

EXHIBIT 1
PERFORMANCE SPECIFICATIONS
PRODUCT CUT SHEETS (FOR REFERENCE)
PHOTOMETRIC INFORMATION

RFP 1415-67 (32) Pages Total)

LED LIGHTING SPECIFICATIONS-STRIP KIT:

- Wattage: 2' Strip <10W
- Wattage: 4' Strip <20W (2-2FT Strips)
- Each 2' strip shall have three holes located centrally along the long axis for positive attachment to the fixture for ease of installation and to ensure adequate compression of the thermally conductive interface material between the strips and the fixture.
- Efficacy rate : >125 LM/W as measured with the 28 watt single driver powering either 4 or 6 of the 2'strips installed in a 2'X4' parabolic test fixture in an LM79 test
- Color Rendering Index: (CRI) >82 (+/-0.5)
- Color Temperature: 4100K (+/- 200K)
- LEDs must have an LM70 point > 220,000 hours as calculated using the LM80 test data and the TM21 algorithm provided by the DOE
- In-Situ Temp Test (ISTMT) results shall not exceed 35°C when measured with a 20 watt driver powering 2 of the 2'strips installed in a 2'X4' parabolic test fixture for an ISTMT conducted in accordance with "Energy Star Program Requirements for Luminaires – Version 1.2".
- Voltage:110-277VAC 50-60 Hz
- External Drivers:
- Three drivers shall be specified as follows:
 - a. To drive 2 pcs of the 2' strips a single 14 watt driver will be used
 - b. To drive 4 pcs of the 2' strips a single 28 watt driver will be used
 - c. To drive 6 pcs of the 2' strips a single 28 watt driver will be used
 - d. If multi-level switching is desired to drive 4 pcs of the 2' strips a pair of 9 watt drivers will be used to provide three levels, off, 9 watt and 18 watt
 - e. If multi-level switching is desired to drive 6 pcs of the 2' strips a 9 watt driver and a 18 watt driver will be used to provide four levels, off, 9 watt, 18 watt and 27 watt
 - f. If multi-level switching is desired to drive 8 pcs of the 2' strips a 18 watt driver and a 18 watt driver will be used to provide four levels, off, 18 watt, 36 watt.
- Power Factor: (PF) >0.98; Measured at 120 Vac
- Total Harmonic Distortion (THD) <5% ; Measured at 120 Vac
- Printed Circuit Board that carries the LEDs must be an aluminum core PCB design to provide optimal thermal management for the LEDs
- Thermally Conductive Adhesive Transfer Tape or equivalent with a Thermal Conductivity of at least 0.60 W/m-K as measured per ASTM C-177 shall be used on the mounting surface of the PCB where it contacts the fixture to ensure adequate thermal transfer from the LED PCB to the fixture housing.
- LED count per 2' strip: Must have a minimum of 140 LED's to ensure proper light distribution.
- Driver must be cULus listed
- Must be DLC Qualified
- 10 year Warranty on Driver and LEDs (product replacement only)
- Must have a manufacturer rated lifetime of 100,000 hours
- Must provide LM79, ISTMT and LM80 by NVLAP accredited testing laboratory approved by the DOE and DLC at the time of submittal

LED LIGHTING SPECIFICATIONS- PARKING LOT/WALKS

- Wattage not to exceed specified wattage on the photometrics provided
- Light levels must meet IES standards as provided in the photometric layout
- Efficacy rate : >90 LM/W
- Color Rendering Index: (CRI) >75
- Color Temperature: 5600K (+/- 200K)
- LEDs must have an LM70 point > 220,000 hours as calculated using the LM80 test data and the TM21 algorithm provided by the DOE
- Voltage: 110-277VAC 50-60 Hz
- Power Factor: (PF) >0.90;
- Total Harmonic Distortion (THD) <20%
- All fixtures must be US made
- All fixtures housings must be made from aluminum with a powder coated finish; Color- Bronze
- All fixtures must have glass lenses to protect LEDs and optics
- Heat sink must be extruded aluminum and secured inside the fixture
- Fixture must have vent ports to allow for proper heat dissipation
- Full 10 year Manufactures Warranty (product replacement only)
- Fixtures must be UL 1598 and 8750 wet rated
- Operating temperature range -40°F/147°F

LED LIGHTING SPECIFICATIONS- SCREW IN BULBS

- Medium base socket (E27)
- Must be Energy Star Approved
- Wattage: 12W A19-(+/-10%)
- Voltage 110V-245V
- Color Rendering Index: (CRI) >82
- Color Temperature: 4100K (+/- 200K)
- Frosted lens
- Warranty 3 years

The District has attached representative products meeting the performance specifications for reference only.

LED LIGHTING SPECIFICATIONS-4' TUBE:

- Wattage: 4' Tube **14W**
- Each tube must have Bi-pin connectors with a rotatable end cap
- Tube must be electrified using an external driver. Each driver must be able to run 2- 4' Tubes at a 36 watts (+/- 10%)
- Efficacy rate : > **130 LM/W**
- Color Rendering Index: (CRI) >82
- Color Temperature: 4100K (+/- 200K)
- LEDs must have an LM70 point > 220,000 hours as calculated using the LM80 test data and the TM21 algorithm provided by the DOE
- Voltage: 110-277VAC 50-60 Hz
- Power Factor: (PF) >0.99; Measured at 120 Vac
- Total Harmonic Distortion (THD) <10% ; Measured at 120 Vac
- Must be UL listed
- Must be DLC Qualified
- 10 year Warranty on Driver and LEDs (product replacement only)
- Must have a manufacturer rated lifetime of 100,000 hours
- Must provide LM79 by an NVLAP accredited testing laboratory approved by the DOE and DLC at the time of submittal

BSL310 (polycarbonate case)

BSL310C (metal case with conduit)

BSL310M (metal case without conduit)

BSL310C-DF (metal case with dual conduit)

PHILIPS
bodine

Emergency Driver for Linear LED Strips
Class 2 Output



A Division Of Philips Electronics North America Corporation

Product Summary

UL RECOGNIZED

Factory Installation *
(Indoor and Damp)
Output Class 2 Compliant
*BSL310 is field installable when used with the Philips
EvoKit G2 LED Retrofit luminaire.



Illumination Time

90 Minutes

Full Warranty

5 Years (NOT pro-rata)

Universal Input Voltage

120-277 VAC, 50/60 Hz

AC Input Current

60 mA Maximum

AC Input Power Rating

4.0 W Maximum

Output Current and Voltage

Selectable (See Table 1)

Without Selector: minimum 200 mA, 35-50 VDC,
minimum 300 mA over optimized range (30-34 VDC)

With Selector: minimum 400 mA, 10-29 VDC

Output Power

10.0 W (Maximum)

Test Switch/Charging Indicator Light

Illuminated Test Switch

Battery

High-Temperature,
Maintenance-Free
Nickel-Cadmium Battery
7- to 10-Year Life Expectancy

Battery Charging Current

180 mA

Recharge Time

24 Hours

Temperature Rating (Ambient)

0°C to +55°C
(32°F to 131°F)

Dimensions (BSL310)

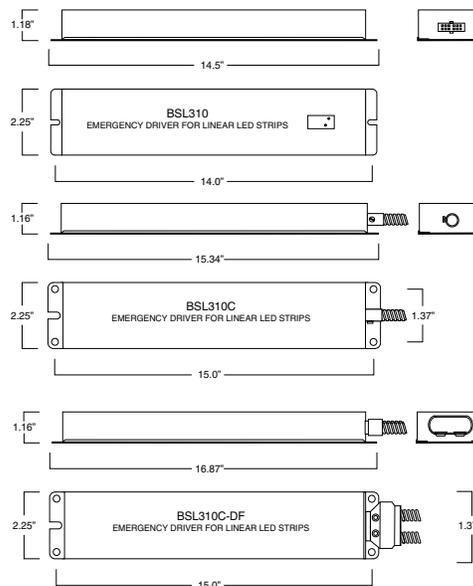
14.5" x 2.25" x 1.18"
(369 mm x 58 mm x 30 mm)
Mounting Center 14.0" (356 mm)

Dimensions (BSL310C/M)

15.34" x 2.25" x 1.16"
(390 mm x 58 mm x 29 mm)
Mounting Center 15.0" (381 mm) x 1.37" (34.8mm)

Weight

2.25 lbs. (1.0 kg) - polycarbonate
3.15 lbs. (1.43kg) - metal w/o conduit
3.45 lbs. (1.56kg) - metal w/conduit
3.80 lbs. (1.73kg) - metal w/dual conduit



Application

The BSL310 universal input (120-277 V) emergency LED driver works in conjunction with an AC LED driver that has an output current not to exceed 3.0 A. The emergency driver consists of a high-temperature nickel-cadmium battery, charger and electronic circuitry in one case. The BSL310 can deliver up to 10 watts to an LED load (measured at nominal battery voltage) for 90 minutes. If used in an emergency-only fixture, no AC driver is necessary. The BSL310 is suitable for indoor and damp locations. For more information about specific LED and AC driver compatibility, please call the factory.

Operation

When AC power fails, the BSL310 immediately switches to the emergency mode, operating the LEDs at a reduced lumen output for a minimum of 90 minutes. When AC power is restored, the emergency driver automatically returns to the charging mode. A patented circuit delays AC LED driver operation for up to 5 seconds to prevent over current of LED's that would occur if both drivers supply the load at the same time.

Installation

The BSL310 does not affect normal fixture operation and may be used with either a switched or unswitched fixture. If a switched fixture is used, an unswitched hot lead must be connected to the emergency driver. The emergency driver must be fed from the same branch circuit as the AC driver. Per UL requirements, the polycarbonate BSL310 must be enclosed if remote mounted outside of the fixture. Installation is not recommended with fixtures where the ambient temperature may fall below 0° C. The product is suitable for installation in sealed and gasketed fixtures. For LED loads rated less than 30V, connect the load select per Table 1 for proper operation and optimum performance. The BSL310C-DF is offered in two options. Both are equipped with two flexible metal conduits. For option A, the illuminated test switch is located in one conduit and product wiring in the other. *BSL310 is field installable when used with the Philips EvoKit G2 LED Retrofit luminaire. Option B contains the illuminated test switch wiring in its own conduit, with the test switch and a wall plate included in a separate parts kit.

UL and Code Compliance

The BSL310 has been tested by Underwriters Laboratories in accordance with the standards set forth in UL 924, "Emergency Lighting and Power Equipment," and is UL Recognized for factory installation only. Emergency illumination time exceeds the National Electrical Code (NEC), Life Safety Code (NFPA-LSC) and UL 90-minute requirements.

Specifiers Reference

Project _____ Type _____ Model No. _____

Comments _____

L2300211

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P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine

(polycarbonate case) **BSL310**

(metal case with conduit) **BSL310C**

(metal case without conduit) **BSL310M**

(metal case with dual conduit) **BSL310C-DF**

Emergency Driver for Linear LED Strips Class 2 Output

Emergency Illumination

The BSL310 operates an LED load of up to 10.0 W at nominal battery voltage for a minimum of 90 minutes.

Specification

Emergency lighting shall be provided by using a LED fixture equipped with a Philips Bodine BSL310 universal input (120-277 V) emergency driver. A patented circuit delays AC LED driver operation for up to 5 seconds to prevent over current of LED's that would occur if both drivers supply the load at the same time. This emergency driver shall consist of a high-temperature, maintenance-free nickel-cadmium battery, charger and electronic circuitry contained in one case. An illuminated test switch (ITS) to monitor charger and battery and installation hardware shall be provided. The emergency driver shall be capable of delivering up to 10 watts to an LED load for a minimum of 90 minutes. The BSL310 is suitable for indoor and damp locations. The BSL310 shall have a maximum of 4.0 watts of input power and a 24.0 Watt-hour battery capacity and shall comply with emergency standards set forth by the current NEC. The emergency driver shall be UL Recognized for factory installation only and shall be warranted for a full five years from date of purchase.

Warranty

Model BSL310 is warranted for five (5) full years from date of purchase. This warranty covers only properly installed Philips Bodine emergency LED drivers used under normal conditions. For the warranty period, Philips Emergency Lighting will, at its option, repair or replace without charge a defective emergency LED driver, provided it is returned to the factory transportation prepaid and our inspection determines it to be defective under terms of the warranty. Repair or replacement, as stated above, shall constitute the purchaser's exclusive warranty, which does not extend to transportation, installation, labor or any other charges; nor does it apply to any equipment of another manufacturer used in conjunction with the emergency driver.

IMPORTANT TEXT: REFER TO TABLE 1 REGARDING LOAD SELECT

Table 1 LOAD SELECT OPTIONS

| MAXIMUM LOAD VOLTAGE | LOAD SELECT |
|----------------------|---------------|
| 10V - 29V | CONNECTED |
| 30V - 50V | NOT CONNECTED |

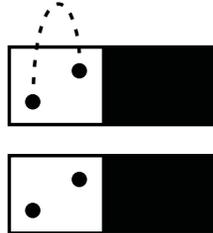


TABLE 2a. UL CLASSIFIED LOADS

| Manufacturer | Series Reference | Manufacturer's Part Number |
|--------------|------------------|----------------------------|
| Philips | Fortimo LED Line | 1ft 1100lm 830 3R HV1 |
| Philips | Fortimo LED Line | 1ft 1100lm 835 3R HV1 |
| Philips | Fortimo LED Line | 1ft 1100lm 840 3R HV1 |
| Philips | Fortimo LED Line | 1ft 1100lm 850 3R HV1 |
| Philips | Fortimo LED Line | 1ft 1100lm 865 3R HV1 |
| Philips | Fortimo LED Line | L2EVO1.5 ft 1250lm 830-1 |
| Philips | Fortimo LED Line | L2EVO1.5 ft 1250lm 835-1 |
| Philips | Fortimo LED Line | L2EVO1.5 ft 1250lm 830-1 |

TABLE 2b. Listed Luminaires

| Manufacturer | Model Number |
|--------------|-------------------------------|
| Philips | EvoKit LED Retrofit Luminaire |

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P.O. Box 460 Collierville, TN USA 38027-0460
Sales 800-223-5728 FAX 901-853-5009
Tech. Support 888-263-4638
www.philips.com/bodine

For the most current technical information and notices, please visit TechNotes on our website.

Benefits:

- Enables LED Linear strip fixtures to meet Emergency Code requirements
- Emergency mode lumen output of up to 1300 lumens
- Universal input (120-277 VAC)
- 2 wire input reduces wiring errors
- Compatible with a variety of LED strip manufacturers
- Compatible with AC drivers and LED loads rated for Class 2
- Selectable Output

Compatible With*

Philips LEDline

Samsung U990048

LG Lightbox

*Contact Factory for compatibility with other LED applications



Philips LEDline

Table 3 REMOTE DISTANCES

| Wire Gauge (AWG) | Maximum Remote Mounting Distance* (ft) | Maximum Wire Length** (ft) |
|------------------|--|----------------------------|
| 10 | 500 | 1000 |
| 12 | 300 | 600 |
| 14 | 200 | 400 |
| 16 | 125 | 250 |
| 18 | 75 | 150 |
| 20 | 50 | 100 |
| 22 | 30 | 60 |
| 24 | 20 | 40 |
| 26 | 13 | 26 |

* Total wire length can NOT exceed that given in Maximum Wire Length column.

** Distance is round trip wire length.

Distances are for Emergency Driver only. Consult AC Driver specification for remote mounting distances when using AC Driver.

BSL310 (polycarbonate case)

BSL310C (metal case with conduit)

BSL310M (metal case without conduit)

BSL310C-DF (metal case with dual conduit)

Emergency Driver for Linear LED Strips
Class 2 Output

Product Summary

UL RECOGNIZED

Factory Installation *
(Indoor and Damp)
Output Class 2 Compliant
*BSL310 is field installable when used with the Philips
EvoKit G2 LED Retrofit luminaire.



Illumination Time

90 Minutes

Full Warranty

5 Years (NOT pro-rata)

Universal Input Voltage

120-277 VAC, 50/60 Hz

AC Input Current

60 mA Maximum

AC Input Power Rating

4.0 W Maximum

Output Current and Voltage

Selectable (See Table 1)

Without Selector: minimum 200 mA, 35-50 VDC,
minimum 300 mA over optimized range (30-34 VDC)

With Selector: minimum 400 mA, 10-29 VDC

Output Power

10.0 W (Maximum)

Test Switch/Charging Indicator Light

Illuminated Test Switch

Battery

High-Temperature,
Maintenance-Free
Nickel-Cadmium Battery
7- to 10-Year Life Expectancy

Battery Charging Current

180 mA

Recharge Time

24 Hours

Temperature Rating (Ambient)

0°C to +55°C
(32°F to 131°F)

Dimensions (BSL310)

14.5" x 2.25" x 1.18"
(369 mm x 58 mm x 30 mm)
Mounting Center 14.0" (356 mm)

Dimensions (BSL310C/M)

15.34" x 2.25" x 1.16"
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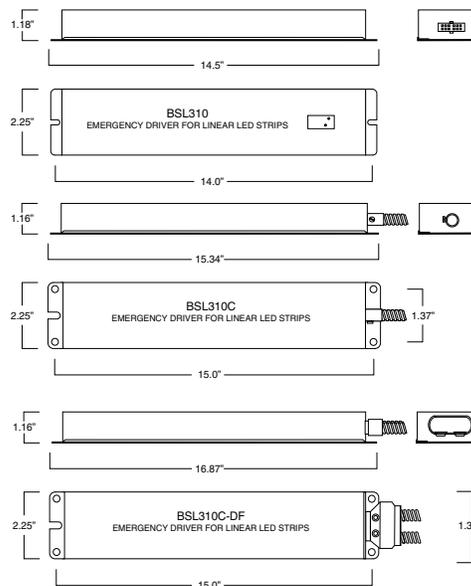
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Application

The BSL310 universal input (120-277 V) emergency LED driver works in conjunction with an AC LED driver that has an output current not to exceed 3.0 A. The emergency driver consists of a high-temperature nickel-cadmium battery, charger and electronic circuitry in one case. The BSL310 can deliver up to 10 watts to an LED load (measured at nominal battery voltage) for 90 minutes. If used in an emergency-only fixture, no AC driver is necessary. The BSL310 is suitable for indoor and damp locations. For more information about specific LED and AC driver compatibility, please call the factory.

Operation

When AC power fails, the BSL310 immediately switches to the emergency mode, operating the LEDs at a reduced lumen output for a minimum of 90 minutes. When AC power is restored, the emergency driver automatically returns to the charging mode. A patented circuit delays AC LED driver operation for up to 5 seconds to prevent over current of LED's that would occur if both drivers supply the load at the same time.

Installation

The BSL310 does not affect normal fixture operation and may be used with either a switched or unswitched fixture. If a switched fixture is used, an unswitched hot lead must be connected to the emergency driver. The emergency driver must be fed from the same branch circuit as the AC driver. Per UL requirements, the polycarbonate BSL310 must be enclosed if remote mounted outside of the fixture. Installation is not recommended with fixtures where the ambient temperature may fall below 0° C. The product is suitable for installation in sealed and gasketed fixtures. For LED loads rated less than 30V, connect the load select per Table 1 for proper operation and optimum performance. The BSL310C-DF is offered in two options. Both are equipped with two flexible metal conduits. For option A, the illuminated test switch is located in one conduit and product wiring in the other. *BSL310 is field installable when used with the Philips EvoKit G2 LED Retrofit luminaire. Option B contains the illuminated test switch wiring in its own conduit, with the test switch and a wall plate included in a separate parts kit.

UL and Code Compliance

The BSL310 has been tested by Underwriters Laboratories in accordance with the standards set forth in UL 924, "Emergency Lighting and Power Equipment," and is UL Recognized for factory installation only. Emergency illumination time exceeds the National Electrical Code (NEC), Life Safety Code (NFPA-LSC) and UL 90-minute requirements.

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(metal case with dual conduit) **BSL310C-DF**

Emergency Driver for Linear LED Strips Class 2 Output

Emergency Illumination

The BSL310 operates an LED load of up to 10.0 W at nominal battery voltage for a minimum of 90 minutes.

Specification

Emergency lighting shall be provided by using a LED fixture equipped with a Philips Bodine BSL310 universal input (120-277 V) emergency driver. A patented circuit delays AC LED driver operation for up to 5 seconds to prevent over current of LED's that would occur if both drivers supply the load at the same time. This emergency driver shall consist of a high-temperature, maintenance-free nickel-cadmium battery, charger and electronic circuitry contained in one case. An illuminated test switch (ITS) to monitor charger and battery and installation hardware shall be provided. The emergency driver shall be capable of delivering up to 10 watts to an LED load for a minimum of 90 minutes. The BSL310 is suitable for indoor and damp locations. The BSL310 shall have a maximum of 4.0 watts of input power and a 24.0 Watt-hour battery capacity and shall comply with emergency standards set forth by the current NEC. The emergency driver shall be UL Recognized for factory installation only and shall be warranted for a full five years from date of purchase.

Warranty

Model BSL310 is warranted for five (5) full years from date of purchase. This warranty covers only properly installed Philips Bodine emergency LED drivers used under normal conditions. For the warranty period, Philips Emergency Lighting will, at its option, repair or replace without charge a defective emergency LED driver, provided it is returned to the factory transportation prepaid and our inspection determines it to be defective under terms of the warranty. Repair or replacement, as stated above, shall constitute the purchaser's exclusive warranty, which does not extend to transportation, installation, labor or any other charges; nor does it apply to any equipment of another manufacturer used in conjunction with the emergency driver.

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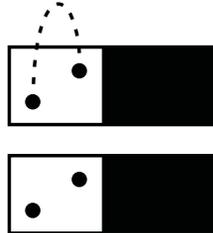


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| Philips | Fortimo LED Line | 1ft 1100lm 850 3R HV1 |
| Philips | Fortimo LED Line | 1ft 1100lm 865 3R HV1 |
| Philips | Fortimo LED Line | L2EVO1.5 ft 1250lm 830-1 |
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TABLE 2b. Listed Luminaires

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For the most current technical information and notices, please visit TechNotes on our website.

Benefits:

- Enables LED Linear strip fixtures to meet Emergency Code requirements
- Emergency mode lumen output of up to 1300 lumens
- Universal input (120-277 VAC)
- 2 wire input reduces wiring errors
- Compatible with a variety of LED strip manufacturers
- Compatible with AC drivers and LED loads rated for Class 2
- Selectable Output

Compatible With*

Philips LEDline

Samsung U990048

LG Lightbox

*Contact Factory for compatibility with other LED applications



Philips LEDline

Table 3 REMOTE DISTANCES

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|------------------|--|----------------------------|
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| 12 | 300 | 600 |
| 14 | 200 | 400 |
| 16 | 125 | 250 |
| 18 | 75 | 150 |
| 20 | 50 | 100 |
| 22 | 30 | 60 |
| 24 | 20 | 40 |
| 26 | 13 | 26 |

* Total wire length can NOT exceed that given in Maximum Wire Length column.

** Distance is round trip wire length.

Distances are for Emergency Driver only. Consult AC Driver specification for remote mounting distances when using AC Driver.

STRIPIT KIT™

PRODUCT DESCRIPTION

| SPECIFICATIONS AND FEATURES | |
|--------------------------------------|---|
| Dimensions | 21.75" X 2.5" LED strips in AL Extrusions |
| Wattage | 10, 14, 18, 22, 28, 36, 44, 72, 88 |
| Total Lumens | 10 watt >> 1250 lumens 2' strip 14 watt >> 1750 lumens 2-2' strips 18 watt >> 2250 lumens 2-2' strips 22 watt >> 2750 lumens 2-2' strip |
| Efficacy (5000K installed in) | >140 Lms/Watt |
| CRI | > 82 |
| R9 | > 5 @ 4100K |
| Duv | Duv < 0.0019 |
| Voltage | 120 ~ 277VAC 50-60 Hz |
| LED Drivers | 10, 14, 18, 22, 28, 36, 44, 72, 88 watts 0-10 volt dimming Battery Backed Emergency Driver |
| Power Factor / THD | PF>0.99, THD < 6% |
| Power Connections | Pre-terminated leads with polarized plugs to connect driver to strips, PH connectors |
| PCB construction | Aluminum core, molecularly fused to extrusion through a mechanical swaging process |
| LED Elements | 144 SMD LEDs/2' strip |
| Color Temperature | 3500K, 4100K, 5000K +/- 200'K (< 3 McAdam ellipses) |
| cULus RU | E347929, E363806, E 357319, E362805, E341042 |
| Native Beam Angle | 120° |
| Lens Options | Lambertian, Soft Bat-Wing, DLC Bat-Wing, 60°, 45°, 25°, Side-Throw, Custom |
| Operating Temperature | -40° F to 110° F |
| Certifications | UL, cUL, RU, 1993, 1598, 1598(B), 1598(C) 8750, FCC, CE, RoHS |
| DesignLights Consortium | Yes |
| Warranty | 10 Years for External Driver and Strips Full replacement Warranty, no Pro-rating warranty@redbirdled.com |
| Rated Lifetime | 100,000 Hrs (TM21 L70 > 240,000 hrs) |

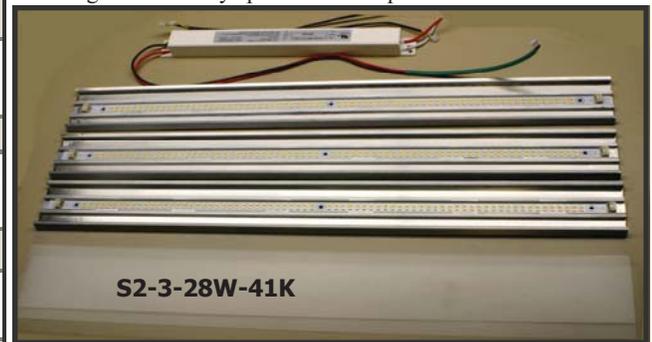
Cardinal™ STRIPIT™ KITS, Using the same ultra high efficacy LEDs and power supplies developed for our 'best-in-class' tube lights, RedBird LED is proud to offer a direct, field installable LED retrofit kit that provides one of the easiest to install and most affordable lighting upgrades available today.

Employing a direct molecular fusing between the aluminum core PCB carrying the LEDs and the low profile strip extrusion ensures the lowest LED In Situ TMP readings we have ever seen in a high efficacy LED lighting system. Based on the LM80 and the ISTMT data sets the calculated Energy Star TM21 LED L70 point is greater than 240,000 hours.

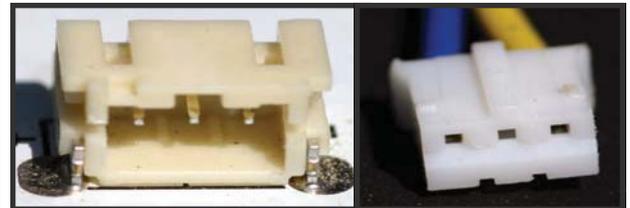
Our multi-volt (110-277 VAC) proprietary LED drivers with active power factor correction and a discontinuous current mode of operation deliver efficiencies up to 94%, a PF=0.996 and THD < 6% . Built with premium components, the MTBF rating on the RedBird LED drivers is greater than 140,000 hours.

100,000 hr lifetime, Ten Year Replacement Warranty.
With these levels of quality, efficiency and cool operating temperatures we are able to provide a complete system replacement warranty for a full ten years and a 100,000 hour stated lifetime with no pro-rating or exhaustive list of exclusions.

Fast, simple installation, only one tool required.
The complete system has been designed to cut installation time and complexity to the minimum. Freedom to locate the LED strips and the driver within the fixture allows optimizing the fit for each application. The installer simply positions the strips in as desired in the fixture and inserts three TEK screws with a cordless driver. This provide a positive mechanical attachment while the integral 6063 T5 extrusion ensures excellent thermal management regardless of any specific fixture peculiarities.



STRIPIT KIT™ comprising Driver, 3 Strips in Extrusions, Jumpers and Diffusers for Lambertian output.



Polarized connectors simplify installation

ORDERING INFORMATION

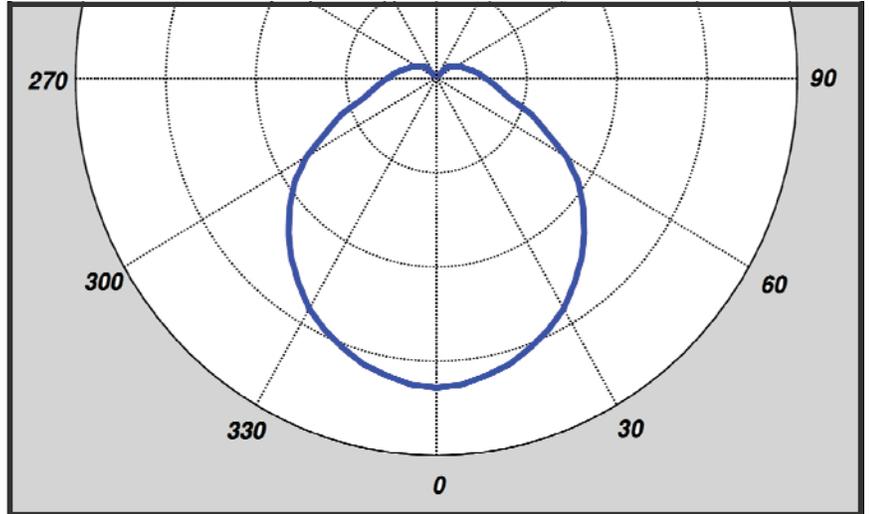
| Size | Form | Color Temp | DIM |
|------------------------|----------------|---------------------|-----|
| S2-4 (2 foot-# pcs) | 36W (power) | 50K (5000 K CCT) | DIM |

Ordering Example: **S2-4-36W-50K-DIM** includes 4 pcs of the 2' strips @5000K CCT, a single 0-10 volt dimmable 36 watt driver with two pre-terminated leads to connect PS to Strips and two pcs 3" jumpers to connect two strips together

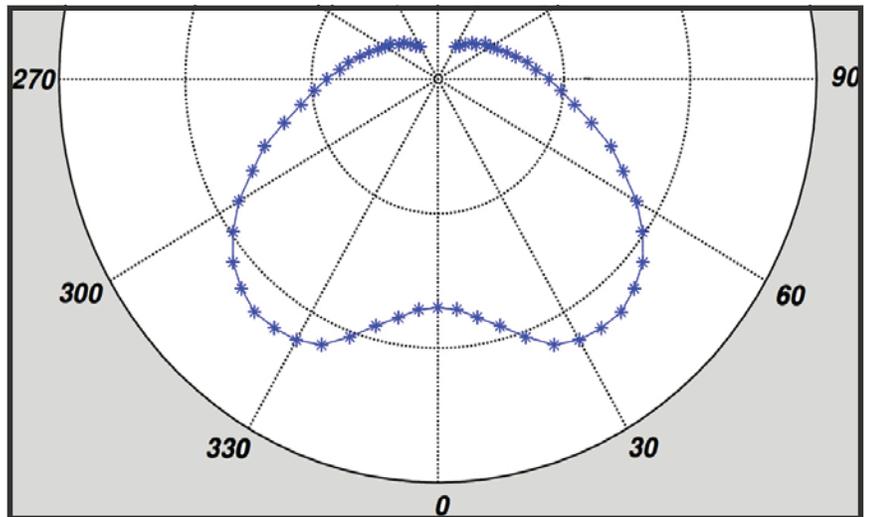
- PATENTS PENDING -



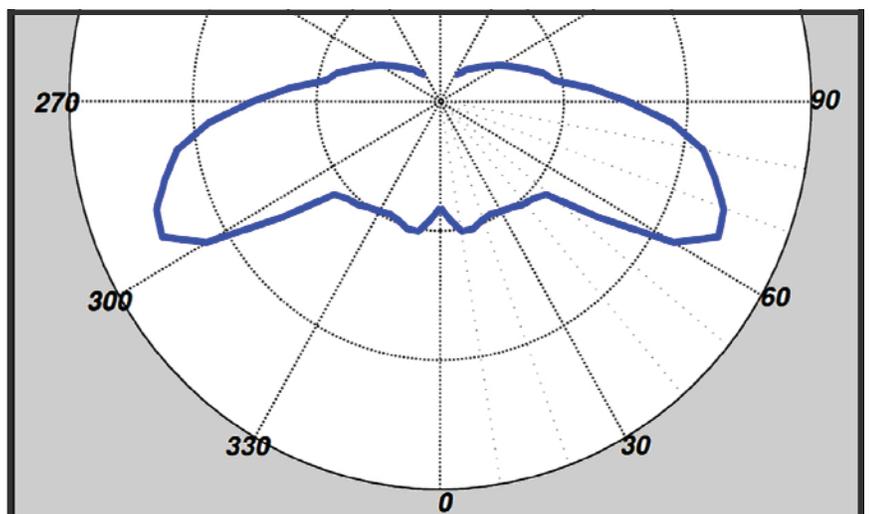
STRIPIT KIT™ Integral Optics Beam Forming Options



Thin-film Diffuser installed STRIPIT KIT™ to generate smooth Lambertian pat-



Bi-Planar Diffuser installed STRIPIT KIT™ to generate ' Soft ' Bat-Wing for De-Lamping applications.



Micro-Structured Optical Thin-Film installed in STRIPIT KIT™ to generate DLC Compliant Parking Deck Bat-Wing pattern.

A typical application in a challenging environment: Retrofitting any parabolic style troffer, particularly the 2X2 U-tube versions, is one of the most challenging fixtures to achieve a well performing and aesthetically pleasing LED retrofit on. The RedBird STRIPIT KIT™ system offers a perfect solution to this challenge.

With the ability to position the strips arbitrarily within the fixture, they can be optimally centered within the grid of the parabolic grill. Also, because they are placed on the uppermost surface of the fixture, and the lambertian diffuser option is installed, the light fill of the fixture is as good, if not better, than when the fluorescent tubes were in place. The result is a finished appearance where the parabolic grills are uniformly illuminated with a soft, indirect light, and the radiometric distribution of the fixture is actually improved over the original performance with the U-tubes installed by virtue wider output beam delivered by the thin-film directional diffusers.

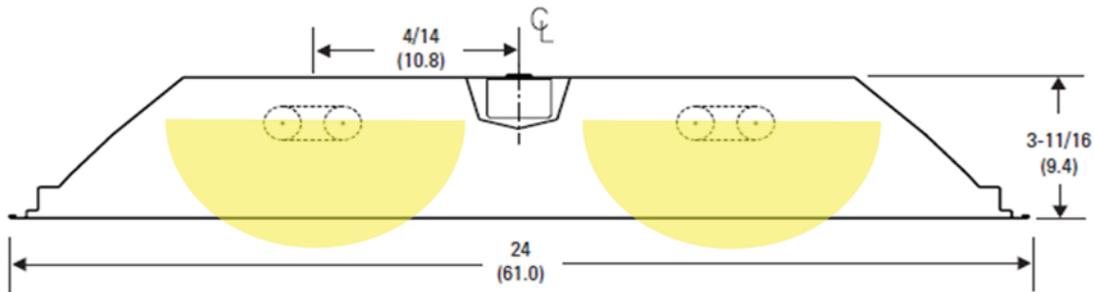


A STRIPIT KIT™ retrofit in a 2X2 parabolic troffer previously populated with fluorescent U-tubes

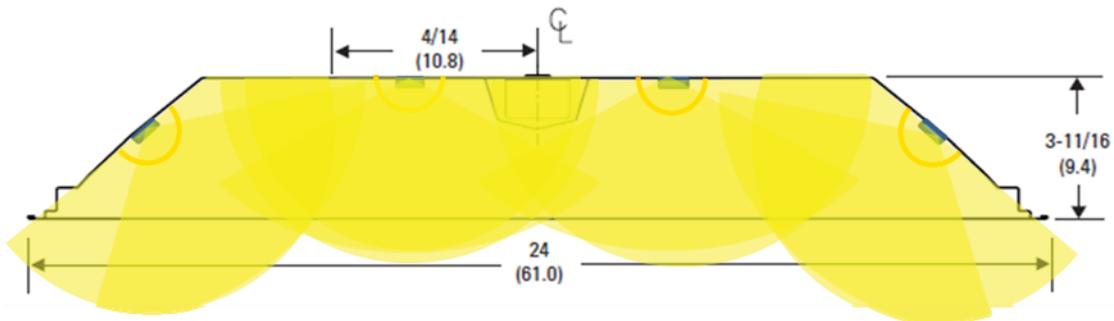


S2-3-28W-35K STRIPIT KIT™ installed in a Lithonia SP8 2X2 Prismatic Troffer. Even with only three strips installed, because of the deep location and the diffusers the ‘fill’ of the A12 lens is very uniform with none of the ‘banding’ effect complained about with most LED retrofit systems.

Performance advantages beyond energy savings– Better uniformity of light fill behind a Prismatic lens or Parabolic Grill: Because the strips are placed on the inside surface of the top of the fixture, the distance between the LEDs and the lens is maximized. Also, the thin-film diffuser material provides a $> 180^\circ$ beam pattern giving a multi-path fill of the entire inside of the fixture similar to the fluorescent tubes. These two qualities combine to deliver a smooth overlapping coverage resulting in a very continuous and uniform light level over the entire fixture aperture.



Relative 1st order fill pattern from a two tube BIA configuration in an Acuity Brand SP8 2' x 2' Static T8 Troffer



Same Acuity Brand SP8 2' x 2' Static T8 Troffer showing the Relative fill pattern when Fitted with four of the Cardinal LED strips

The page below is an excerpt from an LM79 test report done for RedBird LED on an ALP Sentry Series F240-2-GT Vapor-Tight Fixture fitted with a RedBird LED STRIPIT KIT™ model S2-4-36W-50K. The complete report is available for review if requested. Some notable points on this page are: the **fixture** Efficacy shown to be > 140 lumens/watt; the In-Situ Temperature Measurement Test (ISTMT) shows the LEDs running at a very cool 46.6° C; the measured CCT of 5045K is within 50°K of the specified CCT; all this with a CRI of 83. What this report doesn't say is that this entire package of fixture and STRIPIT KIT™ has an MSRP of less than \$200.00. This gives this product a lumens/dollar value of 24.65! And with a 10 year warranty!



IESNA LM79-2008 TEST REPORT

Report# JI1402415-1-LM79

April 2, 2014

Summary of Key Test Results

Model# **PGS2-4-36W-50K**
Manufacturer **RedBird LED**
TÜV Sample# **1266-1**
Date of Test **March 31st, 2014**



Notes:

Tested in Horizontal orientation (intended)

| Parameter | Measured Result |
|-----------------------------|---------------------------|
| Luminous Flux | 4929 Lumens |
| Input Power | 35.13 Watts |
| Efficacy | 140.32 Lumens/Watt |
| C.C.T. | 5045 K |
| C.R.I. (R _a) | 83.0 |
| Beam Angle | 115.3° |
| Stabilization Time | 60 minutes |
| In-Situ Temp Test (ISTMT)** | 46.6°C |

The above results are recorded / derived from measurements in accordance with LM79-08

**ISTMT in accordance with "Energy Star Program Requirements for Luminaires – Version 1.2".

Cardinal™ 4' External Driver Tube

PRODUCT DESCRIPTION

| SPECIFICATIONS AND FEATURES | |
|---|--|
| Length | Four Foot External Driver Version |
| Wattage | 9, 14, 18 watts fixed, 2-20 dimmable |
| Total Lumens (@5000K) | 9 watt >> 1300 lumens 14 watt >> 2030 lumens 18 watt >> 2600 lumens 20 watts >> 2900 lumens |
| Efficacy (@ 5000K, Clear lens) | 145 Lms/Watt |
| CRI | CRI 82 |
| Total Harmonic Distortion | 3.58% (120 VAC) 7.64% (277 VAC) |
| Duv | Duv = 0.00127 |
| Voltage | 120 ~ 277VAC 50-60 Hz |
| Power Supply Options | RB-9W-132-E, RB-14W-132-E, RB-18W-132-E, RB-20W-132-DIM, RB-40W-132-DIM, RB-88W-132-DIM |
| Power Factor | 0.998 (120 VAC) 0.953 (277 VAC) |
| Power Input to Tube | Double ended, Low voltage, 32-40 VDC, constant current regulation, Polarity not important |
| Endcaps | G13 Bi-Pin, rotatable option available |
| LED Elements | 288 LEDs, Surface Mount Devices (SMDs) |
| Color Temperature | 3500K, 4100K, 5000K +/- 200°K (3 McAdam Ellipses) |
| cULus listed | E347929, E363806, E 357319, E362805, E341042 Dry or Damp Locations |
|  | |
| Beam Angle | 120° (Clear Lens Installed) |
| Size | 48" |
| Operating Temperature | -40 °F to 110 °F |
| Certifications | UL, cUL, RU, 1993, 1598, 1598(B), 1598(C) 8750, FCC, CE, RoHS |
| DesignLights Consortium | 32 RedBird models on the DLC List Highest efficacy LED tube on the DLC list |
| Warranty | 10 Years warranty@redbirdled.com |
| Lifetime | 100,000 Hours (LM-80 available) |

Cardinal™ Linear Lights are high quality replacements of standard fluorescent tubes (T8 and T12) and provide electrical savings of > 50%. Installation is easy with the same G13 Bi-Pin connections as fluorescent tubes and a universal voltage external driver to mount where the old fluorescent ballast had been located. Very tightly binned surface mount device LEDs are employed to provide a 100,000+ hour lifetime, a measured efficacy of >145 lms/watt and a CRI=82. Exceptional thermal management is achieved with an aluminum core LED PCB thermally bonded to the ribbed aluminum heat sink with a 'D' channel extrusion made from 6063-T5 alloy for optimal heat conduction. The lens over the LEDs is a tough polycarbonate design available as crystal clear or a frosted option. Solid brass, nickel-plated terminal pins are installed in end-caps that are fastened with screws to the aluminum core. If the application needs it, a no-cost, rotatable end-cap option can be specified as well. All of these features and being the first Led tube earn DesignLights Consortium's Qualification helped the Cardinal™ LED Tube win the IES Progress Committee Selection for 2012..



ORDERING INFORMATION

Size - Form - Color Temp - Model - E, DIM, F

L4-4 foot - 18W - 41K-4100 K - 132 - ROT -E-F

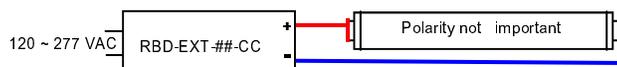
Ordering Example: L4-18W-41K-132-E-F is uses one RBD-EXT-18W-CC, 18 watt, constant current driver connected to a 4' LED Linear Replacement Lamp employing 4100K CCT LEDs and a frosted lens.

Dimmable configurations are one RBD-DIM-20W-CC power supply to drive each 4' LED tubes, one RBD-DIM-44W-CC drive two 4' tubes or one RBD-DIM-88W-CC to drive four 4' tubes.

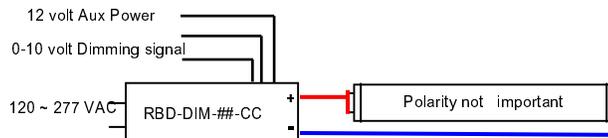
CONNECTION METHOD

Remove fluorescent ballast. Install the External Driver and wire as shown below. The same basic connections apply whether the power supply is a fixed version or a dimmable version.

Fixed External Driver Version



Dimmable External Driver Version



NOTE: The External Driver versions of the Cardinal™ LED tubes use a double-ended power input design for the low voltage, 32-40 VDC, constant current power supplied by the external driver.

OVERVIEW

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FEATURES



Thermal Management

The industry's only combination of the superior thermal conductivity of an aluminum extrusion heat sink with a bird-protected ventilated housing. Dual-sided copper clad boards with thermally inductive interfaces optimize thermal conductivity. Tall, frequent fin geometry paired with largest in class LED spacing provides 15.1in² convective surface area per LED.

Optical

Proprietary family of optics designed by Cireon for the specific output signature of the Luxeon LED combine class-leading efficiency and uniformity with soft, undetectable edges.

Quality Componentry

Philips Luxeon® LEDs, with the patented wafer-bonded design, provides the industry's most efficient and robust designs all with half the thermal resistance of the next closest competitor. With over six decades of knowledge, the Philips Advance power supplies provide reliability, onboard thermal and electrical overload protection and the smoothest dimming available.

Mechanical

Dimensions: 10"W x 13"D x 5.6"H. Carton Weight: 17lbs..
 EPA Rating- 1.02
 Solid aluminum housing, baked powder coat finish on all exterior and interior surfaces.
 Stainless steel fasteners and hardware; no ferrous metals.
 Bayer Makrolon V-0 polycarbonate optics for superior chemical and impact resistance.
 Operating Temperature Range: -40°C/-40°F to 55°C/130°F.

Electrical

UL/cUL Wet Listed to UL 1598 and 8750.
 Driver reduces power if case temperature exceeds 80°C/176°F.
 Class A sound rating.
 0-10V dimming standard, 100% to 10%, available with optional integral sensors.
 >0.9 power factor, <20% THD, RoHS.
 Standard 3kV surge suppression. Optional 20kV surge suppression.

CASCADE SERIES - AREA AND SITE

| | |
|----------|---------------------------|
| Part #: | CA2-048-AG-AH-AF-BZ-AF-NS |
| Project: | |
| Notes: | |
| Date: | |



| | |
|--------------------|-----------------------------------|
| System Watts: | 50 |
| Luxeon LEDs: | 48 |
| Delivered Lumens: | 4950 lm |
| Distribution: | Type III |
| Color Temperature: | 5700K |
| Input Voltage: | 120-277V |
| | <i>also available in 347-480V</i> |
| CRI: | 75 Typ |
| Mount: | 2AF Slip Fitter |
| Integral Sensor: | No Sensor |

Housing Color: Architectural Bronze
available in White, Black, Bronze, and Custom Colors

10 YEAR



WARRANTY

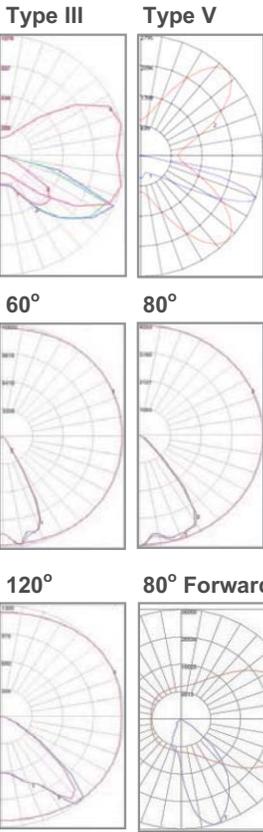
Spacing Criteria:

Cireon's proprietary Type 3 free form optic delivers an avg:min uniformity of better than 1.2:1 when spaced at 2.5 x 4.0 times the mounting height. At 3.1 x 5.4 times the mounting height, uniformity is better than 2:1.

Your Authorized Cireon Agent



Notes: ⁽¹⁾ Combines LM-79 in situ at 25°C/76°F ambient and LM-80 data as published by Philips Lumileds in the DOE's TM-21 Calculation.



Proven Longevity

The Cascade family's unified flow-through thermal management system provides a **life expectancy of 201,000 to 440,000 hours** to 70% output⁽¹⁾.

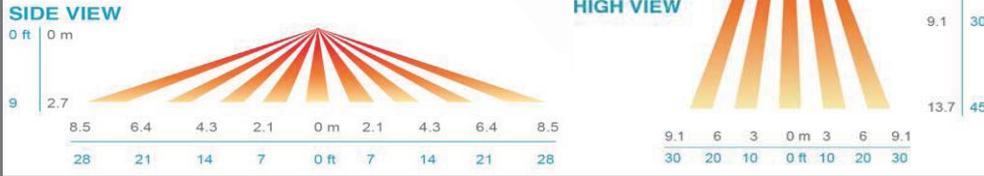
TM-21 using Cireon LM-79 in situ and Lumileds LM-80 data:

| In-Situ Inputs | |
|---|---------|
| Drive current for each LED package/array/module (mA): | 0.7 |
| In-situ case temperature (T _c , °C): | 89.9 |
| Percentage of initial lumens to project to (e.g. for L ₇₀ , enter 70): | 70 |
| Results | |
| Time (t) at which to estimate lumen maintenance (hours): | 54,000 |
| Lumen maintenance at time (t) (%): | 93.60% |
| Calculated L70 (hours): | 201,000 |
| Reported L70 (hours): | >54000 |



Optional Integral Sensor

Choose Occupancy, Photocell, or Hybrid (combined). Suitable for mounting heights from 7' to 45'; specify mounting height when ordering.



Mounting Options

Standard 2AF Slip Fitter (2-1/2" ID)



Standard Two and Four Bolt Arms



Standard Yoke Mount



Standard Wall Pack Mount



custom mounts available

ORDERING INFORMATION

(Example: CA2-048-AG-AJ-AL-WH-AF-PC)

| Family | No. of 24 LED Modules | Total LED Count | Kelvin Temperature, CRI (Typical) | Drive Current, Input Voltage | Optic, Included Angle | Housing Color | Mounting Method | Integral Sensor |
|---|-----------------------|-----------------|-----------------------------------|------------------------------|-----------------------|---------------------------|------------------------------------|-----------------|
| CA Cascade | 1 | -024 | -AG 5700K, 75CRI | -AH 350mA, 120-277V | -AB 80° included | -BK Black | -AF 2AF Slip Fitter | -NS No Sensor |
| | 2 | -048 | -AH 4000K, 75CRI | -AJ 530mA, 120-277V | -AC 60° included | -BZ Architectural Bronze | -TB Two-Bolt Arm | -WS With Sensor |
| -AJ 5000K, 75CRI | | | -AK 700mA, 120-277V | -AF Type 3, wide rectangle | -WH White | -FB Four-Bolt Arm | -PC Integral Photocell On/Off Only | |
| -CU Custom color temperature and CRI levels | | | -AL 700mA, 347-480V | -AG Type 5, wide square | -CU Custom Colors | -WM Wall Pack Flush Mount | | |
| | | | -AM 530mA, 347-480V | -AL 120° included | | -YM Yoke Mount | | |
| | | | -AN 350mA, 347-480V | -AM 80° Forward Throw | | -CU Custom Mount | | |



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Quality Componentry

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Mechanical

Dimensions: 12"W x 19"D x 5.6"H. Carton Weight: 22lbs..

EPA Rating- 1.5

Solid aluminum housing, baked powder coat finish on all exterior and interior surfaces.

Stainless steel fasteners and hardware; no ferrous metals.

Bayer Makrolon V-0 polycarbonate optics for superior chemical and impact resistance.

Operating Temperature Range: -40°C/-40°F to 55°C/130°F.

Electrical

UL/cUL Wet Listed to UL 1598 and 8750.

Driver reduces power if case temperature exceeds 80°C/176°F.

Class A sound rating.

0-10V dimming standard, 100% to 10%, available with optional integral sensors.

>0.9 power factor, <20% THD, RoHS.

Standard 3kV surge suppression. Optional 20kV surge suppression.

CASCADE SERIES - AREA AND SITE

| | |
|----------|---------------------------|
| Part #: | CA3-072-AG-AK-AG-BZ-AF-NS |
| Project: | |
| Notes: | |
| Date: | |



| | |
|-----------------------------------|-----------------|
| System Watts: | 146 |
| Luxeon LEDs: | 48 |
| Delivered Lumens: | 11680 lm |
| Distribution: | Type V |
| Color Temperature: | 5700K |
| Input Voltage: | 120-277V |
| <i>also available in 347-480V</i> | |
| CRI: | 75 Typ |
| Mount: | 2AF Slip Fitter |
| Integral Sensor: | No Sensor |

Housing Color: Architectural Bronze
also available in White, Black, and Custom Colors

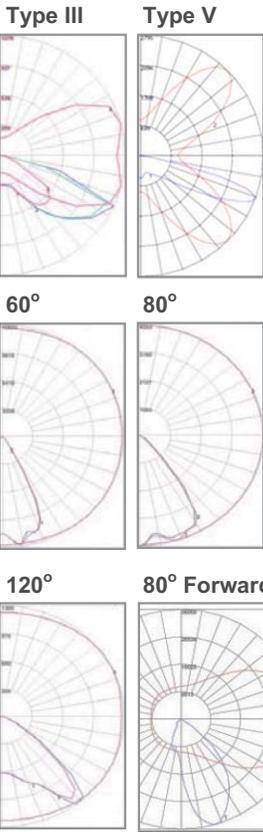


Spacing Criteria:

Cireon's proprietary Type 5 free form optic delivers an avg:min uniformity of better than 1.2:1 when spaced at 3.0 x 3.0 times the mounting height. At 4.2 x 4.2 times the mounting height, uniformity is better than 2:1.

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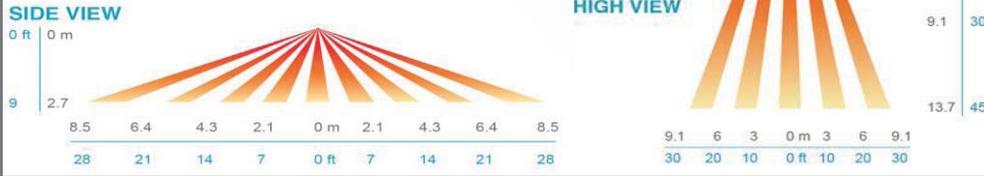
TM-21 using Cireon LM-79 in situ and Lumileds LM-80 data:

| In-Situ Inputs | |
|---|---------|
| Drive current for each LED package/array/module (mA): | 0.7 |
| In-situ case temperature (T _c , °C): | 89.9 |
| Percentage of initial lumens to project to (e.g. for L ₇₀ , enter 70): | 70 |
| Results | |
| Time (t) at which to estimate lumen maintenance (hours): | 54,000 |
| Lumen maintenance at time (t) (%): | 93.60% |
| Calculated L70 (hours): | 201,000 |
| Reported L70 (hours): | >54000 |



Optional Integral Sensor

Choose Occupancy, Photocell, or Hybrid (combined). Suitable for mounting heights from 7' to 45'; specify mounting height when ordering.



Mounting Options

Standard 2AF Slip Fitter (2-1/2" ID)



Standard Two and Four Bolt Arms



Standard Yoke Mount



Standard Wall Pack Mount



custom color shown

Custom Mounts available

ORDERING INFORMATION

(Example: CA3-072-AJ-AK-AF-BZ-FB-WS)

| Family | No. of 24 LED Modules | Total LED Count | Kelvin Temperature, CRI (Typical) | Drive Current, Input Voltage | Optic, Included Angle | Housing Color | Mounting Method | Integral Sensor |
|---|-----------------------|-----------------|-----------------------------------|------------------------------|-----------------------|---------------------------|------------------------------------|-----------------|
| CA Cascade | 2 | -048 | -AG 5700K, 75CRI | -AH 350mA, 120-277V | -AB 80° included | -BK Black | -AF 2AF Slip Fitter | -NS No Sensor |
| | 3 | -072 | -AH 4000K, 75CRI | -AJ 530mA, 120-277V | -AC 60° included | -BZ Architectural Bronze | -TB Two-Bolt Arm | -WS With Sensor |
| -AJ 5000K, 75CRI | | | -AK 700mA, 120-277V | -AF Type 3, wide rectangle | -WH White | -FB Four-Bolt Arm | -PC Integral Photocell On/Off Only | |
| Custom color temperature and CRI levels | | | -AL 700mA, 347-480V | -AG Type 5, wide square | -CU Custom Colors | -WM Wall Pack Flush Mount | | |
| | | | -AM 530mA, 347-480V | -AL 120° included | | -YM Yoke Mount | | |
| | | | -AN 350mA, 347-480V | -AM 80° Forward Throw | | -CU Custom Mount | | |



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Mechanical

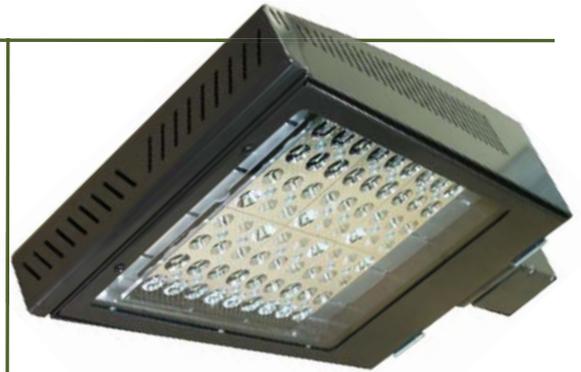
Dimensions: 12"W x 19"D x 5.6"H. Carton Weight: 22lbs..
 EPA Rating- 1.5
 Solid aluminum housing, baked powder coat finish on all exterior and interior surfaces.
 Stainless steel fasteners and hardware; no ferrous metals.
 Bayer Makrolon V-0 polycarbonate optics for superior chemical and impact resistance.
 Operating Temperature Range: -40°C/-40°F to 55°C/130°F.

Electrical

UL/cUL Wet Listed to UL 1598 and 8750.
 Driver reduces power if case temperature exceeds 80°C/176°F.
 Class A sound rating.
 0-10V dimming standard, 100% to 10%, available with optional integral sensors.
 >0.9 power factor, <20% THD, RoHS.
 Standard 3kV surge suppression. Optional 20kV surge suppression.

CASCADE SERIES - AREA AND SITE

| | |
|----------|---------------------------|
| Part #: | CA3-072-AG-AK-AF-BZ-AF-NS |
| Project: | |
| Notes: | |
| Date: | |



| | |
|-----------------------------------|-----------------|
| System Watts: | 146 |
| Luxeon LEDs: | 48 |
| Delivered Lumens: | 11388 lm |
| Distribution: | Type III |
| Color Temperature: | 5700K |
| Input Voltage: | 120-277V |
| <i>also available in 347-480V</i> | |
| CRI: | 75 Typ |
| Mount: | 2AF Slip Fitter |
| Integral Sensor: | No Sensor |

Housing Color: Architectural Bronze
also available in White, Black, and Custom Colors

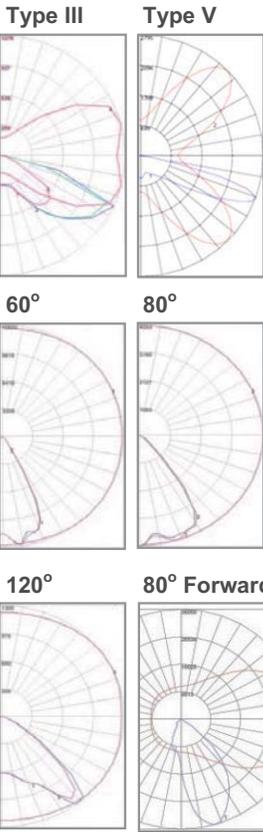


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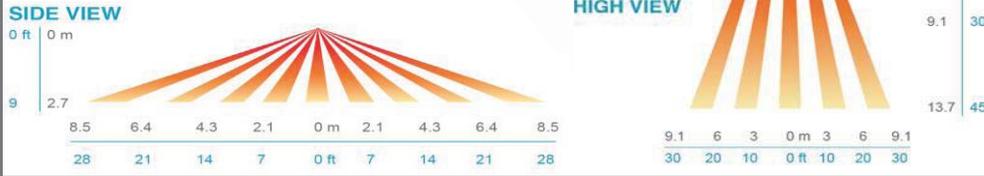
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| In-Situ Inputs | |
|---|---------|
| Drive current for each LED package/array/module (mA): | 0.7 |
| In-situ case temperature (T _c , °C): | 89.9 |
| Percentage of initial lumens to project to (e.g. for L ₇₀ , enter 70): | 70 |
| Results | |
| Time (t) at which to estimate lumen maintenance (hours): | 54,000 |
| Lumen maintenance at time (t) (%): | 93.60% |
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Optional Integral Sensor

Choose Occupancy, Photocell, or Hybrid (combined). Suitable for mounting heights from 7' to 45'; specify mounting height when ordering.



Mounting Options

Standard 2AF Slip Fitter (2-1/2" ID)



Standard Two and Four Bolt Arms



Standard Yoke Mount



Standard Wall Pack Mount



custom color shown

Custom Mounts available

ORDERING INFORMATION

(Example: CA3-072-AJ-AK-AF-BZ-FB-WS)

| Family | No. of 24 LED Modules | Total LED Count | Kelvin Temperature, CRI (Typical) | Drive Current, Input Voltage | Optic, Included Angle | Housing Color | Mounting Method | Integral Sensor |
|---|-----------------------|-----------------|-----------------------------------|------------------------------|-----------------------|---------------------------|------------------------------------|-----------------|
| CA Cascade | 2 | -048 | -AG 5700K, 75CRI | -AH 350mA, 120-277V | -AB 80° included | -BK Black | -AF 2AF Slip Fitter | -NS No Sensor |
| | 3 | -072 | -AH 4000K, 75CRI | -AJ 530mA, 120-277V | -AC 60° included | -BZ Architectural Bronze | -TB Two-Bolt Arm | -WS With Sensor |
| -AJ 5000K, 75CRI | | | -AK 700mA, 120-277V | -AF Type 3, wide rectangle | -WH White | -FB Four-Bolt Arm | -PC Integral Photocell On/Off Only | |
| Custom color temperature and CRI levels | | | -AL 700mA, 347-480V | -AG Type 5, wide square | -CU Custom Colors | -WM Wall Pack Flush Mount | | |
| | | | -AM 530mA, 347-480V | -AL 120° included | | -YM Yoke Mount | | |
| | | | -AN 350mA, 347-480V | -AM 80° Forward Throw | | -CU Custom Mount | | |



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Optical

Proprietary family of optics designed by Cireon for the specific output signature of the Luxeon LED combine class-leading efficiency and uniformity with soft, undetectable edges.

Quality Componentry

Philips Luxeon® LEDs, with the patented wafer-bonded design, provides the industry's most efficient and robust designs all with half the thermal resistance of the next closest competitor. With over six decades of knowledge, the Philips Advance power supplies provide reliability, onboard thermal and electrical overload protection and the smoothest dimming available.

Mechanical

Dimensions: 12"W x 19"D x 5.6"H. Carton Weight: 22lbs..
 EPA Rating- 1.5
 Solid aluminum housing, baked powder coat finish on all exterior and interior surfaces.
 Stainless steel fasteners and hardware; no ferrous metals.
 Bayer Makrolon V-0 polycarbonate optics for superior chemical and impact resistance.
 Operating Temperature Range: -40°C/-40°F to 55°C/130°F.

Electrical

UL/cUL Wet Listed to UL 1598 and 8750.
 Driver reduces power if case temperature exceeds 80°C/176°F.
 Class A sound rating.
 0-10V dimming standard, 100% to 10%, available with optional integral sensors.
 >0.9 power factor, <20% THD, RoHS.
 Standard 3kV surge suppression. Optional 20kV surge suppression.

CASCADE SERIES - AREA AND SITE

| | |
|----------|---------------------------|
| Part #: | CA3-072-AG-AK-AL-BZ-AF-NS |
| Project: | |
| Notes: | |
| Date: | |



| | |
|--------------------|-----------------------------------|
| System Watts: | 146 |
| Luxeon LEDs: | 48 |
| Delivered Lumens: | 12848 lm |
| Distribution: | 120 degree |
| Color Temperature: | 5700K |
| Input Voltage: | 120-277V |
| | <i>also available in 347-480V</i> |
| CRI: | 75 Typ |
| Mount: | 2AF Slip Fitter |
| Integral Sensor: | No Sensor |

Housing Color: Architectural Bronze
also available in White, Black, and Custom Colors



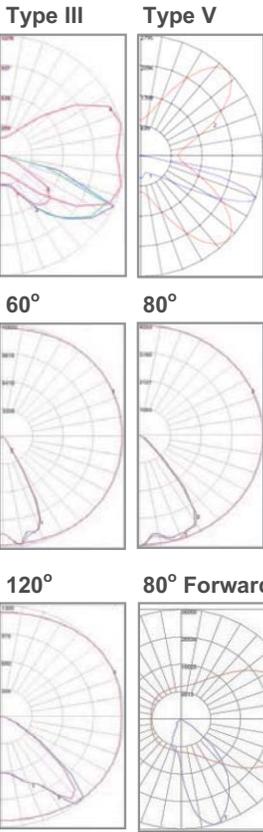
Spacing Criteria:

Cireon's proprietary 120 degree reflector and lens optic assembly delivers an avg:min uniformity of better than 1.2:1 when spaced at 1.33 times the mounting height. At 2.07 times the mounting height, uniformity is better than 2:1.

Your Authorized Cireon Agent



Notes: ⁽¹⁾ Combines LM-79 in situ at 25°C/76°F ambient and LM-80 data as published by Philips Lumileds in the DOE's TM-21 Calculation. ⁽²⁾ additional



Proven Longevity

The Cascade family's unified flow-through thermal management system provides a **life expectancy of 201,000 to 440,000 hours** to 70% output⁽¹⁾.

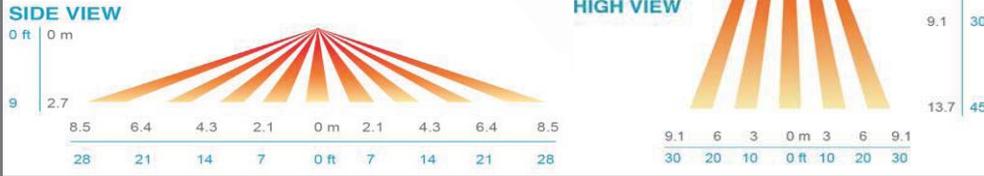
TM-21 using Cireon LM-79 in situ and Lumileds LM-80 data:

| In-Situ Inputs | |
|---|---------|
| Drive current for each LED package/array/module (mA): | 0.7 |
| In-situ case temperature (T _c , °C): | 89.9 |
| Percentage of initial lumens to project to (e.g. for L ₇₀ , enter 70): | 70 |
| Results | |
| Time (t) at which to estimate lumen maintenance (hours): | 54,000 |
| Lumen maintenance at time (t) (%): | 93.60% |
| Calculated L70 (hours): | 201,000 |
| Reported L70 (hours): | >54000 |



Optional Integral Sensor

Choose Occupancy, Photocell, or Hybrid (combined). Suitable for mounting heights from 7' to 45'; specify mounting height when ordering.



Mounting Options

Standard 2AF Slip Fitter (2-1/2" ID)



Standard Two and Four Bolt Arms



Standard Yoke Mount



Standard Wall Pack Mount



custom color shown

Custom Mounts available

ORDERING INFORMATION

(Example: CA3-072-AJ-AK-AF-BZ-FB-WS)

| Family | No. of 24 LED Modules | Total LED Count | Kelvin Temperature, CRI (Typical) | Drive Current, Input Voltage | Optic, Included Angle | Housing Color | Mounting Method | Integral Sensor |
|---|-----------------------|-----------------|-----------------------------------|------------------------------|-----------------------|---------------------------|------------------------------------|-----------------|
| CA Cascade | 2 | -048 | -AG 5700K, 75CRI | -AH 350mA, 120-277V | -AB 80° included | -BK Black | -AF 2AF Slip Fitter | -NS No Sensor |
| | 3 | -072 | -AH 4000K, 75CRI | -AJ 530mA, 120-277V | -AC 60° included | -BZ Architectural Bronze | -TB Two-Bolt Arm | -WS With Sensor |
| -AJ 5000K, 75CRI | | | -AK 700mA, 120-277V | -AF Type 3, wide rectangle | -WH White | -FB Four-Bolt Arm | -PC Integral Photocell On/Off Only | |
| Custom color temperature and CRI levels | | | -AL 700mA, 347-480V | -AG Type 5, wide square | -CU Custom Colors | -WM Wall Pack Flush Mount | | |
| | | | -AM 530mA, 347-480V | -AL 120° included | | -YM Yoke Mount | | |
| | | | -AN 350mA, 347-480V | -AM 80° Forward Throw | | -CU Custom Mount | | |



100% of Cireon's proprietary componentry is manufactured by US suppliers in US facilities. All final assembly done in the US.

OVERVIEW

The Cireon Cascade Series is the industry's longest lasting high performance solid state luminaires. With the best in thermal management, proprietary optics, and the highest quality componentry available, Cireon products provide beautifully uniform lighting while maintaining unmatched output over the industry's longest lifetimes.

FEATURES



Thermal Management

The industry's only combination of the superior thermal conductivity of an aluminum extrusion heat sink with a bird-protected ventilated housing. Dual-sided copper clad boards with thermally inductive interfaces optimize thermal conductivity. Tall, frequent fin geometry paired with largest in class LED spacing provides 15.1in² convective surface area per LED.

Optical

Proprietary family of optics designed by Cireon for the specific output signature of the Luxeon LED combine class-leading efficiency and uniformity with soft, undetectable edges.

Quality Componentry

Philips Luxeon® LEDs, with the patented wafer-bonded design, provides the industry's most efficient and robust designs all with half the thermal resistance of the next closest competitor. With over six decades of knowledge, the Philips Advance power supplies provide reliability, onboard thermal and electrical overload protection and the smoothest dimming available.

Mechanical

Dimensions: 10"W x 13"D x 5.6"H. Carton Weight: 17lbs..
 EPA Rating- 1.02
 Solid aluminum housing, baked powder coat finish on all exterior and interior surfaces.
 Stainless steel fasteners and hardware; no ferrous metals.
 Bayer Makrolon V-0 polycarbonate optics for superior chemical and impact resistance.
 Operating Temperature Range: -40°C/-40°F to 55°C/130°F.

Electrical

UL/cUL Wet Listed to UL 1598 and 8750.
 Driver reduces power if case temperature exceeds 80°C/176°F.
 Class A sound rating.
 0-10V dimming standard, 100% to 10%, available with optional integral sensors.
 >0.9 power factor, <20% THD, RoHS.
 Standard 3kV surge suppression. Optional 20kV surge suppression.

CASCADE SERIES - AREA AND SITE

| | |
|----------|---------------------------|
| Part #: | CA2-048-AG-AJ-AL-BZ-AF-NS |
| Project: | |
| Notes: | |
| Date: | |



| | |
|--------------------|-----------------------------------|
| System Watts: | 78 |
| Luxeon LEDs: | 48 |
| Delivered Lumens: | 7800 lm |
| Distribution: | 120 degree |
| Color Temperature: | 5700K |
| Input Voltage: | 120-277V |
| | <i>also available in 347-480V</i> |
| CRI: | 75 Typ |
| Mount: | 2AF Slip Fitter |
| Integral Sensor: | No Sensor |

Housing Color: Architectural Bronze
available in White, Black, Bronze, and Custom Colors

10 YEAR



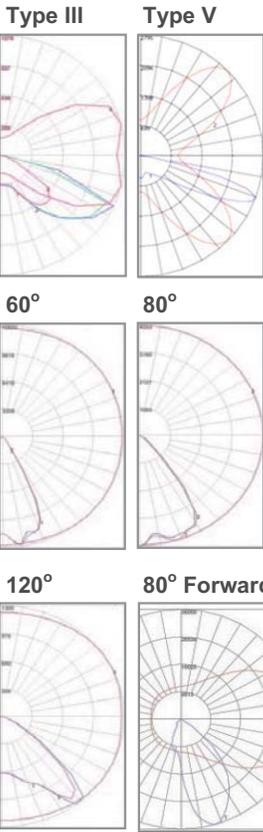
WARRANTY

Spacing Criteria:

Cireon's proprietary 120 degree reflector and lens optic assembly delivers an avg:min uniformity of better than 1.2:1 when spaced at 1.33 times the mounting height. At 2.07 times the mounting height, uniformity is better than 2:1.

Your Authorized Cireon Agent





Proven Longevity

The Cascade family's unified flow-through thermal management system provides a **life expectancy of 201,000 to 440,000 hours** to 70% output⁽¹⁾.

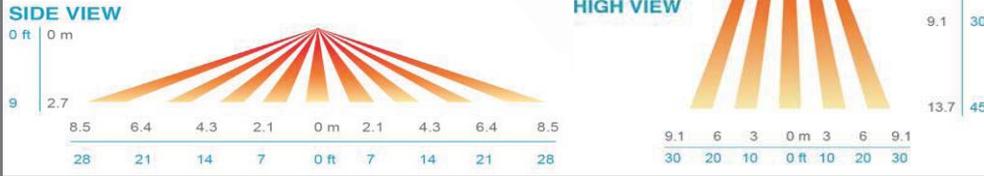
TM-21 using Cireon LM-79 in situ and Lumileds LM-80 data:

| In-Situ Inputs | |
|---|---------|
| Drive current for each LED package/array/module (mA): | 0.7 |
| In-situ case temperature (T _c , °C): | 89.9 |
| Percentage of initial lumens to project to (e.g. for L ₇₀ , enter 70): | 70 |
| Results | |
| Time (t) at which to estimate lumen maintenance (hours): | 54,000 |
| Lumen maintenance at time (t) (%): | 93.60% |
| Calculated L70 (hours): | 201,000 |
| Reported L70 (hours): | >54000 |



Optional Integral Sensor

Choose Occupancy, Photocell, or Hybrid (combined). Suitable for mounting heights from 7' to 45'; specify mounting height when ordering.



Mounting Options

Standard 2AF Slip Fitter (2-1/2" ID)



Standard Two and Four Bolt Arms



Standard Yoke Mount



Standard Wall Pack Mount



custom mounts available

ORDERING INFORMATION

(Example: CA2-048-AG-AJ-AL-WH-AF-PC)

| Family | No. of 24 LED Modules | Total LED Count | Kelvin Temperature, CRI (Typical) | Drive Current, Input Voltage | Optic, Included Angle | Housing Color | Mounting Method | Integral Sensor |
|---|-----------------------|---------------------|-----------------------------------|------------------------------|-----------------------|---------------------------|------------------------------------|-----------------|
| CA Cascade | 1 | -024 | -AG 5700K, 75CRI | -AH 350mA, 120-277V | -AB 80° included | -BK Black | -AF 2AF Slip Fitter | -NS No Sensor |
| | 2 | -048 | -AH 4000K, 75CRI | -AJ 530mA, 120-277V | -AC 60° included | -BZ Architectural Bronze | -TB Two-Bolt Arm | -WS With Sensor |
| -AJ 5000K, 75CRI | | | -AK 700mA, 120-277V | -AF Type 3, wide rectangle | -WH White | -FB Four-Bolt Arm | -PC Integral Photocell On/Off Only | |
| -CU Custom color temperature and CRI levels | | | -AL 700mA, 347-480V | -AG Type 5, wide square | -CU Custom Colors | -WM Wall Pack Flush Mount | | |
| | | | -AM 530mA, 347-480V | -AL 120° included | -YM Yoke Mount | | | |
| | | -AN 350mA, 347-480V | -AM 80° Forward Throw | -CU Custom Mount | | | | |



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OVERVIEW

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FEATURES



Thermal Management

The industry's only combination of the superior thermal conductivity of an aluminum extrusion heat sink with a bird-protected ventilated housing. Dual-sided copper clad boards with thermally inductive interfaces optimize thermal conductivity. Tall, frequent fin geometry paired with largest in class LED spacing provides 15.1in² convective surface area per LED.

Optical

Proprietary family of optics designed by Cireon for the specific output signature of the Luxeon LED combine class-leading efficiency and uniformity with soft, undetectable edges.

Quality Componentry

Philips Luxeon® LEDs, with the patented wafer-bonded design, provides the industry's most efficient and robust designs all with half the thermal resistance of the next closest competitor. With over six decades of knowledge, the Philips Advance power supplies provide reliability, onboard thermal and electrical overload protection and the smoothest dimming available.

Mechanical

Dimensions: 10"W x 13"D x 5.6"H. Carton Weight: 17lbs..
 EPA Rating- 1.02
 Solid aluminum housing, baked powder coat finish on all exterior and interior surfaces.
 Stainless steel fasteners and hardware; no ferrous metals.
 Bayer Makrolon V-0 polycarbonate optics for superior chemical and impact resistance.
 Operating Temperature Range: -40°C/-40°F to 55°C/130°F.

Electrical

UL/cUL Wet Listed to UL 1598 and 8750.
 Driver reduces power if case temperature exceeds 80°C/176°F.
 Class A sound rating.
 0-10V dimming standard, 100% to 10%, available with optional integral sensors.
 >0.9 power factor, <20% THD, RoHS.
 Standard 3kV surge suppression. Optional 20kV surge suppression.

CASCADE SERIES - AREA AND SITE

| | |
|----------|---------------------------|
| Part #: | CA2-048-AG-AH-AG-BZ-AF-NS |
| Project: | |
| Notes: | |
| Date: | |



| | |
|--------------------|-----------------------------------|
| System Watts: | 50 |
| Luxeon LEDs: | 48 |
| Delivered Lumens: | 5050 lm |
| Distribution: | Type V |
| Color Temperature: | 5700K |
| Input Voltage: | 120-277V |
| | <i>also available in 347-480V</i> |
| CRI: | 75 Typ |
| Mount: | 2AF Slip Fitter |
| Integral Sensor: | No Sensor |

Housing Color: Architectural Bronze
available in White, Black, Bronze, and Custom Colors

10 YEAR



WARRANTY

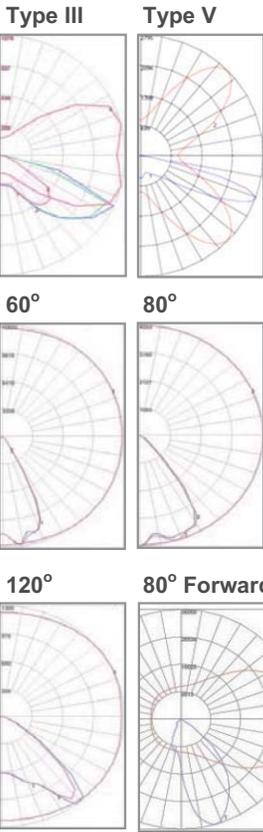
Spacing Criteria:

Cireon's proprietary Type 5 free form optic delivers an avg:min uniformity of better than 1.2:1 when spaced at 3.0 x 3.0 times the mounting height. At 4.2 x 4.2 times the mounting height, uniformity is better than 2:1.

Your Authorized Cireon Agent



Notes: ⁽¹⁾ Combines LM-79 in situ at 25°C/76°F ambient and LM-80 data as published by Philips Lumileds in the DOE's TM-21 Calculation.



Proven Longevity

The Cascade family's unified flow-through thermal management system provides a **life expectancy of 201,000 to 440,000 hours** to 70% output⁽¹⁾.

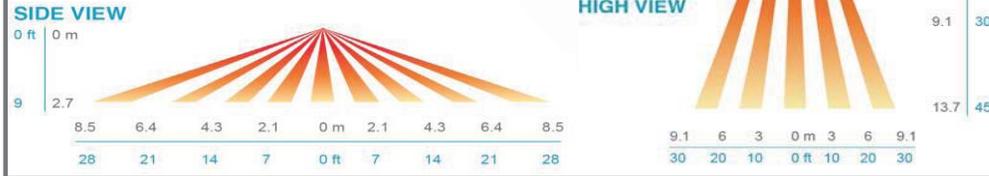
TM-21 using Cireon LM-79 in situ and Lumileds LM-80 data:

| In-Situ Inputs | |
|---|---------|
| Drive current for each LED package/array/module (mA): | 0.7 |
| In-situ case temperature (T _c , °C): | 89.9 |
| Percentage of initial lumens to project to (e.g. for L ₇₀ , enter 70): | 70 |
| Results | |
| Time (t) at which to estimate lumen maintenance (hours): | 54,000 |
| Lumen maintenance at time (t) (%): | 93.60% |
| Calculated L70 (hours): | 201,000 |
| Reported L70 (hours): | >54000 |



Optional Integral Sensor

Choose Occupancy, Photocell, or Hybrid (combined). Suitable for mounting heights from 7' to 45'; specify mounting height when ordering.



Mounting Options

Standard 2AF Slip Fitter (2-1/2" ID)



Standard Two and Four Bolt Arms



Standard Yoke Mount



Standard Wall Pack Mount



custom mounts available

ORDERING INFORMATION

(Example: CA2-048-AG-AJ-AL-WH-AF-PC)

| Family | No. of 24 LED Modules | Total LED Count | Kelvin Temperature, CRI (Typical) | Drive Current, Input Voltage | Optic, Included Angle | Housing Color | Mounting Method | Integral Sensor |
|---|-----------------------|---------------------|-----------------------------------|------------------------------|-----------------------|---------------------------|------------------------------------|-----------------|
| CA Cascade | 1 | -024 | -AG 5700K, 75CRI | -AH 350mA, 120-277V | -AB 80° included | -BK Black | -AF 2AF Slip Fitter | -NS No Sensor |
| | 2 | -048 | -AH 4000K, 75CRI | -AJ 530mA, 120-277V | -AC 60° included | -BZ Architectural Bronze | -TB Two-Bolt Arm | -WS With Sensor |
| -AJ 5000K, 75CRI | | | -AK 700mA, 120-277V | -AF Type 3, wide rectangle | -WH White | -FB Four-Bolt Arm | -PC Integral Photocell On/Off Only | |
| -CU Custom color temperature and CRI levels | | | -AL 700mA, 347-480V | -AG Type 5, wide square | -CU Custom Colors | -WM Wall Pack Flush Mount | | |
| | | | -AM 530mA, 347-480V | -AL 120° included | -YM Yoke Mount | | | |
| | | -AN 350mA, 347-480V | -AM 80° Forward Throw | -CU Custom Mount | | | | |



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OVERVIEW

The Cireon Cascade Series is the industry's longest lasting high performance solid state luminaires. With the best in thermal management, proprietary optics, and the highest quality componentry available, Cireon products provide beautifully uniform lighting while maintaining unmatched output over the industry's longest lifetimes.

FEATURES



Thermal Management

The industry's only combination of the superior thermal conductivity of an aluminum extrusion heat sink with a bird-protected ventilated housing. Dual-sided copper clad boards with thermally inductive interfaces optimize thermal conductivity. Tall, frequent fin geometry paired with largest in class LED spacing provides 15.1in² convective surface area per LED.

Optical

Proprietary family of optics designed by Cireon for the specific output signature of the Luxeon LED combine class-leading efficiency and uniformity with soft, undetectable edges.

Quality Componentry

Philips Luxeon® LEDs, with the patented wafer-bonded design, provides the industry's most efficient and robust designs all with half the thermal resistance of the next closest competitor. With over six decades of knowledge, the Philips Advance power supplies provide reliability, onboard thermal and electrical overload protection and the smoothest dimming available.

Mechanical

Dimensions: 10"W x 13"D x 5.6"H. Carton Weight: 17lbs..
 EPA Rating- 1.02
 Solid aluminum housing, baked powder coat finish on all exterior and interior surfaces.
 Stainless steel fasteners and hardware; no ferrous metals.
 Bayer Makrolon V-0 polycarbonate optics for superior chemical and impact resistance.
 Operating Temperature Range: -40°C/-40°F to 55°C/130°F.

Electrical

UL/cUL Wet Listed to UL 1598 and 8750.
 Driver reduces power if case temperature exceeds 80°C/176°F.
 Class A sound rating.
 0-10V dimming standard, 100% to 10%, available with optional integral sensors.
 >0.9 power factor, <20% THD, RoHS.
 Standard 3kV surge suppression. Optional 20kV surge suppression.

CASCADE SERIES - AREA AND SITE

| | |
|----------|---------------------------|
| Part #: | CA2-048-AG-AH-AF-BZ-AF-NS |
| Project: | |
| Notes: | |
| Date: | |



| | |
|--------------------|-----------------------------------|
| System Watts: | 50 |
| Luxeon LEDs: | 48 |
| Delivered Lumens: | 4950 lm |
| Distribution: | Type III |
| Color Temperature: | 5700K |
| Input Voltage: | 120-277V |
| | <i>also available in 347-480V</i> |
| CRI: | 75 Typ |
| Mount: | 2AF Slip Fitter |
| Integral Sensor: | No Sensor |

Housing Color: Architectural Bronze
available in White, Black, Bronze, and Custom Colors

10 YEAR



WARRANTY

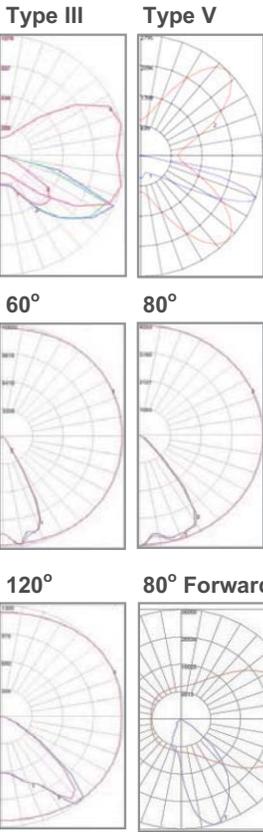
Spacing Criteria:

Cireon's proprietary Type 3 free form optic delivers an avg:min uniformity of better than 1.2:1 when spaced at 2.5 x 4.0 times the mounting height. At 3.1 x 5.4 times the mounting height, uniformity is better than 2:1.

Your Authorized Cireon Agent



Notes: ⁽¹⁾ Combines LM-79 in situ at 25°C/76°F ambient and LM-80 data as published by Philips Lumileds in the DOE's TM-21 Calculation.



Proven Longevity

The Cascade family's unified flow-through thermal management system provides a **life expectancy of 201,000 to 440,000 hours** to 70% output⁽¹⁾.

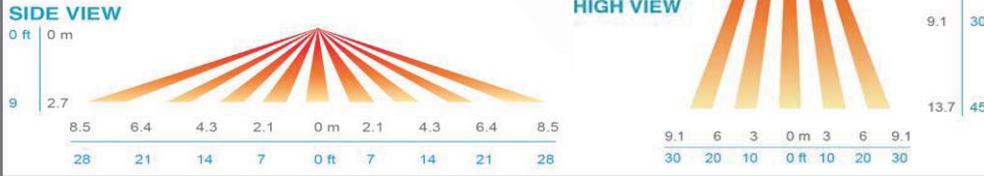
TM-21 using Cireon LM-79 in situ and Lumileds LM-80 data:

| In-Situ Inputs | |
|---|---------|
| Drive current for each LED package/array/module (mA): | 0.7 |
| In-situ case temperature (T _c , °C): | 89.9 |
| Percentage of initial lumens to project to (e.g. for L ₇₀ , enter 70): | 70 |
| Results | |
| Time (t) at which to estimate lumen maintenance (hours): | 54,000 |
| Lumen maintenance at time (t) (%): | 93.60% |
| Calculated L70 (hours): | 201,000 |
| Reported L70 (hours): | >54000 |



Optional Integral Sensor

Choose Occupancy, Photocell, or Hybrid (combined). Suitable for mounting heights from 7' to 45'; specify mounting height when ordering.



Mounting Options

Standard 2AF Slip Fitter (2-1/2" ID)



Standard Two and Four Bolt Arms



Standard Yoke Mount



Standard Wall Pack Mount



custom mounts available

ORDERING INFORMATION

(Example: CA2-048-AG-AJ-AL-WH-AF-PC)

| Family | No. of 24 LED Modules | Total LED Count | Kelvin Temperature, CRI (Typical) | Drive Current, Input Voltage | Optic, Included Angle | Housing Color | Mounting Method | Integral Sensor |
|------------|---|---------------------|-----------------------------------|------------------------------|---------------------------|------------------------------------|---------------------|-----------------|
| CA Cascade | 1 | -024 | -AG 5700K, 75CRI | -AH 350mA, 120-277V | -AB 80° included | -BK Black | -AF 2AF Slip Fitter | -NS No Sensor |
| | | | -AH 4000K, 75CRI | -AJ 530mA, 120-277V | -AC 60° included | -BZ Architectural Bronze | -TB Two-Bolt Arm | -WS With Sensor |
| | -AJ 5000K, 75CRI | -AK 700mA, 120-277V | -AF Type 3, wide rectangle | -WH White | -FB Four-Bolt Arm | -PC Integral Photocell On/Off Only | | |
| | -CU Custom color temperature and CRI levels | -AL 700mA, 347-480V | -AG Type 5, wide square | -CU Custom Colors | -WM Wall Pack Flush Mount | | | |
| | | -AM 530mA, 347-480V | -AL 120° included | -YM Yoke Mount | | | | |
| | | -AN 350mA, 347-480V | -AM 80° Forward Throw | -CU Custom Mount | | | | |



100% of Cireon's proprietary componentry is manufactured by US suppliers in US facilities. All final assembly done in the US.

OVERVIEW

The Cireon Ontario Series high bays are the industry's longest lasting high performance solid state luminaires. With the best in thermal management, proprietary optics, and the highest quality componentry available, Cireon products provide beautifully uniform lighting while maintaining unmatched output over the industry's longest lifetimes.

FEATURES



Thermal Management

One-piece extruded aluminum heat sink and dual-sided copper clad boards with thermally inductive interfaces optimize thermal conductivity. Tall, frequent fin geometry paired with largest in class LED spacing provides 15.1in² convective surface area per LED. Flow through design promotes continuous movement of fresh air into fins and around all six sides of the power supply.

Optical

Proprietary freeform low bay optics designed by Cireon for the specific output signature of the Luxeon LED combine class-leading efficiency and uniformity with soft, undetectable edges.

Quality Componentry

Philips Luxeon® LEDs, with the patented wafer-bonded design, provides the industry's most efficient and robust designs all with half the thermal resistance of the next closest competitor. With over six decades of knowledge, the Philips Advance power supplies provide reliability, onboard thermal and electrical overload protection and the smoothest dimming available.

Mechanical

Housing Dimensions:

Ontario 2 & 3: 13.5"W x 18.5"L x 3.5" H Carton Weight: 21lbs.

Ontario 4, 6 & 8: 18.5"W x 23.5"L x 3.5" H Carton Weight: 38lbs.

Solid aluminum housing, baked powder coat finish on all exterior and interior surfaces. Stainless steel fasteners and hardware; no ferrous metals.

Bayer Makrolon V-0 polycarbonate optics for superior chemical and impact resistance. Operating Temperature Range: -40°C/-40°F to 55°C/130°F.

Electrical

UL/cUL Listed to UL 1598 and 8750.

Driver reduces power if case temperature exceeds 80°C/176°F.

Class A sound rating.

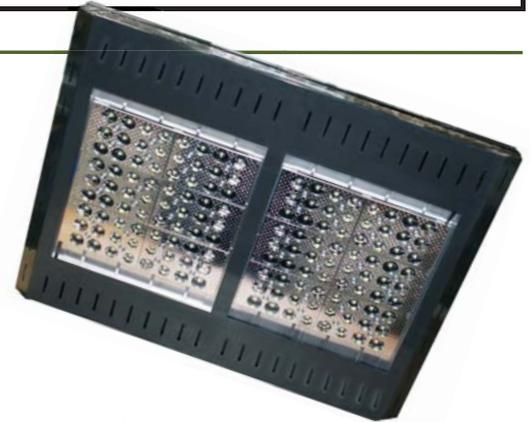
0-10V dimming standard, 100% to 10%, available with optional integral sensors.

>0.9 power factor, <20% THD, RoHS.

Standard 3kV surge suppression. Optional 20kV surge suppression.

ONTARIO SERIES - HIGH BAY

| | |
|----------|---------------------------|
| Part #: | ON3-072-AG-AK-AB-WH-SF-NS |
| Project: | |
| Notes: | |
| Date: | |



System Watts: 146
 Luxeon LEDs: 72
 Delivered Lumens: 13724 lm
 Distribution: 80 degree
 Color Temperature: 5700K
 Input Voltage: 120-277V

also available in 347-480V

CRI: 75 Typ
 Integral Sensor: Excluded
 Housing Color: White

Also available in Steel Gray

10 YEAR



WARRANTY

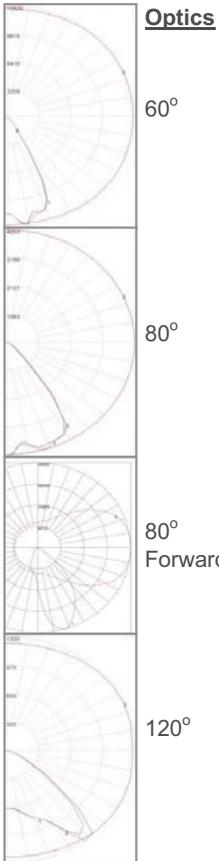
Spacing Criteria:

Cireon's proprietary 80 degree multi-arrayed optic delivers an avg:min uniformity of better than 1.1:1 when spaced at 1.15 times the mounting height. At 1.37 times the mounting height, uniformity is better than 1.8:1.

See Cireon Low Bays for additional optic options.

Your Authorized Cireon Agent





Optics

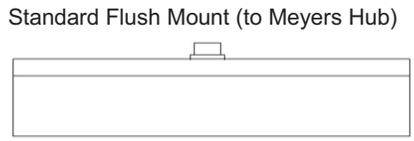
Proven Longevity

The Ontario family's unified thermal management system provides a **life expectancy of 201,000 to 440,000 hours** to 70% of original output⁽¹⁾.

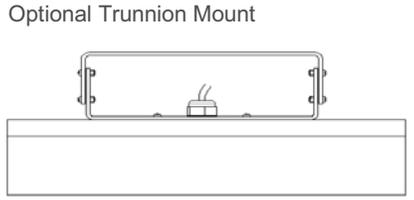
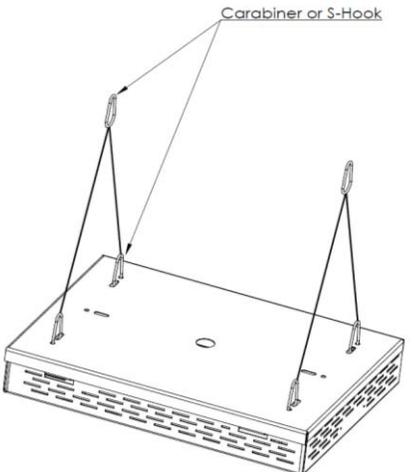
TM-21 using Cireon LM-79 in situ and Lumileds LM-80 data:

| In-Situ Inputs | |
|---|---------|
| Drive current for each LED package/array/module (mA): | 0.7 |
| In-situ case temperature (T _c , °C): | 89.9 |
| Percentage of initial lumens to project to (e.g. for L ₇₀ , enter 70): | 70 |
| Results | |
| Time (t) at which to estimate lumen maintenance (hours): | 54,000 |
| Lumen maintenance at time (t) (%): | 93.60% |
| Calculated L70 (hours): | 201,000 |
| Reported L70 (hours): | >54000 |

Mounting Options



Standard Cable Mount
cables and hardware not included



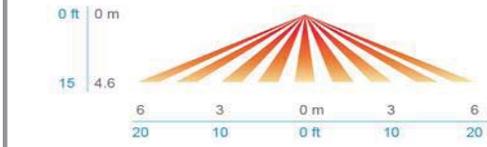
Optional Integral Sensor; High Bay

Additional coverage patterns available.

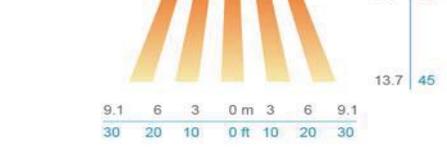
6 HIGH BAY 360° LENS

- Best choice for 15 to 45 ft (4.57 to 13.72 m) mounting heights
- 15 to 20 ft (4.57 to 6.10 m) radial coverage overlaps area lit by a typical high bay fixture
- Excellent detection of large motion (e.g. **walking**) up to a 35 ft (10.76 m) mounting height
- Excellent detection of extra large motion (e.g. **forklifts**) up to a 45 ft (13.72 m) mounting height

LOW VIEW



HIGH VIEW



ORDERING INFORMATION

(Example: **ON4-096-AG-AK-AF-WH-SF-WS**)

| Family | No. of 24 LED Modules | Total LED Count | Kelvin Temperature, CRI (Typical) | Drive Current, Input Voltage | Optic, Included Angle | Housing Color | Mounting Method | Integral Sensor | |
|--------|-----------------------|-----------------|-----------------------------------|--|-----------------------|----------------------------|-------------------|--|-----------------|
| ON | Ontario | 2 | -048 | -AG 5700K, 75CRI | -AH 350mA, 120-277V | -AA 120° included Textured | -SG Steel Gray | -CC 110V Plug with 10' XO Cord | -NS No Sensor |
| | | 3 | -072 | -AH 4000K, 75CRI | -AJ 530mA, 120-277V | -AB 80° included | -WH White | -TR Trunnion Mount | -WS With Sensor |
| | | 4 | -096 | -AJ 5000K, 75CRI | -AK 700mA, 120-277V | -AC 60° included | -CU Custom Colors | -SF Standard Flush to J-box or with Meyers Hub | |
| | | 6 | -144 | -CU Custom color temperatures and CRI levels | -AL 700mA, 347-480V | -AF Type 3, wide rectangle | | | |
| | | 8 | -192 | | -AM 530mA, 347-480V | -AG Type 5, wide square | | -CU Custom Mount | |
| | | | | -AN 350mA, 347-480V | -AL 120° included | | | | |



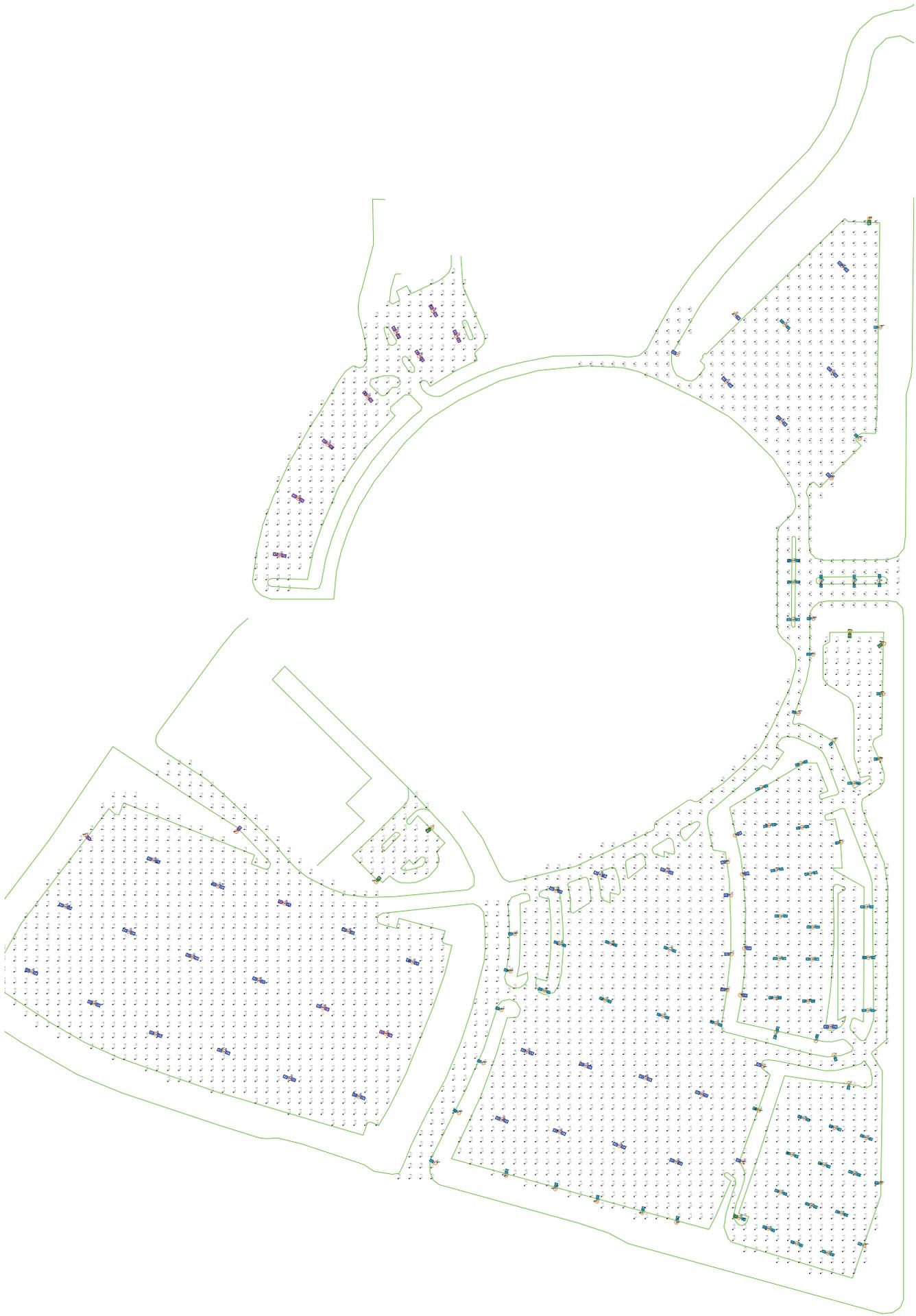
100% of Cireon's proprietary componentry is manufactured by US suppliers in US facilities. All final assembly done in the US.

| Luminaire Location Summary | | | | | | | |
|----------------------------|------------------|--------|--------|----|---------|------|--|
| LumNo | Label | X | Y | Z | Orient | Tilt | |
| 151 | Cascade 2-5-T3 | 351 | 614.5 | 25 | 70 | 10 | |
| 152 | Cascade 2-5-T5 | 239.5 | 645.5 | 25 | 70 | 12 | |
| 153 | Cascade 2-5-T5 | 239.5 | 645.5 | 25 | 250 | 12 | |
| 154 | Cascade 2-5-T3 | 454.5 | 668.5 | 25 | 90 | 12 | |
| 155 | Cascade 2-5-T3 | 386.5 | 677 | 25 | 75 | 12 | |
| 156 | Cascade 2-5-T3 | 14 | 685 | 25 | 347.083 | 10 | |
| 157 | Cascade 2-5-T5 | 115.5 | 692 | 25 | 70 | 12 | |
| 158 | Cascade 2-5-T5 | 115.5 | 692 | 25 | 250 | 12 | |
| 159 | Cascade 2-5-T3 | 316 | 692.5 | 25 | 70 | 12 | |
| 160 | Cascade 2-5-T3 | 219 | 726 | 25 | 65 | 12 | |
| 161 | Cascade 2-5-T3 | 128 | 770.5 | 25 | 60 | 12 | |
| 162 | Cascade 3-7-T3 | 1545.5 | 774 | 25 | 205 | 10 | |
| 163 | Cascade 3-7-T3 | 1545.5 | 774 | 25 | 25 | 10 | |
| 164 | Cascade 2-5-T3 | 36.5 | 813.5 | 25 | 60 | 12 | |
| 165 | Cascade 3-7-T3 | 1592 | 817 | 25 | 210 | 10 | |
| 166 | Cascade 3-7-T3 | 1592 | 817 | 25 | 30 | 10 | |
| 167 | Cascade 3-7-T20C | 648.5 | 820.5 | 25 | 132.58 | 25 | |
| 168 | Cascade 3-7-T3 | 1509.5 | 842 | 25 | 215 | 10 | |
| 169 | Cascade 3-7-T3 | 1509.5 | 842 | 25 | 35 | 10 | |
| 170 | Cascade 3-7-T5 | 403.5 | 855 | 25 | 70 | 12 | |
| 171 | Cascade 3-7-T5 | 403.5 | 855 | 25 | 250 | 12 | |
| 172 | Cascade 3-7-T3 | 1552.5 | 885 | 25 | 30 | 10 | |
| 173 | Cascade 3-7-T3 | 1552.5 | 885 | 25 | 210 | 10 | |
| 174 | Cascade 3-7-T3 | 272.5 | 903.5 | 25 | 250 | 12 | |
| 175 | Cascade 3-7-T3 | 272.5 | 903.5 | 25 | 70 | 12 | |
| 176 | Cascade 3-7-T20C | 549.5 | 921.5 | 25 | 320 | 25 | |
| 177 | Cascade 3-7-T3 | 1435 | 936.5 | 25 | 220 | 10 | |
| 178 | Cascade 3-7-T3 | 1435 | 936.5 | 25 | 40 | 10 | |
| 179 | Cascade 3-7-T5 | 158 | 953 | 25 | 250 | 12 | |
| 180 | Cascade 3-7-T5 | 158 | 953 | 25 | 70 | 12 | |
| 181 | Cascade 3-7-T5 | 459.5 | 972.5 | 25 | 70 | 12 | |
| 182 | Cascade 3-7-T5 | 459.5 | 972.5 | 25 | 250 | 12 | |
| 183 | Cascade 3-7-T3 | 1348.5 | 1009.5 | 25 | 230 | 10 | |
| 184 | Cascade 3-7-T3 | 1348.5 | 1009.5 | 25 | 50 | 10 | |
| 185 | Cascade 3-7-T5 | 320 | 1018.5 | 25 | 70 | 10 | |
| 186 | Cascade 3-7-T3 | 320 | 1018.5 | 25 | 250 | 12 | |
| 187 | Cascade 3-7-T3 | 1250 | 1064 | 25 | 240 | 10 | |
| 188 | Cascade 3-7-T3 | 1250 | 1064 | 25 | 60 | 10 | |
| 189 | Cascade 3-7-T5 | 191 | 1079.5 | 25 | 250 | 12 | |
| 190 | Cascade 3-7-T5 | 191 | 1079.5 | 25 | 70 | 12 | |
| 191 | Cascade 3-7-T5 | 510.5 | 1088.5 | 25 | 250 | 12 | |
| 192 | Cascade 3-7-T3 | 510.5 | 1088.5 | 25 | 70 | 12 | |
| 193 | Cascade 3-7-T3 | 1146 | 1097.5 | 25 | 260 | 10 | |
| 194 | Cascade 3-7-T3 | 1146 | 1097.5 | 25 | 80 | 10 | |
| 195 | Cascade 3-7-T5 | 370 | 1135.5 | 25 | 70 | 12 | |
| 196 | Cascade 3-7-T5 | 370 | 1135.5 | 25 | 250 | 12 | |
| 197 | Cascade 3-7-T3 | 641.5 | 1176.5 | 25 | 316.332 | 12 | |
| 198 | Cascade 3-7-T5 | 240 | 1199.5 | 25 | 70 | 12 | |
| 199 | Cascade 3-7-T5 | 240 | 1199.5 | 25 | 250 | 12 | |
| 200 | Cascade 3-7-T5 | 542.5 | 1210 | 25 | 70 | 12 | |

| Luminaire Location Summary | | | | | | | |
|----------------------------|----------------|-------|--------|----|---------|------|--|
| LumNo | Label | X | Y | Z | Orient | Tilt | |
| 201 | Cascade 3-7-T5 | 542.5 | 1210 | 25 | 250 | 12 | |
| 202 | Cascade 3-7-T5 | 413 | 1257 | 25 | 250 | 12 | |
| 203 | Cascade 3-7-T5 | 413 | 1257 | 25 | 70 | 12 | |
| 204 | Cascade 3-7-T5 | 271.5 | 1323.5 | 25 | 250 | 12 | |
| 205 | Cascade 3-7-T5 | 271.5 | 1323.5 | 25 | 70 | 12 | |
| 206 | Cascade 3-7-T5 | 589 | 1327.5 | 25 | 70 | 12 | |
| 207 | Cascade 3-7-T5 | 589 | 1327.5 | 25 | 250 | 12 | |
| 208 | Cascade 3-7-T5 | 458.5 | 1372.5 | 25 | 250 | 12 | |
| 209 | Cascade 3-7-T5 | 458.5 | 1372.5 | 25 | 70 | 12 | |
| 210 | Cascade 3-7-T5 | 327.5 | 1436 | 25 | 70 | 12 | |
| 211 | Cascade 3-7-T5 | 327.5 | 1436 | 25 | 250 | 12 | |
| 212 | Cascade 3-7-T3 | 634 | 1452 | 25 | 232.306 | 12 | |
| 213 | Cascade 3-7-T5 | 504.5 | 1488.5 | 25 | 250 | 12 | |
| 214 | Cascade 3-7-T5 | 504.5 | 1488.5 | 25 | 70 | 12 | |
| 215 | Cascade 3-7-T5 | 385.5 | 1550 | 25 | 250 | 12 | |
| 216 | Cascade 3-7-T5 | 385.5 | 1550 | 25 | 70 | 12 | |



Results indicated are based upon data provided to Cireon. The intensity, distribution, and uniformity shown are based upon the dimensional and reflectance parameters indicated. Field results will be based upon the actual parameters of the space and the objects within. It is the customers responsibility to assess the accuracy of the assumed parameters and their affect upon field results.



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