L-Series
CIRCUIT BREAKER

The L-Series high performance, compact hydraulic-magnetic circuit breaker is ideally suited for the rigors and confined spaces found in today’s telecom/datacom power distribution units and rack systems. It provides best in class performance in an innovative low profile, space saving package complementing the overall spatial objectives required by telecommunications and data-communications systems designers in their quest to reduce the overall size of equipment, while increasing transmission capacity.

With the integration of an optional current transformer, the L-Series is capable of sensing current down to a level of 1%. This optional capability provides precise current monitoring and reporting required for back billing of the actual power consumed by datacenter storage and routing devices. This feature also facilitates load adjustments and maximizes efficiency. Further, a patent pending flush rocker actuator design and optional push-to-reset guard offers additional protection against accidental switching.

Number of poles: 1-3 poles; Max current/voltage ratings: .1-32A, 120/240-240VAC. Max interrupting capacity: 5000 Amps

Product Highlights:
• Optional current transformer
• Ultra low profile design saves valuable space
• Optional handle guard actuator
• UL 489 LISTED Branch Circuit breaker
• Designed for worldwide datacenter compatibility with up to 240VAC ratings

Typical Applications:
• Telecom/Datacom

Resources:
Configure a Complete Part
Download CAD & Sales Drawing
Watch Product Video

Carling Technologies®
L-Series
DESIGN FEATURES

1–Pole Configuration
with Low Profile Rocker Actuator

PATENT PENDING FLUSH
ROCKER ACTUATOR

PATENT PENDING LOW PROFILE
DESIGN: 1.760 INCH (4.4 CM)

INTEGRATED MOLEX CONNECTOR
For optional current transformer

2–Pole Configuration
with Push-To-Reset Guard

OPTIONAL PUSH-TO-RESET GUARD

INTER-POLE BARRIER
### Electrical

**Maximum Voltage**
- AC, 415V/240VAC (see table A)
- UL489, AC, 240VAC (see table A)

**Current Metering**
- Integrated current transformer.
- Measurement range: 1-32 Amps
- Voltage output: 10mV per Amp according to the formula below:
  \[ V = 0.01 \times I \pm 2\% \]
  (with current metering codes 1 or 2)
  \[ V = 0.01 \times I \pm 1\% \]
  (with current metering codes 3 or 4)

\[ \left| \frac{V - V_{10}}{V_{10}} \right| \leq 0.85\% \]

Where \( V = \text{CT output in volts} \)
\( V_{10} = \text{CT output in volts with} I = I_{10} = 10 \) (A);
\( l = \text{primary current in amperage (50/60 Hz)} \)
Phase shift between primary current and CT output is 0.25±0.25°.
Maximum crest factor of primary current is 1.73.
R1 shall be integrated in the breaker.
R2 and R3 are provided by end user and external to the breaker.
Connection: below Load Terminal.
2-pin connector, Molex 35362-0250.
Mating Connector housing – Molex PN35507-0200.

### Environmental

**Environmental Strength**
- UL-PRF-55629 and MIL-STD-202G
- MIL-PRF-55629 and MIL-STD-202G, Method 213B, Test Condition A
- Instantaneous and ultra-short curves tested at 90% of rated current.

**Vibration**
- 5-cycles at -55°C to +25°C to +85°C to +25°C.

**Thermal Shock**
- 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 @ 5% NaCl Solution, 96hrs)

### Physical

**Number of Poles**
- 1-3 poles

**Termination**
- Screw Terminals with the following thread sizes: 10-32, 8-32, M5, M4
- Standard for 2 & 3 poles
- Threaded Insert: #6-32 UNC-2B, or M3X0.5-6H B ISO (2 per Pole)
- Actuator – Rocker, with or without guard
- Series Trip
- Housing - Glass Filled Polyester
- Rocker – Nylon 6/6
- Line/Load Terminals – Copper Alloy; Bright Acid Tin Plated
- ~107 Grams (~3.76 Ounces) per pole
- Standard Color - Black
- Rocker - Black

**Weight**
- Standard Color
- Minimum of 100 Megohms@500VDC

**Overload Interrupt Capacity**
- 50 operations @ 600% of rated
- See Table A

**Agency Approvals**
- UL489, cUL, TUV (EN60934)

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

Table A: Voltage, Current and IC Ratings

<table>
<thead>
<tr>
<th>VOLTAGE</th>
<th>CURRENT (AMPS)</th>
<th>NUMBER OF POLES</th>
<th>PHASE</th>
<th>CURRENT METERING</th>
<th>INTERRUPT CAPACITY (AMPS)</th>
<th>UL 489 (Amps)</th>
<th>EN60934</th>
<th>(Icn) without Backup Fuse</th>
<th>(Inc) with Backup Fuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>240 VAC</td>
<td>0.1 - 32</td>
<td>1</td>
<td>1</td>
<td>Yes</td>
<td>5000</td>
<td>3000</td>
<td>10000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>240 VAC</td>
<td>0.1 - 32</td>
<td>2*</td>
<td>1</td>
<td>Yes</td>
<td>5000</td>
<td>3000</td>
<td>10000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>240 VAC</td>
<td>0.1 - 20</td>
<td>3</td>
<td>3</td>
<td>Yes</td>
<td>5000</td>
<td>3000</td>
<td>5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>415/240 VAC</td>
<td>0.1 - 20</td>
<td>3</td>
<td>3</td>
<td>Yes</td>
<td>----</td>
<td>3000</td>
<td>5000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120/240 VAC</td>
<td>0.1 - 32</td>
<td>2</td>
<td>1</td>
<td>Yes</td>
<td>5000</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>120/240 VAC</td>
<td>0.1 - 32</td>
<td>3**</td>
<td>1</td>
<td>Yes</td>
<td>5000</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
* Breaking both sides of the line
** 3rd pole to be neutral break

Electrical: Impedance (Across circuit breaker main terminals)

<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 - 32.0</td>
<td>+/- 25</td>
</tr>
</tbody>
</table>
### L-Series Circuit Breaker – Ordering Scheme

<table>
<thead>
<tr>
<th>L</th>
<th>1</th>
<th>1</th>
<th>B</th>
<th>0</th>
<th>24</th>
<th>620</th>
<th>4</th>
<th>2</th>
<th>1</th>
<th>D</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Series</td>
<td>2 Actuator</td>
<td>3 Poles</td>
<td>4 Circuit</td>
<td>5 Current Metering</td>
<td>6 Frequency &amp; Delay</td>
<td>7 Current Rating</td>
<td>8 Terminal</td>
<td>9 Actuator Color &amp; Legend</td>
<td>10 Mounting</td>
<td>11 Rating</td>
<td>12 Agency Approval</td>
</tr>
</tbody>
</table>

#### 1 Series
- L

#### 2 Actuator
- 1: Single Color Low Profile Rocker, Vertical Legend
- 2: Single Color Low Profile Rocker, Horizontal Legend
- 3: Single Color Push to Reset Low Profile Rocker, Vertical Legend
- 4: Single Color Push to Reset Low Profile Rocker, Horizontal Legend

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

#### 4 Circuit
- B: Series Trip (current)

#### 5 Current Metering
- 0: Without Current Transformer
- 1: Integrated Current Transformer, +/- 2%, 1 per unit
- 2: Integrated Current Transformer, +/- 2%, 1 per pole
- 3: Integrated Current Transformer, +/- 1%, 1 per unit
- 4: Integrated Current Transformer, +/- 1%, 1 per pole

#### 6 Frequency & Delay
- 20: 50/60Hz Instantaneous
- 21: 50/60Hz Short
- 22: 50/60Hz Medium
- 24: 50/60Hz Long
- 42: 50/60Hz Short, High-inrush
- 44: 50/60Hz Medium, High-inrush
- 46: 50/60Hz Long, High-inrush

#### 7 Current Rating (Amperes)

<table>
<thead>
<tr>
<th>Code</th>
<th>Amperes</th>
<th>...</th>
<th>...</th>
<th>...</th>
<th>...</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>410</td>
<td>1.000</td>
<td>460</td>
<td>6.000</td>
<td>613</td>
<td>13.000</td>
<td></td>
</tr>
<tr>
<td>512</td>
<td>1.250</td>
<td>465</td>
<td>6.500</td>
<td>614</td>
<td>14.000</td>
<td></td>
</tr>
<tr>
<td>415</td>
<td>1.500</td>
<td>470</td>
<td>7.000</td>
<td>615</td>
<td>15.000</td>
<td></td>
</tr>
<tr>
<td>517</td>
<td>1.750</td>
<td>475</td>
<td>7.500</td>
<td>616</td>
<td>16.000</td>
<td></td>
</tr>
<tr>
<td>420</td>
<td>2.000</td>
<td>480</td>
<td>8.000</td>
<td>617</td>
<td>17.000</td>
<td></td>
</tr>
<tr>
<td>522</td>
<td>2.250</td>
<td>485</td>
<td>8.500</td>
<td>618</td>
<td>18.000</td>
<td></td>
</tr>
<tr>
<td>425</td>
<td>2.500</td>
<td>490</td>
<td>9.000</td>
<td>620</td>
<td>20.000</td>
<td></td>
</tr>
<tr>
<td>527</td>
<td>2.750</td>
<td>495</td>
<td>9.500</td>
<td>622</td>
<td>22.000</td>
<td></td>
</tr>
<tr>
<td>430</td>
<td>3.000</td>
<td>510</td>
<td>10.000</td>
<td>624</td>
<td>24.000</td>
<td></td>
</tr>
<tr>
<td>435</td>
<td>3.500</td>
<td>710</td>
<td>10.500</td>
<td>625</td>
<td>25.000</td>
<td></td>
</tr>
<tr>
<td>440</td>
<td>4.000</td>
<td>611</td>
<td>11.000</td>
<td>630</td>
<td>30.000</td>
<td></td>
</tr>
<tr>
<td>445</td>
<td>4.500</td>
<td>711</td>
<td>11.500</td>
<td>632</td>
<td>32.000</td>
<td></td>
</tr>
<tr>
<td>450</td>
<td>5.000</td>
<td>612</td>
<td>12.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>455</td>
<td>5.500</td>
<td>712</td>
<td>12.500</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 8 Terminal
- 2: Screw Terminal, 8-32 (Bus Type)
- 4: Screw Terminal, 10-32 (Bus Type)
- E: Screw Terminal, M4 (Bus Type)
- H: Screw Terminal, M5 (Bus Type)

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

#### 10 Mounting Inserts
- 3
- C: 120/240 VAC (2 or 3 Pole only)
- D: 240 VAC
- P: 415Y/240 VAC (TUV only) 240 VAC 3 phase Delta

#### 11 Max. Application Rating
- C: 120/240 VAC (2 or 3 Pole only)
- D: 240 VAC
- P: 415Y/240 VAC (TUV only) 240 VAC 3 phase Delta

#### 12 Agency Approval
- A: Without approvals
- G: UL 489 Listed
- 3: UL 489 Listed, TUV Certified

**Notes:**
- 1: 3 Pole units available only when one of three poles is neutral
- 2: On Multi Pole units one current transformer is supplied on the actuator pole
- 3: Terminal barriers are required on multi poles breaker
- 4: Voltage rating P only available as a 3 pole device 20A max
- 5: Only available with approval code “A”
- 6: +/1% tolerance only available when used with +/-0.1% tolerance external burden resistor.
**Dimensional Specifications: in. [mm]**

**Notes:**
1. All dimensions are in inches [millimeters].
2. Screws have combination head.
3. Screw thread options: #8-32, #10-32, M4x.7, M5x.8
Authorized Sales Representatives and Distributors

Click on a region of the map below to find your local representatives and distributors or visit www.carlingtech.com/findarep.

About Carling

Founded in 1920, Carling Technologies is a leading manufacturer of electrical and electronic switches and assemblies, circuit breakers, electronic controls, power distribution units, and multiplexed power distribution systems. With four ISO registered manufacturing facilities and technical sales offices worldwide, Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! To learn more about Carling please visit www.carlingtech.com/company-profile.

To view all of Carling’s environmental, quality, health & safety certifications please visit www.carlingtech.com/environmental-certifications
Worldwide Headquarters
Carling Technologies, Inc.
60 Johnson Avenue, Plainville, CT 06062
Phone: 860.793.9281  Fax: 860.793.9231
Email: sales@carlingtech.com

Northern Region Sales Office: nrsm@carlingtech.com
Southeast Region Sales Office: sersm@carlingtech.com
Midwest Region Sales Office: mrsm@carlingtech.com
West Region Sales Office: wrsm@carlingtech.com
Latin America Sales Office: larsm@carlingtech.com

Asia-Pacific Headquarters
Carling Technologies, Asia-Pacific Ltd.,
Suite 1607, 16/F Tower 2, The Gateway,
Harbour City, 25 Canton Road,
Tsimshatsui, Kowloon, Hong Kong
Phone: Int + 852-2737-2277  Fax: Int + 852-2736-9332
Email: sales@carlingtech.com.hk

Shenzhen, China: shenzhen@carlingtech.com
Shanghai, China: shanghai@carlingtech.com
Pune, India: india@carlingtech.com
Kaohsiung, Taiwan: taiwan@carlingtech.com
Yokohama, Japan: japan@carlingtech.com

Europe | Middle East | Africa Headquarters
Carling Technologies LTD
4 Airport Business Park, Exeter Airport,
Clyst Honiton, Exeter, Devon, EX5 2UL, UK
Phone: Int + 44 1392.364422  Fax: Int + 44 1392.364477
Email: ltd.sales@carlingtech.com

Germany: gmbh@carlingtech.com
France: sas@carlingtech.com

Carling Technologies®

www.carlingtech.com