



# Bridgelux® DriveLux-C3 3CCT 10mm Engine (Casambi) AC Inputs Light Engine (EU)

Product Data Sheet DS1331

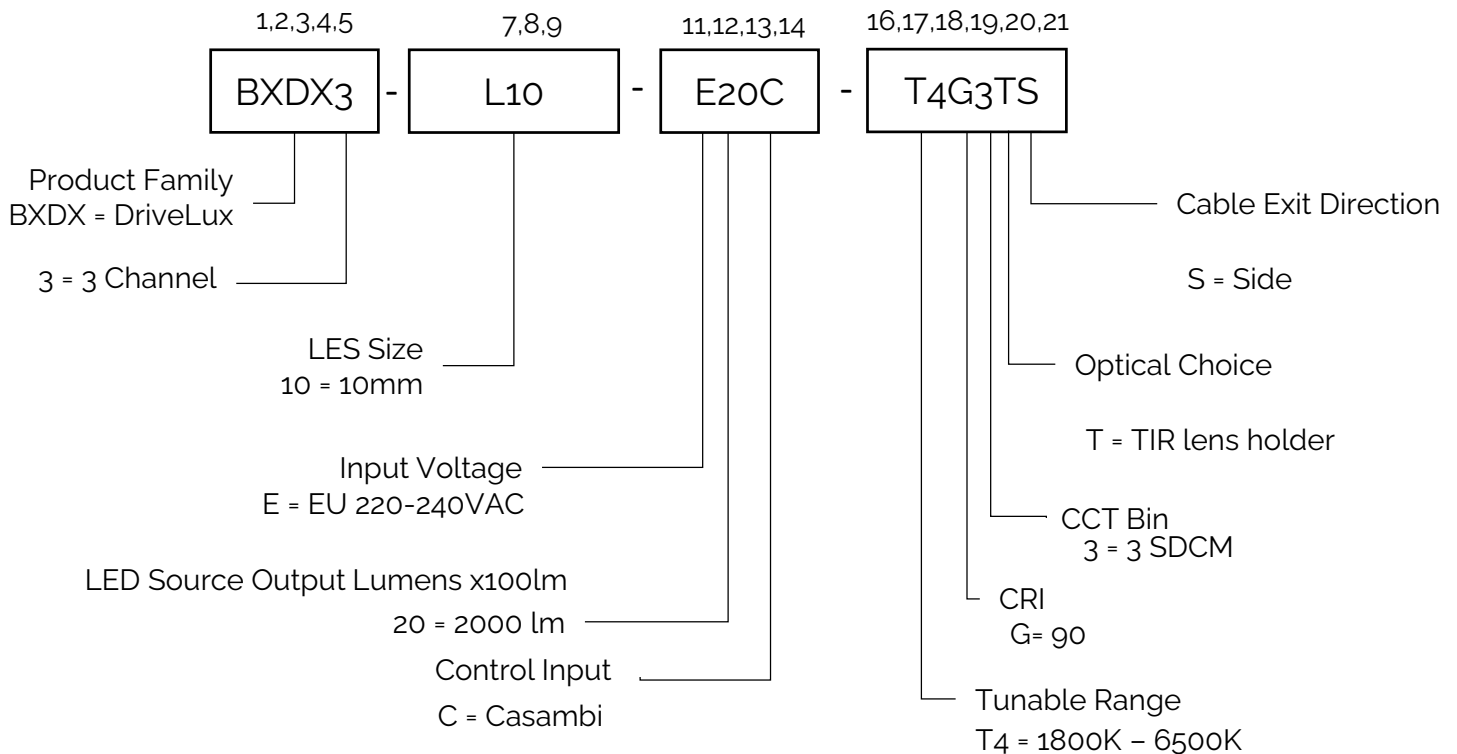
## Product Feature Map

Bridgelux's Drivelux-C3 light engine revolutionizes everything. Bridgelux's global expertise in LEDs and driver has led to a significant breakthrough in lighting technology – integrating the AC-DC driver directly into the light engine, ensuring the highest quality of light. Crucially, Drivelux-C3 provides comprehensive cost reductions, from the expense, size, and manufacturing complexity of fixtures with traditional external drivers to inventory SKU reduction – aligning performance, control, and cost to meet every requirement.



### Product Nomenclature

The part number designation for Bridgelux Drivelux-C3 Light Engine is explained as follows:



## Product Selection Guide

Table 1: Product Selection Guide (examples)

| Part Number                                      | Configuration                                    |
|--|--|
| BXDX3-L10-E20C-T4G3T <sup>1</sup> S <sup>2</sup> | 220-240VAC, 10mm, 2000lm, CRI90, 3 SDCM, Casambi |

1 Optical Choice:

- T = TIR Lens Holder

2 Cable Exit Direction:

- S = Side

Table 2: AC Input Power Cable (Ordered Separately)

| Part Number        | Configuration   |
|--------------------|---|
| BXDX-AC-NA400      | 2-wire AC Input Power Cable, Black/White, 400mm   |
| BXDX-AC-NA100      | 2-wire AC Input Power Cable, Black/White, 100mm   |
| BXDX-AC-NA413-QD   | 2-wire AC Input Power Cable, Black/White, 413mm, with quick disconnect                  |
| BXDX-AC-NA400-QDFL | 2-wire AC Input Power Cable, Black/White, 400mm, with quick disconnect and flying leads |

## Electrical Characteristics

Table 3: Electrical Characteristics

| Parameter           | Unit | Specification                        |
|---------------------|------|--------------------------------------|
| Nominal voltage     | V    | 220 - 240VAC                         |
| Nominal frequency   | Hz   | 50 / 60 Hz                           |
| AC voltage range    | V    | 198 - 264 Vac                        |
| Input current (max) | A    | < 0.09 A (@ 230Vac)                  |
| Input Power (Typ.)  | W    | 20.6 W                               |
| THD                 | %    | < 20% (@ 230Vac, Dimming 100% - 40%) |
| Power factor        | -    | > 0.9 (@ 230Vac, Dimming 100%)       |
| Inrush current      | A    | Meet NEMA-410 requirements (@25° C)  |
| Standby Power       | mW   | < 500mW (@ 230Vac)                   |
| Control             |      | Casambi                              |
| Flicker             |      | Pst LM ≤ 1<br>SVM ≤ 0.4              |
| Start-up Time       | s    | < 0.5 s                              |

Table 5: Photometric Characteristics (Light Engine without Diffuser – LED temperature = 65°C)

| CCT [K] | Input Power [W] | Lumens [lm] | CRI min. | Rg min. | Lm/W  | Remarks |
|---------|-----------------|-------------|----------|---------|-------|---------|
| 1800K   | 9.63            | 655         | 88       | 33      | 68.0  |         |
| 2200K   | 12.41           | 1024        | 94       | 55      | 82.5  |         |
| 2700K   | 17.75           | 1673        | 94       | 66      | 94.2  |         |
| 3000K   | 20.37           | 2043        | 94       | 68      | 100.3 |         |
| 3500K   | 20.62           | 2162        | 93       | 70      | 104.9 |         |
| 4000K   | 20.50           | 2211        | 91       | 69      | 107.9 |         |
| 5000K   | 20.23           | 2214        | 90       | 62      | 109.5 |         |
| 5700K   | 19.17           | 2084        | 90       | 63      | 108.7 |         |
| 6500K   | 16.72           | 1786        | 90       | 63      | 106.8 |         |

# Photometric Characteristics

Figure 1: Typical Color Spectrum

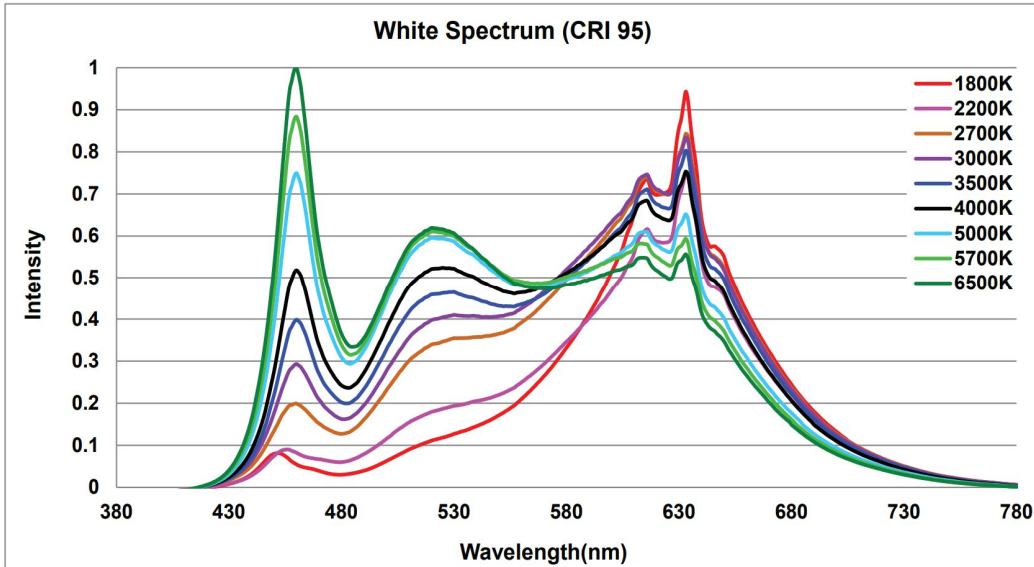
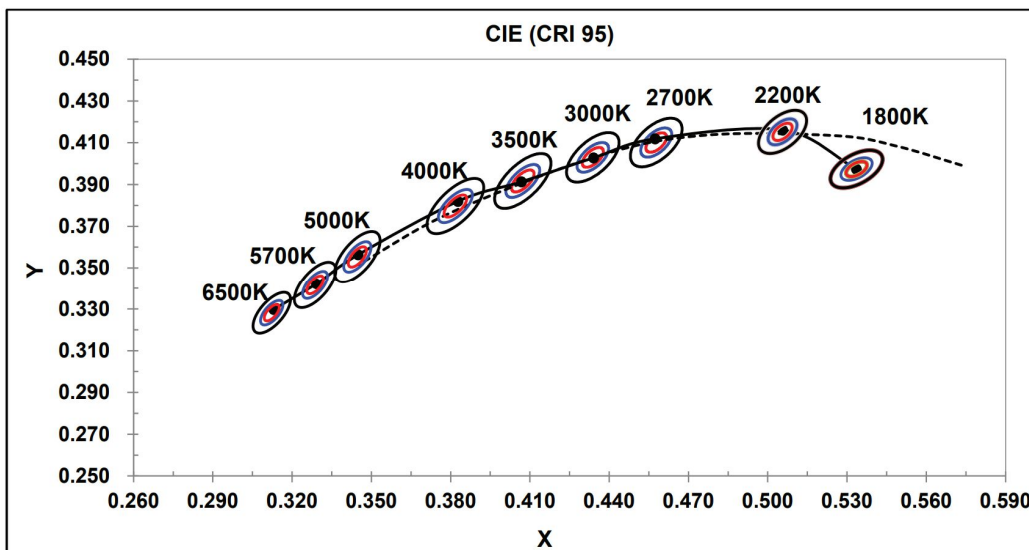


Figure 2: White Test Bins in xy Color Space



## Electrical Characteristics

Figure 4: Power Factor vs Output Lumens

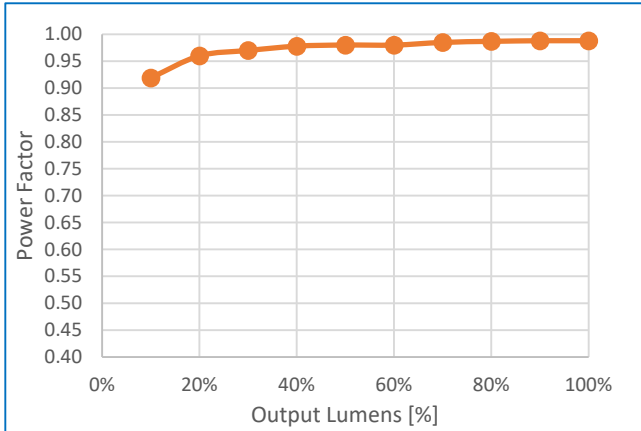


Figure 5: THDi vs Output Lumens

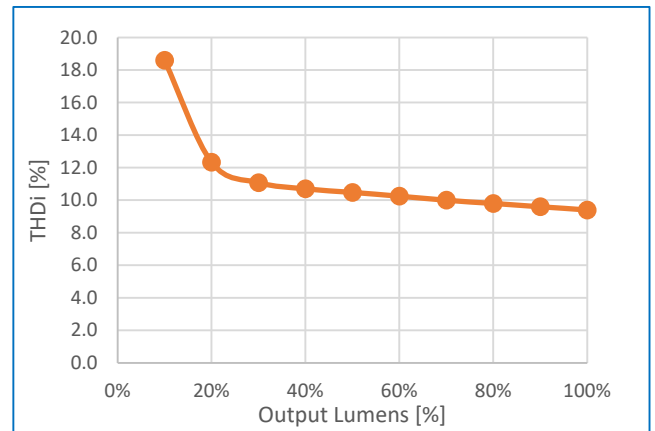


Figure 6: Input Power vs Output Lumens

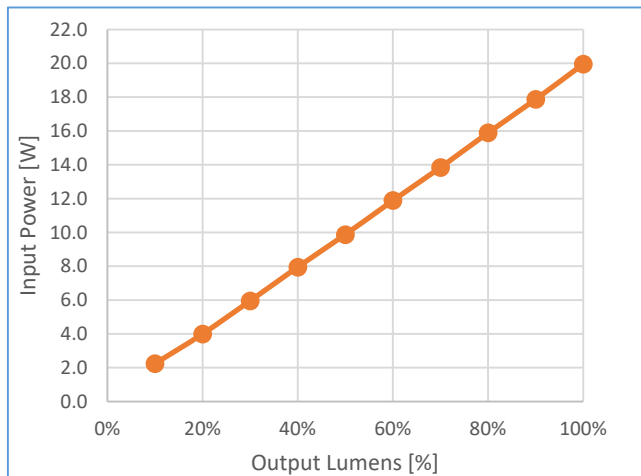


Figure 7: Output Lumens vs CCT

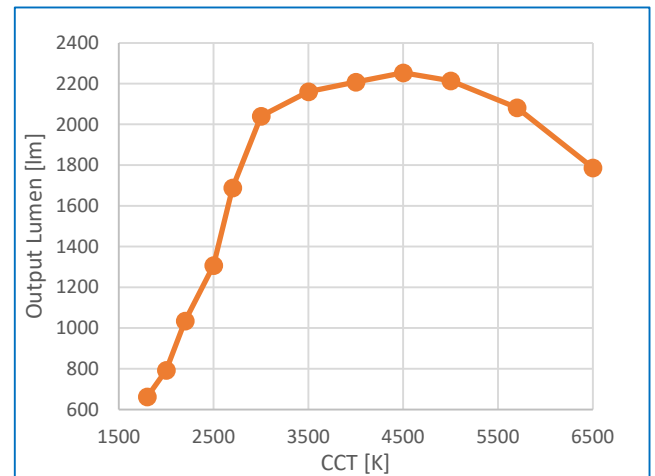
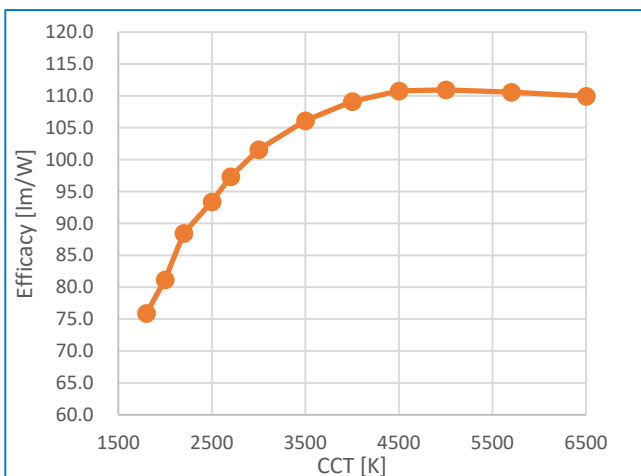


Figure 8: Efficacy vs CCT

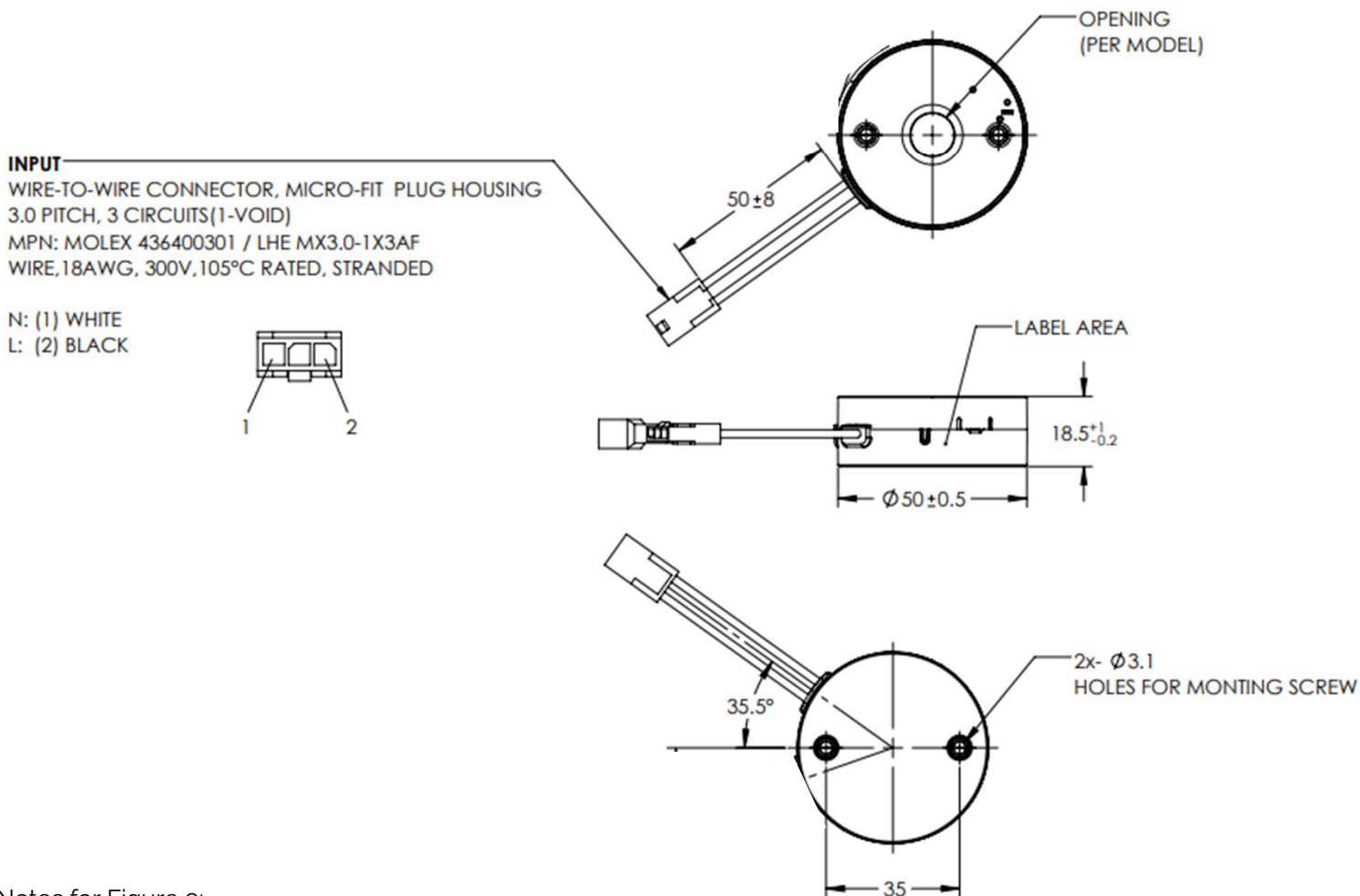


## Mechanical Characteristics

Table 5: Driver Mechanical Characteristics

| Characteristics                 | Specification |
|---------------------------------|---------------|
| Dimensions                      | Ø50 x 18.5 mm |
| Lighting Emitting Surface (LES) | 10 mm         |
| Weight                          | 45 g          |

Figure 9: Mechanical Drawing (Side Cable Models)



Notes for Figure 9:

1. Drawing dimensions are in millimeters
2. Unless otherwise specified, all linear tolerances are +/-1.0mm

## Optical Accessories of the Light Engine

The Light Engine (LE) can order with the optical TIR lens holder. This holder can easily install various optics lens best for smooth color mixing.

Detail lens offering, can be referred to Bridgelux Website.

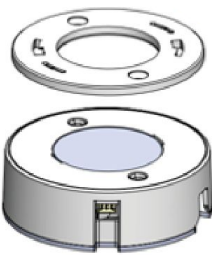


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Home > OPTICS

### OPTICS

We've taken in your feedback and are thrilled to unveil the Bridgelux Integrated Solution. This solution includes Non-soldering Holders, Kirin Optics, and Drives, all designed to work together in harmony. The Optics, which are an essential part of this solution, come with a variety of beam angles, namely 15°, 24°, 36°, and 50°. Plus, they're available in different diameters, namely 35mm, 45mm, 55mm, up to 65mm. This variety ensures you find the perfect fit for your needs. What makes Bridgelux Optics even more special is their compatibility with our solder-free COB array holders, providing a smooth user experience. Our turn & lock design is a game-changer, it simplifies the adoption of our integrated lighting solution. In a nutshell, this design is a boon for manufacturers, lighting designers, and more, making the installation process easier than ever before. Additionally, we offer the opportunity for customization. We understand that needs can vary, so we're open to creating personalized solutions as per your specific requests. Customized solutions are available per customer request.

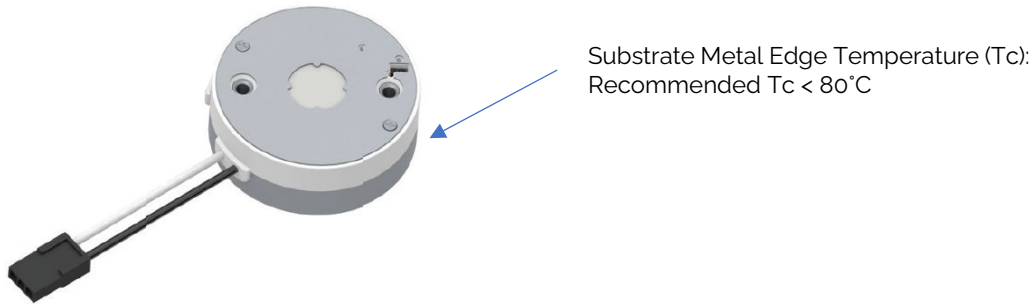


| Product Family | Product             | Data sheet | Doc Number | Diameter (mm) | Beam angle     | Max LES (mm) | Material |
|----------------|---------------------|------------|------------|---------------|----------------|--------------|----------|
| BXHK           | BXHK-MN-5024-xx-D09 |            | DS1346     | ø50, 24H      | 14, 24, 36, 50 | 9            | PC       |
| BXHK           | BXHK-MN-5525-xx-D09 |            | DS1347     | ø55, 25H      | 14, 24, 36, 50 | 9            | PC       |
| BXHK           | BXHK-MN-6230-xx-D09 |            | DS1348     | ø62, 30H      | 14, 24, 36, 50 | 9            | PC       |
| BXHK           | BXHK-MN-6832-xx-D09 |            | DS1349     | ø68, 32H      | 14, 24, 36, 50 | 9            | PC       |
| BXHK           | BXHK-DK-5024-xx-D09 |            | DS1342     | ø50, 24H      | 14, 24, 36, 50 | 9            | PC       |
| BXHK           | BXHK-DK-5525-xx-D09 |            | DS1343     | ø55, 25H      | 14, 24, 36, 50 | 9            | PC       |
| BXHK           | BXHK-DK-6230-xx-D09 |            | DS1344     | ø62, 30H      | 14, 24, 36, 50 | 9            | PC       |
| BXHK           | BXHK-DK-6832-xx-D09 |            | DS1345     | ø68, 32H      | 14, 24, 36, 50 | 9            | PC       |

## Thermal Management of the Light Engine

Check the heat sink's temperature ( $T_c$ ) with the Light Engine installed in the fixture under similar conditions to its final use. Aim for a  $T_c$  below  $80^\circ\text{C}$ .

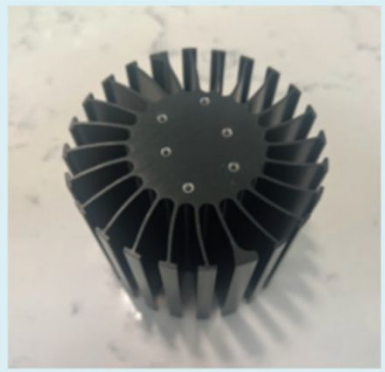
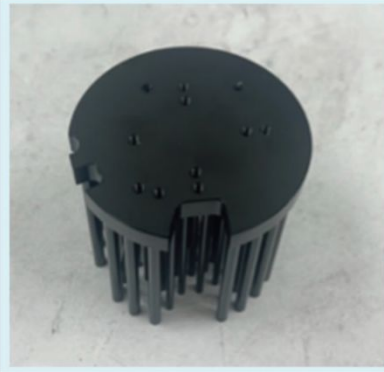
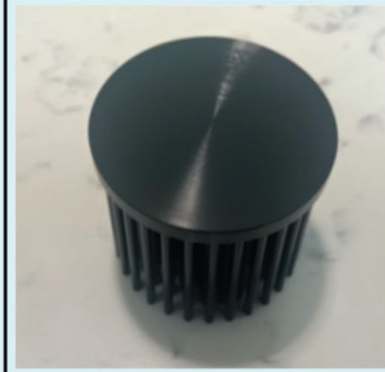
The Light Engine has a safety feature that reduces power to the LEDs if  $T_c$  reaches  $90^\circ\text{C}$ .



The Light Engine (LE) needs an external heat sink to maintain proper LED temperature. It has an aluminum base for efficient heat transfer, allowing simple heat sink designs. Several recommended heat sinks are listed with their performance at different Lumen outputs.

The LE can be installed in various fixtures, but solid contact with the heat sink and a thermally conductive material (at least  $10 \text{ W}/(\text{m}^2\text{K})$ ) are crucial. Internal tests used an extruded heat sink. Proper airflow to the heat sink is essential to avoid overheating. The fixture's thermal design must keep the engine's base at the recommended temperature.

**IMPORTANT:** Heat sinks are usually tested in free air at  $25^\circ\text{C}$ . In insulated can fixtures, the LE might overheat. Test the heat sink in actual conditions for the desired application

| Manufacturer                | Mechatronix   | Mechatronix  | Mechatronix   |
|-----------------------------|---|--|---|
| Model                       | GH36D 9980-B  | LPF67A68-8-B   | LPF70A50-5-B  |
|                             |  |  |  |
|                             | GH36D 9980-B, 120 Vac, Rev. X04, 4000K CCT  | LPF67A68-8-B, 120 Vac, Rev. X04, 4000K CCT   | LPF70A50-5-B, 120 Vac, Rev. X04, 4000K CCT  |
| Light Engine Output (Lumen) | Ts at Ta of $40^\circ\text{C}$  |  | Ts at Ta of $40^\circ\text{C}$  |
| 850                         |   |  |   |
| 1000                        |   |  | 69.1  |
| 1250                        |   |  | 74.5  |
| 1500                        |   |  | 79.9  |
| 2000                        |   |  | 91.5  |
| 2500 (Max)                  | 64.9  | 85.3   | 97.4  |

## Cable Assemblies (AC Input Power Cable)

Table 6: AC Input Cables 1

| Part Number   | Configuration                                   |
|---------------|---|
| BXDX-AC-NA400 | 2-wire AC Input Power Cable, Black/White, 400mm |
| BXDX-AC-NA100 | 2-wire AC Input Power Cable, Black/White, 100mm |

| Item No. | Part No. (UL) | Wire Description                    | Wire Color | Input   |
|----------|---------------|-------------------------------------|------------|---------|
| 3        | UL 1430       | Wire Stranded Tinned 18 AWG (Pin-1) | White      | Neutral |
| 4        | UL 1430       | Wire Stranded Tinned 18 AWG (Pin-3) | Black      | Line    |

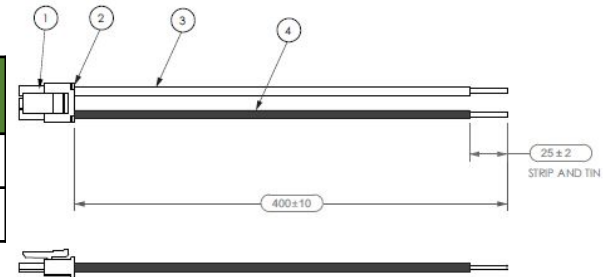
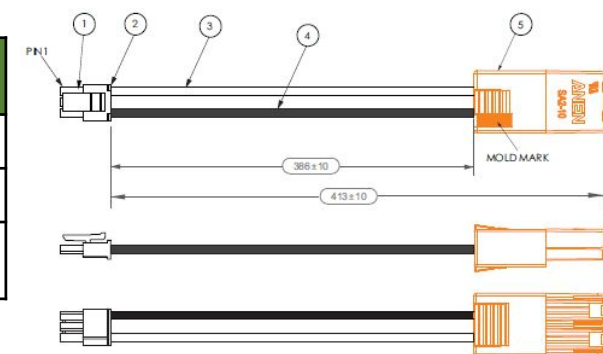


Table 7: AC Input Cables 2

| Part Number        | Configuration   |
|--------------------|---|
| BXDX-AC-NA413-QD   | 2-wire AC Input Power Cable, Black/White, 413mm, with quick disconnect                  |
| BXDX-AC-NA400-QDFL | 2-wire AC Input Power Cable, Black/White, 400mm, with quick disconnect and flying leads |

| Item No. | Part No. (UL)   | Wire Description                    | Wire Color | Input   |
|----------|-----------------|-------------------------------------|------------|---------|
| 3        | UL 1430         | Wire Stranded Tinned 18 AWG (Pin-1) | White      | Neutral |
| 4        | UL 1430         | Wire Stranded Tinned 18 AWG (Pin-3) | Black      | Line    |
| 5        | SA-2-10, Single | NBC ELECTRONIC 2-Pin Connector      | Orange     | N/A     |



| Item No. | Part No. (UL) | Manufacturer | Description     | QTY |
|----------|---------------|--------------|-----------------|-----|
| 1        | 3016H-1*03    | ECI          | Connector 3-Pin | 1   |
| 2        | 3016P-L       | ECI          | Connector Crimp | 2   |

## Environmental and Regulatory Standards

Table 9: Environmental Conditions

| Parameter                     | Specification  |
|-------------------------------|--|
| Ambient Operating Temperature | -20°C to +40°C<br><i>Light Engine can operate with <math>T_a &gt; 40^\circ\text{C}</math> by linearly de-rating the output lumen by 2.5%/°C (from 40°C - 60°C)</i> |
| Max. Case Temperature Tc      | +90°C (max)  |
| Humidity Rating               | Maximum 95% Relative Humidity, non condensing  |
| Storage Temperature           | -40°C to + 85°C  |
| Acoustic Noise                | < 24 dBA (measured from 1M w/o/dimmer)   |
| Expected Lifetime             | 50,000 hours (Tc < 80°C)   |
| Working Locations             | Suitable for dry and damp locations  |
| Warranty                      | 5 Years (Tc < 80°C)  |

Table 10: Regulatory Approvals and Compliance

| Specification                  | Reference Standard  | Condition  |
|--------------------------------|---|--|
| Conducted and Radiated EMI     | EN 55015:2019+A1:2020 (CISPR 15:2018)   |  |
| Voltage Fluctuations & Flicker | IEC 61000-3-3   |  |
| ESD (Electrostatic Discharge)  | IEC 61547:2009 Section 5.2<br>Test des.: IEC 61000-4-2                        | 6 kV contact discharge,<br>8 kV air discharge, level 3               |
| Radiated Immunity              | IEC 61000-4-3   | 3 V/m, 80-1000 MHz, 80% modulated @ 3 meters, Level 2                |
| Electrical Fast Transient      | IEC 61547 Section 5.5<br>Test des.: IEC 61000-4-4                             | ± 2KV on AC power port for 1minute,<br>± 1KV on signal/control lines |
| Surge Protection               | IEC 61547 Section 5.7<br>Test des.: IEC 61000-4-5 or<br>ANSI/IEEE C62.41-2002 | ± 2KV line to line / ± 2KV line to earth on AC power ports.          |
|                                | ANSI/IEEE C62.41.1-2002   | 2.5kV Ring Wave  |
| Conducted Immunity             | IEC 61000-4-3   | 3V, 0.15-80 MHz, 80% modulated, Level 2                              |
| Voltage Dips                   | IEC 61547 Section 5.8, 5.9<br>Test des.: IEC 61000-4-11                       | >95% dip, .5 period; 30% dip, 25 periods; 95% reduction, 250 periods |

Note: Unless otherwise specified, all the above parameters are measured at ambient temperature of 25°C and rated voltage.

## Regulatory Standards (continued)

Table 11: Safety Agency Approvals

| Specification    | Reference Standard                        | Condition                  |
|------------------|---|----------------------------|
| ENEC / CE / UKCA | EN 61347-1:2015,<br>EN 61347-2-13:2014+A1 | ENEC Certification pending |

Table 12: Protection

| Specification                         | Reference Standard | Condition  |
|---------------------------------------|--------------------|--|
| Over Voltage Protection (OVP)         | YES                | Automatic recovery   |
| OLP tolerance                         | 100 – 110%         |  |
| Over Temperature Protection (OTP)     | YES                | Gradually reduce output power when $T_c < 85^\circ\text{C}$ Automatic recovery |
| Output Short-Circuit Protection (SCP) | YES                | Automatic recovery   |



## Design Resources

### Application Notes

Please contact your Bridgelux sales representative for assistance on obtaining application support when designing with the Bridgelux Drivelux-C3 Light Engine. For a list of available resources, visit [www.bridgelux.com](http://www.bridgelux.com).

## Precautions

### CAUTION: PRODUCT HANDLING

Handle the Drivelux-C3 Light Engine with care to prevent any damage from mechanical shock  
It is recommended to handle this driver in a static-free environment  
Do not open or disassemble the product  
To maintain product warranty, the installer is responsible for ensuring that the driver's operating conditions do not exceed the maximum conditions stated within this data sheet

### CAUTION: ELECTRIC SHOCK

Be aware of the possibility of an electric shock hazard which can result in serious injury or death.  
Disconnect power before servicing or installing this device.

## Disclaimers

### MINOR PRODUCT CHANGE POLICY

The rigorous qualification testing on products offered by Bridgelux provides performance assurance. Slight cosmetic changes that do not affect form, fit, or function may occur as Bridgelux continues product optimization.

## About Bridgelux: Bridging Light and Life™

At Bridgelux, we help companies, industries and people experience the power and possibility of light. Since 2002, we've designed LED solutions that are high performing, energy efficient, cost effective and easy to integrate. Our focus is on light's impact on human behavior, delivering products that create better environments, experiences and returns—both experiential and financial. And our patented technology drives new platforms for commercial and industrial luminaires.

For more information about the company, please visit

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