤ 50A; Rocker: 1 pole ≤ 100A.
- **Internal Circuit Config.**: Series (with or without auxiliary switch, mid trip & mid trip with alarm switch) Shunt & Relay with current or voltage trip coils, Dual Coil, Switch Only (with or without aux. switch). UL489: Series (with or without auxiliary switch, mid-trip & midtrip with alarm switch).
- **Weight**: Approx. 112 grams/pole (3.95 oz).
- **Standard Colors**: Housing: Black

**Environmental**

- **Designed and tested in accordance with requirements of specification MIL-PRF-55629 & MIL-STD-202 as follows:**
- **Shock**: Withstands 100 Gs, 6ms sawtooth while carrying rated current per Method 213, Test Condition “I”. Instantaneous and ultrashort curves tested @ 90% of rated current.
- **Vibration**: Withstands 0.060° excursion from 10-55 Hz & 10 Gs 55-500 Hz, @ rated current per Method 204C, Test Cond. A. Instantaneous & ultrashort curves tested @ 90% 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 C to +85°C to +25°C).
- **Operating Temperature**: -40°C to +85°C

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

#### Table A: Lists UL Recognized & CSA Accepted configurations and performance capabilities as a component supplementary protector

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Short Circuit Capacity (Amps)</th>
<th>Application Codes</th>
<th>Construction Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. Rating</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 - 100</td>
<td>---</td>
<td>---</td>
<td>--- 5,000</td>
<td>TC1, OL1, U2, TC1, OL1, U2</td>
</tr>
<tr>
<td>48 DC</td>
<td>0.02 - 70</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>65 DC</td>
<td>0.02 - 70</td>
<td>---</td>
<td>---</td>
<td>7,500 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>80 DC</td>
<td>0.02 - 100</td>
<td>---</td>
<td>---</td>
<td>10,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>125 DC</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>125/250 DC</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>250 DC</td>
<td>0.02 - 100</td>
<td>---</td>
<td>---</td>
<td>3,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>125/250 DC</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>Must have Agency &quot;L&quot;</td>
</tr>
<tr>
<td>150 DC</td>
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<td>80-100</td>
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<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>125/250 50/60</td>
<td>0.02 - 100</td>
<td>---</td>
<td>---</td>
<td>3,500 TC1, OL1, U2, TC1, OL1, U2</td>
<td>2 or 3 poles breaking single phase</td>
</tr>
<tr>
<td>250 50/60</td>
<td>0.02 - 100</td>
<td>---</td>
<td>---</td>
<td>3,500 TC1, OL1, U2, TC1, OL1, U2</td>
<td>2 or 3 poles breaking single phase. Agency &quot;L&quot;</td>
</tr>
<tr>
<td>125 50/60</td>
<td>0.02 - 100</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>Must have Agency &quot;L&quot;</td>
<td></td>
</tr>
<tr>
<td>277 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>480/277 50/60</td>
<td>0.02 - 30</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>480 50/60</td>
<td>0.02 - 30</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>2 poles breaking 1 phase</td>
</tr>
<tr>
<td>80 DC</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>7,500 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>125 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>3,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>125/250 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>3,500 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>250 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>3,500 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>125/250 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>277 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>Must have Agency &quot;L&quot;</td>
</tr>
<tr>
<td>480/277 50/60</td>
<td>0.02 - 30</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>480 50/60</td>
<td>0.02 - 30</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>80 DC</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>7,500 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>250 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>2 poles breaking 1 phase</td>
</tr>
<tr>
<td>277 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>3 poles breaking 3 phase</td>
</tr>
<tr>
<td>80 DC</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>7,500 TC1, OL1, U2, TC1, OL1, U2</td>
<td></td>
</tr>
<tr>
<td>250 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>3 poles breaking 3 phase</td>
</tr>
<tr>
<td>277 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>3 poles breaking 3 phase</td>
</tr>
<tr>
<td>250 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>3 poles breaking 3 phase</td>
</tr>
<tr>
<td>250 50/60</td>
<td>0.02 - 50</td>
<td>---</td>
<td>---</td>
<td>5,000 TC1, OL1, U2, TC1, OL1, U2</td>
<td>3 poles breaking 3 phase</td>
</tr>
</tbody>
</table>

**Notes:**
1. Requires branch circuit backup with a UL LISTED Type K5 or RK5 fuse rated 15A minimum and no more than 4 times full load amps not to exceed 125A for 50 Amp or less rating and not to exceed 175 for 51 through 100 Amp rating.

www.carlingtech.com
## Electrical Tables

### Table B: Lists UL Recognized and CSA Accepted configurations and performance capabilities as a Manual Motor Controller.

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Horsepower Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. Rating</td>
<td>Frequency</td>
<td>Phase</td>
</tr>
<tr>
<td>Series, Shunt &amp; Relay Switch Only</td>
<td>120 1</td>
<td>50 / 60</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>250 1</td>
<td>50 / 60</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>277 1</td>
<td>50 / 60</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>480 2</td>
<td>50 / 60</td>
<td>3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Short Circuit Capacity (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. Rating</td>
<td>Frequency</td>
<td>Phase</td>
</tr>
<tr>
<td>Series 125 DC</td>
<td>80 DC</td>
<td>---</td>
<td>0.10 - 70</td>
</tr>
<tr>
<td></td>
<td>125 DC</td>
<td>---</td>
<td>0.10 - 50</td>
</tr>
<tr>
<td></td>
<td>250 DC</td>
<td>---</td>
<td>0.10 - 70</td>
</tr>
<tr>
<td></td>
<td>415 DC</td>
<td>---</td>
<td>0.10 - 30</td>
</tr>
<tr>
<td>Dual Coil 80 DC</td>
<td>250 50 / 60</td>
<td>1 &amp; 3</td>
<td>0.10 - 30</td>
</tr>
<tr>
<td>Shunt 80 DC</td>
<td>250 50 / 60</td>
<td>1 &amp; 3</td>
<td>0.10 - 70</td>
</tr>
</tbody>
</table>

### Table D: Lists UL Listed (489), CSA Certified (C22.2 No. 5.1-M) configuration and performance capabilities as a Molded Case Circuit Breaker.

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Interrupting Capacity (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. Rating</td>
<td>Frequency</td>
<td>Phase</td>
</tr>
<tr>
<td>Series 80 DC</td>
<td>---</td>
<td>0.10 - 100</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>125 DC</td>
<td>---</td>
<td>0.10 - 100</td>
</tr>
<tr>
<td></td>
<td>151 - 250</td>
<td>---</td>
<td>10,000</td>
</tr>
<tr>
<td>125 / 250 DC</td>
<td>---</td>
<td>0.10 - 50</td>
<td>---</td>
</tr>
<tr>
<td>120 DC</td>
<td>50 / 60</td>
<td>1</td>
<td>0.10 - 50</td>
</tr>
<tr>
<td></td>
<td>51 - 70</td>
<td>---</td>
<td>5,000</td>
</tr>
<tr>
<td>120 / 240 DC</td>
<td>50 / 60</td>
<td>1</td>
<td>0.10 - 50</td>
</tr>
<tr>
<td></td>
<td>240</td>
<td>50 / 60</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>277</td>
<td>50 / 60</td>
<td>1</td>
</tr>
<tr>
<td>Dual Coil 120 DC</td>
<td>50 / 60</td>
<td>1</td>
<td>0.10 - 30</td>
</tr>
</tbody>
</table>

Notes:
1. Requires branch circuit backup with a UL Listed Type K5 or RK5 fuse rated 15A minimum and no more than 4 times full load amps not to exceed 125A for 50 Amp or less rating and not to exceed 175A for 51 through 100A rating.
2. UL Recognized and CSA Certified at 480V refers to 3 and 4 pole versions used in a 3Ø, WYE connected circuit or a 2 pole version with 2 poles breaking 1Ø and backed up with a series fusing as stated in note 1.
3. Shunt and Relay Trip - Voltage Coil Construction not current coils.
C-Series Circuit Breaker - General Specifications

Electrical Tables

Table E: Lists UL Recognized, CSA Accepted configurations and performance capabilities as Protectors, Supplementary for Marine Electrical and Fuel Systems (Guide PEQZ2, File E75596). Ignition Protected per UL 1500. UL Classified Small Craft Electrical Devices, Marine in accordance with ISO 8846 (Guide UZMK, File MQ1515) as Marine Supplementary Protectors.

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Interrupting Capacity (Amps)</th>
<th>Application Codes</th>
<th>Construction Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. Rating</td>
<td>Frequency</td>
<td>Phase</td>
<td>Full Load Amps</td>
<td>Without Backup Fuse</td>
</tr>
<tr>
<td>Series 48 DC</td>
<td>48 DC</td>
<td>---</td>
<td>0.02 - 100</td>
<td>5,000</td>
<td>TC1, 2, OL1, U1</td>
</tr>
<tr>
<td>65 DC</td>
<td>65 DC</td>
<td>---</td>
<td>0.02 - 100</td>
<td>1,500</td>
<td>TC1, 2, OL0, U1</td>
</tr>
<tr>
<td>80 DC</td>
<td>80 DC</td>
<td>---</td>
<td>0.02 - 70</td>
<td>1,500</td>
<td>TC1, 2, OL1, U1</td>
</tr>
<tr>
<td>125 50 / 60</td>
<td>125 50 / 60</td>
<td>1</td>
<td>0.02 - 70</td>
<td>5,000</td>
<td>TC1, 2, OL1, U1</td>
</tr>
<tr>
<td>125 50 / 60</td>
<td>125 50 / 60</td>
<td>1</td>
<td>71 - 100</td>
<td>1,500</td>
<td>TC1, 2, OL1, U1</td>
</tr>
</tbody>
</table>

Table F: Lists UL Listed configurations and performance capabilities as Circuit Breakers for use in Communications Equipment (Guide DITT, File E189195), under UL489A.

<table>
<thead>
<tr>
<th>Circuit Configuration</th>
<th>Voltage</th>
<th>Current Rating</th>
<th>Interrupting Capacity (Amps)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Max. Rating</td>
<td>Frequency</td>
<td>General Purpose Amps</td>
</tr>
<tr>
<td>Series 80 DC</td>
<td>80 DC</td>
<td>100 - 250</td>
<td>10,000</td>
</tr>
</tbody>
</table>

Agency Certifications

**UL Recognized**
- UL Standard 1077

**CSA Accepted**
- Component Recognition Program as Protectors Supplementary (Guide CCN/QVNU2, File E75596)

**UL Standard 508**
- Switches, Industrial Control (Guide CCN/NRNT2, File E148683)

**CSA Certified**
- Circuit Breaker Model Case (Class 1432 01, File 093910), CSA Standard C22.2 No. 5.1 - M

**UL Standard 1500**
- Protectors, Supplementary for Marine Electrical & Fuel Systems (Guide PEQZ2, File E75596) Ignition Protection

**TUV Certified**
- EN60934, under License No. R72040875

**UL Listed**
- UL Standard 489

**VDE Certified**
- EN60934, VDE 0642 under File No. 10537

**UL Listed**
- UL Standard 489A

**Communications Equipment** (Guide CCN/DITT, File E189195)
## C-Series Circuit Breaker - Handle UL489 Listed - Ordering Scheme

### 1 SERIES
- **C**: A

### 2 ACTUATOR
- **A**: Handle, one per pole
- **B**: Handle, one per multipole unit
- **C**: Mid-Trip Handle, one per pole
- **T**: Mid-Trip Handle, one per pole & Alarm Switch

### 3 POLES
- **2**: Two
- **3**: Three

### 4 CIRCUIT
- **B**: Series Trip (Current)

### 5 AUXILIARY / ALARM SWITCH
- **0**: without Aux Switch
- **1**: S.P.D.T., 0.139 Q.C. Term.
- **2**: S.P.D.T., 0.139 Solder Lug
- **3**: S.P.D.T., 0.110 Q.C. Term.
- **4**: S.P.D.T., 0.110 Q.C. Term. (Gold Contacts)

### 6 FREQUENCY & DELAY
- **11**: DC Ultra Short
- **12**: DC Short
- **14**: DC Medium
- **16**: DC Long
- **21**: 50/60Hz Ultra Short
- **22**: 50/60Hz Short
- **24**: 50/60Hz Medium

### 7 CURRENT RATING (AMPERES)

<table>
<thead>
<tr>
<th>Code</th>
<th>Ampere</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>0.100</td>
</tr>
<tr>
<td>215</td>
<td>0.150</td>
</tr>
<tr>
<td>220</td>
<td>0.200</td>
</tr>
<tr>
<td>225</td>
<td>0.250</td>
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<tr>
<td>230</td>
<td>0.300</td>
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<tr>
<td>235</td>
<td>0.350</td>
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<tr>
<td>240</td>
<td>0.400</td>
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<tr>
<td>245</td>
<td>0.450</td>
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<tr>
<td>250</td>
<td>0.500</td>
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<tr>
<td>255</td>
<td>0.550</td>
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<tr>
<td>260</td>
<td>0.600</td>
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<tr>
<td>265</td>
<td>0.650</td>
</tr>
<tr>
<td>270</td>
<td>0.700</td>
</tr>
<tr>
<td>275</td>
<td>0.750</td>
</tr>
<tr>
<td>280</td>
<td>0.800</td>
</tr>
<tr>
<td>285</td>
<td>0.850</td>
</tr>
<tr>
<td>290</td>
<td>0.900</td>
</tr>
</tbody>
</table>

### 8 TERMINAL
- **1**: Stud 10-32
- **2**: Screw 10-32
- **3**: Stud 1/4-20
- **4**: Stud M5 x 0.8
- **5**: Screw M5 x 0.8

### 9 ACTUATOR COLOR & LEGEND
- **A**: Black
- **B**: White
- **C**: Black
- **D**: White
- **G**: Black
- **J**: Black

### 10 MOUNTING / BARRIERS

#### MOUNTING STYLE
- **Threaded Insert**: 6-32 x 0.195 inches
- **ISO M3 x 5mm**: 1.500

### 11 MAXIMUM APPLICATION RATING

<table>
<thead>
<tr>
<th>Code</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>65 DC</td>
</tr>
<tr>
<td>B</td>
<td>125 DC</td>
</tr>
<tr>
<td>C</td>
<td>120/240 AC</td>
</tr>
<tr>
<td>D</td>
<td>240 AC</td>
</tr>
<tr>
<td>K</td>
<td>120 AC</td>
</tr>
<tr>
<td>F</td>
<td>277 AC</td>
</tr>
<tr>
<td>M</td>
<td>80 DC</td>
</tr>
</tbody>
</table>

### 12 AGENCY APPROVAL
- **A**: without approvals
- **F**: UL489 Listed, CSA Certified & VDE Certified
- **G**: UL489 Listed & CSA Certified
- **J**: UL489 Listed, CSA Certified & TUV Certified

---

Notes:
1. **Actuator Code**:
   - **A**: Handle tie pin spacer(s) and retainers provided assembled with multi-pole units.
   - **B**: Handle located, as viewed from front of breaker in left pole, 2 pole maximum.
   - **S**: Handle moves to mid-position only upon electrical trip of the breaker.
   - **T**: Handle moves to mid-position and alarm switch activates only upon electrical trip of the breaker.

2. **Standard multipole units have all poles identical except when specifying auxiliary switch and/or mixed poles.**
   - **2 & 3 pole circuit breakers required for 120/240 VAC (Maximum application rating code C) applications, have all poles identical except when specifying auxiliary switch and/or mixed poles.**

3. **On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.**
   - VDE approval on auxiliary switch code 2, 3 & 4 only.
   - Auxiliary / Alarm Switch with Independent Circuit ie: separate from breaker circuit, only available with circuit breakers rated 50 amp maximum at 80 VDC, 125 VDC, and 200 VAC. Auxiliary / Alarm Switch with Dependent Circuit ie: same as circuit breaker, is supplied from factory with common terminal of auxiliary / alarm switch connected to line terminal on 120/240 and 240 VAC ratings. Circuit breakers rated 120 VAC 50 amp maximum can be supplied with Auxiliary/Alarm switch common terminal connected to breaker line terminal. Consult factory for special catalog number.

4. **Available up to 50 amps maximum.**
5. **Current ratings 71 - 100 with VDE approvals are available up to two poles maximum.**

6. **Terminal Codes 9 & C are not VDE approved.**
7. **Terminal Code available to 60 amps maximum.**
8. **Terminal Codes 2, 4, 5 & G available to 50 amps maximum.**
9. **Terminal Codes 3, 6 & 9 available to 100 amps maximum.**
10. **Terminal Code A available to 100 amps maximum.**
11. **VDE and TUV approvals require Dual (I-O, ON-OFF) markings on all handles.**
12. **Barriers supplied on multi-pole units only.**

---

www.carlingtech.com
C-Series Circuit Breaker - Rocker UL Recognized – Ordering Scheme

1 SERIES
C

2 ACTUATOR

Two Color Visi-Rocker
A Indicate ON, vertical legend
B Indicate ON, horizontal legend
C Indicate OFF, vertical legend
D Indicate OFF, horizontal legend
E Indicate ON, no legend
F Indicate OFF, no legend

Push-To-Reset, Visi-Rocker
G Indicate OFF, vertical legend
H Indicate OFF, horizontal legend
I Indicate ON, no legend
J Indicate OFF, no legend

Single color
K Vertical legend
L Horizontal legend
M No legend

Push-To-Reset, Single color
N Vertical legend
O Horizontal legend
P No legend

3 POLES

1 One
2 Two
3 Three

4 CIRCUIT

A Switch Only (No Coil)
B Series Trip (Current)
C Series Trip (Voltage Coil)
D Shunt Trip (Current)
E Shunt Trip (Voltage)

6 FREQUENCY & DELAY

03 DC 50/60Hz, Switch Only
04 DC 50/60Hz Instantaneous
07 DC Instantaneous
09 DC Ultra Short
10 DC Short
11 DC Medium
12 DC Long
13 Ultra Short
14 Ultra Medium
15 Ultra Long
16 DC Long
17 50/60Hz Instantaneous
18 50/60Hz Ultra Short
19 50/60Hz Medium
20 50/60Hz Long
21 50/60Hz Short
22 60Hz Medium
23 60Hz Long
24 60Hz Short
25 60Hz Medium
26 60Hz Long

6 AUXILIARY / ALARM SWITCH

0 No with Aux Switch
S P.D.T. 0.110 Q.C. Term.
T P.D.T. 0.110 Solder Lug
U P.D.T. 0.110 Q.C. Term. (Gold Contacts)

7 CURRENT RATING (AMPERES)

700 0.200 470 1.200
750 0.250 485 1.500
800 0.300 500 1.800
850 0.350 515 2.100
900 0.400 525 2.400
950 0.450 535 2.700
1000 0.500 545 3.000
1050 0.550 555 3.300
1100 0.600 565 3.600
1150 0.650 575 3.900
1200 0.700 585 4.200
1250 0.750 595 4.500
1300 0.800 605 4.800
1350 0.850 615 5.100
1400 0.900 625 5.400
1450 0.950 635 5.700
1500 1.000 645 6.000
1550 1.050 655 6.300
1600 1.100 665 6.600
1650 1.150 675 6.900
1700 1.200 685 7.200
1750 1.250 695 7.500
1800 1.300 705 7.800
1850 1.350 715 8.100
1900 1.400 725 8.400
1950 1.450 735 8.700
2000 1.500 745 9.000
2050 1.550 755 9.300
2100 1.600 765 9.600

OR VOLTAGE COIL (NORMAL RATED VOLTAGE)

A02 6 DC A32 32 DC J12 12 AC J65 65 AC
A12 12 DC A48 48 DC J18 18 AC K20 20 AC
A18 18 DC A65 65 AC J24 24 AC L40 40 AC
A24 24 DC J06 6 AC J48 48 AC

9 ACTUATOR COLOR & LEGEND

Actuator or
Visi-Color: I-O ON-OFF Dual/None Rocker/Handle Visi-Rocker

9.1 Marking: Single Color

9.2 Marking: Rocker/Handle Visi-Rocker

White
Red
Green
Yellow
Gray
Orange

9.3 Marking: Voltage Coil (Normal Rated Voltage)

A18 18 DC A32 32 DC J12 12 AC J65 65 AC
A12 12 DC A48 48 DC J18 18 AC K20 20 AC
A18 18 DC A65 65 AC J24 24 AC L40 20 AC
A24 24 DC J06 6 AC J48 48 AC

10 MOUNTING BARRIERS

BARRIERS

1 6-32 x 0.195 inches no <300
2 6-32 x 0.195 inches yes <300
3 6-32 x 0.195 inches yes ≥300
4 ISO M3 x 5mm no <300
5 ISO M3 x 5mm yes <300
6 ISO M3 x 5mm yes ≥300

ROCKERGUARD BEZEL

A 6-32 x 0.195 inches no <300
B 6-32 x 0.195 inches yes <300
C 6-32 x 0.195 inches yes ≥300
D 6-32 x 0.195 inches no <300
E 6-32 x 0.195 inches yes <300
F 6-32 x 0.195 inches yes ≥300

PUSH-TO-RESET BEZEL

A 6-32 x 0.195 inches no <300
B 6-32 x 0.195 inches yes <300
C 6-32 x 0.195 inches yes ≥300

11 AGENCY APPROVAL

C UL Recognized & CSA Accepted
D VDE Certified, UL Recognized & CSA Accepted
E TUV Certified, UL Recognized & CSA Accepted
F UL489 Construction: VDE Certified, UL Recognized & CSA Accepted
I UL Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted
J UL 489 Construction: UL Recognized & CSA Accepted
K UL 489 Construction: VDE Certified, UL Recognized & CSA Accepted

VDE/TUV 30 amps max.; UL/CSciA 50 amps max.; Available in 2-4 poles only and limited to AC Delays. “General Purpose amps” not rated for “full load amps” or to be used in applications with a motor.
### C-Series Circuit Breaker - Rocker UL Listed – Ordering Scheme

#### 1 SERIES

- **C**

#### 2 ACTUATOR

- **Single color**
  - **C** Indicate ON, vertical legend
  - **D** Indicate ON, horizontal legend
  - **F** Indicate OFF, vertical legend
  - **G** Indicate OFF, horizontal legend

<table>
<thead>
<tr>
<th>Rocker Style Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LINE</strong></td>
</tr>
<tr>
<td>Vertical</td>
</tr>
<tr>
<td>Horizontal</td>
</tr>
</tbody>
</table>

#### 3 POLES

- **1** One
- **2** Two
- **3** Three

#### 4 CIRCUIT

- **B** Series Trip (current)

#### 5 AUXILIARY / ALARM SWITCH

- **0** without Aux Switch
- **2** S.P.D.T., 0.110 Q.C. Term. (Gold Contacts)
- **3** S.P.D.T., 0.139 Solder Lug
- **9** S.P.D.T., 0.187 Q.C. Term.

#### 6 FREQUENCY & DELAY

<table>
<thead>
<tr>
<th>Term</th>
<th>Code</th>
<th>Frequency &amp; Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>42g</td>
<td>50/60Hz Short, Hi-Inrush</td>
</tr>
<tr>
<td>12</td>
<td>44g</td>
<td>50/60Hz Medium, Hi-Inrush</td>
</tr>
<tr>
<td>14</td>
<td>46g</td>
<td>50/60Hz Long, Hi-Inrush</td>
</tr>
<tr>
<td>16</td>
<td>48g</td>
<td>50/60Hz Short, Hi-Inrush</td>
</tr>
<tr>
<td>21</td>
<td>52g</td>
<td>50/60Hz Ultra Short</td>
</tr>
<tr>
<td>22</td>
<td>54g</td>
<td>50/60Hz Medium</td>
</tr>
<tr>
<td>24</td>
<td>56g</td>
<td>50/60Hz Long</td>
</tr>
</tbody>
</table>

#### 7 CURRENT RATING (AMPERES)

<table>
<thead>
<tr>
<th>Code</th>
<th>Amps</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>1.000</td>
<td>0.950</td>
</tr>
<tr>
<td>215</td>
<td>1.500</td>
<td>1.000</td>
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<tr>
<td>220</td>
<td>2.000</td>
<td>1.250</td>
</tr>
<tr>
<td>225</td>
<td>2.500</td>
<td>1.500</td>
</tr>
<tr>
<td>230</td>
<td>3.000</td>
<td>1.750</td>
</tr>
<tr>
<td>235</td>
<td>3.500</td>
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<td>285</td>
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<td>4.800</td>
</tr>
<tr>
<td>290</td>
<td>9.000</td>
<td>5.000</td>
</tr>
</tbody>
</table>

#### 8 TERMINAL

- **1** Stud 10-32
- **2** Screws 10-32 with saddle & washer clamps
- **3** Stud 1/4-20
- **4** Stud M6 x 0.8
- **5** Screw M6 x 0.8 with saddle & washer clamps

#### 9 ACTUATOR COLOR & LEGEND

<table>
<thead>
<tr>
<th>Actuator or Visi-Rocker</th>
<th>Marking</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON-OFF</td>
<td>10 x 2</td>
<td>White</td>
</tr>
<tr>
<td>Rocker/Handle</td>
<td>10 x 2</td>
<td>Black</td>
</tr>
<tr>
<td>Rocker/Handle Visi-Rocker</td>
<td>10 x 2</td>
<td>Black</td>
</tr>
</tbody>
</table>

#### 10 MOUNTING / BARRIERS

- **A** 6-32 x 0.195 inches
- **B** ISO M3 x 5 mm
- **C** 5/16” Clip Terminal
- **D** Stud M6
- **E** 7/16” Clip Terminal
- **F** Stud M6
- **G** 7/16” Clip Terminal
- **H** Stud M6

#### 11 MAXIMUM APPLICATION RATING

<table>
<thead>
<tr>
<th>Agency</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>65 DC</td>
</tr>
<tr>
<td>B</td>
<td>125 DC</td>
</tr>
<tr>
<td>C</td>
<td>120/240 AC</td>
</tr>
<tr>
<td>D</td>
<td>240 AC</td>
</tr>
<tr>
<td>E</td>
<td>277 AC</td>
</tr>
<tr>
<td>F</td>
<td>120 AC</td>
</tr>
<tr>
<td>G</td>
<td>80 DC</td>
</tr>
</tbody>
</table>

#### 12 AGENCY APPROVAL

- **A** without approvals
- **B** UL Listed
- **C** CSA Certified
- **D** TUV Certificated
- **E** UL Listed
- **F** CSA Certified
- **G** TUV Certificated
- **H** UL Listed
- **I** CSA Certified
- **J** TUV Certificated

Notes:
1. Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.
2. On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.
3. Available up to 50 amps maximum.
4. Current ratings 71 - 100 with VDE approvals are available up to two poles maximum.
5. Terminal Code 1 available to 60 amps maximum.
6. Terminal Codes 2, 4, 5 & C available to 50 amps maximum.
7. Terminal Codes 3, 6, 9 & A available to 100 amps maximum.
8. Terminal Codes 9 & C are not VDE approved.
9. Color shown is visi and legend with remainder of rocker black.
10. Dual = ON-OFF:1-0 legend on actuator.
11. VDE and TUV approval requires Dual (I-O, ON-OFF) markings on rocker.
12. Rocker guard available with all actuator codes.
13. Barriers supplied on multi-pole units only.
14. 2 & 3 pole circuit breakers required for 120/240 AC rating.

www.carlingtech.com
# C-Series Circuit Breaker - Sealed Toggle 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 Aux/Alarm Switch</th>
<th>6 Frequency &amp; Delay</th>
<th>7 Current Rating</th>
<th>8 Terminal</th>
<th>9 Legend Plate</th>
<th>10 Mounting Style</th>
<th>11 Agency Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</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

1. Sealed Toggle, one per pole

## 3 Poles

1. One Pole
2. Two Poles
3. Three Poles

## 4 Circuit

1. Switch Only (no coil)
2. Series Trip (current)
3. Shunt Trip (current)
4. Shunt Trip (voltage)

### 4 Switch Options

- **A**: Switch Only
- **B**: Series Trip
- **C**: Shunt Trip
- **D**: Voltage Coil

## 5 Auxiliary / Alarm Switch

0. Without Aux Switch
1. S.P.D.T., 0.139 O.C. Term.
2. S.P.D.T., 0.139 Solder Lug
3. S.P.D.T., 0.110 O.C. Term. (Gold Contacts)

## 6 Frequency & Delay

<table>
<thead>
<tr>
<th>Code</th>
<th>Frequency &amp; Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>DC 50/60Hz, Switch Only</td>
</tr>
<tr>
<td>04</td>
<td>DC Instantaneous</td>
</tr>
<tr>
<td>11</td>
<td>DC Ultra Short</td>
</tr>
<tr>
<td>12</td>
<td>DC Short</td>
</tr>
<tr>
<td>14</td>
<td>DC Medium</td>
</tr>
<tr>
<td>16</td>
<td>DC Long</td>
</tr>
<tr>
<td>20</td>
<td>50/60Hz Instantaneous</td>
</tr>
<tr>
<td>21</td>
<td>50/60Hz Ultra Short</td>
</tr>
<tr>
<td>22</td>
<td>50/60Hz Short</td>
</tr>
<tr>
<td>24</td>
<td>50/60Hz Medium</td>
</tr>
<tr>
<td>26</td>
<td>50/60Hz Long</td>
</tr>
</tbody>
</table>

## 7 Current Rating (Amperes)

<table>
<thead>
<tr>
<th>Code</th>
<th>Amperes</th>
</tr>
</thead>
<tbody>
<tr>
<td>020</td>
<td>0.020</td>
</tr>
<tr>
<td>025</td>
<td>0.025</td>
</tr>
<tr>
<td>030</td>
<td>0.030</td>
</tr>
<tr>
<td>035</td>
<td>0.035</td>
</tr>
<tr>
<td>040</td>
<td>0.040</td>
</tr>
<tr>
<td>045</td>
<td>0.045</td>
</tr>
<tr>
<td>050</td>
<td>0.050</td>
</tr>
<tr>
<td>055</td>
<td>0.055</td>
</tr>
<tr>
<td>060</td>
<td>0.060</td>
</tr>
<tr>
<td>065</td>
<td>0.065</td>
</tr>
<tr>
<td>070</td>
<td>0.070</td>
</tr>
<tr>
<td>075</td>
<td>0.075</td>
</tr>
<tr>
<td>080</td>
<td>0.080</td>
</tr>
<tr>
<td>085</td>
<td>0.085</td>
</tr>
<tr>
<td>090</td>
<td>0.090</td>
</tr>
<tr>
<td>095</td>
<td>0.095</td>
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<tr>
<td>100</td>
<td>0.100</td>
</tr>
<tr>
<td>105</td>
<td>0.105</td>
</tr>
<tr>
<td>110</td>
<td>0.110</td>
</tr>
<tr>
<td>115</td>
<td>0.115</td>
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<tr>
<td>120</td>
<td>0.120</td>
</tr>
<tr>
<td>125</td>
<td>0.125</td>
</tr>
<tr>
<td>130</td>
<td>0.130</td>
</tr>
</tbody>
</table>

## 8 Terminal

<table>
<thead>
<tr>
<th>Code</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stud 10-32</td>
</tr>
<tr>
<td>2</td>
<td>Screw 10-32</td>
</tr>
<tr>
<td>3</td>
<td>Stud 1/4-20</td>
</tr>
<tr>
<td>4</td>
<td>Screw M5 x 0.8</td>
</tr>
<tr>
<td>5</td>
<td>Screw M5 x 0.8</td>
</tr>
</tbody>
</table>

## 9 Legend Plate

0. No Legend

## 10 Mounting / Barriers

<table>
<thead>
<tr>
<th>Code</th>
<th>Mounting Style</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Standard Hex Nut (multi-pole units only)</td>
</tr>
</tbody>
</table>

## 11 Agency Approval

<table>
<thead>
<tr>
<th>Code</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>UL Recognized &amp; CSA Accepted</td>
</tr>
<tr>
<td>I</td>
<td>UL Recognized &amp; CSA Accepted, UL1500 ignition protection</td>
</tr>
</tbody>
</table>

### Notes:

1. Actuator Code M: Handle location as viewed from front of breaker:
   - 2 pole - right pole
   - 3 pole - center pole
2. Switch Only circuits, rated up to 50 amps and 3 poles, and only available with VDE.
   - For 0.2 to 30 amps, select Current Code 630. For 35 - 50 amps, select Current Code 650. For 55-70 amps, select Current Code 670. For 75-100 amps, select Current Code 810.
3. Circuit Codes D.E.F.G.H & K available with Terminal Codes 1, 2 & 4 only.
4. Consult factory for available Dual Coil options, as special catalog number is required. Dual Coil Voltage Coils with Shunt Trip Construction trip instantaneously on line voltage. Dual Coil Voltage Coils require 30VA minimum power to trip instantaneously and are rated for intermittent duty only.
5. Auxiliary Switch available with Series Trip and Switch Only circuits. On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.
7. Available with Circuit Codes B & D only, and up to 50 amps maximum.
8. Consult factory for current ratings 71-100, in three pole units, available as special catalog number only.
9. Terminal Code 1 available to 60 amps maximum.
10. Terminal Code 2 available to 50 amps maximum.
11. Terminal Code 3, 6 & 9 available to 100 amps maximum.
12. Terminal Code 7 available to 25 amps maximum.
13. Terminal Code A available to 100 amps maximum.

[www.carlingtech.com](http://www.carlingtech.com)
C-Series Circuit Breaker - Flat Rocker UL Recognized – Ordering Scheme

Two Color Visi-Rocker
1 Indicate OFF, vertical Legend
2 Indicate OFF, horizontal legend

Single Color
3 Vertical legend
4 Horizontal legend

Push-To-Reset, Visi-Rocker
5 Indicate OFF, vertical Legend
6 Indicate OFF, horizontal legend

Push-To-Reset, Single Color
7 Vertical legend
8 Horizontal legend

3 Poles
1 One
2 Two
3 Three

Circuit
A Switch Only (No Coil)
B Series Trip (Current)
C Trip Switch (Voltage)
D Shunt Trip (Shunt Voltage)
E Shunt Trip (Voltage)

Auxiliary / Alarm Switch
0 without Aux.
1 S.P.D.T. 0.110 Q.C. Term.
2 S.P.D.T. 0.119 Solder Lug
3 S.P.D.T. 0.110 Q.C. Term. (Gold Contacts)

6 Frequency & Delay
03 DC 50/60Hz, Switch Only
10 DC Instantaneous
11 DC Ultra Short
12 DC Short
14 DC Medium
16 DC Long
20 DC 50/60Hz Instantaneous
21 DC 50/60Hz Ultra Short
22 DC 50/60Hz Short
24 DC 50/60Hz Medium
26 DC 50/60Hz Long

7 Current Rating
1 Series
2 Actuator
3 Poles
4 Circuit
5 Aux/Alarm Switch
6 Frequency & Delay
7 Series
8 Terminal
9 Actuator Color
10 Mounting/Barriers
11 Agency Approval

Current Rating (Schedule)

ACTUATOR

Current Rating (Schedule)

Notes:
1 Push-to-reset actuators have OFF portion of rocker shrouded.

2 Multi-pole breakers have all poles identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker. Rocker location as viewed from front panel: 2 pole – left pole; 3 pole – center pole.

3 Switch Only circuits, rated up to 50 amps and 3 poles, and only available with VDE Certification when fed to a protected pole (Circuit Code B, C, D or H). For 32 to 300 amps, select Current Code 630. For 35 - 50 amp, select Current Code 650. For 55-70 amp, select Current Code 670. For 75-100 amp, select Current Code 810.

4 Circuit Codes D.E.F.G & H available with Terminal Codes 1.2, 4 & 5 only. Circuit Codes D,E,F & H available up to 50 amp maximum current Rating.

5 Consult factory for available Dual Coil options, as special catalog number is required. Dual Coil Voltages Coils with Shunt Trip Construction trip instantaneously on line voltage. Dual Coil Voltages Coils require 3/4mA minimum trip to trip instantaneously and are rated for intermittent duty only.

6 Auxiliary Switch available on Series Trip and Switch Only circuits. On multi-pole breakers, auxiliary switch is supplied, mounted in the extreme right pole. Auxiliary switch codes 3, 4 & are VDE approved.

7 Voltage Coils not rated for continuous duty. Available only with delay codes 10 and 20.

8 Available with Circuit Codes B & D only, and up to 50 amps maximum.

9 Current ratings 60-70 are available up to four poles maximum. Current ratings 71 - 100 are available up to two poles maximum.

10 Terminal Code 1 available to 60 amp maximum.

11 Terminal Codes 3, 4 & 5 available to 100 amp maximum.

12 Terminal Code 7 available to 25 amp maximum.

13 Terminal Code 8 available to 100 amp maximum.

14 Terminal Codes 5, 9 & 10 are not VDE approved.

15 Color shown is visi vs legend with remainder of rocker breaker. Dual + ON-OFF-I/O legend.

16 Legend on Push-to-reset bezel/shroud is white with single color actuator codes 7 & 8. Legend on Push-to-reset bezel/shroud is white with visi-color of rocker with actuator codes 5 & 6.

17 VDE/TUV approval requires Dual (I-O, I/O-F) or I/I markings on rocker.

18 VDE/TUV approval requires Dual (I-O, I/O-F) or I/I markings on rocker.

19 UL Recognized & CSA Accepted

20 UL/CSA: 50 amps max.; Available in 2 & 3 poles only and limited to AC Delays. "General Purpose" Amps not rated for "full load amps" or to be used in applications with a motor.

21 UL Recognized & CSA Accepted

22 UL Recognized & CSA Accepted

23 UL Recognized & CSA Accepted
# C-Series Circuit Breaker - Flat Rocker UL Listed – Ordering Scheme

## 1 SERIES

- **C**

## 2 ACTUATOR

<table>
<thead>
<tr>
<th>Two Color Visi-Rocker</th>
<th>Push-To-Reset, Visi-Rocker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Indicate OFF, vertical legend</td>
<td>5 Indicate OFF, vertical legend</td>
</tr>
<tr>
<td>2 Indicate OFF, horizontal legend</td>
<td>6 Indicate OFF, horizontal legend</td>
</tr>
<tr>
<td>3 Vertical legend</td>
<td>7 Vertical legend</td>
</tr>
<tr>
<td>4 Horizontal legend</td>
<td>8 Horizontal legend</td>
</tr>
</tbody>
</table>

### ROCKERS STYLE DESCRIPTIONS

<table>
<thead>
<tr>
<th>VERTICAL</th>
<th>SINGLE COLOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>CODE &quot;1&quot;, &quot;5&quot;</td>
<td>CODE &quot;3&quot;, &quot;7&quot;</td>
</tr>
</tbody>
</table>

### HORIZONTAL |

<table>
<thead>
<tr>
<th>CODE &quot;9&quot;, &quot;F&quot;</th>
</tr>
</thead>
</table>

## 3 POLES

- **1** One
- **2** Two
- **3** Three

## 4 CIRCUIT

- **B** Series Trip (current)

## 5 AUXILIARY / ALARM SWITCH

- **0** without Aux Switch
- **1** S.P.D.T., 0.110 Q.C. Term.
- **2** S.P.D.T., 0.139 Solder Lug Term.
- **3** S.P.D.T., 0.139 Solder Lug Term.
- **4** S.P.D.T., 0.110 Q.C. Term. (Gold Contacts)

## 6 FREQUENCY & DELAY

<table>
<thead>
<tr>
<th>Circuit Code</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>DC Ultra Short</td>
</tr>
<tr>
<td>12</td>
<td>DC Short</td>
</tr>
<tr>
<td>14</td>
<td>DC Medium</td>
</tr>
<tr>
<td>16</td>
<td>DC Long</td>
</tr>
<tr>
<td>21</td>
<td>50/60Hz Ultra Short</td>
</tr>
<tr>
<td>22</td>
<td>50/60Hz Short</td>
</tr>
<tr>
<td>24</td>
<td>50/60Hz Medium</td>
</tr>
<tr>
<td>26</td>
<td>50/60Hz Long</td>
</tr>
</tbody>
</table>

### Notes:
- Push-to-reset actuators have OFF portion of rocker shrouded.
- Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.
- On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.
- Available up to 50 amps maximum.
- Current ratings 71 - 100 with VDE approvals are available up to two poles maximum.
- Terminal Code 1 available to 60 amps maximum.
- Terminal Codes 2, 4, 5 & 6 available to 50amps maximum.
- Terminal Codes 3, 6, 9 & A available to 100 amps maximum.
- Terminal Codes 9 & C are not VDE approved.
- Color shorn is visi and legend with remainder of rocker black.
- Dual = ON-OFF/1-O legend on actuator.
- TUV approval requires Dual (I-O, ON-OFF) markings on rocker.
- Legend on push-to-reset bezel/shroud is white when single color rocker is ordered.
- Legend on push-to-reset bezel/shroud matches visi-color of rocker with actuator codes 5 & 6.
- Recessed “OFF-SIDE” available with actuator codes 1, 2, 3, & 4. Legends on rocker are available in ink stamping only.
- Barriers supplied on multi-pole units only.
- 2 & 3 pole circuit breakers required for 120/240 AC rating.

## 7 CURRENT RATING (AMPERES)

<table>
<thead>
<tr>
<th>Code</th>
<th>Ampers</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>0.100</td>
</tr>
<tr>
<td>215</td>
<td>0.150</td>
</tr>
<tr>
<td>220</td>
<td>0.200</td>
</tr>
<tr>
<td>225</td>
<td>0.250</td>
</tr>
<tr>
<td>230</td>
<td>0.300</td>
</tr>
<tr>
<td>235</td>
<td>0.350</td>
</tr>
<tr>
<td>240</td>
<td>0.400</td>
</tr>
<tr>
<td>245</td>
<td>0.450</td>
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<tr>
<td>250</td>
<td>0.500</td>
</tr>
<tr>
<td>255</td>
<td>0.550</td>
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<td>260</td>
<td>0.600</td>
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<tr>
<td>265</td>
<td>0.650</td>
</tr>
<tr>
<td>270</td>
<td>0.700</td>
</tr>
<tr>
<td>275</td>
<td>0.750</td>
</tr>
<tr>
<td>280</td>
<td>0.800</td>
</tr>
<tr>
<td>285</td>
<td>0.850</td>
</tr>
<tr>
<td>290</td>
<td>0.900</td>
</tr>
</tbody>
</table>

## 8 TERMINAL

<table>
<thead>
<tr>
<th>Code</th>
<th>Terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stud 10-32</td>
</tr>
<tr>
<td>2</td>
<td>Screw 10-32</td>
</tr>
<tr>
<td>3</td>
<td>Stud 1/4-20</td>
</tr>
<tr>
<td>4</td>
<td>Stud M5 x 0.8</td>
</tr>
<tr>
<td>5</td>
<td>Screw M5 x 0.8</td>
</tr>
</tbody>
</table>

## 9 ACTUATOR COLOR & LEGEND

<table>
<thead>
<tr>
<th>Actuator or Rocker Type</th>
<th>Color Code</th>
<th>Legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Color</td>
<td>White</td>
<td>ON-OFF</td>
</tr>
<tr>
<td>Visi-Rocker</td>
<td>Black</td>
<td>Dual</td>
</tr>
</tbody>
</table>

## 10 MOUNTING / BARRIERS

<table>
<thead>
<tr>
<th>Bezel Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threaded Insert, 2 pole</td>
<td>15</td>
</tr>
<tr>
<td>Recessed OFF BEZEL 14</td>
<td></td>
</tr>
<tr>
<td>Threaded Insert, 2 pole</td>
<td>13</td>
</tr>
<tr>
<td>Push-TO-RESET BEZEL 13</td>
<td></td>
</tr>
</tbody>
</table>

## 11 MAXIMUM APPLICATION RATING

<table>
<thead>
<tr>
<th>Code</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>6S</td>
<td>65 DC</td>
</tr>
<tr>
<td>125</td>
<td>125 DC</td>
</tr>
<tr>
<td>120/240 AC</td>
<td>16</td>
</tr>
<tr>
<td>240 AC</td>
<td></td>
</tr>
<tr>
<td>277 AC</td>
<td></td>
</tr>
<tr>
<td>120 AC</td>
<td></td>
</tr>
<tr>
<td>80 DC</td>
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</tr>
</tbody>
</table>

## 12 AGENCY APPROVAL

<table>
<thead>
<tr>
<th>Code</th>
<th>Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>without approvals</td>
</tr>
<tr>
<td>G</td>
<td>UL 489 Listed &amp; CSA Certified</td>
</tr>
<tr>
<td>JL</td>
<td>UL-489 Listed, CSA Certified &amp; TUV Certified</td>
</tr>
</tbody>
</table>
### Circuit & Terminal Diagrams: in. [mm]

#### TERMINAL DETAILS

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CODE</th>
<th>DIMENSIONAL DETAIL</th>
<th>RATING (AMPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS STUD</td>
<td>4</td>
<td>.688 [17.48]</td>
<td></td>
</tr>
<tr>
<td>7/16&quot; CLIP TERMINALS</td>
<td>9</td>
<td>.493 [12.5]</td>
<td></td>
</tr>
<tr>
<td>PUSH-IN STUD</td>
<td>A</td>
<td>.600 [24.3]</td>
<td></td>
</tr>
</tbody>
</table>

**NOTES:**
- All dimensions are in inches [millimeters].
- Tolerance ±.020 [.51] unless otherwise specified.
- Available on Series Trip and Switch Only Circuits when called for on multi-pole units.
- Only one auxiliary switch is normally supplied, as viewed in multi-pole identification scheme.

#### AUXILIARY / ALARM SWITCH TERMINAL DETAIL

![Diagram of auxiliary/alarm switch terminal detail]

#### THREAD TORQUE SPECIFICATIONS

<table>
<thead>
<tr>
<th>THREAD SIZE</th>
<th>TORQUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>#10-32 MS</td>
<td>16-40 FT-LB</td>
</tr>
<tr>
<td>#10-32 MS &amp; MS</td>
<td>16-40 FT-LB</td>
</tr>
<tr>
<td>#10-32 STUD DRILL SCREW</td>
<td>16-40 FT-LB</td>
</tr>
<tr>
<td>#10-32 &amp; MS STUD</td>
<td>16-40 FT-LB</td>
</tr>
</tbody>
</table>

#### TERMINAL HARDWARE

<table>
<thead>
<tr>
<th>TERMINAL DESCRIPTION</th>
<th>CODE</th>
<th>AGENCY APPROVAL</th>
<th>AMPERE RATING</th>
<th>HARDWARE SUPPLIED</th>
</tr>
</thead>
<tbody>
<tr>
<td>#10-32 STUD</td>
<td>1</td>
<td>ALL</td>
<td>.02 - .90</td>
<td>LOCK WASHER - FLAT WASHER - NUT</td>
</tr>
<tr>
<td>MS STUD</td>
<td>4</td>
<td>ALL</td>
<td>.02 - .90</td>
<td>LOCK WASHER - FLAT WASHER - NUT</td>
</tr>
<tr>
<td>#14-20 STUD</td>
<td>3</td>
<td>ALL</td>
<td>.02 - .90</td>
<td>LOCK WASHER - FLAT WASHER - NUT</td>
</tr>
<tr>
<td>MS STUD</td>
<td>6</td>
<td>ALL</td>
<td>.02 - .90</td>
<td>LOCK WASHER - FLAT WASHER - NUT</td>
</tr>
<tr>
<td>#10-32 SCREW</td>
<td>2 &amp; 5</td>
<td>UL RECOGNIZED</td>
<td>.02 - .90</td>
<td>BOLTED CLAMP - FLAT WASHER - SCREW</td>
</tr>
<tr>
<td>UL-CERTIFIED</td>
<td>.02 - .90</td>
<td>BOLTED CLAMP - FLAT WASHER - SCREW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UL-969 LISTED</td>
<td>.02 - .90</td>
<td>BOLTED CLAMP - FLAT WASHER - SCREW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ULV &amp; VDE CERTIFIED</td>
<td>.02 - .90</td>
<td>BOLTED CLAMP - FLAT WASHER - SCREW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ULV &amp; VDE CERTIFIED</td>
<td>.02 - .90</td>
<td>BOLTED CLAMP - FLAT WASHER - SCREW</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* THE BOLTED CLAMP IS FOR DIRECT WIRE CONNECTION USE, DISCARD BOLTED CLAMP IF WIRE TERMINAL LUG IS USED.
Circuit & Terminal Diagrams: in. [mm]

**Notes:**
1. All dimensions are in inches [millimeters].
3. Schematic shown represents current trip circuits.
4. Available only as special catalog number.

---

### Handle Position vs. Aux/Alarm Switch Mode

<table>
<thead>
<tr>
<th>Handle Position</th>
<th>Aux Switch Mode</th>
<th>Handle Position</th>
<th>Alarm Switch Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Pos.</strong></td>
<td></td>
<td><strong>Reverse Pos.</strong></td>
<td></td>
</tr>
<tr>
<td>Off</td>
<td>ON, NC, NO, C</td>
<td>Off</td>
<td>ON, NC, NO, C</td>
</tr>
<tr>
<td>On</td>
<td>ON, NC, NO, C</td>
<td>On</td>
<td>ON, NC, NO, C</td>
</tr>
<tr>
<td>Electrical Trip</td>
<td>ON, NC, NO, C</td>
<td>90°</td>
<td>ON, NC, NO, C</td>
</tr>
</tbody>
</table>

---

**Circuit Schematic**

**Switch Only (no coil)**

- Line
- Load

**Series Trip**

- Line (netz)
- Load (last)

**Series Trip with Aux/Alarm Switch**

- Line (netz)
- Auxiliary switch
- Alarm switch
- Load (last)

---

**Shunt Trip**

- Line
- Load

**Relay Trip**

- Line
- Relay (netz)
- Load (last)

---

**Dual Coil, Series Trip Current Coil, Relay Trip Voltage Coil**

- Line (netz)
- Voltage coil
- Load (last)

**Dual Coil, Series Trip Current Coil, Relay Trip Voltage Coil**

- Line (netz)
- Voltage coil
- Load (last)
C-Series Circuit Breaker - Handle – Dimensional Specifications

Dimensional Specifications: in. [mm]

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

Notes:
1. All dimensions are in inches [millimeters].
Notes:
1 Only 1-pole and 3-pole configurations shown. Arc chute (without barrier) and arc chute barrier also available for 2-pole construction.
2 Dimensions apply to all variations shown.
3 Notice that line and load terminal orientation for indicate on and indicate off rocker circuit breakers are opposite.
4 Screw type terminals shown for Rocker style (CF1, C11, etc) circuit breakers. For other terminal configurations see circuit and terminal diagrams.
5 All dimensions are in inches [millimeters].
6 Tolerance ±0.020 unless otherwise specified.
7 Must be ordered under a special catalog number.
Dimensional Specifications: in. [mm]

Notes:
1. All dimensions are in inches [millimeters].
<table>
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<tr>
<th>CIRCUIT BREAKER PROFILE</th>
<th>CIRCUIT SCHEMATIC</th>
<th>ANNE</th>
<th>EOC</th>
<th>CIRCUIT SCHEMATIC</th>
<th>ANNE</th>
<th>EOC</th>
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</tbody>
</table>

Notes:
1. All dimensions are in inches [millimeters].
3. Schematic shown represents current trip circuit.
**C-Series Circuit Breaker - Rocker – Dimensional Specifications**

**Dimensional Specifications: in. [mm]**

---

**INDICATE "ON"**

- **Screw Type:** Terminals in series trip circuit configuration shown. For other configurations, see circuit and terminal diagrams.
- **Dimensional Specifications:**
  - 2.100 [54.00]
  - 1.860 [47.00]
  - 1.190 [30.26]
  - 1.323 [33.68]
  - 0.500 [12.70]
  - 0.290 [7.37]

---

**INDICATE "OFF" & SINGLE COLOR**

- **Dimensional Specifications:**
  - 1.252 [31.80]

---

**CC1**

- **Dimensions:**
  - 7.460 [190.00]
  - 2.800 [71.12]
  - 2.350 [59.69]
  - 1.245 [31.65]

---

**CC2**

- **Panel Cut-Out Detail:**
  - 2.060 [52.35]
  - 1.780 [45.24]
  - 0.500 [12.70]

---

**CC3**

- **Dimensions:**
  - 2.060 [52.35]
  - 1.900 [48.26]

---

**CF1**

- **Optional "Rocker Guard" Shown in Dashed Lines:**
  - 1.245 [31.65]

---

**CF2**

- **Rocker Shrouded on "Off" Position Side, Shown in Dashed Lines:**
  - 0.566 [14.38]
  - 0.200 [5.08]

---

**CF3**

- **Dimensions:**
  - 0.740 [19.22]

---

**Notes:**

1. Dimensions apply to all variations shown. Notice that circuit breaker line and load terminal orientation on indicate OFF is opposite of indicate ON.
2. For pole orientation with horizontal legend, rotate front view clockwise 90°.
3. All dimensions are in inches [millimeters].
4. Tolerance ±0.020 [0.51] unless otherwise specified.
Notes:
1 For pole orientation with horizontal legend, rotate front view clockwise 90°.
2 All dimensions are in inches [millimeters].
3 Tolerance ±.020 [.51] unless otherwise specified.
The E-Series hydraulic-magnetic circuit breaker is ideally suited for higher current and voltage applications. It is UL listed and CSA certified for branch circuit protection, which does not require a fuse back up. It is also UL recognized and CSA certified as a supplementary protector and as a manual motor controller.

Its physical features include front and back mounting, screw and stud terminals and heavy duty box wire connectors for solid wire or a pressure plate connector for standard wire. The E-series is available with handle actuators and can be configured as .1-125 amps, up to 600VAC or 125VDC, with choice of time delays, actuator colors and 1 to 6 poles configuration. Additionally, a Power Selector device is also available.

**Product Highlights:**
- UL listed and CSA certified
- Certified for circuit branch protection
- Recognized as a supplementary protector and as a manual motor controller
- Optional power selector device
E-Series Circuit Breaker - General Specifications

**Electrical**

- **Maximum Voltage**: 600VAC 50/60 Hz, 125VDC (See Table A)
- **Current Ratings**: Standard current coils: 0.100, 0.250, 0.500, 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 20.0, 25.0, 30.0, 50.0, 60.0, 70.0 & 100 Amp.
- **Auxiliary Switch Rating**: SPDT; 10.1A 250VAC, 1.0A 65VDC; 0.5A 80VDC, 0.1A 125VAC (with gold contacts).
- **Insulation Resistance**: Minimum of 100 Megohms at 500 VDC.
- **Dielectric Strength**: UL, CSA: 2200 V 50/60 Hz for one minute between all electrically isolated terminals. E-Series Circuit Breakers comply with the 8mm spacing and 3750V 50/60 Hz dielectric requirements from hazardous voltage to operator accessible surfaces, between adjacent poles and from main circuits to auxiliary circuits per Publications 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 E-Series Circuit Breakers will trip on overload, even when Handle is forcibly held in the ON position.
- **Trip Indication**: The operating Handle moves positively to the OFF position when an overload causes the breaker to trip.

**Physical**

- **Number of Poles**: 1 - 6
- **Mounting**: A 3” minimum spacing must be provided between the circuit breaker arc venting area on back connected E-Series circuit breakers and grounded obstructions. E-Series circuit breakers must be mounted on a vertical surface.
- **Connectors, Box Type**: Front connected E-Series circuit breakers are supplied with box type pressure connectors that accept copper or aluminum conductors as follows: 1/0-14 Copper, 1/0-12 Aluminum.
- **Internal Circuit Configuration**: Series and Switch Only, (with or without auxiliary switch). Shunt with current coils.
- **Weight**: Approximately 252 grams/pole (Approximately 9 ounces/pole)
- **Standard Colors**
  - Housing-Black; Actuator - 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, Test Condition “I”.
  - **Vibration**: Withstands 0.060” excursion from 10-55 Hz, and 10 Gs 55-500 Hz, at rated current per Method 204C, Test Condition A.
  - **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

*Manufacturer reserves the right to change product specification without prior notice.

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### Electrical Tables

**Table A:** Lists UL Listed (489) & CSA Certified (C22.2 No. 5) configurations & performance capabilities as a Molded Case Circuit Breaker.

#### E SERIES TABLE A: UL489 LISTED BRANCH CIRCUIT BREAKERS

<table>
<thead>
<tr>
<th>CIRCUIT CONFIGURATION</th>
<th>VOLTAGE</th>
<th>MAX. RATING</th>
<th>FREQUENCY</th>
<th>PHASE</th>
<th>CURRENT RATING</th>
<th>INTERRUPTING CAPACITY (AMPS)</th>
<th>WITHOUT BACKUP FUSE</th>
<th>HIGH INTERRUPTING CAPACITY (AMPS)</th>
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<tbody>
<tr>
<td>80 DC</td>
<td>---</td>
<td>0.10 - 100</td>
<td>5,000</td>
<td>50,000</td>
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<td>125 DC</td>
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<td>0.10 - 100</td>
<td>5,000</td>
<td>10,000</td>
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<td>120 50 / 60</td>
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<td>0.10 - 125</td>
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<td>240 50 / 60</td>
<td>1</td>
<td>0.10 - 30</td>
<td>5,000</td>
<td>10,000</td>
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<tr>
<td>120 / 240 50 / 60</td>
<td>1</td>
<td>31 - 100</td>
<td>5,000</td>
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<tr>
<td>120 / 240 50 / 60</td>
<td>1</td>
<td>101 - 125</td>
<td>10,000</td>
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<td>120 / 240 50 / 60</td>
<td>3</td>
<td>0.10 - 100</td>
<td>5,000</td>
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</table>

**Table B:** Lists UL Recognized & CSA Accepted configurations & performance capabilities as a Component Supplementary Protector.

#### E-SERIES TABLE B: COMPONENT SUPPLEMENTARY PROTECTORS

<table>
<thead>
<tr>
<th>CIRCUIT CONFIGURATION</th>
<th>VOLTAGE</th>
<th>MAX. RATING</th>
<th>FREQUENCY</th>
<th>PHASE</th>
<th>CURRENT RATING</th>
<th>SHORT CIRCUIT CAPACITY (AMPS)</th>
<th>APPLICATION CODES</th>
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</thead>
<tbody>
<tr>
<td>125 DC</td>
<td>---</td>
<td>0.02 - 100</td>
<td>5,000</td>
<td>TC1,2, OL1, U1 TC1,2, OL1, U1</td>
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<tr>
<td>125 DC</td>
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<td>0.02 - 100</td>
<td>5,000</td>
<td>TC1,2, OL0, U1 TC1,2, OL0, U1</td>
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<tr>
<td>150 DC</td>
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<td>0.02 - 100</td>
<td>5,000</td>
<td>TC1,2, OL0, U3 TC1, OL0, U3</td>
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<tr>
<td>160 DC</td>
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<td>0.02 - 125</td>
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<td>TC1,2, OL1, U1 TC1,2, OL1, U1</td>
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<tr>
<td>150 / 300 DC</td>
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<td>0.02 - 100</td>
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<td>TC1,2, OL1, U1 TC1,2, OL1, U1</td>
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<td>120 / 240 50 / 60</td>
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<td>240 50 / 60</td>
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<td>0.02 - 100</td>
<td>5,000</td>
<td>TC1,2, OL1, U1 TC1,2, OL1, U1</td>
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<td>250 50 / 60</td>
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<td>0.02 - 100</td>
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<td>TC1,2, OL1, U1 TC1,2, OL1, U1</td>
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<td>227 50 / 60</td>
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<td>0.02 - 100</td>
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<td>TC1,2, OL1, U1 TC1,2, OL1, U1</td>
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<tr>
<td>480 50 / 60 1 &amp; 3</td>
<td>0.02 - 100</td>
<td>10,000</td>
<td>TC1,2, OL1, C1 TC1,2, OL1, C1</td>
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<td>480 50 / 60 1 &amp; 3</td>
<td>0.02 - 125</td>
<td>5,000</td>
<td>TC1, OL0, U3 TC1, OL0, U3</td>
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Notes:
1. Per pole opposite polarity rating - Delta Configuration.
2. 4 Poles connected in series
3. Requires branch circuit backup with a UL Listed Type K5 or RK5 fuse rated 15A minimum and no more than 4 times full load amp rating and not to exceed 225A.
E-Series Circuit Breaker - General Specifications

Electrical Tables

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

Table D: Lists UL Recognized, CSA Accepted configurations and performance capabilities as Protectors, Supplementary for Marine Electrical and Fuel Systems (Guide PEQZ2, File E75596). Ignition Protected per UL 1500. UL Classified Small Craft Electrical Devices, Marine in accordance with ISO 8846 (Guide UZMK, File MQ1515) as Marine Supplementary Protectors.

Agency Certifications

UL Recognized
UL Standard 1077

Component Recognition Program as Protectors, Supplementary (Guide QVNNU2, File E75596)

UL Standard 1500

Protectors, Supplementary for Marine Electrical & Fuel Systems (Guide PEQZ2, File E75596) Ignition Protection

UL Listed
UL Standard 489

Circuit Breakers, Molded Case (Guide DIVQ, File E129899)

CSA Accepted

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

CSA Certified

Component Recognition Program as Manual Motor Controls (Guide NLRV2, File E135367)

TUV Certified

EN60934 under License No. R72031056

VDE Certified

EN60934, VDE 0642 under File No. 10537

Notes:
1 Requires branch circuit backup with a UL LISTED Type K5 or RK5 fuse rated 15A minimum and no more than 4 times full load amp rating and not to exceed 225 amps.
### 8 TERMINAL 12

**BACK CONNECTED (FRONT MOUNTED ONLY) MAX. RATING**

1. 10-32 Stud (All Terminals) 120 A
2. 9/16-20 Stud (All Terminals) 50 A
3. M5 Screw (Line & Load) 100 A
4. M5 Screw (Line & Load) 200 A
5. 10-32 "Bus-Type" Screw (Line), 10-32 Screw (Load) 50 A
6. M5 "Bus-Type" Screw (Line), 10-32 Screw (Load) 100 A
7. 1/4-20 Screw (Line & Load) 100 A
8. 1/4-20 "Bus-Type" Screw (Line), 1/4-20 Screw (Load) 100 A
9. M5 "Bus-Type" Screw (Line), M5 Screw (Load) 100 A
10. 1/4-20 "Bus-Type" Screw (Line), Box Wire Connector (Load) 100 A
11. J1 1/4-20 "Bus-Type" Screw (Line), Box Wire Connector with Pressure Plate (Load) 100 A

**FRONT CONNECTED (MOUNTED ONLY)**

1. Box Wire Connector (Line & Load) 100 A
2. Box Wire Connector with Pressure Plate (Line & Load) 100 A
3. 1/4-20 Screw (Line & Load) 100 A
4. 1/4-20 "Bus-Type" Screw (Line), 1/4-20 Screw (Load) 100 A
5. M5 Screw (Line & Load) 100 A

**MAXIMUM APPLICATION RATING**

1. 65 VDC, 120 A
2. 125 VDC, 120 A
3. 240 VAC, 100 A
4. 277/480 VAC, 100 A

**12 AGENCY APPROVAL**

1. UL 1077 / UL508 Recognized & CSA Accepted
2. UL 1077 Recognized, CSA Accepted, & VDE Certified

---

**Notes:**

1. Auxiliary Switch available on Switch Only and Series Trip units. On multi-pole units, only auxiliary switches are normally supplied mounted in the extreme right pole. Back mounted units require special mounting provisions when auxiliary switch is specified. VDE approval on Auxiliary Switch Codes 0.2, 3, 4 & 5 only.
2. Voltage Trip Collars are not rated for continuous duty. Available only with Frequency & Delay Codes 10 & 20. Series Trip construction with a voltage coil only VDE approved only if tied to a protected pole.
3. Frequency & Delay Codes 92.94 & 96 are not VDE Certified.
4. Current Collar Ratings 0.100 - 1000 amps are VDE Certified.
5. 125 A rating (Code 912) available as a Switch Only (Circuit Code A), rated 125 VDC (Code B).
6. Frequency & Delay Codes 90.94 & 96 are not VDE Certified.
7. Current Collar Ratings 0.100 - 1000 amps are VDE Certified.
8. 125 A rating (Code 912) available as a Switch Only (Circuit Code A), rated 125 VDC (Code B).
9. An Anti-Flash Over Barrier is supplied between poles on multi-pole units with 10-32 (Terminal Codes 11, 14) - 20 (Code 2), M5 Code (A), and M6 Code (B) terminals per UL requirement.
10. Box Wire Connector will accept #14 through 0 AWG, copper wire or #12 through 0 AWG, aluminum wire.
11. Box Wire Connector with Pressure Plate for stranded wire, consult factory for details.
12. Terminal Codes A,B,D,E,G & H are not VDE Certified.
13. Switch Only requires Dual Legend Color (I-O ON-OFF) or I-O ON-OFF marking on all handles.
14. Back Mounted breakers can be also front mounted by utilizing the proper front panel mounting inserts normally supplied. However, terminal connections must be made prior to mounting.
15. Application ratings B,D,T & W are available with VDE.
E-Series Circuit Breaker - Handle UL Listed – Ordering Scheme

1 SERIES

E

2 ACTUATOR

A Handle, one per pole

3 POLES

1 One
2 Two
3 Three
4 Four
5 Five
6 Six

4 CIRCUIT

B Series Trip (current) Series Switch (voltage)

C

5 AUXILIARY SWITCH

0 without Auxiliary Switch
1 P.D.T. 0.110 Q.C. Terminals
2 S.P.D.T. 0.139 Solder Lug
3 S.P.D.T. 0.110 Q.C. Terminals
4 S.P.D.T. 0.110 Q.C. Terminals

6 FREQUENCY & DELAY

10 5 DC Instantaneous
12 DC Short
14 DC Medium
16 DC Long
20 5 50/60Hz Instantaneous
22 5 50/60Hz Short
24 5 50/60Hz Medium
26 5 50/60Hz Long

7 CURRENT RATING (AMPERES)

CODE AMPERES
020 0.020 235 0.350 430 3.000 614 14.000
025 0.025 240 0.400 435 3.500 615 15.000
030 0.030 245 0.450 440 4.000 616 16.000
035 0.035 250 0.500 445 4.500 617 17.000
040 0.040 255 0.550 450 5.000 618 18.000
045 0.045 260 0.600 455 5.500 620 20.000
050 0.050 265 0.650 460 6.000 622 22.000
055 0.055 270 0.700 465 6.500 624 24.000
060 0.060 275 0.750 470 7.000 625 25.000
065 0.065 280 0.800 475 7.500 630 30.000
070 0.070 285 0.850 480 8.000 635 35.000
075 0.075 290 0.900 485 8.500 640 40.000
080 0.080 295 0.950 490 9.000 650 50.000
085 0.085 300 1.000 495 9.500 660 60.000
090 0.090 305 1.050 500 10.000 670 70.000
095 0.095 310 1.100 505 10.500 680 80.000
100 0.100 315 1.150 510 11.000 690 90.000
105 0.105 320 1.200 515 11.500 710 100.000
110 0.110 325 1.250 520 12.000 720 120.000
120 0.120 330 1.300 525 12.500 730 150.000
125 0.125 335 1.350 530 13.000 740 180.000

7 TERMINAL

BACK CONNECTED (FRONT MOUNTED ONLY) MAX. RATING
1 10-32 Stud (All Terminals) 50 A
2 1/4-20 Stud (All Terminals) 125 A
3 10-32 Screw (Line & Load) 60 A
4 1/4-20 Screw (Line & Load) 125 A
5 10-32 Screw (Line & Load) 50 A
6 1/4-20 Screw (Line & Load) 100 A
7 10-32 Screw (Line & Load) 100 A
8 1/4-20 Screw (Line & Load) 100 A

8 TERMINAL

BACK CONNECTED (FRONT MOUNTED ONLY) MAX. RATING
1 10-32 Stud (All Terminals) 50 A
2 1/4-20 Stud (All Terminals) 125 A
3 10-32 Screw (Line & Load) 60 A
4 1/4-20 Screw (Line & Load) 125 A
5 10-32 Screw (Line & Load) 50 A
6 1/4-20 Screw (Line & Load) 100 A
7 10-32 Screw (Line & Load) 100 A
8 1/4-20 Screw (Line & Load) 100 A

9 ACTUATOR COLOR & LEGEND

Actuator Color ON-OFF Dual Legend Color
White B 1 Black
Black D 2 White
Red G 3 Black
Green J 4 White
Blue L 5 White
Yellow N 6 Black
Gray Q 7 Black
Orange S 8 Black

10 MOUNTING / BARRIERS

BACK CONNECTED (FRONT MOUNTED ONLY) Mounting Inserts
A 6-32
B ISO M3

11 MAXIMUM APPLICATION RATING

1 120 VAC
2 125 VDC, 120 A
3 120-240 VAC, 100 A
4 240 VAC, 100 A

12 AGENCY APPROVAL

C UL 489 Listed & CSA Certified
D UL 489 Listed, CSA Certified, & VDE Certified

Notes:
1 Standard multi-pole units identical poles except when specifying auxiliary switch - (see Note 4). For mixed ratings, consult factory. VDE Certification on 1-5 poles only.
2 Series Trip construction available with either front or back connected terminals.
3 Series Trip construction with a voltage coil is not available as a single pole unit and must be tied to a protected pole.
4 On multi-pole units, only one auxiliary switch is normally supplied mounted in the extreme right pole per Figure A. Back mounted units require special mounting provisions when auxiliary switch is specified. VDE Certification on auxiliary switch codes 3, 2, 3 & 4 only.
5 Voltage Trip Coils are not rated for continuous duty. Available only with Frequency & Delay Codes 10 & 20.
6 Frequency & Delay Codes 92, 94 & 96 are not VDE Certified.
7 Current Ratings under 0.100 amps are not VDE Certified.
8 An Anti-Flash Over Barrier is supplied between poles on multi-pole units with 10-32 Stud (Terminal Code 1) or 1/4-20 Stud Code 2 terminals per UL requirement.
9 Box Wire Connector will accept #14 through # AWG, copper wire or #12 through # AWG, aluminum wire.
10 Box Wire Connector with Pressure Plate for stranded wire, consult factory for details.
11 Back Mounted breakers can also be front mounted by utilizing the proper front panel mounting inserts normally supplied. However, terminal connections must be made prior to mounting.
12 VDE Certification requires dual (I-O, ON-OFF) markings on all handles.
13 Not available with VDE Certification.

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Notes:
1. All dimensions are in inches [millimeters].
2. Tolerance ±0.020 [0.51] unless otherwise specified.
4. 51-120 amps: 1/4-20 & M6 Studs .750±.062/19.05±1.574 long.
5. Solder Type (0.010 x 0.500)

TABLE A

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Unit</th>
<th>Terminal Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line/Load</td>
<td>1/4-20</td>
<td>M6 Stud</td>
</tr>
<tr>
<td>Pole 1</td>
<td>0-50</td>
<td>M5 Stud</td>
</tr>
<tr>
<td>Pole 2</td>
<td>51-120</td>
<td>M6 Stud</td>
</tr>
<tr>
<td>Pole 3</td>
<td>51-120</td>
<td>M6 Stud</td>
</tr>
<tr>
<td>Load</td>
<td>0-50</td>
<td>M5 Stud</td>
</tr>
<tr>
<td>Pole 1</td>
<td>51-120</td>
<td>M6 Stud</td>
</tr>
<tr>
<td>Pole 2</td>
<td>51-120</td>
<td>M6 Stud</td>
</tr>
<tr>
<td>Pole 3</td>
<td>51-120</td>
<td>M6 Stud</td>
</tr>
<tr>
<td>Load</td>
<td>51-120</td>
<td>M6 Stud</td>
</tr>
</tbody>
</table>
Dimensional Specifications: in. [mm]

Notes:
1 1/4"-20 stud terminal in Series Trip circuit configuration shown.
2 A 3" min spacing must be provided between the circuit breaker arc venting area of back connected E-Series circuit breaker and grounded obstructions.
3 All dimensions are in inches [millimeters].
4 Tolerance ±0.020 [.51] unless otherwise specified.
5 Circuit breakers must be mounted on vertical surface.
Notes:
1. All dimensions are in inches [millimeters].
3. Box wire connector terminal in Series Trip circuit configuration shown.
4. Circuit breakers must be mounted on vertical surface.
The F-Series hydraulic-magnetic high amperage circuit breakers are designed to handle high current applications in extremely hot and/or cold locations. Due to its time-proven hydraulic-magnetic design, the F-Series load sensing mechanism is insensitive to changes in ambient or enclosure temperature, providing a consistent trip point over temperatures ranging from -40°C to +85°C. Additionally, the F-Series circuit breakers come with a choice of overload time delays, making them ideal for critical applications having inductive loads.

Further, the F-Series breakers are available up to 700A and an optional 25 millivolt metering shunt construction provides a safe method for monitoring current flowing through the breaker by simply connecting a meter with light gauge wire to the appropriate terminals located on the shunt housing at the rear of the breaker. Applications can be customized by measuring and displaying percentage of current, watts or safe/danger zones.

**Product Highlights:**
- AC ratings to UL 489
- DC voltage ratings up to 700A with metering shunt section
- Consistent trip point over temperatures ranging from -40°C to +85°C
- Optional 25 millivolt metering shunt construction
**F-Series Circuit Breaker - General Specifications**

### Electrical

- **Maximum Voltage**: 125VDC, 277VAC
- **Current Ratings**:
  - Standard current coils: 100, 125, 150, 175, 225, 250 amps, 300, 350, 400, 500, 600, 700 amps available as parallel pole construction.
- **Auxiliary Switch Rating**:
  - SPDT; 10.1 Amps @ 250VAC, 1.0 Amps @ 65VDC, 0.5 Amps @ 80VDC 0.1 Amps @ 125VAC (with gold contacts).
- **Insulation Resistance**
  - Minimum: 100 Megohms at 500 VDC
- **Dielectric Strength**: 1960 VAC, 50/60 Hz for one minute between all electrically isolated terminals, except 2500 VAC for one minute between alarm/aux. switch and main terminals with contacts in open and closed position. F-Series circuit breakers comply with the 8mm spacing & 3750VAC 50/60 Hz dielectric requirements from hazardous voltage to operator accessible surfaces, between adjacent poles and from main circuits to auxiliary circuits per Publications EN 60950 and VDE 0805.

### Mechanical

- **Endurance**
  - 4000 ON-OFF operations with rated Current & Voltage & 4000 operations with no load (8000 operations total) @ 5 per minute.
  - Parallel Pole construction: 1000 operations with rated Current and Voltage @ 5 per minute.
- **Trip Free**
  - All F-Series Circuit Breakers will trip on overload, even when the actuator is forcibly held in the ON position.
- **Trip Indication**
  - The operating actuator moves positively to the OFF position when an overload causes the circuit breaker to trip.

### Physical

- **Number of Poles**: 1 - 3 Poles Note: Ratings over 250 Amps only available with parallel pole.
- **Internal Circuit Config.**
  - Series (with or without auxiliary switch), Switch Only (with or without auxiliary switch).
- **Available Accessories**
  - Factory installed: DC Current Metering Shunt (25 mV @lr)
- **Weight**
  - Varies depending on construction. Consult factory.
- **Standard Colors**
  - Housing - Black; Actuator - Black or White with contrasting ON-OFF legend.

### Environmental

- Designed and tested in accordance with requirements of specification MIL-PRF-55629 & MIL-STD-202 as follows:
  - **Shock**
    - Withstands 100 Gs, 6ms, sawtooth while carrying rated current per Method 213, Test Condition "I". Instantaneous and ultra-short curves tested @ 90% 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 and ultrashort curves tested at 90% of rated current.
  - **Moisture Resistance**
    - Method 106D; ten 24-hour cycles @ +25°C to +65°C, 80-98% RH, 56 days @ +85°C, 85% 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

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

Table A: Lists UL Listed (489) and CSA Certified (C22.2 No. 5.1-M) configurations and performance capabilities as a Molded Case Circuit Breaker.

<table>
<thead>
<tr>
<th>CIRCUIT CONFIGURATION</th>
<th>VOLTAGE</th>
<th>CURRENT RATING</th>
<th>INTERRUPTING CAPACITY (AMPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAX RATING</td>
<td>FREQUENCY</td>
<td>PHASE</td>
</tr>
<tr>
<td>SERIES</td>
<td>125</td>
<td>DC</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>120 / 240</td>
<td>50 / 60</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>277</td>
<td>50 / 60</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>208Y / 120</td>
<td>50 / 60</td>
<td>3</td>
</tr>
</tbody>
</table>

Notes:
1. 120/240V rating available in 2 or 3 poles. In a 3 pole construction the center pole is Neutral.
2. TUV constructions are not available with AC ratings and 150-250 amp ratings only.

Table B: Lists UL Listed configurations and performance capabilities as Circuit Breakers for use in Communications Equipment (Guide DITT, File E189195), under UL489A.

<table>
<thead>
<tr>
<th>CIRCUIT CONFIGURATION</th>
<th>VOLTAGE</th>
<th>CURRENT RATING</th>
<th>INTERRUPTING CAPACITY (AMPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAX RATING</td>
<td>FREQUENCY</td>
<td>PHASE</td>
</tr>
<tr>
<td>SERIES</td>
<td>125</td>
<td>DC</td>
<td>---</td>
</tr>
</tbody>
</table>

Agency Certifications

UL Listed
UL 489
Circuit Breakers, Molded Case (Guide DIVQ, File E129899)
Complies with the requirements of the CSA Standard for Molded Case Circuit Breakers, CAN/CSA-C22.2 No. 5.1-M

UL 489A
Circuit Breakers for Use in Communications Equipment (Guide DITT, File E189195)

TUV Certified
IEC 60947-2
Low Voltage Switchgear and Control Gear under TUV License No. R72031058
## F-Series Circuit Breaker - Handle – Ordering Scheme

<table>
<thead>
<tr>
<th>1 Series</th>
<th>2 Actuator</th>
<th>3 Poles</th>
<th>4 Circuit</th>
<th>5 Aux/Alarm Switch</th>
<th>6 Frequency &amp; Delay</th>
<th>7 Current Rating</th>
<th>8 Terminal</th>
<th>9 Actuator Color &amp; Legend</th>
<th>10 Mounting</th>
<th>11 Max. App. Rating</th>
<th>12 Agency Approval</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</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
- A: Handle, one per pole
- S: Mid-Trip Handle, one per pole
- T: Mid-Trip Handle, one per pole & Alarm Switch

### 3 POLES
- 1: One
- 2: Two
- 3: Three

### 4 CIRCUIT
- A: Switch Only (no coil)
- B: Series Trip (current)
- C: Series Trip (voltage)

### Parallel Pole Construction:
- 3 POLES

### 5 AUXILIARY SWITCH
- 0: without Auxiliary Switch
- 1: S.P.D.T. 0.100 Q.C. Terminals (Gold Contacts)
- 2: S.P.D.T. 0.139 Solder Lug (Gold Contacts)
- 3: S.P.T. 0.110 Q.C. Terminals (Gold Contacts)
- 4: S.P.D.T. 0.093 Q.C. Terminals (Gold Contacts)
- 5: S.P.T. 0.110 Q.C. Terminals

### 6 FREQUENCY & DELAY
- 03: DC 50/60Hz, Switch Only
- 10: DC Instantaneous
- 11: DC Ultra Short
- 12: DC Short

### 7 CURRENT RATING (AMPERES)
- 510: 100-2000 A
- 512: 125-2250 A
- 515: 150-2500 A
- 517: 175-3000 A

### OR VOLTAGE COIL (MIN. TRIP RATING, VOLTS)
- 806: 6 DC, 5 DC
- 810: 10 DC
- 812: 12 DC
- 815: 15 DC

### 8 TERMINAL
- Back Connected (Front Mounted Only)
- Max Rating
- 1 1/2: 3/8-16 Stud
- 2 1/2: 3/8-16 Screw, Line & Load
- 5: 3/8-16 Short Stud
- Front Connected (Back Mounted Only)
- Max Rating
- 3: Box Wire Connector, Line & Load
- 4: 3/8-16 Screw, Line & Load

Notes:
1. For 100 to 250 amps, select Current Code 825. For 300-400 amps, select Current Code 840. For 450-700 amps, select Current Code 870.
2. Available with Frequency and Delay code 10 or 20 only, and are not rated for continuous duty. Delay 10 and 20 are only available with voltage coils.
3. 3 Codes M, N, P & Q (Parallel Poles) are supplied with factory installed Bus Bar on Line and Load.
4. 4 Metering terminals are female pin type, ref. Molex part number 02-09-1101, model 1189-T.
5. Auxiliary Switch breakers are only available with Series Trip and Switch Only circuits.
6. Available with parallel pole construction (circuit codes P and Q, and breakers with 3/8 - 16 stud terminals (Terminal Code 1) on AC rated breakers only.
7. Frequency and delay code 10 is only available with Voltage Coils. Voltage Coils are not rated for continuous duty.
8. Ratings over 250 amps are only available with Agency Approval code T (UL489A) and are Parallel Pole configuration (circuit codes M, N, P & Q). 300-500 amp ratings are available on two pole breakers. 500-700 amp ratings are available on three pole breakers.
9. Per UL requirement, an “Anti-Flash Over Barrier” is supplied between poles on multipole breakers with 3/8 - 16 stud terminals (Terminal Code 1) on AC rated breakers only.
10. Front connected breakers can be also be front mounted by utilizing the supplied front panel mounting inserts. Terminal connections must be made before mounting.
11. Box Wire connector will accept #6 through 250 MCM copper wire.
12. Agency codes G & T must have ON-OFF or dual legends. Agency code J must have dual legend.
13. Other colors available, Consult factory.
14. Terminals 2, 4 & 5 are shipped without terminal hardware.
15. 2 or 3 Pole Circuit Breaker Required for 120/240 VAC Rating.
16. 3 Pole Circuit Breaker Required for 120/208 VAC Rating.
**F SERIES NON-PARALLEL POLE CONSTRUCTION:**

<table>
<thead>
<tr>
<th>CIRCUIT BREAKER PROFILE</th>
<th>CIRCUIT SCHEMATIC ( A )</th>
<th>CIRCUIT SCHEMATIC ( E )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SERIES T/RP (2 TERMS)</strong></td>
<td><strong>LINE</strong></td>
<td><strong>LINE</strong></td>
</tr>
<tr>
<td><strong>LOAD</strong></td>
<td><strong>LOAD</strong></td>
<td><strong>LOAD</strong></td>
</tr>
<tr>
<td>2.591 [65.2]</td>
<td>2.591 [65.2]</td>
<td>2.591 [65.2]</td>
</tr>
</tbody>
</table>

**TERMINAL DETAILS**

**BACK CONNECT**

3/8-16 THREADED HOLE

3/16-16 THREADED STUD
CODE 1

1.13 [28.7]

3/8-16 THREADED HOLE
CODE 2

1.016 [25.8]

1.244 [31.6]

.57 [14.5]

3/4 [19.05]

.75 [19.05]

.503 [12.8]  

1.516 [38.5]

**FRONT CONNECT**

3/8-16 THREADED
HOLE

BOX LUG ACCEPTS WIRE SIZE #16 TO #10 NHW

1.675 [42.54]

1.175 [29.84]

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

**F-SERIES PARALLEL POLE CONSTRUCTION:**

<table>
<thead>
<tr>
<th>CIRCUIT BREAKER PROFILE</th>
<th>CIRCUIT SCHEMATIC</th>
<th>SCHEMATIC</th>
<th>CIRCUIT SCHEMATIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>LINE</td>
<td>LINE</td>
<td>A</td>
<td>LINE</td>
</tr>
<tr>
<td>LOAD</td>
<td>LOAD (LAST)</td>
<td>O</td>
<td>LOAD (LAST)</td>
</tr>
</tbody>
</table>

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

**Notes:**
1. All dimensions are in inches [millimeters].
2. Tolerance ±0.020 [0.51] unless otherwise specified.

---

**SERIES TRIP BACK CONNECT (STUD TERMINALS SHOWN)**

- 2.968 [75.38] in.
- 1.325 [33.65] in.
- 6.000 [152.40] in.
- 1.827 [46.40] in.
- 1.406 [35.71] in.
- 2.812 [71.42] in.
- 4.030 [102.36] in.
- 1.500 [38.1] in.
- .113 [2.87] in.

---

**MULTIPOLE SERIES TRIP, SHOWING TERMINAL BARRIER**

- 1.250 [31.75] in.
- 2.141 [54.38] in.
- 1.516 [38.50] in.
- BARRIERS .062 THICK TYP
Dimensional Specifications: in. [mm]

Notes:
1 All dimensions are in inches [millimeters].
2 Tolerance ±.020 [.51] unless otherwise specified.
F-Series Circuit Breaker - Handle – Dimensional Specifications

Dimensional Specifications: in. [mm]

F-Series breakers are available up to 700A, and are also available with a 25 millivolt metering shunt construction. This optional construction provides a safe method for monitoring current flowing through the breaker by simply connecting a meter with light gauge wire to the appropriate terminals located on the shunt housing at the rear of the breaker. You can customize the application by measuring and displaying percentage of current, watts or safe/danger zones.

Notes:
1. All dimensions are in inches [millimeters].
F-Series Circuit Breaker - Handle – Dimensional Specifications

Dimensional Specifications: in. [mm]

Notes:
1. All dimensions are in inches [millimeters].
2. Tolerance ±0.020 [0.5] unless otherwise specified.
# Time Delay Values - C, CX-Series Circuit Breakers

## Notes:
- UL 489 C-Series Breakers available with Delay Curves 11, 12, 14, 16, 21, 22, 24, 26, 42, 44, 46.
- Delay Curves 11, 12, 14, 21, 22, 24, 26, 42, 44, 46: Breakers to hold 100% and must trip at 125% of rated current and greater within the time limit shown in this curve.
- Delay Curves 32, 34, 36: Breakers to hold 100% and must trip at 135% of rated current and greater within the time limit shown in this curve.
- Delay Curves 10, 20: Breakers to hold 100% and must trip at 150% of rated current and greater within the time limit shown in this curve.
- 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.
- On 50 amp and less current ratings, the minimum inrush pulse tolerance handling capability is 12 times the rated current on standard delays and 25 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.

<table>
<thead>
<tr>
<th>DELAY</th>
<th>100%</th>
<th>125%</th>
<th>150%</th>
<th>200%</th>
<th>250%</th>
<th>300%</th>
<th>500%</th>
<th>600%</th>
<th>800%</th>
<th>1000%</th>
<th>1200%</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>No Trip</td>
<td>May Trip</td>
<td>0.02 MAX</td>
<td>0.04 MAX</td>
<td>0.06 MAX</td>
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<td>0.18 MAX</td>
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### Instantaneous

#### AC

#### DC

### Ultrashort

### Short
Time Delay Values - C, CX-Series Circuit Breakers

AC/DC

Short

Medium

Long
### E-Series Time Delay Values

<table>
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<th>TRIP TIME (SECONDS)</th>
<th>PERCENT OF RATED CURRENT</th>
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<td>14, 74</td>
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<td>16, 76</td>
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<td>22, 82</td>
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<td>24, 64</td>
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<tr>
<td>32, 92</td>
<td>No Trip</td>
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<tr>
<td>34, 94</td>
<td>No Trip</td>
</tr>
<tr>
<td>36, 96</td>
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### NOTES
- 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 these curves.
- Delay Curves 12, 14, 16, 22, 24, 26, 32, 34, 36, 72, 74, 76: Breakers to hold 100% and must trip at 150% of rated current and greater within the time limit shown in these curves.
- Delay Curves 32, 34, 36, 92, 94, 96: Breakers to hold 100% and must trip at 135% of rated current and greater within the time limit shown in these curves.
- All curves. Data shown represents breaker response at ambient temperature of 77°F (25°C) with no preloading. Breakers are mounted in standard wall-mount position.
- The minimum inrush pulse tolerance handling capacity on the above standard delays is 16 times rated current & 3.0 times rated current for high inrush delays based on a 60Hz 1/2 cycle, 8.33 ms pulse.

**Instantaneous**

![AC Instantaneous Time Delay Values](image1)

![DC Instantaneous Time Delay Values](image2)

**Short**

![AC Short Time Delay Values](image3)

![DC Short Time Delay Values](image4)

**Medium**

![AC Medium Time Delay Values](image5)

![DC Medium Time Delay Values](image6)

**Long**

![AC Long Time Delay Values](image7)

![DC Long Time Delay Values](image8)
### AC/DC

#### Instantaneous

<table>
<thead>
<tr>
<th>TRIP TIME IN SECONDS</th>
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#### Short

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#### Medium

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#### Long

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### F-SERIES TIME DELAY VALUES

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<th>150%</th>
<th>200%</th>
<th>400%</th>
<th>600%</th>
<th>800%</th>
<th>1000%</th>
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<tr>
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<td>.475 - 10.0</td>
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<td>.140 - .850</td>
<td>.030 - .190</td>
<td>.015 - .125</td>
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<td>6.00 - 40.0</td>
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<td>.500 - 3.00</td>
<td>.180 - 1.00</td>
<td>.010 - .280</td>
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<td>60.0 - 400</td>
<td>22.0 - 150</td>
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<td>1.00 - 5.50</td>
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<td>700.0 - 12.0</td>
<td>.350 - 4.00</td>
<td>.130 - 1.30</td>
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<td>32.0 - 350</td>
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<td>1.50 - 15.0</td>
<td>.500 - 7.00</td>
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### AC Curves
- Short - AC 22
- Medium - AC 24
- Long - AC 26

### DC Curves
-短线 - DC
- Ultrashort - DC
- Medium - DC
- Long - DC
There are several catalogs available featuring complete details on all Carling Technologies products. Below is a list of useful information such as catalogs, brochures and videos. Please visit our website at carlingtech.com or scan the QR codes below for complete details.

**www.carlingtech.com**

**Switches & Controls**

Complete line and ordering details for Switches & Control products including Rocker, Toggle, Pushbutton, and Rotary style switches.

**Hydraulic-Magnetic**

Complete line and ordering details for all hydraulic-magnetic circuit breakers.

**GFCI / ELCI**

Complete line and ordering details for all GFCIs/ELCIs.

**Thermal**

Complete line and ordering details for all thermal circuit breakers.
Marine
Complete line of ELCIs, thermal and hydraulic-magnetic circuit breakers specific for marine applications.

Renewable Energy
Complete line of circuit breakers and disconnect products specific for renewable energy applications.

On-Off Highway
Complete line of switches, controls and custom solutions specific for on-off highway applications.

Military
Complete line of COTS (Commercial-Off-The-Shelf) switches and circuit breakers specific for military applications.

Telecom/Datacom
Complete line of hydraulic-magnetic circuit breakers specific for telecom/datacom applications.

Industrial Automation
Complete line of switches and circuit breakers specific for industrial automation & controls applications.
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