L400 Series
LED Replacement for HID Cobra/Roadway Heads

1/23/18
Howard Lighting L400 Series (LED Roadway/Cobra Head)

Our line of L400 Series luminaires offer direct LED replacements for HID Cobra Head/Roadway luminaires.

- **L401/402** - Wattages 40, 65, 80 and 100

- **L403/404** - Wattages 120, 150, 180 and 240

- **L406/408** – Wattages 260, 280, 300, 320
  (product under development and wattages subject to change)
L400 Series
L401/L402 Models
LED Street and Area Light

<table>
<thead>
<tr>
<th>Model</th>
<th>Model</th>
<th>Options</th>
<th>Power</th>
<th>Color</th>
<th>Distribution</th>
<th>Control Options</th>
<th>Finish</th>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>L401</td>
<td>L401</td>
<td>L: No Photocontrol*</td>
<td>25W</td>
<td>30K: 3000K 40K: 4000K*</td>
<td>T2: Type 2</td>
<td>10: 0-10V Dimming*</td>
<td>GR: Grey*</td>
<td>M: 120-277VAC*</td>
</tr>
<tr>
<td></td>
<td>L402</td>
<td>LC: With Long Life Photocontrol</td>
<td>40W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>65W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>80W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Standard Configuration

<table>
<thead>
<tr>
<th>Model</th>
<th>LEDs</th>
<th>Current</th>
<th>System Watts</th>
</tr>
</thead>
<tbody>
<tr>
<td>L401L</td>
<td>10</td>
<td>0.7A</td>
<td>25W</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>0.75A</td>
<td>40W</td>
</tr>
<tr>
<td></td>
<td>1.15A</td>
<td>65W</td>
<td></td>
</tr>
<tr>
<td>L402L</td>
<td>28</td>
<td>0.7A</td>
<td>80W</td>
</tr>
<tr>
<td></td>
<td>1.0A</td>
<td>100W</td>
<td></td>
</tr>
</tbody>
</table>

**Standard Features:**
- 7-pin photo control receptacle (per ANSI C136.41)
- Stand along 10kV/10kA surge suppression device
- Terminal block accepts 14-6 AWG conductors
- Two bolt mounting accommodates 1 ¾” to 2” arm
- Integral tilt adjustment steps ± 5 degrees
- Tool-Less entry
- Input voltage: 120-277v, 50/60Hz
- Power Factor: > 0.9 at full load and THD < 20% at full load
- Operating Temperatures -40C to +50C
- UL Listed
- DLC Listed
- Ten (10) Year Warranty
L400 Series
L403/L404 Models
LED Street and Area Light

Standard Features:
- 7-pin photo control receptacle (per ANSI C136.41)
- Stand along 10kV/10kA surge suppression device
- Terminal block accepts 14-6 AWG conductors
- Four bolt mounting accommodates 1 ¾” to 2” arm
- Integral tilt adjustment steps ± 5 degrees
- Tool-Less entry
- Input voltage: 120-277v, 50/60Hz
- Power Factor: > 0.9 at full load and THD < 20% at full load
- Operating Temperatures -40C to +50C
- UL Listed
- DLC Listed
- Ten (10) Year Warranty
**LR (LED Roadway)**
LR will be designed as an energy saving LED replacement of High Wattage and High Lumen Roadway fixtures to compete with Holophane.

**Features:**
- Solid die-cast aluminum housing
- Offer optics required to compete with Holophane
- Offer glare shied as option is requested
- UL listed
- DLC listed
- Offer wattages comparable with Holophane and that will meet IESNA’s RP8 for highway lighting.
- Standard with 7 pin photo control receptacle
- 5 year warranty
- Dimming drivers with the option of wireless controls
- Wattages: 260, 280, 300 and 320 (subject to change)

**Markets for this product:**
- DOT’s
- Municipal Utilities
- IOU’s

**Target release date:** 4th Quarter 2018
Information on Options
for
L400 Series
Adjustable Output Unit - AOU

**Benefits**
- Works with standard 0–10 V dimming drivers.
- Doesn’t consume power.
- Costs associated with stocking multiple SKUs can be minimized if ordered with this option (option “U” for MHB series). Fixtures can be converted for lower Lumen/Wattage unit by selecting appropriate settings.
- The unit can be utilized to achieve higher efficacies by reducing LED drive current.

**Description**
AOU is a passive dimmer that can be used with 0–10V capable dimming drivers. It can be easily adjusted with a flat-blade screwdriver. Approximate wattage settings are shown in the table below. The unit comes factory set at “#8” which is the maximum output level. The unit consumes no standby power and can be removed to convert the luminaire to standard 0–10V dimming.

**Dimensions:** Length: 2.0”, Width: 1.3”, Depth: 0.8”

**AOU Position Selector Guide –**

<table>
<thead>
<tr>
<th>Position</th>
<th>#8</th>
<th>#7</th>
<th>#6</th>
<th>#5</th>
<th>#4</th>
<th>#3</th>
<th>#2</th>
<th>#1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimming Voltage (V)</td>
<td>&gt;10</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Input Power* (in percentage of original power)</td>
<td>100%</td>
<td>92%</td>
<td>81%</td>
<td>70%</td>
<td>59%</td>
<td>49%</td>
<td>39%</td>
<td>28%</td>
</tr>
</tbody>
</table>

*Input power provided for estimation purposes only. Actual usage may vary by ±3%.

**Wiring Schematic**

[Diagram of AOU wiring schematic]
Option for NO1: AOU (Adjustable Output Unit)

This new accessory will be offered as an option for LED fixtures standard with 0-10v dimming drivers. This allows the customer an inexpensive way tune down LED fixtures if they want lower light levels and wattages (8 positions/options). This AOU will be located inside the fixture and can be adjusted with a screwdriver. A detailed spec sheet for this new accessory will be available soon. The AOU is available now!

The following preliminary data below is an example of the lumen and wattage variables when used on our L404L150W40K LED Roadway Fixture (all eight settings are shown):
### L400 SERIES - ADJUSTABLE OUTPUT UNIT

#### Chart available in Excel or PDF

<table>
<thead>
<tr>
<th>Model</th>
<th>Lumen Output</th>
<th>AQO Position</th>
<th>Input Wattage</th>
</tr>
</thead>
<tbody>
<tr>
<td>L4001</td>
<td>2000</td>
<td>1</td>
<td>75</td>
</tr>
<tr>
<td>L4002</td>
<td>2200</td>
<td>2</td>
<td>85</td>
</tr>
<tr>
<td>L4003</td>
<td>2400</td>
<td>3</td>
<td>95</td>
</tr>
<tr>
<td>L4004</td>
<td>2600</td>
<td>4</td>
<td>105</td>
</tr>
<tr>
<td>L4005</td>
<td>2800</td>
<td>5</td>
<td>115</td>
</tr>
</tbody>
</table>

L401, L402, L403, and L404 Models

Select control option "AQO" on L400 Series specsheet

AOU is easily adjusted with a flat-blade screwdriver. Approximate lumen and wattage values are shown in the tables below. The unit comes factory set at "8" which is the maximum output level. The unit consumes no standby power and can be removed to convert the luminaire to standard 0-10V dimming.

Benefits:
- Allows maintenance departments to carry less inventory through reduced number of unique models.
- The unit can be utilized to achieve as high as 145LPW.
Optional Howard Long Life Photo Controls for L400 Series

HI-LL (LED Photo Controls)

HI-LL is a line of photo controls offered with our LED fixtures and sell alone.

Features:
- The HI-LL is specifically designed to provide long life, enhanced light sensitivity, and superior surge protection when used with LED luminaires.
- Filtered silicon light sensor – sensitive to Sunlight but not LED.
- Sealed relay
- 4 MOVs each rated for 1280 Joules/40,000 Amp
- Base gasket is a continuous used temperature of 105°C
- 3-6 second turn-off delay
- Up to 200 amp inrush
- Temp range: -40 to +70°C ambient
- ROHS compliant
- Meets ANSI C136.10
- Voltage 105 to 305 VAC, 60Hz
- Load rating: 1800VA driver or ballast load
- Black cover standard, other colors optional (Metal cap standard on 20 year model)
- 20 year life
- 12 Year Warranty

<table>
<thead>
<tr>
<th>LONG LIFE CONTROL</th>
<th>VOLTAGE</th>
<th>TURN ON LEVELS (1.5 ratio)</th>
<th>COVER COLOR</th>
<th>WARRANTY TERM</th>
<th>FAILURE MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HI-LL</td>
<td>127: 120-277 VAC</td>
<td>15: 1.5fc (ANSI Standard)</td>
<td>BK: Black</td>
<td>12: 12 year</td>
<td>Blank: Fail ON</td>
</tr>
<tr>
<td></td>
<td>480: 347-480 VAC</td>
<td>10: 1.0fc</td>
<td>BU: Blue</td>
<td></td>
<td>F: Fail OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>26: 2.6fc (IES)</td>
<td>GN: Green</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Three terminal locking-type plug

Base surface

2.219 Max. (56.4)

1.875 Max. (47.6)

.125 (3.2) Gasket

.313 (79)

20 Year life

12 Year Warranty
Wireless Controls/Sensor Nodes

The L400 Series is standard with a (7) pin photo control receptacle. Since a (7) pin photo control receptacle is standard the L400 Series is set up to accept any of the various manufacturers that offer wireless controls. We’ve established relationships with several of wireless control vendors, therefore have the ability to quote wireless systems now. For more information and details contact your Howard Lighting representative.

Noted below is an image of a (7) pin photo control receptacle.
Glare Shields are available for both L401/402 and L403/404 Series
Literature and Marketing Information
for
L400 Series (LED Cobra Head/Roadway)
Competitive Information for LED Roadway/Cobra Head

We’ve updated our competitive review of LED NEAM heads and this information is available in Excel for you to share with your staff and customers.

<table>
<thead>
<tr>
<th>Model</th>
<th>Wattage</th>
<th>Color Temperature</th>
<th>CRI</th>
<th>CCT</th>
<th>Lumen</th>
<th>Mean Life</th>
<th>Weight</th>
<th>Projected Area</th>
<th>Warranty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>100</td>
<td>3000K</td>
<td>80</td>
<td>8000K</td>
<td>10000</td>
<td>10000</td>
<td>20</td>
<td>8000</td>
<td>5 years</td>
</tr>
<tr>
<td>Model 2</td>
<td>200</td>
<td>3500K</td>
<td>85</td>
<td>9000K</td>
<td>15000</td>
<td>15000</td>
<td>25</td>
<td>10000</td>
<td>7 years</td>
</tr>
<tr>
<td>Model 3</td>
<td>300</td>
<td>4000K</td>
<td>90</td>
<td>10000K</td>
<td>20000</td>
<td>20000</td>
<td>30</td>
<td>12000</td>
<td>10 years</td>
</tr>
</tbody>
</table>

*Updated 03/01/2024*
Literature

We offer the following literature for L400 Series Cobra Head/Roadway luminaires:

- L401/402 spec sheet
- L403/404 spec sheet
- L406/408 spec sheet (coming soon)
- AOU spec sheet with L400 data
- L401/402 Glare Shield spec sheet
- L403/404 Glare Shield spec sheet

Check out our literature library under Documents/Forms on our home page at [www.howard-lighting.com](http://www.howard-lighting.com) for a full list of literature.
L401/402 and L403/404 Warranty

Check out our literature library under Documents/Forms on our home page at www.howard-lighting.com for a full list of our literature.

The DOE report is the most reliable estimate of the outdoor lighting inventory in the US. The data in this report is from 2015, but the report was not released until November 2017. The following tables provide a great insight into the available market for outdoor lighting, the opportunities that still exist for conversions to LED and the average wattages used by application. **The table noted below estimates that there are 39,165,000 Roadway luminaires that have not been converted to LED.**

**Inventory of Lamps/Luminaires by Outdoor Application (1,000’s) in 2015**

<table>
<thead>
<tr>
<th>Application</th>
<th>Incandescent</th>
<th>Halogen</th>
<th>CFL</th>
<th>Linear Fluorescent</th>
<th>MV</th>
<th>MH</th>
<th>HPS</th>
<th>LPS</th>
<th>LED</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airfield</td>
<td>338</td>
<td>599</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,242</td>
</tr>
<tr>
<td>Billboard</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>601</td>
</tr>
<tr>
<td>Building Ext.: C&amp;I</td>
<td>3,044</td>
<td>2,524</td>
<td>11,121</td>
<td>49,124</td>
<td>1,361</td>
<td>17,414</td>
<td>8,435</td>
<td>-</td>
<td>-</td>
<td>114</td>
<td>107,914</td>
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<tr>
<td>Comm. Tower</td>
<td>139</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>350</td>
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<tr>
<td>Parking</td>
<td>1,250</td>
<td>2,790</td>
<td>-</td>
<td>5,558</td>
<td>58</td>
<td>27,076</td>
<td>13,785</td>
<td>-</td>
<td>-</td>
<td>23,498</td>
<td>83,519</td>
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<td>Railway</td>
<td>376</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>912</td>
<td>921</td>
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<tr>
<td>Roadway</td>
<td>59</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>272</td>
<td>1,073</td>
<td>35,484</td>
<td>940</td>
<td>9,003</td>
<td>1,396</td>
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<td>Sports Field</td>
<td>-</td>
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<td>-</td>
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<td>3</td>
<td>300</td>
<td>43</td>
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<td>453</td>
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<td>Traffic Signal</td>
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<td>-</td>
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<td>-</td>
<td>11,429</td>
<td>-</td>
<td>-</td>
<td>14,320</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>8,099</strong></td>
<td><strong>5,939</strong></td>
<td><strong>11,121</strong></td>
<td><strong>54,682</strong></td>
<td><strong>1,694</strong></td>
<td><strong>46,350</strong></td>
<td><strong>57,747</strong></td>
<td><strong>940</strong></td>
<td><strong>58,779</strong></td>
<td><strong>12,195</strong></td>
<td><strong>257,546</strong></td>
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</tbody>
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Market Data Base

Market Data Base

- Utilities
  - Investor Owned
  - Co-op/REA
  - Municipal
- Utility Lighting Contractors
- ESCO’s
- DOT estimated market and inventory
- Daily bid alert for municipal, Federal and state DOT projects

Check out our literature library under Documents/Forms on our home page at www.howard-lighting.com for a full list of our literature. For available market information ask your Howard representative.
For more information on other Howard Lighting products, contact the Howard Lighting (Utility/DOT) regional manager in your area or our customer service team.