

# L-Series

Hydraulic Magnetic Circuit Breaker

**PRODUCT WEBPAGE**

*request sample, configure part, watch video*



## Space Saving Design for Datacom/Telecom Optional Integrated Current Transformer

The L-Series high performance, hydraulic-magnetic circuit breaker is ideal for the confined spaces of datacom/telecom power distribution units and rack systems. The space saving design features an optional current transformer with a 1% sensitivity tolerance for simple monitoring of the power consumed by storage and routing devices. A patented flush rocker actuator and optional push-to-reset guard protect against inadvertent actuation. The L-Series is rated from 0.1-32 amps, up to 240VAC with a max IC of 5,000 amps.

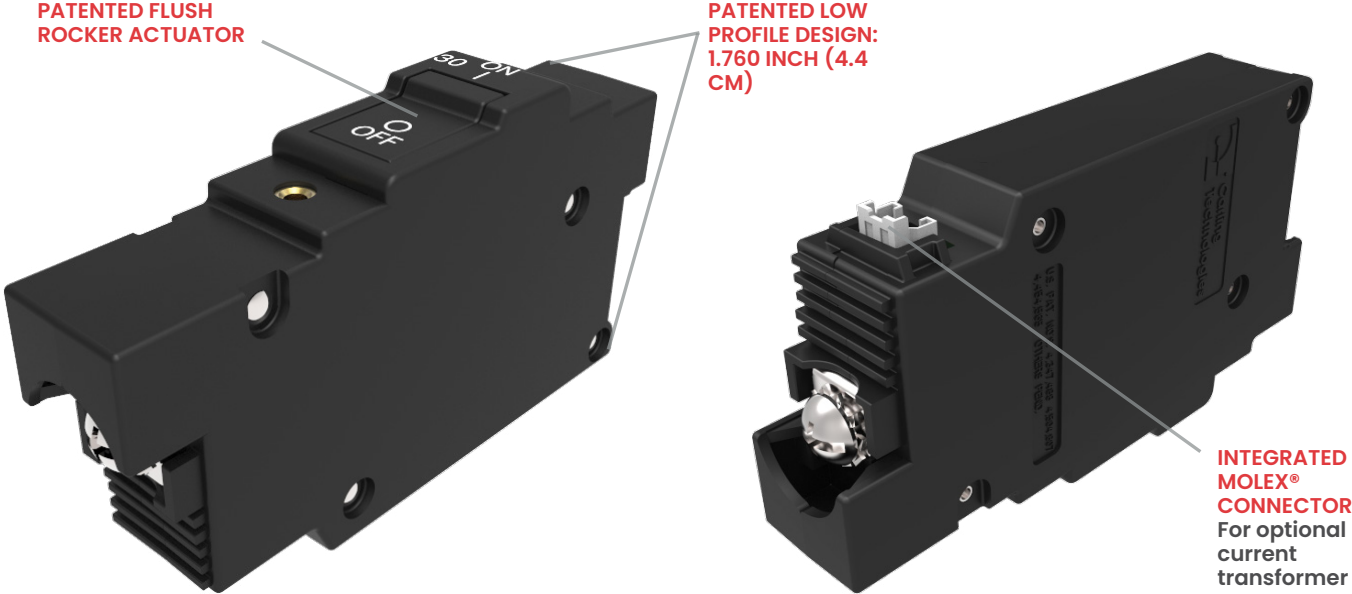
<b>1-3</b>	<b>1-32</b>	<b>240</b>	<b>5000</b>
Poles	Amps	VDC Max	Max Interrupting Capacity

## Typical Applications

- Datacom/Telcom: Power Distribution Units, Data Servers, Data Storage

# Design Features

## 1-Pole Configuration with Low Profile Rocker Actuator



## 2-Pole Configuration with Push-To-Reset Guard



# Tech Specs

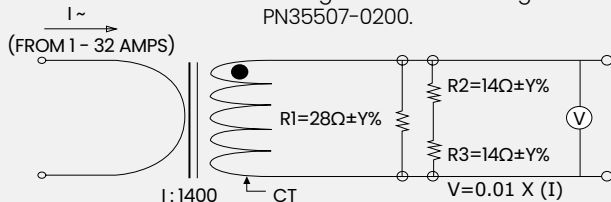
## Electrical

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

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

$$\left| \frac{\frac{V}{I} - \frac{V_{10}}{I_{10}}}{\frac{V_{10}}{I_{10}}} \right| \leq 0.85\%$$

Where V=CT output in volts  
V<sub>10</sub>=CT output in volts with I=I<sub>10</sub>=10 (A); I=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.



Note: When current metering code is 1 or 2; Y to equal 1.0  
When current metering code is 3 or 4; Y to equal 0.1

Dielectric Strength UL, CSA-1960V 50/60 Hz for one minute between all electrically isolated terminals. Comply with the 8mm spacing and 3750V 50/60 Hz dielectric requirements from hazardous voltage to operator accessible surfaces and between main circuits of adjacent poles per Publications EN 60950 & VDE 0805

Impedance See next page

Insulation Resistance Minimum of 100 Megohms@500VDC

Overload 50 operations @ 600% of rated

Interrupt Capacity See Table A

## Agency Approvals

UL489, cULus, TUV (EN60934)

## Mechanical

Endurance Endurance 10,000 "On-Off" Operations @ 6 per minute; with rated Current & Voltage

Trip Free Trips on overload even when actuator is forcibly held in the "On" position.

Trip Indication The operating actuator moves positively to the "Off" position when an overload causes the breaker to trip

## Physical

Number of Poles 1-3 poles

Termination Screw Terminals with the following thread sizes: 10-32, 8-32, M5, M4

Termination Barrier Standard for 2 & 3 poles

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

Actuator Rocker, with or without guard

Internal Circuit Config. Series Trip

Materials Housing – Glass Filled Polyester  
Rocker – Nylon 6/6  
Line/Load Terminals – Copper Alloy; Bright Acid Tin Plated

Weight ~107 Grams (~3.76 Ounces) per pole

Standard Colors Housing – Black; Rocker – Black

## Environmental

Environmental MIL-PRF-55629 and MIL-STD-202G

Operating Temperature -40°C to +85 °C

Vibration Withstands 0.06" excursion from 10-55 Hz and 10Gs 55-500 Hz at rated current per MIL-PRF-55629 and MIL-STD-202G, Method 204D, Test Condition A. Instantaneous and ultra-short curves tested at 90% of rated current.

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

Thermal Shock MIL-PRF-55629 and MIL-STD-202G, Method 107G, Condition A (5-cycles at -55°C to +25°C to +85°C to +25°C).

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 @ 5% NaCl Solution, 96hrs)

# Tech Specs

## Tables

**Table A:** Voltage, Current and IC Ratings

Voltage, Current and AIC Ratings							
Voltage	Current (Amps)	Number of Poles	Phase	Current Metering	Interrupt Capacity (Amps)		
					UL 489 (Amps)	EN60934	
						(Icn) without Backup Fuse	(Inc) with Backup Fuse
240 VAC	0.1 - 32	1	1	Yes	5000	3000	10000
240 VAC	0.1 - 32	2*	1	Yes	5000	3000	10000
240 VAC	0.1 - 20	3	3	Yes	5000	3000	5000
415/240 VAC	0.1 - 20	3	3	Yes	---	3000	5000
120/240 VAC	0.1 - 32	2	1	Yes	5000	N/A	N/A
120/240 VAC	0.1 - 32	3**	1	Yes	5000	N/A	N/A

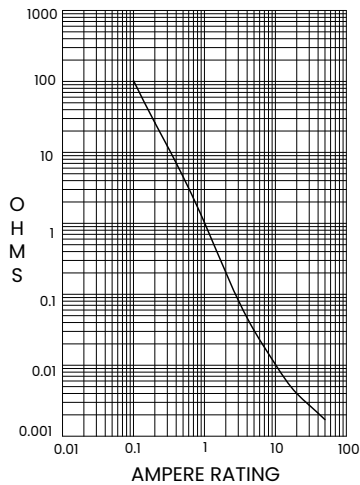
Notes:

\* Breaking both sides of the line

\*\* 3<sup>rd</sup> pole to be neutral break

## Electrical: Impedance (Across circuit breaker main terminals)

RESISTANCE, IMPEDANCE VALUES  
from Line to Load Terminals  
(Values Based on Series Trip Circuit Breaker)



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 5.0	+/- 15
5.1 - 32.0	+/- 25

## Time Delay Specs

To view all hydraulic-magnetic circuit breaker time delay values, please visit [www.carlingtech.com/sites/default/files/documents/Carling-HM-CB-Time-Delays.pdf](http://www.carlingtech.com/sites/default/files/documents/Carling-HM-CB-Time-Delays.pdf)

# Ordering Scheme

Sample Part Number **L 1 1 - B 0 - 24-620 - 4 2 1 - D G**

Selection 1 2 3 4 5 6 7 8 9 10 11 12

## 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<sup>1</sup>

## 4. CIRCUIT

B Series Trip (Current)

## 5. CURRENT METERING

- 0 Without Current Transformer
- 1<sup>2</sup> Integrated Current Transformer, +/- 2%, 1 per unit
- 2 Integrated Current Transformer, +/- 2%, 1 per pole
- 3<sup>2,6</sup> Integrated Current Transformer, +/- 1%, 1 per unit
- 4<sup>6</sup> Integrated Current Transformer, +/- 1%, 1 per pole

## 6. FREQUENCY & TIME DELAY

- 20 50 / 60Hz Instantaneous<sup>2</sup>
- 21 50 / 60Hz Ultra Short
- 22 50 / 60Hz Short
- 24 50 / 60Hz Medium
- 26 50 / 60Hz Long
- 42 50 / 60Hz Short, Hi-Inrush
- 44 50 / 60Hz Medium, Hi-Inrush
- 46 50 / 60Hz Long, Hi-Inrush

## 7. CURRENT RATING (AMPERES)

CODE AMPERES

410	1.000	440	4.000	490	9.000	615	15.000
512	1.250	445	4.500	495	9.500	616	16.000
415	1.500	450	5.000	610	10.000	617	17.000
517	1.750	455	5.500	710	10.500	618	18.000
420	2.000	460	6.000	611	11.000	620	20.000
522	2.250	465	6.500	711	11.500	622	22.000
425	2.500	470	7.000	612	12.000	624	24.000
527	2.750	475	7.500	712	12.500	625	25.000
430	3.000	480	8.000	613	13.000	630	30.000
435	3.500	485	8.500	614	14.000	632	32.000

## 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	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

- 1 6-32 X .195 Threaded Inserts
- A 6-32 X .195 Threaded Inserts with Terminal Barrier
- 2 ISO M3 X 5 mm Threaded Inserts
- B ISO M3 X 5 mm Threaded Inserts with Terminal Barrier

## 11. MAX. APPLICATION RATING

- C<sup>1</sup> 120/240 VAC (2 or 3 Pole only)
- D 240 VAC
- P<sup>4</sup> 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:

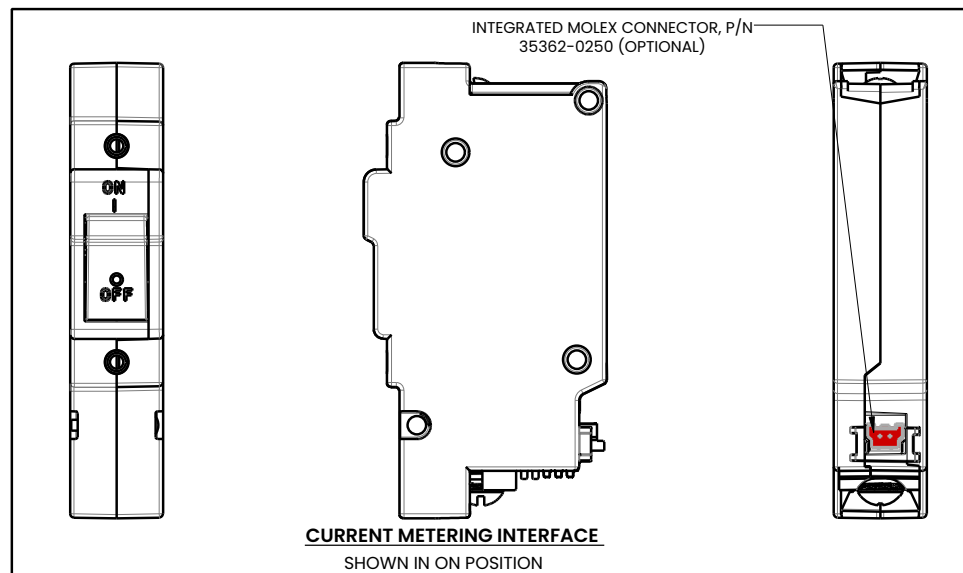
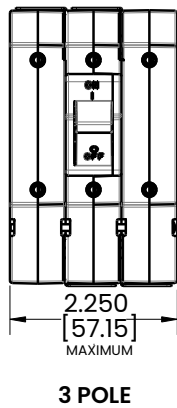
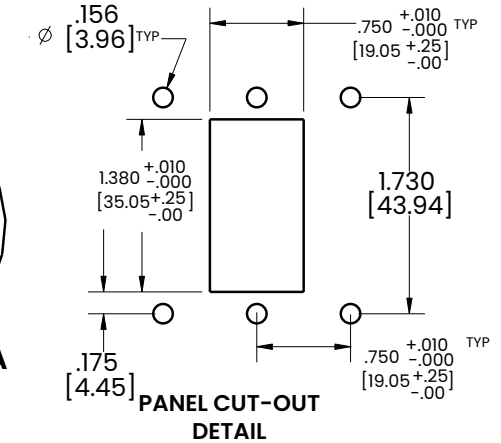
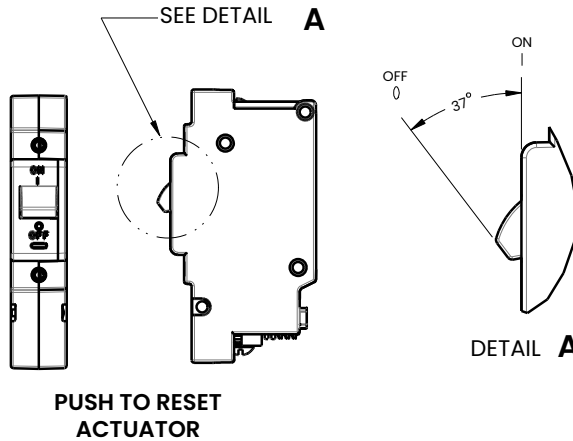
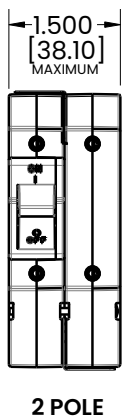
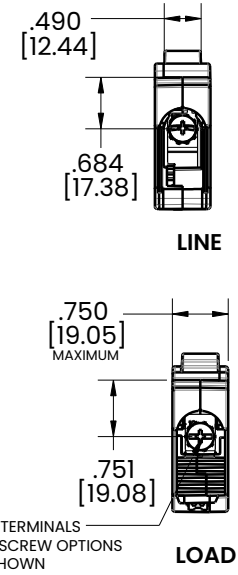
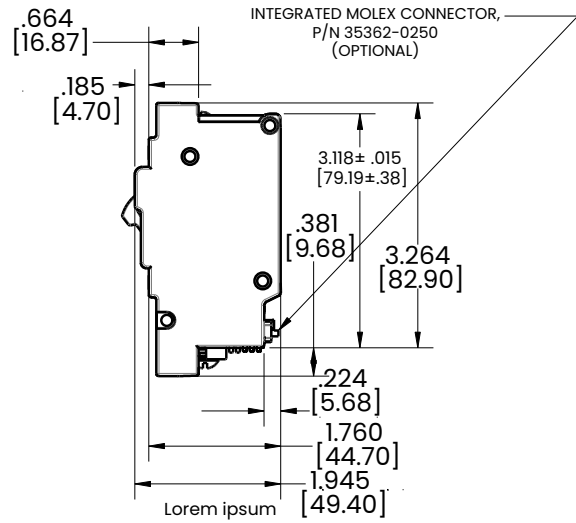
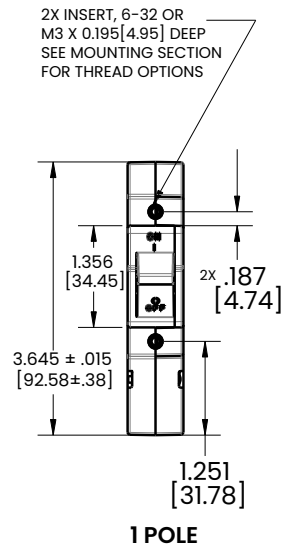
- 1 3 Pole units available only when one of three poles is neutral
- 2 On Multi Pole units one current transformer is supplied on the actuator pole
- 3 Terminal barriers are required on multi poles breaker
- 4 Voltage rating P only available as a 3 pole device 20A max
- 5 Only available with approval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

[Configure Complete Part Number >](#)

[Browse Standard Parts >](#)

# Dimensional Specs

inches [millimeters]



- Notes:
- 1 Screws have combination head
  - 2 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](http://www.carlingtech.com/findarep).



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