Cooper Lighting
by Eaton
Patented AccuAim™ optics

Precisely controlled light output

WaveStream™ LED
Taking Control of Light.

The Breakthrough You’ve Been Waiting For
WaveStream™ LED technology presents a new paradigm that will take LEDs mainstream in a way that hasn’t been possible before — transforming the LED point source into a highly efficient and elegant luminous plane. It’s a groundbreaking technology that delivers unparalleled design freedom, maximum energy efficiency and unrivaled optical and brightness control.

The Science Behind the Beauty
A patented optical coupling process maximizes the amount of light injected into the WaveStream panel, dramatically improving luminaire efficiency. Laser-precise, patented AccuAim™ optics arranged in exacting patterns provide unparalleled brightness control while delivering optimal distributions tailored to each fixture and application.
WaveStream is the first lighting technology designed and optimized exclusively for LEDs — with form and function that allows mainstream adoption like never before. Once you factor in all the ways you can build and customize WaveStream lighting solutions, over 500,000 configurations are available to address nearly every major lighting application.
Unparalleled Performance and Comfort
TopTier™ LED Parking Garage and Canopy Luminaire is an innovative solution that delivers an unparalleled combination of performance and visual comfort. Patented WaveStream™ optical technology disrupts the line of sight of the LED light sources from the observer, while extracting the maximum amount of light on task. This approach results in a high level of uniformity and vertical footcandles which enhances the level of safety in the application.

Long Life and Low Maintenance Cost
In addition to delivering superior performance, the TopTier LED Parking Garage and Canopy Luminaire is designed for low maintenance, long life and low cost of ownership. These are key benefits which provide compelling justification to retrofit traditional HID solutions, or allow end users to capitalize on these advantages in new construction applications. The TopTier luminaire can be tailored to meet your most important needs without compromising on specification features. The fixture housing is IP66 rated, which provides years of reliable operation with minimal service requirements.
Universal functionality, energy-efficient optical control, easy installation and a low-profile design prove that the TopTier LED Parking Garage and Canopy Luminaire is the best choice for parking garage, stairwell, low-bay and canopy illumination.
Design Performance Features

Construction
- Low profile, die-cast aluminum housing
- Spun aluminum top sloped to minimize bird nesting
- Universal, galvanized steel quick-mount plate with click-and-lock tab releases
- Mounts to standard one-gang, two-gang and 4” round wet location junction boxes
- IP66 rated
- 3G vibration rated
- UL and cUL wet location listed

Electrical
- Operates in -40°C to 40°C ambient conditions. Optional high ambient 50°C configuration
- 120-277V 50/60Hz, 347V 60Hz, or 480V 60Hz operation
- Standard proprietary circuit module designed to withstand 10kV of transient line surge
- Optional occupancy sensor provides additional energy savings
- Scalable in six lumen packages ranging from 3,000 to 11,000 nominal delivered lumens

Optical
- Available in concentrated (CQ), medium (MQ) and wide (WQ) distributions
- Standard in 4000K CCT, optional 3000K and 6000K CCT
- Minimum 70 CRI
- Optional clear or Solite® glass lens

Finish
- Five-stage super durable TGIC paint resists extreme weather conditions while providing optimal color and gloss retention. Available in white or optional grey, bronze, black, dark platinum and graphite metallic finishes.

Warranty
- Five-year warranty

Surge Protection
Standard UL 1449 Listed 10kV/10kA surge protective device protects against common (line-to-ground) and differential (line-to-line) mode surges.

Dimming Occupancy Sensor
Optional integral occupancy sensing reduces power consumption and enhances payback. Factory programmed to 50% in low mode and field adjustable with the FSIR-100 remote programmer.

Quick-Mount System
Rugged, quick-mount system with secure click-and-lock tab releases ensures safe and easy installation.

Lumen Maintenance 90%
Hours of Operation 60,000
Mounting Options

Quick-Mount System
IP66 Rated

Three-Step Installation

Step 1
Install quick-mount plate to wet location junction box.

Step 2
Secure fixture on wire hanger and make electrical connections.

Step 3
Lift and slide fixture until it clicks. Lock release tabs with captive hardware.

Surface and J-box Mount (Standard)
Quick-mount plate adapts to all wet location junction boxes allowing for surface, free-swing or rigid pendant installation (J-box supplied by others).

Trunnion Mount
Trunnion mount bracket allows direct attachment to ceiling using anchors, and provides a 1/2" threaded connection box for wiring connections outside the fixture.

Wall Mount
Wall mount arm allows you to match path or perimeter lighting within or outside the parking garage.

Patents Pending

Patented WaveStream™ LED Technology

EATON'S COOPER LIGHTING BUSINESS
TopTier LED Parking Garage and Canopy Luminaire
Parking Garage Applications

Design Practices

Lighting design for parking structures normally follows specific published guidelines and design practices as defined by the Illuminating Engineering Society of North America (IESNA). IESNA publishes recommended guidelines to help facilitate garage lighting design.

The following minimum guidelines are established for safety and security of pedestrians and property within the space.

IESNA RP-20-98 Recommended Maintained Illuminance Values for Parking Garage Facilities

<table>
<thead>
<tr>
<th>Area of Illumination</th>
<th>Minimum Footcandle Level (On Floor)</th>
<th>Maximum / Minimum Footcandle Level</th>
<th>Vertical Reading Area Of Illumination (60° Above Floor)</th>
<th>Minimum Footcandle Level (On Floor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>1.0</td>
<td>10:1</td>
<td>Basic</td>
<td>0.5</td>
</tr>
<tr>
<td>Ramps (Day)</td>
<td>2.0</td>
<td>10:1</td>
<td>Ramps (Day)</td>
<td>1.0</td>
</tr>
<tr>
<td>Ramps (Night)</td>
<td>1.0</td>
<td>10:1</td>
<td>Ramps (Night)</td>
<td>0.5</td>
</tr>
<tr>
<td>Entrance Areas (Day)</td>
<td>50</td>
<td>10:1</td>
<td>Entrance Areas (Day)</td>
<td>25</td>
</tr>
<tr>
<td>Entrance Areas (Night)</td>
<td>1.0</td>
<td>10:1</td>
<td>Entrance Areas (Night)</td>
<td>0.5</td>
</tr>
<tr>
<td>Stairways</td>
<td>2.0</td>
<td>N/A</td>
<td>Stairways</td>
<td>1.0</td>
</tr>
</tbody>
</table>

NOTE: 1 Vertical reading is taken at lowest point of horizontal illumination level.

Center of Drive Fixture Location

Fixture spacing = 30’ centered down drive lane; 60’ on center between driving lanes (one per bay). Fixtures mounted 9’ to bottom of fixture, even with the bottom of t-joists.

Sides of Drive Fixture Location

Fixture spacing = 30’ x 30’ on center spacing (two per bay). Fixtures mounted 9’ to bottom of fixture, even with the bottom of t-joists.

Optical Distributions

The TopTier Luminaire is designed with three different optical distributions, each optimized for different applications. The concentrated (CQ) distribution is designed for the entrance of a parking garage or building canopies, where IES recommended light levels are higher and where fixture spacings are approximately one to two times the mounting height. The medium (MQ) distribution is ideal for mounting heights above 12’, or for applications that have higher than typical light levels. The wide (WQ) distribution is for typical parking garages and is designed for optimal fixture spacing and reduced fixture counts.
Occupancy Sensing

Accelerate Payback on your Investment
To further enhance energy savings, the TopTier Luminaire offers an optional occupancy sensor that is integral to each individual luminaire. When the area surrounding the luminaire is unoccupied, the sensor has the ability to reduce light levels and power consumption. In addition to financial benefits, the control options for the TopTier are designed to be simple and cost-effective ASHRAE and Title 24 compliant solutions.

Dimming Occupancy Sensor (DOS)
When the DOS option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The sensor is factory preset to dim down to approximately 50% lumen output with a time delay of five minutes. To change these settings, the FSIR-100 accessory can be purchased. The FSIR-100 is a wireless configuration tool that allows the dimming level, time delay, sensitivity and other parameters to be changed. Consult a representative from Eaton’s Cooper Lighting business for additional details.

LumaWatt Wireless Control and Monitoring System (DIMRF-LW and DIMRF-LN)
The LumaWatt system is best described as a peer to peer wireless network of luminaire-integral sensors that operate in accordance with programmable profiles. The end user can create and manage sensor profiles with browser based management software and broadcast to sensors as necessary via wireless gateways. Each sensor is capable of motion and photo sensing, metering power consumption and wireless communication. For additional details, refer to www.cooperlighting.com.

Dimming Occupancy Sensor (DOS)

LumaWatt (DIMRF-LW and DIMRF-LN)
Reduced Energy Consumption

Operating and maintenance costs of a lighting system are dramatically impacted by the specified lamp source, system power consumption and the duration time of operation. Total system input watts and fixture operating life should be the driving considerations when addressing energy consumption and total cost of ownership. Energy savings increase when energy consumption is reduced and maintenance intervals are extended.

Annualized Energy and Maintenance Savings/Cost Comparison

<table>
<thead>
<tr>
<th>Product</th>
<th>Hours/Year</th>
<th>Life (Hours)</th>
<th>Wattage</th>
<th>Energy Cost/Year at .10 kWh</th>
<th>Relamp/Fixture</th>
<th>Total Energy Cost/Fixture and Maintenance</th>
<th>Savings Per Fixture</th>
<th>% Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED TopTier</td>
<td>24 / 8,760</td>
<td>60,000</td>
<td>50W</td>
<td>$43.80</td>
<td>$0.00</td>
<td>$43.80</td>
<td>$203.84</td>
<td>82%</td>
</tr>
<tr>
<td>Metal Halide 175W</td>
<td>7,500</td>
<td>208W</td>
<td>$182.21</td>
<td>$65.43</td>
<td>$247.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED TopTier</td>
<td>24 / 8,760</td>
<td>60,000</td>
<td>50W</td>
<td>$43.80</td>
<td>$0.00</td>
<td>$43.80</td>
<td>$83.56</td>
<td>66%</td>
</tr>
<tr>
<td>4 x 32W (Fluorescent)</td>
<td>24,000</td>
<td>114W</td>
<td>$99.86</td>
<td>$27.50</td>
<td>$127.36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED TopTier</td>
<td>24 / 8,760</td>
<td>60,000</td>
<td>50W</td>
<td>$43.80</td>
<td>$0.00</td>
<td>$43.80</td>
<td>$84.75</td>
<td>66%</td>
</tr>
<tr>
<td>2 x 54W (Fluorescent)</td>
<td>36,000</td>
<td>121W</td>
<td>$106.00</td>
<td>$22.55</td>
<td>$128.55</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTE: 1. Lamp life for non-LED sources is defined as 50% failures. 2. Cost = (Watts x 24 hours per day x 365 days per year) / 1000 = Daily Kilowatt hour (kWh). kWh x 0.10 cents/kWh = Cost/Year at .10 kWh. 3. Relamping cost is calculated based on an average relamping period associated with each fixture; MH: .85 yr, T8: 2.74 years, T5: four years.

Energy Savings/Equivalency/Cross Reference Guide

<table>
<thead>
<tr>
<th>Product</th>
<th>HID Equivalency</th>
<th>Fluorescent Equivalency</th>
<th>Lamp System</th>
<th>Wattage</th>
<th>Rated Avg. Life (Hours)</th>
<th>TopTier Wattage</th>
<th>TopTier Life (Hours)</th>
<th>Energy Savings %</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED TopTier</td>
<td>175W</td>
<td>4 x 32W 2 x 54W</td>
<td>175W Metal Halide (HID)</td>
<td>208W</td>
<td>7,500</td>
<td>50W</td>
<td>60,000</td>
<td>76%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 x 52W T8 (Fluorescent)</td>
<td>114W</td>
<td>24,000</td>
<td></td>
<td></td>
<td>56%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 x 54W T5 (Fluorescent)</td>
<td>121W</td>
<td>36,000</td>
<td></td>
<td></td>
<td>59%</td>
</tr>
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</table>

NOTE: Nominal lumens prior to optical and configuration losses based on 4000 CCT, 4000K package at 25°C ambient. TopTier = 5,280 lumens. 1. Hours of life based on 85% lumen maintenance.

Utility Incentive Programs*

Utility companies are leading the way in responding to climate change and the power sector’s role in reducing greenhouse gases while meeting the country’s growing energy needs. Monetary incentives toward the purchase of high-efficient parking garage luminaires support clean energy resources and technologies, which are critical to our transition to a sustainable, low carbon society.

* As of November 1, 2013.
Ordering Information

Sample Number: TT-B2-LED-E1-WQ-AP

<table>
<thead>
<tr>
<th>Product Family</th>
<th>Lumen Package</th>
<th>Lamp Type</th>
<th>Voltage</th>
<th>Distribution</th>
<th>Mounting</th>
<th>Color</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>B2=Nominal 4,000 Lumens</td>
<td></td>
<td>347-347V</td>
<td>MO=Medium</td>
<td>TMB=Trunnion Mount with Connection Box</td>
<td>AP=Grey</td>
</tr>
<tr>
<td></td>
<td>B3=Nominal 5,000 Lumens</td>
<td></td>
<td>480-480V</td>
<td>WG=Wide</td>
<td>WM=Wall Mount</td>
<td>BZ=Bronze</td>
</tr>
<tr>
<td></td>
<td>B4=Nominal 7,000 Lumens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BK=Black</td>
</tr>
<tr>
<td></td>
<td>B5=Nominal 9,000 Lumens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DP=Dark Platinum</td>
</tr>
<tr>
<td></td>
<td>B6=Nominal 11,000 Lumens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>GM=Graphite Metallic</td>
</tr>
<tr>
<td></td>
<td>B7=Nominal 13,000 Lumens</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Options (Add as Suffix)

- 7060=70 CRI / 6000K
- 8030=80 CRI / 3000K
- 30L=Extra Long 30’ Wires
- HA=50°C High Ambient
- CG=Clear Glass
- SG=Solite® Glass
- TR=Tamper Resistant Hardware
- X=Driver Surge Protection Only
- SLTD=Fifth Light DALI Driver(s)
- IBP=Integral Battery Pack (Specify 120V or 277V. Must Specify Voltage)
- ICP=Integral Cold Weather Battery Pack (Specify 120V or 277V. Must Specify Voltage)
- MSP/DIM-L12=Mini Dimming Occupancy Sensor (8’ - 12’ Mounting)
- MSP/DIM-L30=Mini Dimming Occupancy Sensor (12’ - 30’ Mounting)
- DOS=Dimming Occupancy Sensor (8’ - 20’ Mounting)
- DIMRF-LW=LumaWatt Wireless Sensor, Wide Lens (8’ - 16’ Mounting)
- DIMRF-LNW=LumaWatt Wireless Sensor, Narrow Lens (16’ - 40’ Mounting)

Accessories (Order Separately)

- FSIR-100=Wireless Configuration Tool for Occupancy Sensor
- MA1252=10kV Circuit Module Replacement

NOTES:
1. The B5 and B6 lumen packages are not available with the HA high ambient option.
2. The IBP option is only available in 120V or 277V, must specify voltage. 0°C minimum, 25°C maximum ambient temperature. Not available with B5 lumen package.
3. The ICP option is only available in 120V or 277V, must specify voltage. -20°C minimum, 25°C maximum ambient temperature. Not available with B5 lumen package.
4. Replace E1 with specific voltage when selecting the SLTD option (120, 208, 240 or 277V).
5. Not to be used with un-grounded systems.
6. Extended lead times apply.
7. Not available with WM or TMB mounting options.
8. The SLTD, IBP and ICP options are not available with dimming (DIM, DOS, DIMRF-LN or DIMRF-LW) or the HA high ambient option.
9. CG clear glass option only available with MO and WQ distributions.
10. B5 (Solite® glass) – Included as standard with the CO distribution. Not available with WQ distribution. Not available in combination with the IBP and ICP options.
11. Multiply published IES files by .95 when SLTD is used with the B5 or B6 lumen package.
13. The FSIR-100 configuration tool is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your Eaton’s Cooper Lighting business representative for more information.
14. DIMRF-LN and DIMRF-LW are not available in 347 or 480V.

Dimensions

SURFACE OR PENDANT MOUNT

TRUNNION MOUNT

WALL MOUNT

Additional Information

<table>
<thead>
<tr>
<th>Compliances</th>
<th>Technical Data (Electronic LED Driver)</th>
<th>Shipping Data (Approximate Net Weight)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL and cUL Wet Location Listed</td>
<td>&gt;0.9 Power Factor</td>
<td>16 lbs. (7.2 kgs.)</td>
</tr>
<tr>
<td>3G Vibration Rated</td>
<td>&lt;20% Total Harmonic Distortion</td>
<td></td>
</tr>
<tr>
<td>LM79/LM80 Compliant</td>
<td>120-277V, 50/60Hz, 347V/60Hz, 480V/60Hz</td>
<td></td>
</tr>
<tr>
<td>IP66 Rated</td>
<td>40°C Minimum Ambient Temperature Rating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40°C Maximum Ambient Temperature Rating (HA Option)</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: Specifications and dimensions subject to change without notice.