

# LD-Series

## ELECTRONIC DIMMER CONTROLS

The LD-Series represents a dynamic breakthrough in dashboard technology, with its programmable circuitry, superior design, and unparalleled performance that affords seamless integration into most any dash panel. A variety of options, along with superior performance, functionality, and aesthetics assure compliance with the most stringent customer requirements. Key features include: robust design package with all components encased in switch housing, eliminating wire chafing and providing cost-savings as well with minimized electrical connections; sealing which prevents PCB degradation and eliminates short circuit potential. Superior heat dissipation is achieved with a heat sink mass which is over 50% larger than competitive products. Fully programmable circuitry lets the designer decide illumination levels and detent positions. EMC eliminates electrical “noise” and provides interference-free radio signals. Ease of assembly is accommodated with polarized integral connectors and an industry standard mounting hole.



### Resources:

[Configure a Complete Part](#)

[Download CAD & Sales Drawing >](#)

### Product Highlights:

- 3 Choices for incremental dimming rates
- 12 or 24 Volts
- Laser Etched or Lens Illumination

### Typical Applications:

- On/Off-Highway Equipment
- Agricultural Equipment
- Construction Equipment



**Carling Technologies®**  
Innovative Designs. Powerful Solutions.

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## Electrical

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact Rating      | 9-16VDC, 2-10Amp.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Terminals           | 6.3mm (0.250" TAB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Contacts            | solid-state load switching                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Output              | PWM 200 Hz.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| EMI/EMC             | SAE J1113 and SAE J1455<br>Conducted Transient Emissions<br>RF Conducted Emissions<br>Conducted Susceptibility:<br>Test pulse #1<br>Test pulse #2<br>Test pulse #3a, #3b<br>Load Dump: Test Pulse #5<br>Power lead Disturbance (Power Dips)<br>AF Conducted Immunity<br>Direct RF Injection (DRFI)<br>Abnormal Vehicle Operating Conditions<br>RF Radiated Emissions<br>Radiated Immunity-Absorber Lined Chamber<br>Electrostatic Discharge:<br>Shipping / handling Electrostatic Discharge: Human Static Discharge |
| Dielectric Strength | 1000V @ 60 Hz was applied for each unit for 1 minute                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Reverse Polarity    | 24VDC for 5 minutes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

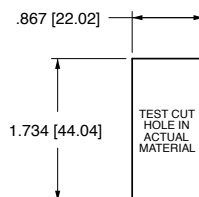
## Environmental

| Operating Temperature | -40°C to + 85°C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                          |       |      |       |      |        |       |         |       |         |       |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|-------|------|-------|------|--------|-------|---------|-------|---------|-------|
| Vibration             | Resonance Search<br>Individual resonance searches were conducted with vibration applied along each of the three mutually perpendicular axes.<br>24-50 Hz 0.40DA<br>50-2000 Hz $\pm 10$ G's peak<br>Random Vibration<br>The random vibration endurance test conditions were sequentially conducted in each of the three mutually perpendicular axes, 1hr/axis<br><table> <tr> <th>Freq. (Hz)</th><th>PSD (G<sup>2</sup>/Hz)</th></tr> <tr> <td>24 Hz</td><td>0.06</td></tr> <tr> <td>60 Hz</td><td>0.50</td></tr> <tr> <td>100 Hz</td><td>0.025</td></tr> <tr> <td>1000 Hz</td><td>0.025</td></tr> <tr> <td>2000 Hz</td><td>0.025</td></tr> </table> During the test, all units were operated at a load current of 2A with 12.5VDC. | Freq. (Hz) | PSD (G <sup>2</sup> /Hz) | 24 Hz | 0.06 | 60 Hz | 0.50 | 100 Hz | 0.025 | 1000 Hz | 0.025 | 2000 Hz | 0.025 |
| Freq. (Hz)            | PSD (G <sup>2</sup> /Hz)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |                          |       |      |       |      |        |       |         |       |         |       |
| 24 Hz                 | 0.06                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                          |       |      |       |      |        |       |         |       |         |       |
| 60 Hz                 | 0.50                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                          |       |      |       |      |        |       |         |       |         |       |
| 100 Hz                | 0.025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                          |       |      |       |      |        |       |         |       |         |       |
| 1000 Hz               | 0.025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                          |       |      |       |      |        |       |         |       |         |       |
| 2000 Hz               | 0.025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                          |       |      |       |      |        |       |         |       |         |       |
| Salt Spray            | Per Mil-Std 202F, Method 101D, Test Condition A. Duration 96 hrs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |                          |       |      |       |      |        |       |         |       |         |       |
| Dust                  | Per Mil-Std 810C, Method 510.2. Air velocity 300 $\pm$ 200 Feet/Min., Test Duration 16 Hr.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                          |       |      |       |      |        |       |         |       |         |       |
| Moisture Resistance   | Per Mil-Std 202F, Method 106E. Test Criteria-pre and post test operation of switch.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                          |       |      |       |      |        |       |         |       |         |       |

## Physical

|                 |                                            |
|-----------------|--------------------------------------------|
| Function        | Incremental for continuous dimming         |
| Operation       | Momentary                                  |
| Lighted         | LED's internally dimmed                    |
| Base            | PBT Polyester V-0 flammability             |
| Rocker          | Polycarbonate or Nylon 6/6<br>Glass filled |
| Bracket         | PBT Polyester V-0 flammability             |
| Connector       | Nylon 6/6 toughened                        |
| Actuation Force | 300 gm $\pm$ 50 gm                         |
| Weight          | 52 grams                                   |

## Mounting Specifications



**Panel Thickness Range**  
Acceptable Panel Thickness  
.030 to .156 (.76mm to 3.96mm)  
Recommended:  
.030, .062, .093, .125 and .156

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

|           |          |                |               |                |                |                 |                         |              |               |             |                       |             |          |           |
|-----------|----------|----------------|---------------|----------------|----------------|-----------------|-------------------------|--------------|---------------|-------------|-----------------------|-------------|----------|-----------|
| <b>LD</b> | <b>3</b> | <b>5</b>       | <b>1</b>      | <b>C</b>       | <b>C</b>       | <b>1</b>        | <b>-</b>                | <b>3</b>     | <b>A</b>      | <b>A</b>    | <b>FE</b>             | <b>-</b>    | <b>1</b> | <b>FC</b> |
| 1 Series  | 2 Rating | 3 Dimming Rate | 4 Termination | 5 Illumination | 6 Illumination | 7 Bracket Color | 8 Actuator Style/ Color | 9 Lens Color | 10 Lens Color | 11 Legend 1 | 12 Legend Orientation | 13 Legend 2 |          |           |

### 1 SERIES

**LD** Electronic Dimmer Control

### 2 RATING

**1** 4A, 12 volts **A** 2A, 24 volts  
**2** 10A, 12 volts **C** 5A, 24 volts

### 3 DIMMING RATE

**1** 30 - 100% 8 positions **A** 0 - 100% 11 positions  
**5** 10 - 100% 10 positions

### 4 TERMINATION

**1** .230 TABS (5.84 mm)

### 5 & 6 ILLUMINATION

No lamp **S**  
 12V LED **C** **N** **H**  
 24V LED **D** **P** **J**

### 7 BRACKET COLOR <sup>1</sup>

**1** Black **2** White **3** Gray

### 8 ACTUATOR STYLE / COLOR <sup>1</sup>

Rocker **3** Laser Etched **A** Black **B** White **C** Gray **D** Red  
 Paddle **4** **J** **K** **M** **N**

### 9 & 10 LENS COLOR

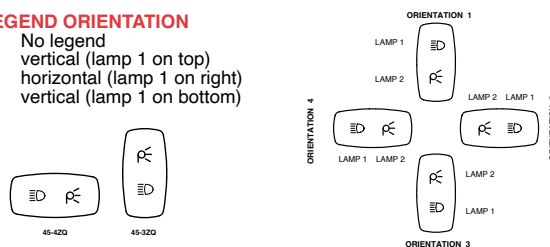
**Z** No Lens  
**1** Clear **B** White **G** Amber **M** Green **T** Red **U** Blue  
**2** - **C** - **H** - **N** - **V** -  
**3** - **D** - **J** - **P** - **W** -  
**5** **A** - - - -

### 11 LEGEND #1

**00** No legend **FC** Dim **FE** Bright  
 For legend options, visit us at [carlingtech.com](http://carlingtech.com)

### 12 LEGEND ORIENTATION

**0** No legend  
**1** vertical (lamp 1 on top)  
**2** horizontal (lamp 1 on right)  
**3** vertical (lamp 1 on bottom)

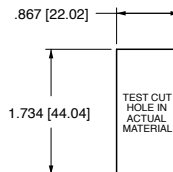
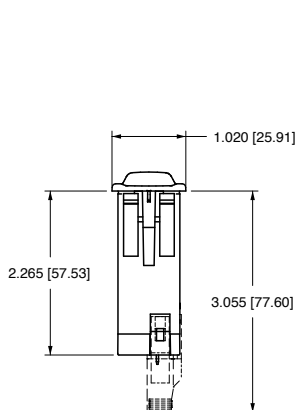
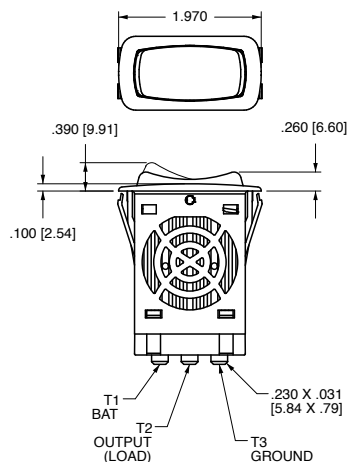


### 13 LEGEND #2

**00** No legend **FC** Dim **FE** Bright  
 For legend options, visit us at [carlingtech.com](http://carlingtech.com)

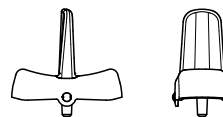
Notes:

<sup>1</sup> Custom colors are available. Consult factory.

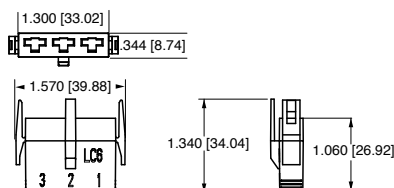


### MOUNTING HOLE

**Panel Thickness Range**  
 Acceptable Panel Thickness  
 .030 to .156 (.76mm to 3.96mm)  
 Recommended:  
 .030, .062, .093, .125 and .156



PADDLE STYLE ACTUATOR



| Q.C. SELECTION GUIDE                           |                  |                 |                   |
|------------------------------------------------|------------------|-----------------|-------------------|
| COMPANY SERIES                                 | PACKARD PART NO. | WIRE GAGE       |                   |
|                                                |                  | AWG             | MM <sup>2</sup>   |
| PACKARD METRI-PACK 630 SERIES TIN PLATED BRASS | 12084590         | 12              | 3.0               |
|                                                | 12052224         | 12              | 3.0               |
|                                                | 12015870         | 16-14           | 2.0-1.0           |
|                                                | 12015869         | 20-18           | 1.0-.80           |
|                                                | 12020035         | 22-18 (2 REQ'D) | .80-.50 (2 REQ'D) |
|                                                | 12052222         | 20-22           | .50-.35           |

## Authorized Sales Representatives and Distributors

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## 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 ISO9001 and IATF16949 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](http://www.carlingtech.com/company-profile).

To view all of Carling's environmental, quality, health & safety certifications please visit [www.carlingtech.com/environmental-certifications](http://www.carlingtech.com/environmental-certifications)

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