Our Target Markets

• Indoor Residential and Commercial lighting
• Outdoor street and area lighting
• Office lighting
• Warehouses, manufacturing facilities, and Large retail store application
• Parking garages
• Architectural lighting
• Display / Signage
• Stage Lighting (entertainment, concert)
About ERP

ERP designs and manufactures energy-efficient LED drivers/power supplies for a wide range of lighting applications: from residential to commercial, industrial, outdoor, office buildings, architectural and stage lighting. Small, yet powerful, ERP products deliver an industry-leading combination of compact size, extensive dimmer compatibility, and high efficiency at competitive cost. Headquartered in Moorpark, CA, ERP owns and operates its own ISO 9001 certified manufacturing facility to ensure quality of design, sourcing, production and testing.

- Industry leader in high-efficiency (high-power-saving) & high-density (small footprint) LED drivers/power supplies
- Product offerings include standard and custom solutions for LED Lighting
- U.S.A. Headquarters in Moorpark, California, with sales/marketing, R&D, and technical support to serve the North-American market
- China Operations Center in Zhuhai include document center, QA, R&D, manufacturing, and sales/technical support to serve China and Asia
ERP Manufacturing

ERP products are manufactured in our wholly owned manufacturing facility in Zhuhai, China. The factory is configured with high-speed production lines for LED drivers and high-density power supplies, as well as state of the art burn-in chambers and automated test equipment. Strategic manufacturing partners provide significant upside capabilities. ERP products go through 100% burn-in to eliminate “infant mortality” failures. ISO 9001:2008 certified, with regular audits by safety agencies.

ERP Quality

Quality Management Systems (QMS)

- Design Qualification Assurance
  - Reliability testing
  - 4-stage development process
  - Component qualification (Derating, MTBF, Thermal testing)
  - Production auditing

- Product Qualification Assurance
  - Failure analysis
  - Customer returns

Standard Certifications

ERP products are designed and manufactured to comply with worldwide international IEC standards for lighting applications, and carry certifications by safety agencies such as UL, CSA and Nemko.

ERP products also comply with EMC regulations from Europe, and FCC/ICES in North America.
**Best-In-Class Dimming**

Forward-phase (TRIAC or leading-edge) and reverse-phase (ELV or trailing-edge)

[Diagram showing light output vs. 0-10V signal voltage]

**0-10 V control**

**Tri-Mode Dimming™**

The ESS, ESP, ESM, EVM, and EVB series of LED drivers are compatible with Tri-Mode Dimming™ from 6 W up to 160 W, i.e., they are compatible with forward-phase (TRIAC or leading-edge), reverse-phase (ELV or trailing-edge) and 0-10 V dimmers.

**Broad Dimming Compatibility**

ERP LED drivers deliver an extensive dimmer compatibility. For each LED driver, a dimming compatibility matrix is available upon request, showing how the LED driver scores against a long list of dimmers according to several criteria such as: flicker, shimmer, smooth dimming, no flash at startup, etc.

**Power Density**

**Highest Power Density in the industry**

The new patent-pending power electronics design delivers more than double the density of the previous generation ERP platform, while delivering 5 times the power density of current industry competitors.
LED Cross-Reference

ERP has developed an extensive cross-reference for 12 different LED manufacturers. This cross-reference can be directly accessed from the ERP website at www.erp-power.com. On the homepage, using the pull-down menus, select the LED manufacturer and then the LED. You may also select your desired drive current. The cross-reference tool will return a list of driver(s) that are the most relevant for your LED selection. You can also access the cross-reference by clicking on LED GUIDE at the top of the homepage. The LED guide lists the 12 LED manufacturers whose LEDs have been cross referenced to some of our LED drivers.

<table>
<thead>
<tr>
<th>bridgelux</th>
<th>CITIZEN</th>
<th>CREE®</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG Innotek</td>
<td>SAMSUNG</td>
<td>LUMINUS XNOVA</td>
</tr>
<tr>
<td>NICHIA</td>
<td>Lumileds</td>
<td>XICTAO</td>
</tr>
<tr>
<td>SEOUL</td>
<td>lumenetix</td>
<td></td>
</tr>
</tbody>
</table>

4
ERP Constant Current and Constant Voltage LED Driver Portfolios

Below are two graphs that illustrate our portfolio of constant current and constant voltage LED drivers. ERP LED drivers are targeted at architectural, commercial and industrial applications requiring 10 W to 260 W of power with dimming, programming and connectivity to the Internet of Lights. The color coded drivers are represented in this brochure.

Indoor/Outdoor, Constant Current LED Drivers

Programmable with Communication

Programmable Output

Fixed Output

Indoor/Outdoor, Isolated, Dimmable & Non-Dimmable, Constant Voltage LED Drivers

Efficiency (%)

Dimming

No Dimming

Output Power (W)
**Features**

- Non-linear 0-10 V dimming profile with dim-to-off pre-loaded by default
  
  10 V to 9.0 V = 100%, 1.5 V to 0.7 V = 1%, < 0.7 V = dim-to-off
- UL Class P
- Class 2 output / Class II power supply
- Lifetime: 50,000 hours @ Tc = 75°C
- 90°C maximum case hot spot temperature
- IP20-rated case with silicone-based potting
- No TRIAC/ELV dimming for PSBXXE models, only 0-10 V dimming
- Surge protection:
  - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
  - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

**Programming**

- Current: 100% to 50% in each voltage range
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles
- Fully programmable and selectable 0-10 V dimming profiles: Non-linear with dim-to-off, Logarithmic, Non-Linear without dim-to-off

**Typical Applications**

- Commercial lighting
- Architectural lighting
- Residential lighting
- Indoor Lighting
High Performance, Programmable, Constant Current, Class 2 / Class II LED Drivers with Tri-Mode Dimming™ (TRIAC, ELV and 0-10 V)

**Features**

- Ripple < 10% @ 20% & 100% load for TRIAC, ELV, and 0-10 V
- Turn-on at 1% Iout for TRIAC, ELV, and 0-10 V dimming
- Programmable conduction angles with turn-on & turn-off for TRIAC & ELV
- Programmable 0-10 V dimming profile
- Non-linear 0-10 V dimming profile with dim-to-off pre-loaded by default (10 V to 9.0 V = 100%, 1.5 V to 0.7 V = 1%, < 0.7 V = dim-to-off)
- UL Class P
- Class 2 output / Class II power supply
- Lifetime: 50,000 hours @ Tc ≤ 75°C
- 90°C maximum case hot spot temperature
- IP20-rated case with silicone-based potting
- Surge protection:
  - IEC61000-4-5: 2 kV line to line / 2 kV line to earth
  - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

**Typical Applications**

- Commercial lighting
- Architectural lighting
- Residential lighting
- Indoor Lighting

**Nominal Input Voltage**

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Efficiency</th>
<th>Max. Case Temperature</th>
<th>THD</th>
<th>Power Factor</th>
<th>Dimming Method</th>
<th>Dimming Range</th>
<th>Startup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>50 W</td>
<td>up to 90% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>Programmable Forward-Phase, Reverse-Phase, &amp; 0-10 V</td>
<td>1-100% (% of Iout)</td>
<td>300 ms typical</td>
</tr>
</tbody>
</table>

**Typical Application Diagram**

![Diagram of PHB Series LED Drivers](image)

**Programming**

- Current: 100% to 50% in each voltage range
- Data log read: Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles
- Fully programmable and selectable 0-10 V dimming profiles: Non-linear with dim-to-off, Logarithmic, Non-Linear without dim-to-off
- Programmable conduction angles with turn-on & turn-off for TRIAC & ELV

**Step-by-Step Programming**

1. **Choose Configuration**: Select the desired LED configuration for your application.
2. **Connect to Dimmer**: Connect the PHB Series LED Driver to the TRIAC / ELV dimmer.
3. **Set Voltage**: Set the dimmer to the desired voltage level.
4. **Adjust Current**: Adjust the current level to achieve the desired light output.
5. **Test Operation**: Test the LED Driver's operation to ensure proper dimming and current output.
6. **Save Settings**: Save the programmed settings for future use.

**Nominal Application Diagram**

![Diagram of PHB Series LED Drivers](image)
PTB SERIES  15 W - 30 W
Programmable, Constant Current, Class 2
LED Drivers with Tri-Mode Dimming™ (TRIAC, ELV & 0-10 V)

Typical Applications
• Commercial lighting
• Architectural lighting
• Residential lighting
• Indoor lighting

Features
• UL Class 2 power supply
• Lifetime: 5 years @ Tc = 75°C
• 90°C maximum case hot spot temperature
• IP20-rated case with silicone-based potting
• Surge protection:
  • IEC61000-4-5: 2 kV line to line / 2 kV line to earth
  • 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
• Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

Typical Applications Diagram

Programming
• Audio jack programming
• Current: 100% to 60% in each voltage range
• 0-10V dimming profiles: linear, non-linear, logarithmic
• Programmable conduction angles with turn-on and turn-off for TRIAC and ELV
• Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

ERP Part Number | Nominal Input Voltage (Vac) | Max. Output Power (W) | Iout (mA) | Default Programmed Current (mA) | Vout Min. (Vdc) | Vout Max. (Vdc) |
--- | --- | --- | --- | --- | --- | --- |
PTB15W-0350-42 | 120 & 277 | 14.7 | 210 to 350 | 250 | 28 | 42 |
PTB30W-0500-42 | 120 & 277 | 21.0 | 300 to 500 | 350 | 28 | 42 |
PTB30W-0700-42 | 120 & 277 | 29.4 | 420 to 700 | 500 | 28 | 42 |

1. Please order the programming cable using the part number PROG-JACK-USB.
For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

Table
<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Efficiency</th>
<th>Max. Case Temperature</th>
<th>THD</th>
<th>Power Factor</th>
<th>Dimming Method</th>
<th>Dimming Range</th>
<th>Startup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>30 W</td>
<td>up to 90% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>Programmable Forward-Phase, Reverse-Phase, &amp; 0-10 V</td>
<td>1-100% (% of Iout)</td>
<td>300 ms typical</td>
</tr>
</tbody>
</table>
**Features**

- Universal input voltage range
- Ripple < 10% @ 20% & 100% load
- Turn-on: @ 1% Iout
- EMI: Compliant with FCC CFR Title 47 Part 15 Class B at 120 V ac & Class A at 277 Vac and with CE EN55015 (CISPR 15) at 220, 230, and 240 Vac
- Safety, Compliance
  - UL: Class 2 output, Class P
  - CB, CE
  - FCC, ENEC
  - DALI2, Device Type 6 (Parts 101, 102, 207)
- IP20-rated case with silicone-based potting
- Lifetime: 50,000 hours min. at 75°C case temperature
- Class II power supply
- 90°C maximum case hot spot temperature

**NFC Programming**

- Current: 100% to 50% in each voltage range
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

---

**ErP Part Number | Nominal Input Voltage (Vac) | Max. Output Power (W) | Iout (mA) | Vout Min. (Vdc) | Vout Nom. (Vdc) | Vout Max. (Vdc) | Open Loop (No Load) Voltage (Vdc)**
---
DAL30W-0600-42-T | 120 to 277 | 25.2 | 300 to 600 | 28 | 37.8 | 42 | 50
DAL50W-0850-56-T | 120 to 277 | 47.6 | 425 to 850 | 38 | 50.4 | 56 | 60
DAL50W-1200-42-T | 120 to 277 | 50.4 | 600 to 1200 | 28 | 37.8 | 42 | 50

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
CNB SERIES  30 W - 50 W
Programmable, Constant Current, Class 2
LED Drivers with Bluetooth® Wireless Dimming

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Efficiency</th>
<th>Max. Case Temperature</th>
<th>THD</th>
<th>Power Factor</th>
<th>Dimming Method</th>
<th>Dimming Range</th>
<th>Startup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>50 W</td>
<td>up to 90% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>Bluetooth</td>
<td>1-100%</td>
<td>300 ms typical</td>
</tr>
</tbody>
</table>

Typical Applications

- Commercial lighting
- Indoor lighting
- Architectural lighting

NFC Programming

- Current: 100% to 50% in each voltage range
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

Features

- UL Class P
- Class 2 power supply
- Lifetime: 50,000 hours @ $T_c = 75°C$
- 90°C maximum case hot spot temperature
- IP20-rated case with silicone-based potting
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

Typical Application Diagram

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
Programmable, Constant Current Class 2
LED Drivers with 0-10 V Dimming

PKB SERIES    30 W - 65 W

Typical Applications
• Commercial lighting
• Residential lighting
• Architectural lighting
• Indoor lighting

Features
• UL Class P
• Class 2 output
• Lifetime: 5 years @ Tc ≤ 75°C
• 20% maximum ripple current
• 90°C maximum case hot spot temperature
• Surge protection:
  • IEC61000-4-5: 2 kV line to line / 2 kV line to earth
  • 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
• Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

Typical Application Diagram

Terminal Blocks, Aluminum Case
L 257 x W 29.4 x H 25.1 mm
(L 10.12 x W 1.16 x H 0.99 in.)

Programming
• Audio jack programming
• 0-10V dimming profiles: linear, non-linear, logarithmic
• Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

ERP Part Number | Nominal Input Voltage (Vac) | Max. Output Power (W) | Iout (mA) | Vout Min. (Vdc) | Vout Nom. (Vdc) | Vout Max. (Vdc) | Open Loop (No Load) Voltage (Vdc)
--- | --- | --- | --- | --- | --- | --- | ---
PKB30W-1050-SS-TD | 120 & 277 | 30 | 275 to 1050 | 10 | 49.5 | 55 | 60
PKB50W-1400-SS-TD | 120 & 277 | 50 | 455 to 1400 | 10 | 49.5 | 55 | 60
PKB65W-1800-SS-TD | 120 & 277 | 65 | 591 to 1800 | 10 | 49.5 | 55 | 60

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

Nominal Input Voltage | Max. Output Power | Efficiency | Max. Case Temperature | THD | Power Factor | Dimming Method | Dimming Range | Startup Time
--- | --- | --- | --- | --- | --- | --- | --- | ---
120 & 277 Vac | 65 W | 86% typical | 90°C (measured at the hot spot) | < 20% | > 0.9 | Programmable 0-10 V | 1-100% (% of Iout) | 300 ms typical
Programmable, Constant Current Class 2
LED Drivers with 0-10 V Dimming

PKM SERIES 30 W - 50 W

Typical Applications
• Commercial lighting
• Residential lighting
• Architectural lighting
• Indoor lighting

Features
• UL Class P
• Class 2 output
• Lifetime: 5 years @ Tc ≤ 75°C
• 20% maximum ripple current
• 90°C maximum case hot spot temperature
• Surge protection:
  • IEC61000-4-5: 2 kV line to line / 2 kV line to earth
  • 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
• Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

Nominal Input Voltage | Max. Output Power | Efficiency | Max. Case Temperature | THD | Power Factor | Dimming Method | Dimming Range | Startup Time
---|---|---|---|---|---|---|---|---
120 & 277 Vac | 50 W | 86% typical | 90°C (measured at the hot spot) | < 20% | > 0.9 | Programmable 0-10 V | 1-100% (% of Iout) | 300 ms typical

ERP Part Number | Nominal Input Voltage (Vac) | Max. Output Power (W) | Iout (mA) | Vout Min. (Vdc) | Vout Nom. (Vdc) | Vout Max. (Vdc) | Open Loop (No Load) Voltage (Vdc)
---|---|---|---|---|---|---|---
PKM30W | 120 & 277 | 30 | 10 | 49.5 | 55 | 60
PKM30W-1050-55-SD | 120 & 277 | 30 | 10 | 49.5 | 55 | 60
PKM30W-1050-55-TD | 120 & 277 | 30 | 10 | 49.5 | 55 | 60
PKM50W | 120 & 277 | 50 | 10 | 49.5 | 55 | 60
PKM50W-1400-55-SD | 120 & 277 | 50 | 10 | 49.5 | 55 | 60
PKM50W-1400-55-TD | 120 & 277 | 50 | 10 | 49.5 | 55 | 60

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

Typical Application Diagram

Programming
• Audio jack programming
• 0-10V dimming profiles: linear, non-linear, logarithmic
• Data log read: SKU, S/N, lot code, hours of operation, FW rev., power cycles

Terminal Blocks, Metal Case: “-TD” Suffix
L 106.5 x W 60.3 x H 25.5 mm
(L 4.20 x W 2.37 x H 0.99 in.)

Bottom Leads, Metal Case: “-SD” Suffix
L 106.7 x W 60.3 x H 25.2 mm
(L 4.20 x W 2.37 x H 0.99 in.)

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- ESSxxxxW models: only 0-10 V dimming at 277 Vac
- ESSxxxxE models: no dimming
- 90°C maximum case hot spot temperature
- Class 2 power supply
- Lifetime: 50,000 hours at 70°C case hot spot temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- IP64-rated (IP66 for ESST) case with silicone-based potting
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac) and Class A (277 Vac), and EN55015 (CISPR 15) at 220, 230, and 240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

Typical Applications

- Indoor & Outdoor
- Commercial lighting
- Architectural lighting
- Recessed lighting (downlights)
- Residential lighting
- Office Lighting

Typical Application Diagram
ESSV SERIES 11 W - 40 W

Constant Current LED Drivers with Tri-Mode Dimming™ (TRIAC, ELV & 0-10 V)

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Output Voltage</th>
<th>Output Current</th>
<th>Efficiency</th>
<th>Max. Case Temperature</th>
<th>THD</th>
<th>Power Factor</th>
<th>Dimming Method</th>
<th>Dimming Range</th>
<th>Startup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>40 W</td>
<td>20 to 42 Vdc</td>
<td>250 mA to 1.4 A</td>
<td>up to 87% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>Forward-Phase, Reverse-Phase, &amp; 0-10 V</td>
<td>1-100% (% of Iout)</td>
<td>400 ms</td>
</tr>
</tbody>
</table>

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

Features

- Same features as ESS/ESST series but with 5 VA flammability, UL Class P and a thermally-enhanced plastic case
- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- UL Class P
- 90°C maximum case hot spot temperature
- Class 2 power supply
- Lifetime: 50,000 hours at 70°C case hot spot temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- IP66-rated thermally-enhanced case with silicone-based potting
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac) and Class A (277 Vac)
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) & CA Title 24 technical requirements

Typical Applications

- Indoor & Outdoor
- Commercial lighting
- Architectural lighting
- Recessed lighting (downlights)
- Residential lighting
- Office Lighting

Typical Application Diagram

Plastic Case
L 84 x W 40 x H 27 mm
(L 3.30 x W 1.57 x H 1.06 in.)
Constant Current LED Drivers with Deep TRIAC and ELV Dimming (1 - 100%) and with Fast Startup Time

### Nominal Input Voltage

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Output Voltage</th>
<th>Output Current</th>
<th>Efficiency</th>
<th>Max. Case Temperature</th>
<th>THD</th>
<th>Power Factor</th>
<th>Dimming Method</th>
<th>Dimming Range</th>
<th>Startup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 Vac, 220 to 240 Vac</td>
<td>21 W</td>
<td>16 to 42 Vdc</td>
<td>200 to 700 mA Constant Current</td>
<td>up to 85% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>Forward-Phase, Reverse-Phase</td>
<td>1-100% (% of Iout)</td>
<td>200 ms</td>
</tr>
</tbody>
</table>

### Typical Application Diagram

**Features**

- Compatible with industry standard phase-cut dimmers: TRIAC (forward-phase or leading-edge) and ELV (reverse-phase or trailing-edge)
- Lifetime: 50,000 hours at 70°C case hot spot temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- 90°C maximum case hot spot temperature
- Low acoustic noise of 20 dBA
- Class 2 power supply
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B at 120 Vac and EN55015 (CISPR 15) at 220, 230 and 240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- IP20-rated case with silicon-based potting

### Typical Applications

- Recessed lighting (downlights)
- Architectural lighting
- Commercial lighting
- Residential lighting

### ERP Part Number

<table>
<thead>
<tr>
<th>ERP Part Number</th>
<th>Nominal Input Voltage (Vac)</th>
<th>Iout (mA)</th>
<th>Max. Output Power (W)</th>
<th>Output Voltage Range (Vdc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBR010U-0200-42</td>
<td>120</td>
<td>8.4</td>
<td>30</td>
<td>42</td>
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<tr>
<td>EBR010U-0250-42</td>
<td>120</td>
<td>10.5</td>
<td>30</td>
<td>42</td>
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<tr>
<td>EBR010U-0440-24</td>
<td>120</td>
<td>16.6</td>
<td>16</td>
<td>24</td>
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<tr>
<td>EBR015U-0250-42</td>
<td>120</td>
<td>12.6</td>
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<td>EBR015U-0350-42</td>
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<td>14.7</td>
<td>30</td>
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</tr>
<tr>
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<td>15.8</td>
<td>24</td>
<td>36</td>
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<tr>
<td>EBR020U-0500-42</td>
<td>120</td>
<td>16.8</td>
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<tr>
<td>EBR020U-0500-37</td>
<td>120</td>
<td>18.5</td>
<td>25</td>
<td>37</td>
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<tr>
<td>EBR020U-0500-42</td>
<td>120</td>
<td>21.0</td>
<td>30</td>
<td>42</td>
</tr>
<tr>
<td>EBR020U-0700-30</td>
<td>120</td>
<td>21.0</td>
<td>20</td>
<td>30</td>
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<tr>
<td>EBR020U-0720-21</td>
<td>120</td>
<td>15.1</td>
<td>14</td>
<td>21</td>
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<tr>
<td>EBR020U-0500-42</td>
<td>220</td>
<td>16.8</td>
<td>30</td>
<td>42</td>
</tr>
<tr>
<td>EBR020U-0500-32</td>
<td>220</td>
<td>16.0</td>
<td>21</td>
<td>32</td>
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<tr>
<td>EBR020U-0500-37</td>
<td>220</td>
<td>18.5</td>
<td>25</td>
<td>37</td>
</tr>
<tr>
<td>EBR020U-0500-42</td>
<td>220</td>
<td>21.0</td>
<td>30</td>
<td>42</td>
</tr>
<tr>
<td>EBR020U-0700-30</td>
<td>220</td>
<td>21.0</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>EBR020U-0720-21</td>
<td>220</td>
<td>15.1</td>
<td>14</td>
<td>21</td>
</tr>
</tbody>
</table>

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
ESM SERIES  10 W - 60 W
Constant Current LED Drivers with Tri-Mode Dimming™ (TRIAC, ELV & 0-10 V)

Nominal Input Voltage | Max. Output Power | Output Voltage | Output Current | Efficiency | Max. Case Temperature | THD | Power Factor | Dimming Method | Dimming Range | Startup Time
---|---|---|---|---|---|---|---|---|---|---
120 & 277 Vac | 60 W | 8 to 56 Vdc | 280 mA to 1.4 A | Constant Current | up to 87% typical | 90°C (measured at the hot spot) | < 20% | > 0.9 | Forward-Phase, Reverse-Phase, & 0-10 V | 1-100% (% of Iout) | 400 ms

Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- Only 0-10 V dimming at 277 Vac
- 90°C maximum case temperature
- Class 2 power supply
- Lifetime: 50,000 hours at 70°C case temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- IP20-rated case with silicone-based potting
- Two 0-10 V dimming profiles are available:
  - Linear 0-10 V dimming: 10 V = 100%, 1 V = 10%, 0.1 V = 1%. Non-linear 0-10 V dimming: 10 V to 8.1 V = 100%, 1 V to 0.8 V = 1%, < 0.8 V dim-to-off.
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac) and Class A (277 Vac)
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) & CA Title 24 technical requirements

Typical Application Diagram

![Typical Application Diagram](image)

ERP Part Number | Nominal Input Voltage (Vac) | Iout (mA) | Max. Output Power (W) | Output Voltage Range (Vdc) | min. | max.
---|---|---|---|---|---
ESM020W-11-20W | 120 & 277 | 280 | 11.8 | 24 | 42
ESM020W-0250-42 | 120 & 277 | 350 | 14.7 | 24 | 42
ESM020W-0280-42-Z1 | 120 & 277 | 440 | 11.0 | 19 | 25
ESM020W-0350-42 | 120 & 277 | 14.7 | 24 | 42
ESM020W-0350-42-Z1 | 120 & 277 | 440 | 11.0 | 19 | 25
ESM020W-0440-25 | 120 & 277 | 11.0 | 19 | 25
ESM020W-0440-34 | 120 & 277 | 15.0 | 19 | 34
ESM020W-1000-14 | 120 & 277 | 14.0 | 8 | 14
ESM020W-0440-34-Z1 | 120 & 277 | 440 | 11.0 | 19 | 25
ESM020W-1000-14-Z1 | 120 & 277 | 14.0 | 8 | 14
ESM020W-0440-34-Z1 | 120 & 277 | 440 | 11.0 | 19 | 25
ESM020W-1000-14-Z1 | 120 & 277 | 14.0 | 8 | 14

1. Models with the “Z1” suffix exhibit a non-linear 0-10 V dimming profile with dim-to-off: 10 V to 8.1 V = 100%, 1 V to 0.8 V = 1%, < 0.8 V dim-to-off.

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

Typical Applications

- Indoor & Outdoor
- Commercial lighting
- Architectural lighting
- Recessed lighting (downlights)
- Residential lighting
- Office Lighting

CA Title 24
**Nominal Input Voltage**

| EVM Series | 60 W - 100 W |

| Constant Current LED Drivers with Tri-Mode Dimming™ (TRIAC, ELV & 0-10 V) |

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Output Voltage</th>
<th>Output Current</th>
<th>Efficiency</th>
<th>Max. Case Temperature</th>
<th>THD Power Factor</th>
<th>Dimming Method</th>
<th>Dimming Range</th>
<th>Startup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>100 W</td>
<td>30 to 48 Vdc</td>
<td>1.4 to 2.35 A</td>
<td>up to 87%</td>
<td>&gt; 20%</td>
<td>&gt; 0.9</td>
<td>Forward-Phase</td>
<td>1-100%</td>
<td>400 ms</td>
</tr>
</tbody>
</table>

**Typical Application Diagram**

![Typical Application Diagram](image)

### Features

- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- Only 0-10 V dimming at 277 Vac
- Outdoor surge protection: 3 kV line to line / 6 kV line to earth
- Linear 0-10 V dimming transfer function: 10 V = 100%, 1 V = 10%, 0.1 V = 1%
- Optional non-linear 0-10 V dimming profile with dim-to-off
- Lifetime: 50,000 hours at 70°C case temperature
- 90°C maximum case hot spot temperature
- Class 2 power supply (most models)
- IP20-rated Bottom Leads with Studs metal case with silicone-based potting. Optional IP64 metal case with side leads
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac) and Class A (277 Vac)
- Complies with ENERGY STAR® luminaire specification and DLC (DesignLight Consortium®) technical requirements

### Typical Applications

- High Bay Lights
- Tunnels & Street lighting
- Outdoor LED Lighting
- Industrial LED Lighting
- Metal Halide replacements
- Wide-area downlights
- Suitable for driving high current COB LEDs such as Cree's CXA3050/3070/3590 and Bridgelux's Vero series, and modules such as Cree's LMH2 6000/8000

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

1. The EVM090W-1700-48-N1B is specifically intended to drive the Cree LMH2 6000 module and exhibits a customized 0-10 V dimming transfer function.
### Features

- **NOT RECOMMENDED FOR NEW DESIGNS. FOR NEW DESIGNS, USE THE ESPT SERIES.**
- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- ESPxxxW: only 0-10 V dimming at 277 Vac
- ESPxxxE models: only ELV dimming
- 90°C maximum case hot spot temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- Class 2 power supply
- Lifetime: 50,000 hours at 70°C case hot spot temperature
- IP66-rated case with silicone-based potting
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac) and Class A (277 Vac), and EN55015 (CISPR 15) at 220, 230, and 240 Vac
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

### Typical Applications

- Indoor & Outdoor
- Commercial lighting
- Architectural lighting
- Recessed lighting (downlights)
- Residential lighting
- Office Lighting

### Typical Application Diagram

![Diagram of ESP Series](image)

Plastic Case

L 90 x W 60 x H 27.2 mm

(L 3.54 x W 2.36 x H 1.07 in.)

### Nominal Input Voltage

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Output Voltage</th>
<th>Output Current</th>
<th>Efficiency</th>
<th>Max. Case Temperature</th>
<th>THD</th>
<th>Power Factor</th>
<th>Dimming Method</th>
<th>Dimming Range</th>
<th>Startup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac, 220 to 240 Vac</td>
<td>60 W</td>
<td>21 to 56 Vdc</td>
<td>700 mA to 1.4 A</td>
<td>up to 87% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>Forward-Phase, Reverse-Phase, &amp; 0-10 V</td>
<td>1-100% (% of Iout)</td>
<td>400 ms</td>
</tr>
</tbody>
</table>

1. The ESP040W-0940-33-SS-F1 is specifically intended to drive the Cree LMH2 3000 sunset module and exhibits a customized 0-10 V dimming transfer function. It will not work with any other LED or LED string.

2. The ESP driver case can also be mounted by using two metal clips, one on each short side. The ordering part number for the two metal clips is ESP-CLIPS. By default, the ESP driver is shipped without metal clips. When metal clips are required, add ESP-CLIPS to your order.

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
**ESPT SERIES  40 W - 60 W**

Constant Current LED Drivers with  
Tri-Mode Dimming™ (TRIAC, ELV & 0-10 V)

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Output Voltage</th>
<th>Output Current</th>
<th>Efficiency</th>
<th>Max. Case Temperature</th>
<th>THD</th>
<th>Power Factor</th>
<th>Dimming Method</th>
<th>Dimming Range</th>
<th>Startup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>60 W</td>
<td>24 to 56 Vdc</td>
<td>700 mA to 1.4 A</td>
<td>up to 87% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>Forward-Phase, Reverse-Phase, &amp; 0-10 V</td>
<td>1-100% (% of Iout)</td>
<td>400 ms</td>
</tr>
</tbody>
</table>

**Typical Application Diagram**

**ESPT Series**

- TRIA Dimmer
- ELV Dimmer
- 0-10 V Dimmer
- LEDs
- - LEDs

**Plastic Case**

L 87 x W 60 x H 30 mm (L 3.43 x W 2.36 x H 1.18 in.)

**Features**

- Same features as the ESP series but with a thermally-enhanced plastic case
- Compatible with TRIAC (forward-phase or leading-edge), ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- Only 0-10 V dimming at 277 Vac
- 90°C maximum case hot spot temperature
- Class 2 power supply
- Lifetime: 50,000 hours at 70°C case hot spot temperature (some models have higher lifetime. Check lifetime curves in spec sheet)
- IP66-rated case with silicone-based potting
- Two 0-10 V dimming profiles are available:
  - Linear 0-10 V dimming: 10 V = 100%, 1 V = 10%, 0.1 V = 1%.  
  - Non-linear 0-10 V dimming: 10 V to 8.1 V = 100%, 1 V to 0.8 V = 1%, < 0.8 V dim-to-off.
- Protections: output open load, over-current and short-circuit (hiccup), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class B (120 Vac) and Class A (277 Vac)
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) & CA Title 24 technical requirements

**ERP Part Number**

<table>
<thead>
<tr>
<th>ERP Part Number</th>
<th>Nominal Input Voltage (Vac)</th>
<th>Iout (mA)</th>
<th>Max. Output Power (W)</th>
<th>Output Voltage Range (Vdc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESPT040W-0900-42</td>
<td>120 &amp; 277</td>
<td>900</td>
<td>37.8</td>
<td>24</td>
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<tr>
<td>ESPT050W-1050-42-Z1</td>
<td>120 &amp; 277</td>
<td>1050</td>
<td>44.1</td>
<td>24</td>
</tr>
<tr>
<td>ESPT050W-1200-42-Z1</td>
<td>120 &amp; 277</td>
<td>1200</td>
<td>50.4</td>
<td>24</td>
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<tr>
<td>ESPT050W-1400-34</td>
<td>120 &amp; 277</td>
<td>1400</td>
<td>47.6</td>
<td>23</td>
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<td>ESPT060W-51 to 60 W</td>
<td>ESPT060W-1400-42-Z1</td>
<td>120 &amp; 277</td>
<td>1400</td>
<td>58.8</td>
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</tbody>
</table>

1. ESPT models with the "-Z1" suffix exhibit a non-linear 0-10 V dimming profile with dim-to-off: 10 V to 8.1 V = 100%, 1 V to 0.8 V = 1%, < 0.8 V dim-to-off.

2. The ESPT driver case must be mounted by using a minimum of two metal clips. By default, the ESPT driver is shipped with 2 metal clips. Additional metal clips can be ordered with the following part numbers:
   - ESPT-CLIPS-100: bag of 100 clips
   - ESPT-CLIPS-1k: bag of 1000 clips

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

**Typical Applications**

- Indoor & Outdoor
- Commercial lighting
- Architectural lighting
- Recessed lighting (downlights)
- Residential lighting
- Office Lighting
### SLM SERIES 90 W - 160 W

**Tri-Mode Dimming™ (TRIAC, ELV & 0-10 V)**
High Power, Constant Current LED Drivers
with 1-100% Dimming Range and with 12 V / 100 mA Auxiliary Output

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Output Voltage Range</th>
<th>Output Current Range</th>
<th>Efficiency</th>
<th>Max. Case Temperature</th>
<th>THD</th>
<th>Power Factor</th>
<th>Dimming Method</th>
<th>Dimming Range</th>
<th>Startup Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>160 W</td>
<td>30 to 56 Vdc</td>
<td>1.7 to 2.8 A</td>
<td>up to 90% efficient</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>Forward-Phase, Reverse-Phase, &amp; 0-10 V</td>
<td>1-100% (% of Iout)</td>
<td>0.75 sec</td>
</tr>
</tbody>
</table>

Forced air cooling or heatsink base plate (aluminum baseplate: 210 mm x 200 mm x 2 mm) is required for total continuous power exceeding 120 W.

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

### Features
- Compatible with TRIAC (forward-phase or leading-edge) / ELV (reverse-phase or trailing-edge) and 0-10 V dimmers
- Only 0-10 V dimming at 277 Vac
- 12 V / 100 mA auxiliary output
- IP66-rated case with silicone-based potting
- 90°C maximum case hot spot temperature
- Protections: output open load, short-circuit (latch-off), and over-temperature with auto recovery
- Conducted and radiated EMI: Compliant with FCC CFR Title 15 Part 15 Class A at 120 Vac & 277 Vac
- Complies with ENERGY STAR® luminaire specification and DLC (DesignLight Consortium®) technical requirements

### Typical Application Diagram

#### Aluminum Case
L 101.6 x W 50.8 x H 38.5 mm
(L 4 x W 2 x H 1.52 in.)

#### Typical Applications
- Outdoor & Indoor
- Horticulture grow lights
- Street lights, Area lights
- Industrial high-bay lights
TLM SERIES    90 W

Tri-Mode Dimming™ (TRIAC, ELV & 0-10 V)
High Power, Constant Current LED Drivers
with 0.01-100% Dimming Range and 12 V / 100 mA Auxiliary Output

Features

- Dimming range: 0.01-100% with ETC, Leprecon and Elation stage lighting AC phase dimmers
- 12 V / 100 mA auxiliary output to power external fan, motion or ambient light sensor, or wireless module
- Only 0-10 V dimming at 277 Vac
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class A at 120 Vac & 277 Vac
- IP66-rated case with silicone-based potting
- 90°C maximum case hot spot temperature
- Complies with ENERGY STAR® luminaire specification and DLC (DesignLight Consortium®) technical requirements

ERP Part Number | Nominal Input Voltage (Vac) | Iout (A) | Max. Output Power (W) | Vout Min. (Vdc) | Vout Max. (Vdc)
--- | --- | --- | --- | --- | ---
TLM90W-2.1-42 | 120 & 277 | 2.1 | 88.2 | 30 | 42

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

--- | --- | --- | --- | --- | --- | --- | --- | --- | ---
120 & 277 Vac | 90 W | 30 to 42 Vdc | 2.1 A Constant Current | up to 90% typical | 90°C (measured at the hot spot) | < 20% | > 0.9 | Forward-Phase, Reverse-Phase, & 0-10 V | 0.01-100% (% of Iout)

Typical Application Diagram

Aluminum Case
L 101.6 x W 50.8 x H 38.5 mm
(L 4 x W 2 x H 1.52 in.)

Typical Applications

- Stage, Theatrical lighting
- Studio Lighting
PDB SERIES  260 W
Programmable, Constant Current LED Drivers with 0-10 V Dimming

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</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>260 W</td>
<td>114 to 400 Vdc</td>
<td>325 mA to 1700 mA Constant Current</td>
<td>up to 93% typical</td>
<td>&lt; 20°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>0-10 V</td>
<td>1-100% (% of Iout)</td>
</tr>
</tbody>
</table>

**Typical Application Diagram**

- **Features**
  - Non-linear 0-10 V dimming profile with dim-to-off (10 V to 9.1 V = 100%, 1.5 V to 0.6 V = 1%, < 0.6 V = dim-to-off)
  - Auxiliary output 12 V / 100 mA
  - Dual output voltage range
  - UL Class P
  - IP66-rated case with silicone-based potting
  - Surge protection:
    - Combination wave IEC61000-4-5: 4 kV line to line / 4 kV line to earth (higher surge is available upon request)
    - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
  - 90°C maximum case hot spot temperature
  - Complies with ENERGY STAR® luminaire specification and DLC (DesignLight Consortium®) technical requirements

**Typical Applications**

- Street lights, Area lights
- Industrial high-bay lights
- Horticulture grow lights

**Programming**

- Current: 100% to 50% in each voltage range
- Output voltage range selection
- Data log read: SKU, S/N, lot code, hours of operation, FW rev., fault events: power failure, transients (short or surge), thermal events

**Typical Application Diagram**

- Aluminum Case
  - L 214.4/240 x W 50.8 x H 38.5 mm
  - (L 8.44/9.47 x W 2 x H 1.52 in.)

- ERP Part Number | Nominal Input Voltage (Vac) | Max. Output Power (W) | Iout 1 (mA) | Vout 1 (Vdc) | Iout 2 (mA) | Vout 2 (Vdc)
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>PDB260W-0860-400</td>
<td>120 &amp; 277</td>
<td>260.0</td>
<td>430 to 860</td>
<td>234 to 300</td>
<td>325 to 650</td>
<td>312 to 400</td>
</tr>
<tr>
<td>PDB260W-1300-280</td>
<td>120 &amp; 277</td>
<td>260.0</td>
<td>650 to 1300</td>
<td>156 to 200</td>
<td>465 to 930</td>
<td>218 to 280</td>
</tr>
<tr>
<td>PDB260W-1700-210</td>
<td>120 &amp; 277</td>
<td>260.0</td>
<td>850 to 1700</td>
<td>117 to 150</td>
<td>620 to 1240</td>
<td>164 to 210</td>
</tr>
</tbody>
</table>

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
CDB SERIES 260 W
Programmable, Constant Current LED Drivers with 0-10 V Dimming & Integrated Bluetooth® Mesh

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>260 W</td>
<td>114 to 400 Vdc</td>
<td>325 mA to 1700 mA Constant Current</td>
<td>up to 93% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>0-10 V</td>
<td>1-100% (% of Iout)</td>
</tr>
</tbody>
</table>

**Programming**
- Dual output voltage range selection
- Serial port programming
  - Current: 100% to 50% in each voltage range
  - Data log read: SKU, S/N, lot code, hours of operation, FW rev., fault events: power failure, transients (short or surge), thermal

**Communication**
- Bi-directional (dimming up and down and data log read)
- Bluetooth Mesh with wire whip antenna and external removable antenna

**Avi-on Bluetooth Mesh Solution**
- Wireless lighting controls with simple set-up that anyone can use
- Pre-integrated Bluetooth Smart + CSRmesh module enables brands to create multi-way controls and switching without additional wiring; no central gateway required
- Utility grade, secure, reliable mobile app & software
- Dimming, grouping, many users, schedules, timers
- Virtually unlimited range with mesh
- Download for free, additional services available
- Compatible with large ecosystem of products from major brands
- Avi-on battery-powered movable dimming switches available to complete the turnkey solution

**Typical Applications**
- Outdoor & Indoor
- Horticulture grow lights
- Street lights, Area lights
- Industrial high-bay lights

**Features**
- Non-linear 0-10 V dimming profile with dim-to-off
- Auxiliary output 12 V / 100 mA
- IP66-rated case with silicone-based potting
- UL Class P
- Outdoor Surge protection:
  - IEC61000-4-6: 4 kV line to line / 4 kV line to earth
  - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Conducted and radiated EMI: Compliant with FCC CFR Title 47 Part 15 Class A at 120 Vac & 277 Vac
- Lifetime: 50,000 hours @ Tc = 70°C
- 90°C maximum case hot spot temperature
- Complies with ENERGY STAR® luminaire specification and DLC (DesignLight Consortium®) technical requirements

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
### Efficient, Compact, Non-Dimmable Constant Voltage Class 2 / Class II LED Drivers

**VLM60/40 SERIES** 40 W - 60 W

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac, 220 to 240 Vac</td>
<td>60 W</td>
<td>12, 24, 48 Vdc</td>
<td>5, 2.5, 1.25 A</td>
<td>up to 90% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
</tr>
</tbody>
</table>

#### Typical Application Diagram

![Typical Application Diagram](image)

- **Models with Flying Leads, Aluminum Case (VLMXXW Models)**
  - L 130 x W 19.65 x H 19.8 mm
  - (L 5.12 x W 0.77 x H 0.78 in.)

- **Models with “-S” Suffix**
  - Bottom Leads with Studs, Aluminum Case
  - L 130 x W 19.65 x H 23.85 mm
  - (L 5.12 x W 0.77 x H 0.94 in.)

- **Models with “-T” Suffix (Terminal Blocks)**
  - Aluminum case
  - L 183.2 x W 19.9 x H 19.85 mm
  - (L 7.12 x W 0.78 x H 0.78 in.)

#### ERP Part Number

<table>
<thead>
<tr>
<th>ERP Part Number</th>
<th>Nominal Input Voltage (Vac)</th>
<th>Pout Max (W)</th>
<th>Vout Nom (Vdc)</th>
<th>Iout Max (A)</th>
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<tbody>
<tr>
<td><strong>120 &amp; 277 VAC NOMINAL INPUT VOLTAGE</strong></td>
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<tr>
<td>VLM40W-12</td>
<td>120 &amp; 277</td>
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<tr>
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<tr>
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<td>120 &amp; 277</td>
<td>40.0</td>
<td>12</td>
<td>3.3</td>
</tr>
<tr>
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<td>120 &amp; 277</td>
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<td>24</td>
<td>1.67</td>
</tr>
<tr>
<td>VLM40W-48-S</td>
<td>120 &amp; 277</td>
<td>40.0</td>
<td>48</td>
<td>0.83</td>
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<tr>
<td><strong>220 TO 240 VAC NOMINAL INPUT VOLTAGE</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>VLM40E-12</td>
<td>220 to 240</td>
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<td>40.0</td>
<td>24</td>
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<tr>
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<td>3.3</td>
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<td>40.0</td>
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<td>VLM40E-48-T</td>
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<tr>
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<td>5</td>
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<td>48</td>
<td>1.25</td>
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1. Strain reliefs for “-T” models can be ordered using part number SR1.

Suffix for the different mounting options:
- a) NO suffix: side leads
- b) “-T”: Terminal blocks
- c) “-S”: Bottom lead exit with studs

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

### Typical Applications

- Strip lights
- Pendant lights
- Linear lighting
- Cove Lights
Features
• Very high power density of 24 W/in³
• Class 2 power supply
• Class II power supply per IEC 61347
• IP20-rated case with silicone-based potting
• Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
• 90°C maximum case hot spot temperature
• Lifetime: 50,000 hours min. at 70°C case temperature
• UL Class P
• Worldwide safety approvals
• Additional safety approvals when using the optional strain reliefs for models with "-T" suffix

Efficient, Compact, Non-Dimmable
Constant Voltage Class 2 / Class II LED Drivers

VLM100 SERIES    96 W

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>120 &amp; 277 Vac, 220 to 240 Vac</td>
<td>96 W</td>
<td>12, 24, 48 Vdc</td>
<td>8, 4, 2 A</td>
<td>up to 92% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
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</table>

Typical Application Diagram

Models with Flying Leads, Aluminum Case (VLM100W Models)
L 137 x W 26 x H 19.8 mm
(L 5.39 x W 1.02 x H 0.77 in.)

Models with "-S" Suffix
Bottom Leads with Studs, Aluminum Case
L 137 x W 26.0 x H 23.85 mm
(L 5.39 x W 1.02 x H 0.94 in.)

Models with "-T" Suffix (Terminal Blocks)
Aluminum case
L 193.2 x W 26.2 x H 19.85 mm
(L 7.60 x W 1.03 x H 0.78 in.)

Typical Applications
• Strip lights
• Linear lighting
• Pendant lights
• Cove Lights

1. VLM100W-12 is not Class 2 because the over-current protection of this model exceeds the 5A UL Class 2 limit.
2. Strain reliefs for "-T" models can be ordered using part number SR2.

Suffix for the different mounting options:
a) NO suffix: side leads
b) "-T": Terminal blocks
c) "-S": Bottom lead exit with studs

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
Features

- Low profile, rugged steel enclosure designed for use with our Constant Voltage VLM series
- JVLM is Plenum-rated, so it can go in air handling spaces. (In building construction, the plenum is the space that is used for air circulation in heating and air conditioning systems, typically between the structural ceiling and the suspended ceiling or under a raised floor).
- Designed for contractor installation:
  - UL listed
  - Separation of low-voltage wiring and high-voltage wiring
  - 4 mounting holes for surface mounting
  - 4 knockout holes for low-voltage wiring and 4 knockout holes for high-voltage wiring enable maximum wiring flexibility
- Same electrical features as the VLM series
- IP20-rated case
- Patent protected

Efficient, Compact, Constant Voltage
Class 2 LED Drivers in a Junction Box

Typical Application Diagram

Typical Applications

- Strip lights
- Linear lighting
- Pendant lights
- Cove Lights

Dimensions

L 207.2 x W 75.4 x H 33 mm
(L 8.16 x W 2.97 x H 1.30 in.)

ERP Part Number | Nominal Input Voltage (Vac) | Pout Max (W) | Vout Nom (Vdc) | Iout Max (A) |
-----------------|----------------------------|--------------|---------------|--------------|
JVLM60W-12      | 120 & 277                  | 60.0         | 12            | 5            |
JVLM60W-24      | 120 & 277                  | 60.0         | 24            | 2.5          |
JVLM60W-48      | 120 & 277                  | 60.0         | 48            | 1.3          |
JVLM100W-24     | 120 & 277                  | 96.0         | 24            | 4            |
JVLM100W-48     | 120 & 277                  | 96.0         | 48            | 2            |

Models contain the VLM LED Driver in the aluminum case with flying leads.

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
VZM SERIES  60 W - 90 W

Efficient, Compact, Constant Voltage, Class 2 / Class II
LED Drivers with 0-10 V Dimming

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>120 &amp; 277 Vac</td>
<td>90 W</td>
<td>24, 48 Vdc</td>
<td>3.75, 1.9 A</td>
<td>up to 90% typical</td>
<td>90°C (measured at the hot spot)</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>Programmable 0-10 V</td>
<td>1-100%</td>
<td>300 ms typical</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ERP Part Number</th>
<th>Nominal Input Voltage (Vac)</th>
<th>Pout Max (W)</th>
<th>Vout Nom (Vdc)</th>
<th>Iout Max (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VZM60W</td>
<td>120 &amp; 277</td>
<td>60.0</td>
<td>24</td>
<td>2.5</td>
</tr>
<tr>
<td>VZM100W</td>
<td>120 &amp; 277</td>
<td>90.0</td>
<td>24</td>
<td>3.75</td>
</tr>
<tr>
<td>VZM100W-24</td>
<td>120 &amp; 277</td>
<td>60.0</td>
<td>48</td>
<td>1.25</td>
</tr>
<tr>
<td>VZM100W-48</td>
<td>120 &amp; 277</td>
<td>90.0</td>
<td>48</td>
<td>1.87</td>
</tr>
</tbody>
</table>

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

Models with Flying Leads, Aluminum Case

VZM100
L 150.2 x W 38.8 x H 24.9 mm
(L 5.91 x W 1.53 x H 0.98 in.)

VZM060
L 148.7 x W 31.8 x H 22.4 mm
(L 5.85 x W 1.25 x H 0.88 in.)

Features

• Class 2 power supply
• Class II power supply per IEC61347
• UL Class P
• Ripple ≤ 5% @ 20% & 100% load
• Constant voltage mode with over-current protection
• IP20-rated case with silicone-based potting
• 90°C maximum case hot spot temperature
• Lifetime: 5 years minimum at 70°C case temperature
• EMI: Compliant with FCC CFR Title 47 Part 15 Class B at 120 Vac & Class A at 277 Vac
• Surge protection:
  • IEC61000-4-5; 2 kV line to line / 2 kV line to earth
  • 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
• Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

RoHS  UL LISTED  FCC  5
Features

- Very high power density of 10.2 W/in³
- UL Class P
- IP66-rated case with silicone-based potting
- 90°C maximum case temperature
- Complies with ENERGY STAR® luminaire specification and DLC (DesignLight Consortium®) technical requirements

**Typical Application Diagram**

**Nominal Input Voltage** | **Max. Output Power** | **Nominal Output Voltage** | **Max. Output Current** | **Efficiency** | **Max. Case Temperature** | **THD** | **Power Factor**
--- | --- | --- | --- | --- | --- | --- | ---
120 & 277 Vac, 220 to 240 Vac | 260 W | 12, 24, 48 Vdc | 21.6, 10.8, 5.4 A | up to 93% typical | 90°C (measured at the hot spot) | < 20% | > 0.9

**Typical Applications**

- Horticulture
- Industrial lights
- Outdoor and indoor

**Aluminum Case**

L 214.4/240 x W 50.8 x H 38.5 mm

(L 8.44/9.47 x W 2 x H 1.52 in.)
Features

- Class 2 power supply
- IP66-rated case with silicone-based potting
- Lifetime: 50,000 hours min. at 50°C ambient temperature
- UL879 SAM (Sign Component Manual) listing
- Surge protection:
  - IEC61000-4-5: 6 kV line to line / 6 kV line to earth
  - 2.5 kV ring wave: ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements

Typical Application Diagram

<table>
<thead>
<tr>
<th>ERP Part Number</th>
<th>Nominal Input Voltage (Vac)</th>
<th>Pout Max (W)</th>
<th>Vout Nom (Vdc)</th>
<th>Iout Max (A)</th>
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</thead>
<tbody>
<tr>
<td>VGM060W-12</td>
<td>120 &amp; 277</td>
<td>60.0</td>
<td>12</td>
<td>5</td>
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<tr>
<td>VGM100W</td>
<td>120 &amp; 277</td>
<td>90.0</td>
<td>24</td>
<td>3.75</td>
</tr>
</tbody>
</table>

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com
### Features
- Class 2 power supply
- IP66-rated case with silicone-based potting
- Complies with ENERGY STAR®, DLC (DesignLight Consortium®) and CA Title 24 technical requirements
- Lifetime: 50,000 hours min.

### Typical Applications
- Signage
- Strip lights

### Performance Table

<table>
<thead>
<tr>
<th>ERP Part Number</th>
<th>Nominal Input Voltage (Vac)</th>
<th>Pout Max (W)</th>
<th>Vout Nom (Vdc)</th>
<th>Iout Max (A)</th>
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<tr>
<td>VIM60W</td>
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<td>60.0</td>
<td>12</td>
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<td>120 &amp; 277</td>
<td>90.0</td>
<td>24</td>
<td>3.75</td>
</tr>
</tbody>
</table>

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

### Typical Application Diagram

![Typical Application Diagram](image)
**xDrive™ 40 W - 100 W**

Constant Voltage LED Drivers with Integrated Dimmer for Single Gang Box Mount

### Nominal Input Voltage, Max. Output Power, Output Voltage, Output Current Max, Efficiency, Max. Ambient Temperature, THD, Power Factor, Dimming Range, Startup Time

<table>
<thead>
<tr>
<th>Nominal Input Voltage</th>
<th>Max. Output Power</th>
<th>Output Voltage</th>
<th>Output Current Max</th>
<th>Efficiency</th>
<th>Max. Ambient Temperature</th>
<th>THD</th>
<th>Power Factor</th>
<th>Dimming Range</th>
<th>Startup Time</th>
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</thead>
<tbody>
<tr>
<td>120 Vac</td>
<td>100 W</td>
<td>12, 24 V</td>
<td>4.2 A</td>
<td>up to 91% typical</td>
<td>40°C</td>
<td>&lt; 20%</td>
<td>&gt; 0.9</td>
<td>1-100% of light output</td>
<td>500 ms typical</td>
</tr>
</tbody>
</table>

### Typical Application Diagram

100 W: Metal Case & Metal Wall Plate
40 W & 60 W: Plastic Case & Metal Wall Plate

### Features

- LED Driver + Dimmer in one physical unit
- Simplifies LED installation by eliminating compatibility issues between driver and dimmer
- Fits in a standard recessed electrical box (gang box)
- 100% - 1% smooth dimming
- Single pole preset dimmer with on/off push switch
- Adjustable voltage output dial to address voltage drop
- Includes voltage barrier partition to install high and low voltage circuit in same gang box
- No derating required when ganging units
- Power failure memory: If power is interrupted, xDrive will return to the setting prior to interruption.
- The Glossy White color is the default color for the face plate and the trim plate. Other colors (Glossy Light Almond, Glossy Dark Brown, and Glossy Black) are available but sold separately

### Typical Applications

- Track lights
- Downlights
- Tape/Strip lights
- Under-cabinet lights

For additional options of output current and output voltage, contact your sales representative or send an email to: SaveEnergy@ERP-Power.com

### Typical Application Diagram

![Typical Application Diagram](image)

![ERP Part Number](image)

![ERP Power](image)

![UL Listed](image)
Lumenetix-araya recreates and controls light that emulates the spectral quality of daylight. And, Lumenetix-araya accesses a rich gamut of pastels and saturated colors to unveil new design frontiers.
THE LUMENETIX BREAKTHROUGH

The replication and control of the range and beauty of daylight while ensuring color consistency from fixture-to-fixture over life, whether you use Tunable Color, Tunable White, LED Dimming or Halogen Dimming light paths. After all, **Color is How You Light It™.**

**HIGHEST QUALITY TUNABLE WHITE LIGHT:** Lumenetix-araya recreates daylight by mixing LED colors of the rainbow – red, amber, mint, cyan and blue, plus green if an expanded gamut option with saturated green is desired – to deliver full spectrum light from 1650K to 8000K at 90+ CRI.

**NATURAL DAYLIGHT EMULATION** from sunrise through sunset – the light tracks the CIE Blackbody locus from 1650 - 4500K and then smoothly transitions to the Daylight Curve to 8000K.

**FULL COLOR ACCESS** to millions of colors within the gamut area created by the LEDs in the CIE color space, enabling tailored light from shades of pastels to saturates.

**E-FLICKER FREE LED DIMMING TO 0.1%** is enabled by a proprietary hybrid technology that maintains color consistency while dimming.

**TRADITIONAL DIMMING RECREATED** by emulating a halogen lamp from 3050K at full brightness to 1800K at 1%.

**COLOR CONSISTENCY OF LESS THAN 2 MACADAM ELLIPSE OVER LIFE** from fixture-to-fixture as verified by independent LM-84 testing – a corrective closed loop system and a predictive feedback algorithm resolve thermal droop and lumen depreciation for each LED.
ANALOG - Two 0-10 V lines can be used to control Dimming and CCT independently, or program Scenes — in any combination of Dimming, CCT, Saturation and Hue — and recall them with five 0-10 V presets or the Lumenetix-araya iOS App.

DIGITAL - Lumenetix-araya is compatible with all industry-leading digital control systems.

COMMISSION AND CONTROL EFFORTLESSLY

DIGITAL - Lumenetix-araya is compatible with all industry-leading digital control systems.

ANALOG - Two 0-10 V lines can be used to control Dimming and CCT independently, or program Scenes — in any combination of Dimming, CCT, Saturation and Hue — and recall them with five 0-10 V presets or the Lumenetix-araya iOS App.

**DMX512-A-RDM**

**0-10 V**

**LUTRON ECOSYSTEM**

**AVI-ON WIRELESS BLE MESH**

**DALI TYPE 8**

**WATTSTOPPER DLM**

*100 - 0.1% eFlicker-Free LED dimming is available for specific modules/arrays when connected to 0.1% dimming-capable digital controls.

100 - 1% dimming is available with analog 0-10 V control and for Warm/Dynamic Dimming Modules (DDM).

Refer to the separate DMX Lookup Tables or Lutron EcoSystem Lookup Tables for specific programming values and information.

Two 0-10 V lines can be used to control Dimming and CCT independently, or program Scenes — in any combination of Dimming, CCT, Saturation and Hue — and recall them with five 0-10 V presets or the Lumenetix-araya iOS App.

For additional color and performance information, please refer to www.erp-power.com.
## SAME GREAT FEATURES
### ACROSS ALL PRODUCT FAMILIES

<table>
<thead>
<tr>
<th></th>
<th>CTM 1C</th>
<th>CTM 1C HD</th>
<th>CTM 1C HD WI</th>
<th>CTM 2</th>
<th>LTM 2</th>
<th>DDM 1C</th>
<th>DDM 2</th>
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<td>Less than 2 SDCM</td>
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<td>9, 19</td>
<td>9, 12, 19, 32, 41</td>
<td></td>
<td>9, 12, 19</td>
<td>9, 12, 19, 32, 41</td>
</tr>
<tr>
<td><strong>DIAMETER (mm)</strong></td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>40, 50, 60, 70</td>
<td></td>
<td>50</td>
<td>40, 50, 60, 70</td>
</tr>
<tr>
<td><strong>LINEAR ARRAY LENGTH (in)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11, 22, 24</td>
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</tr>
<tr>
<td><strong>LINEAR CONNECTOR POSITION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Top or Bottom</td>
<td></td>
</tr>
<tr>
<td><strong>LINEAR LED POSITION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Symmetrical, Asymmetrical</td>
<td></td>
</tr>
<tr>
<td><strong>CONTROL OPTIONS</strong></td>
<td>DMX512-A-RDM 0 - 10V Lutron® EcoSystem® DALI Type 8® Wattstopper® DLM®</td>
<td>DMX512-A-RDM 0 - 10V Lutron® EcoSystem® DALI Type 8® Wattstopper® DLM®</td>
<td>Avi-on BLE Mesh®</td>
<td>DMX512-A-RDM® 0 - 10V Lutron® EcoSystem® Avi-on BLE Mesh® DALI Type 8® Wattstopper® DLM®</td>
<td>DMX512-A-RDM® 0 - 10V Lutron® EcoSystem® Avi-on BLE Mesh® DALI Type 8® Wattstopper® DLM®</td>
<td>DMX512-A-RDM® 0 - 10V Lutron® EcoSystem® Avi-on BLE Mesh® DALI Type 8® Wattstopper® DLM®</td>
<td>DMX512-A-RDM® 0 - 10V Lutron® EcoSystem® Avi-on BLE Mesh® DALI Type 8® Wattstopper® DLM®</td>
</tr>
</tbody>
</table>

*0.1% eFlicker-Free / Hybrid LED dimming available for specific modules/arrays, and only when connected to 0.1% dimming-capable digital controls. Individual specifications may vary; please refer to technical product data sheets.

1. From 2000 - 6000K, down to 5% dimming level.
2. Light Emitting Surface.
4. On-board the module or via external Digital Control Adapter.
5. Requires external Wattstopper adapter.
6. Requires wireless interface BLE Mesh dongle/harness.
7. Requires optional control card.
GOOD LIGHT IS A RIGHT™

YOU’LL FIND LUMENETIX-ARAYA TECHNOLOGY IN LUMINAires FROM THESE BRANDS.