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

Resources:

Download 3D CAD Files

IGS > STP >

Watch Product Video

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

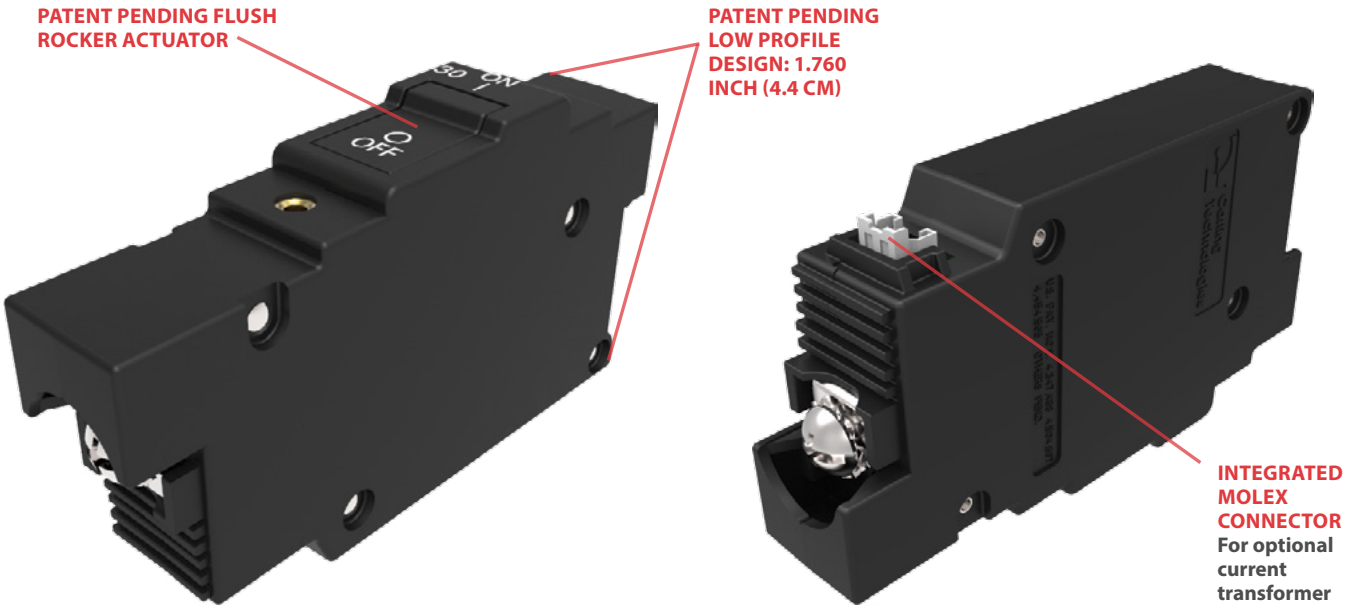
Carling Technologies®
Innovative Designs. Powerful Solutions.

Carling Technologies, Inc.
60 Johnson Avenue, Plainville, CT 06062
Email: sales@carlingtech.com
Application Support: team2@carlingtech.com
Phone: 860.793.9281 **Fax:** 860.793.9231

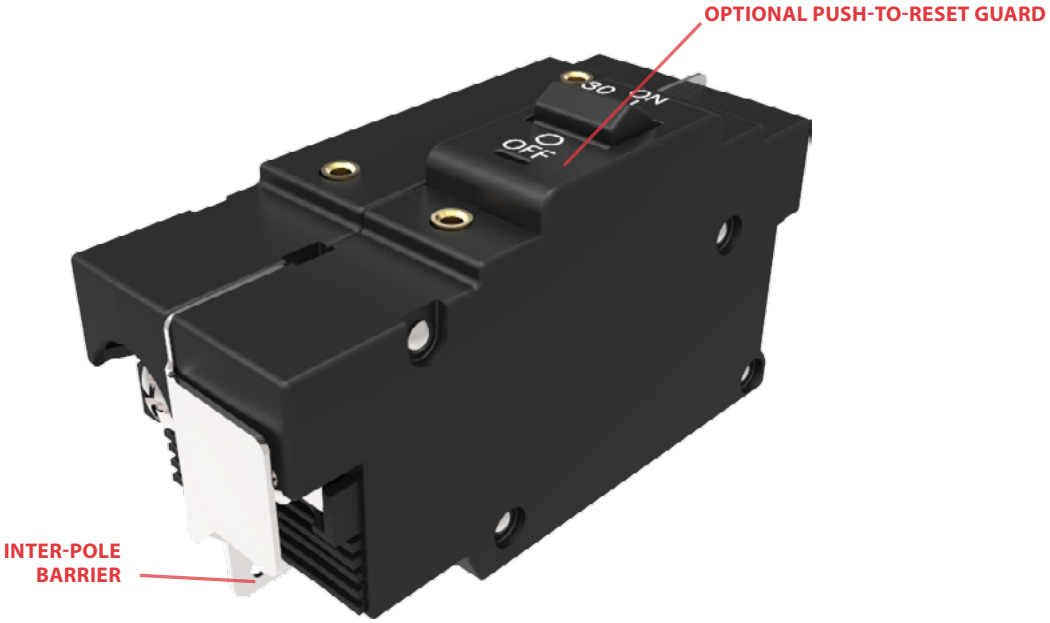
www.carlingtech.com

L-Series
DESIGN FEATURES

1–Pole Configuration with Low Profile Rocker Actuator



2–Pole Configuration with Push-To-Reset Guard

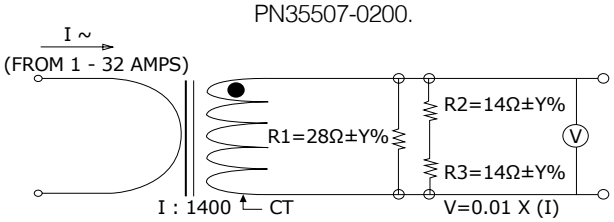


Electrical

Maximum Voltage	AC, 415Y/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: 2 (Amp) ≤ I ≤ 32(Amp) V = 0.01× I ± 2% (with current metering codes 1 or 2) V = 0.01× I ±1% (with current metering codes 3 or 4)

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

Where V=CT output in volts V_{10}=CT output in volts with I=I_{10}=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, cUL, TUV (EN60934)

Environmental

Environmental	MIL-PRF-55629 and MIL-STD-202G
Operating Temp	-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)

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 Color	Housing - Black Rocker - Black

Mechanical

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

Electrical Tables

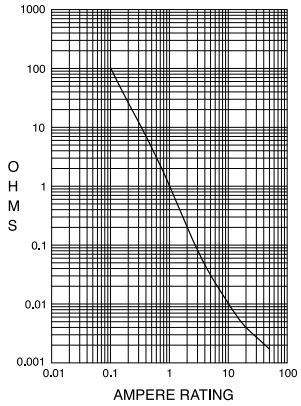
Table A: Voltage, Current and IC Ratings

L-SERIES TABLE A: VOLTAGE, CURRENT AND AIC RATINGS							
VOLTAGE	CURRENT (AMPS)	NUMBER OF POLES	PHASE	CURRENT METERING	INTERRUPT CAPACITY (AMPS)		
					UL 489 (Amps)	EN60934	
						Icn	Inc
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
** 3rd 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

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

L	1	1	–	B	0	–	24	–	620	–	4	2	1	–	K	G
1 Series	*2 Actuator*	*3 Poles*		*4 Circuit*	*5 Current Metering*		*6 Frequency & Delay*		*7 Current Rating*		*8 Terminal*	*9 Actuator Color & Legend*	*10 Mounting*		*11 Rating*	*12 Agency Approval*

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 [2] Integrated Current Transformer, +/- 2%, 1 per unit
2 Integrated Current Transformer, +/- 2%, 1 per pole
3 [2,6] Integrated Current Transformer, +/- 1%, 1 per unit
4 [6] Integrated Current Transformer, +/- 1%, 1 per pole

6 FREQUENCY & DELAY
20 [5] 50/60Hz Instantaneous
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	CODE	AMPERES	CODE	AMPERES
410	1.000	**460**	6.000	**613**	13.000
512	1.250	**465**	6.500	**614**	14.000
415	1.500	**470**	7.000	**615**	15.000
517	1.750	**475**	7.500	**616**	16.000
420	2.000	**480**	8.000	**617**	17.000
522	2.250	**485**	8.500	**618**	18.000
425	2.500	**490**	9.000	**620**	20.000
527	2.750	**495**	9.500	**622**	22.000
430	3.000	**610**	10.000	**624**	24.000
435	3.500	**710**	10.500	**625**	25.000
440	4.000	**611**	11.000	**630**	30.000
445	4.500	**711**	11.500	**632**	32.000
450	5.000	**612**	12.000		
455	5.500	**712**	12.500		

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

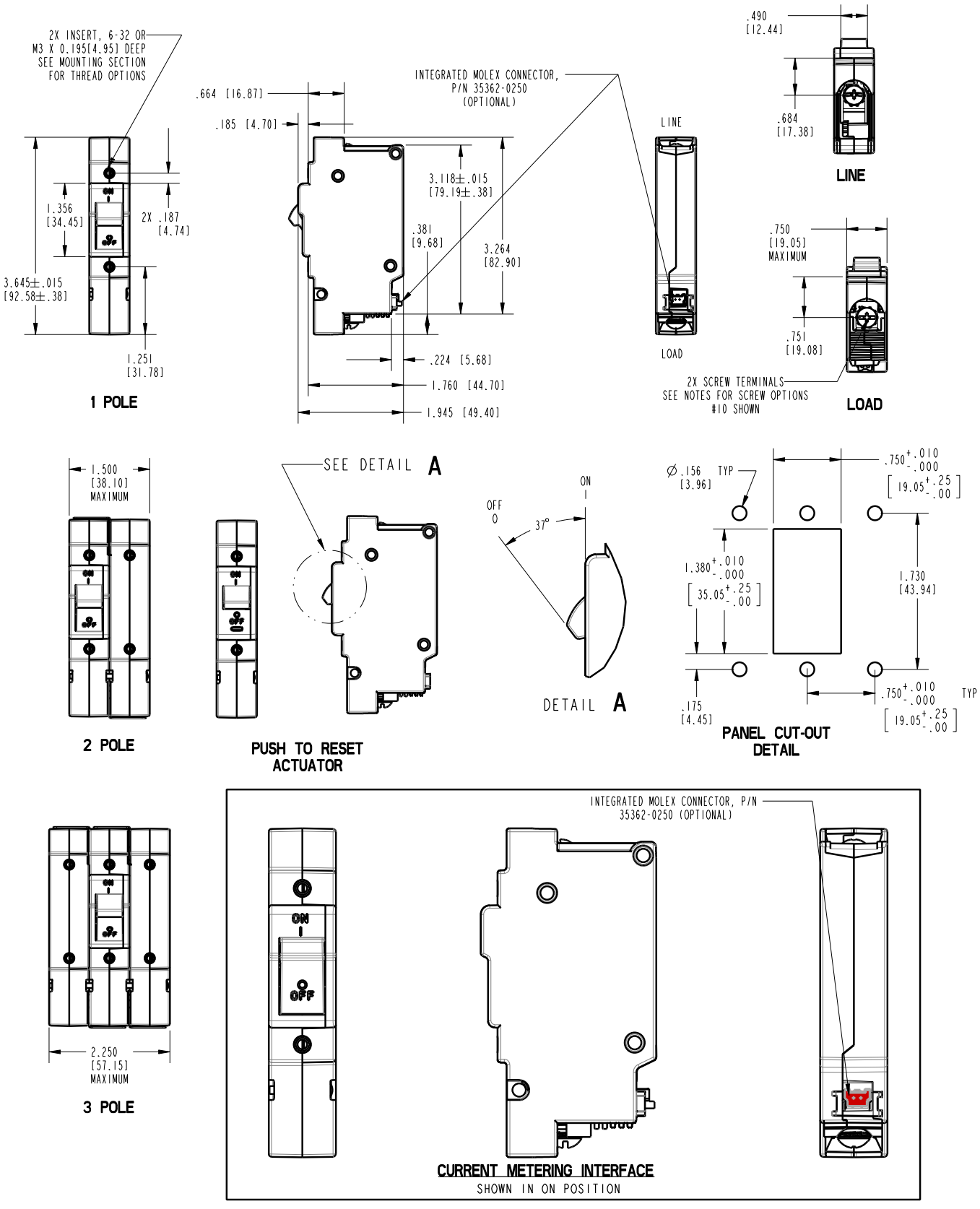
10 MOUNTING INSERTS [3]
1 6-32 X .195 Threaded Inserts
A 6-32 X .195 Threaded Inserts with Terminal Barrier
2 ISO M3 X 5 mm Threaded Inserts
B ISO M3 X 5 mm Threaded Inserts with Terminal Barrier

11 MAX. APPLICATION RATING
C [1] 120/240 VAC (2 or 3 Pole only)
D 240 VAC
P [4] 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.

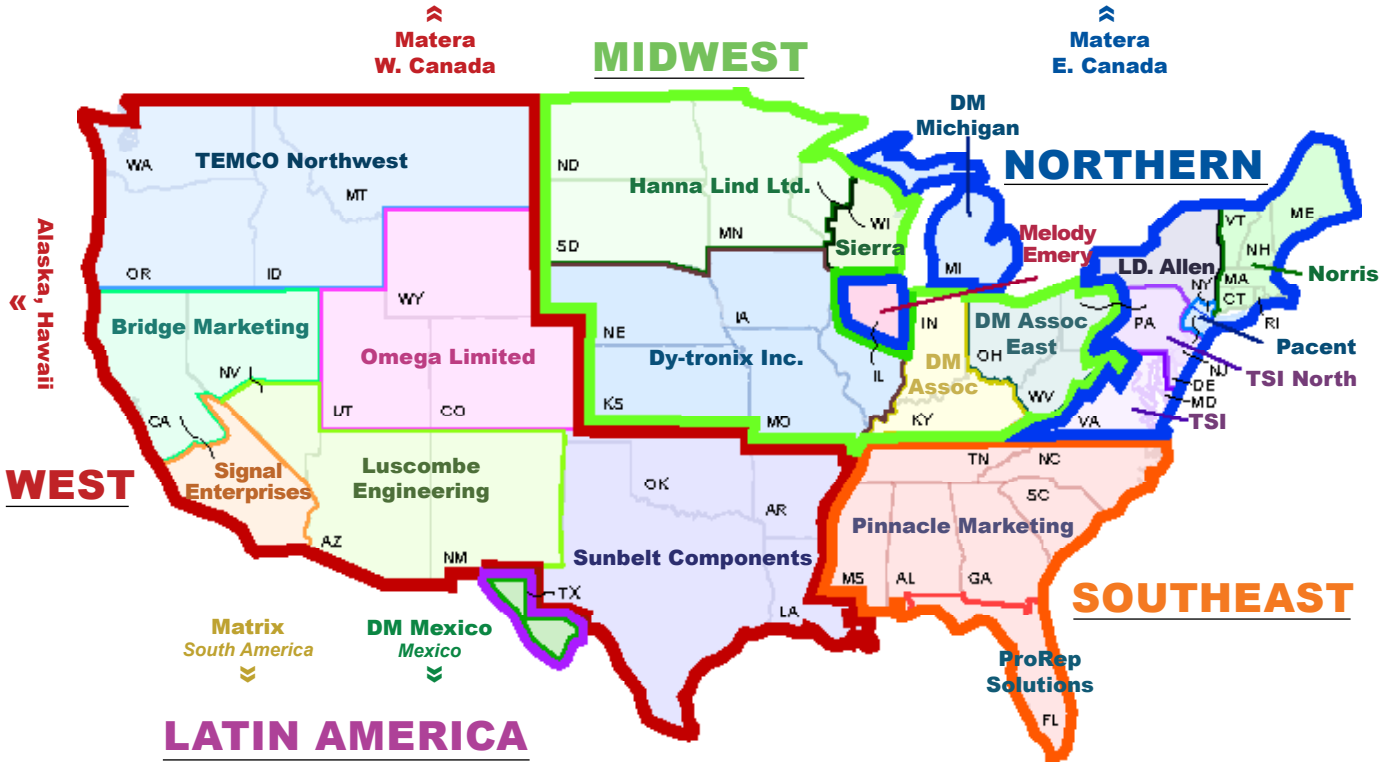
Dimensional Specifications: in. [mm]



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

Click on the group name on the map below to find your local representative or visit *www.carlingtech.com/findarep*.



Americas

Europe
Middle East
Africa

Asia-Pacific
Oceania

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.,
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®
Innovative Designs. Powerful Solutions.