LED Driver + Dimmer

40W, 60W or 100W Constant Voltage LED Driver with Integrated Dimmer for Single Gang Box Mount

FEATURES & BENEFITS
• 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)
• No de-rating required in multi-gang installations
• Single pole
• Pre-set dimmer with on/off push switch offers excellent dimming performance: 100%-1%
• Adjustable voltage output dial to address voltage drop
• Includes voltage barrier partition to install high and low voltage circuit in same gang box
• Power Failure Memory: If power is interrupted, the LED Driver + Dimmer returns to its prior setting
• Glossy White is the default color for the LED Driver + Dimmer face plate. The Glossy White trim plate, and additional finish options (Trim/face plate combination packs: Glossy Light Almond, Glossy Brown, Glossy Black), are sold separately.

APPLICATIONS
• Tape light
• Hard Strip lights
• Accent Disc lights

Nominal Input Voltage | Max Output Power | Output Voltage | Output Current Min
---|---|---|---
120 VAC | 100W | 12, 24 V CV | 0

Output Current Max | Efficiency | Max Ambient Temperature | THD
---|---|---|---
4.2A | up to 91% typical | 40º C | <20%

Power Factor | Dimming Range | Startup Time
---|---|---
>0.9 | 1-100% of light output | 500 ms typical

Typical Application Diagram

Wiring Diagram

120 VAC - 60Hz
L (BLK)
N (WHT)
Ground (GRN)

Typical Application Diagram

LED Array/Fixture

Driver + Dimmer

V+ (Red)
V- (Blue)
12 or 24 VDC

White: Neutral
Red: + LEDs
Black: Line
Blue: - LEDs

Ground (GRN)

White: Neutral
Red: + LEDs
Black: Line
Blue: - LEDs

Ground (GRN)

12 or 24 VDC

Typical Application Diagram

Wiring Diagram

120 VAC - 60Hz
L (BLK)
N (WHT)
Ground (GRN)

Typical Application Diagram

Wiring Diagram

120 VAC - 60Hz
L (BLK)
N (WHT)
Ground (GRN)
1 - ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Nominal AC Line Voltage (VAC)</th>
<th>Pout Max (W)</th>
<th>Vout Max (V)</th>
<th>Iout Max (V)</th>
<th>Vout Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4DD12V040WH</td>
<td>120</td>
<td>40</td>
<td>12</td>
<td>3.3</td>
<td>11.1 - 12.9 (+/- 0.9V)</td>
</tr>
<tr>
<td>4DD12V060WH</td>
<td>120</td>
<td>60</td>
<td>12</td>
<td>5.0</td>
<td>11.1 - 12.9 (+/- 0.9V)</td>
</tr>
<tr>
<td>6DD24V060WH</td>
<td>120</td>
<td>60</td>
<td>24</td>
<td>2.5</td>
<td>22.2 - 25.8 (+/- 1.8V)</td>
</tr>
<tr>
<td>6DD24V100WH</td>
<td>120</td>
<td>100</td>
<td>24</td>
<td>4.2</td>
<td>22.2 - 25.8 (+/- 1.8V)</td>
</tr>
</tbody>
</table>

CONTENTS OF BOX

Each SKU model includes the following accessories:

- Wall Plate
- Barrier
- Face Plate
- Wire Nut (x4)
- Mounting Screw (x2)

NOTES

- The Glossy White Trim Plate is not included in the box. It can be ordered as an option (part number: 1DDTRIMWH)
- The Glossy White color is the default color for the LED Driver + Dimmer face plate. Additional finish options: Glossy Light Almond, Glossy Brown & Glossy Black, are sold separately.

OPTIONAL ORDERABLE ITEMS

Face Plate (FP) + Trim Plate (TP): part number
- Glossy Black FP+TP: 1DDTRIM BK
- Glossy Brown FP+TP: 1DDTRIM BW
- Glossy Light Almond FP+TP: 1DDTRIM ALM
- Glossy White FP+TP: 1DDTRIM WH

Safety & Warnings

1. UNLIKE TRADITIONAL DIMMING CONTROLS, LED DRIVER + DIMMER REQUIRES UNIQUE WIRING STEPS. READ ALL WARNINGS AND INSTALLATION INSTRUCTIONS THOROUGHLY.
2. Install in accordance with national and local electrical code.
3. This product is intended to be installed and serviced by a qualified, licensed electrician.
4. NEC Code 725.136: Class 1 and Class 2 circuits in same enclosure must be separated by a barrier unless Class 2 circuit conductors are installed in accordance with 725.41 Class 1 Circuits.
5. Only install compatible 12 V or 24 V Constant Voltage DC fixtures or warranty will be void. 5 Year Limited Warranty, visit www.kichler.com/warranty for details.
6. Do not modify product beyond instructions or warranty will be void.

Input Output Max Load

- 4DD12V040WH: 120 VAC, 12 VDC 40 W
- 4DD12V060WH: 12 VDC 60 W
- 6DD24V060WH: 24 VDC 60 W
- 6DD24V100WH: 24 VDC 100 W

Supplied Accessories

- LED Driver + Dimmer
- Barrier Wire Connectors (4)
- Mounting Screws (2)
- Face Plate

Tools for Install

- Flat-Head Screwdriver
- Phillips-Head Screwdriver
- Pliers

Quick Specs / Models

- LED DRIVER + DIMMER
- INSTALLATION GUIDE

INSTALLATION GUIDE 1 of 4

1. TURN POWER OFF AT CIRCUIT BREAKER.
   SHOCK HAZARD! May result in serious injury or death.
   Turn power OFF at circuit breaker prior to installation.

2. DETERMINE LOCATION TO INSTALL COMPONENTS

3. REMOVE EXISTING SWITCH (IF NECESSARY)
   a. Remove trim plate and switch mounting screws.
   b. Pull switch from wall.
   c. Identify wires connected to switch and mark wires if desired.
   d. Disconnect wires from switch.

4. REMOVE FINS (IF NECESSARY)
   It’s required to break off dimmer fins when ganging multiple dimmers in same wall box.

Installation Guide

Figure 1

Figure 2

Face plates can be interchanged as shown:
# LED Driver + Dimmer

## 2 - INPUT SPECIFICATION (at 25°C AMBIENT TEMPERATURE)

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Voltage Range (Vin)</td>
<td>Vac</td>
<td>108</td>
<td>120</td>
<td>132</td>
<td></td>
</tr>
<tr>
<td>Input Frequency Range</td>
<td>Hz</td>
<td>47</td>
<td>60</td>
<td>63</td>
<td></td>
</tr>
<tr>
<td>Power Factor (PF)</td>
<td>0.9</td>
<td>&gt;0.9</td>
<td></td>
<td></td>
<td>At nominal input voltage and full rated load</td>
</tr>
<tr>
<td>Inrush Current</td>
<td>Meets NEMA-410 requirements</td>
<td></td>
<td></td>
<td></td>
<td>At any nominal input full sine wave voltage and full rated load</td>
</tr>
<tr>
<td>Leakage Current</td>
<td>µA</td>
<td>500</td>
<td></td>
<td></td>
<td>At nominal input voltage and measured per IEC 60950-1, paragraph 5.1</td>
</tr>
<tr>
<td>Input Harmonics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Complies with IEC61000-3-2 for Class C</td>
</tr>
<tr>
<td>Total Harmonics Distortion (THD)</td>
<td>%</td>
<td></td>
<td></td>
<td>20%</td>
<td>At nominal input voltage and full rated load, Complies with DLC (Design Light Consortium) technical requirements</td>
</tr>
<tr>
<td>Efficiency</td>
<td>%</td>
<td>-</td>
<td>up to 91%</td>
<td></td>
<td>At nominal input voltage and full rated load</td>
</tr>
<tr>
<td>Isolation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Meets UL60950-1 for class II reinforced/double insulation power supply</td>
</tr>
<tr>
<td>Standby Power</td>
<td>W</td>
<td>-</td>
<td>0.5</td>
<td></td>
<td>With no load</td>
</tr>
</tbody>
</table>

## 3 - OUTPUT SPECIFICATION (at 25°C AMBIENT TEMPERATURE)

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Voltage (Vout)</td>
<td>Vdc</td>
<td>12, 24</td>
<td>3.3</td>
<td></td>
<td>See ordering information for details</td>
</tr>
<tr>
<td>Output Current (Iout)</td>
<td>A</td>
<td>0</td>
<td>3.3A</td>
<td>5.0A</td>
<td>• for 4DD12V40WH, 40W/12V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.5A</td>
<td>4.2A</td>
<td>• for 4DD12V60WH, 60W/12V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• for 6DD24V60WH, 60W/24V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• for 6DD24V100WH, 100W/24V</td>
</tr>
<tr>
<td>Output Voltage Regulation</td>
<td>%</td>
<td>+/- 3.0</td>
<td></td>
<td></td>
<td>Includes AC line voltage, load, and voltage set point variations</td>
</tr>
<tr>
<td>Output Voltage Overshoot</td>
<td>%</td>
<td>-</td>
<td>-</td>
<td>20</td>
<td>The driver does not operate outside of the regulation requirements for more than 200 ms during power on</td>
</tr>
<tr>
<td>Ripple Voltage</td>
<td>≤ 10% of rated output voltage for each model</td>
<td></td>
<td></td>
<td>• Measured at nominal input voltage</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Calculated in accordance with the IES Lighting Handbook, 9th edition</td>
</tr>
<tr>
<td>Dimming Range</td>
<td>%</td>
<td>1</td>
<td>100</td>
<td></td>
<td>As a % of light output</td>
</tr>
<tr>
<td>Start-up Time</td>
<td>ms</td>
<td></td>
<td>500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 4 - ENVIRONMENTAL CONDITIONS

<table>
<thead>
<tr>
<th>Units</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Ambient Temperature (Ta)</td>
<td>°C</td>
<td>0</td>
<td>+40</td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>°C</td>
<td>-40</td>
<td>+85</td>
<td></td>
</tr>
<tr>
<td>Humidity</td>
<td>%</td>
<td>8</td>
<td>-</td>
<td>90</td>
</tr>
<tr>
<td>Cooling</td>
<td></td>
<td></td>
<td></td>
<td>Convection cooled</td>
</tr>
<tr>
<td>Acoustic Noise</td>
<td>dBA</td>
<td></td>
<td>22</td>
<td>Measured at a distance of 1 foot (30 cm)</td>
</tr>
<tr>
<td>Mechanical Shock Protection</td>
<td>per EN60068-2-27</td>
<td></td>
<td></td>
<td>At nominal input voltage and full rated load, Complies with DLC (DesignLight Consortium) technical requirements</td>
</tr>
<tr>
<td>Vibration Protection</td>
<td>per EN60068-2-6 &amp; EN60068-2-64</td>
<td></td>
<td></td>
<td>At nominal input voltage and full rated load</td>
</tr>
<tr>
<td>MTBF</td>
<td></td>
<td></td>
<td>&gt;200,000 hours when operated at nominal input voltage and 75% of rated load, and at Tc ≤ 70°C</td>
<td></td>
</tr>
<tr>
<td>Lifetime</td>
<td>hours</td>
<td></td>
<td>50,000</td>
<td>At TC ≤ 70°C maximum case hot spot temperature</td>
</tr>
</tbody>
</table>

### 5 - EMC COMPLIANCE AND SAFETY APPROVALS

#### EMC Compliance

<table>
<thead>
<tr>
<th>Conducted and Radiated EMI</th>
<th>FCC CFR Title 47 Part 15 Class B at 120 Vac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmonic Current Emissions</td>
<td>IEC61000-3-2 For Class C equipment</td>
</tr>
<tr>
<td>Voltage Fluctuations &amp; Flicker</td>
<td>IEC61000-3-3</td>
</tr>
<tr>
<td>ESD (Electrostatic Discharge)</td>
<td>IEC61000-4-2 6kV contact discharge, 8kV air discharge, level 3</td>
</tr>
<tr>
<td>RF Electromagnetic Field Susceptibility</td>
<td>IEC61000-4-3 3V/m, 80 - 1000 MHz, 80% modulated at a distance of 3 meters</td>
</tr>
<tr>
<td>Electrical Fast Transient</td>
<td>IEC61000-4-4 +/- 2kV on AC power port for 1 minute, +/- 1kV on signal/control lines</td>
</tr>
<tr>
<td>Surge</td>
<td>IEC61000-4-5 +/- 1kV line to line (differential mode) / +/- 2kV line to common mode ground (tested to secondary ground) on AC power port, +/- 0.5kV for outdoor cables</td>
</tr>
<tr>
<td>Conducted RF Disturbances</td>
<td>IEC61000-4-6 3V, 0.15-80MHz, 80% modulated</td>
</tr>
<tr>
<td>Voltage Dips</td>
<td>IEC61000-4-11 &gt;95% dip, 0.5 period; 30% dip, 25 periods; 95% reduction, 250 periods</td>
</tr>
<tr>
<td>Transient Protection</td>
<td>Ring Wave ANSI/IEEE c62.41.1-2002 &amp; c62.41.2-2002 category A, 2.5kV ring wave</td>
</tr>
</tbody>
</table>

#### Safety Agency Approvals

<table>
<thead>
<tr>
<th>UL Listed</th>
<th>UL8750, UL2108, UL1598 / CSA 250.0-08</th>
</tr>
</thead>
<tbody>
<tr>
<td>cUL</td>
<td>CSA 250.13-12</td>
</tr>
</tbody>
</table>

#### Safety

<table>
<thead>
<tr>
<th>Units</th>
<th>Minimum</th>
<th>Typical</th>
<th>Maximum</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi Pot (High-Potential) or Dielectric Voltage-Withstand</td>
<td>Vdc</td>
<td>2500</td>
<td></td>
<td>• Insulation between the input (AC line and Neutral) and the output, • Tested at the RMS voltage equivalent of 1768 Vac</td>
</tr>
</tbody>
</table>
6 - PROTECTION FEATURES

• Under-Voltage (Brownout)
The LED Driver + Dimmer provides protection circuitry such that an application of an input voltage below the minimum stated in paragraph 1 (Input Specification) shall not cause damage to the driver.

• Short Circuit
The LED Driver + Dimmer is protected against short circuit such that a short from any output to return shall not result in a fire hazard or shock hazard. The driver shall hiccup as a result of a short circuit or over current fault. Removal of the fault will return the driver to within normal operation. The driver shall recover, with no damage, from a short across the output for an indefinite period of time.

• Internal Over Temperature Protection
The LED Driver + Dimmer incorporates circuitry that prevents internal damage due to an over temperature condition. An over temperature condition may be a result of an excessive ambient temperature or as a result of an internal failure. When the over temperature condition is removed, the driver shall automatically recover.

• Output Over-Voltage Protection
The output voltage of the LED Driver + Dimmer is limited to 1.3 times the maximum output voltage of each model.
7 - MOUNTING

Figure 3

Wall Box (Gang Box) (not included)

Trim Plate (not included)

8 - OPERATION & DIMMING

Output voltage is adjustable via a sliding lever by user

Figure 4

Slide to adjust brightness 100% - 1%
Push to turn ON/OFF

Normalized Light Output vs Slider Position

Slider Position

At 120V ac
For best performance and lumen output, ensure proper wire gauge is installed to compensate for voltage drop of low voltage circuits.

### 12V Voltage Drop & Wire Length Distance Chart

<table>
<thead>
<tr>
<th>Wire Gauge</th>
<th>10W (.83A)</th>
<th>20W 1.7A</th>
<th>30W 2.5A</th>
<th>40W 3.3A</th>
<th>50W 2.1A</th>
<th>60W 4.2A</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 AWG</td>
<td>34 ft.</td>
<td>17 ft.</td>
<td>11 ft.</td>
<td>8 ft.</td>
<td>6 ft.</td>
<td>5 ft.</td>
</tr>
<tr>
<td>16 AWG</td>
<td>54 ft.</td>
<td>27 ft.</td>
<td>18 ft.</td>
<td>13 ft.</td>
<td>10 ft.</td>
<td>9 ft.</td>
</tr>
<tr>
<td>14 AWG</td>
<td>86 ft.</td>
<td>43 ft.</td>
<td>29 ft.</td>
<td>21 ft.</td>
<td>17 ft.</td>
<td>14 ft.</td>
</tr>
<tr>
<td>12 AWG</td>
<td>134 ft.</td>
<td>68 ft.</td>
<td>45 ft.</td>
<td>34 ft.</td>
<td>27 ft.</td>
<td>22 ft.</td>
</tr>
<tr>
<td>10 AWG</td>
<td>199 ft.</td>
<td>99 ft.</td>
<td>66 ft.</td>
<td>49 ft.</td>
<td>39 ft.</td>
<td>33 ft.</td>
</tr>
</tbody>
</table>

### 24V Voltage Drop & Wire Length Distance Chart

<table>
<thead>
<tr>
<th>Wire Gauge</th>
<th>10W .42A</th>
<th>20W .83A</th>
<th>30W 1.3A</th>
<th>40W 1.7A</th>
<th>50W 2.1A</th>
<th>60W 2.5A</th>
<th>70W 2.9A</th>
<th>80W 3.3A</th>
<th>100W 4.2A</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 AWG</td>
<td>134 ft.</td>
<td>68 ft.</td>
<td>45 ft.</td>
<td>33 ft.</td>
<td>27 ft.</td>
<td>22 ft.</td>
<td>19 ft.</td>
<td>17 ft.</td>
<td>14 ft.</td>
</tr>
<tr>
<td>16 AWG</td>
<td>215 ft.</td>
<td>109 ft.</td>
<td>72 ft.</td>
<td>54 ft.</td>
<td>43 ft.</td>
<td>36 ft.</td>
<td>31 ft.</td>
<td>27 ft.</td>
<td>22 ft.</td>
</tr>
<tr>
<td>14 AWG</td>
<td>345 ft.</td>
<td>174 ft.</td>
<td>115 ft.</td>
<td>86 ft.</td>
<td>69 ft.</td>
<td>57 ft.</td>
<td>49 ft.</td>
<td>43 ft.</td>
<td>36 ft.</td>
</tr>
<tr>
<td>12 AWG</td>
<td>539 ft.</td>
<td>272 ft.</td>
<td>181 ft.</td>
<td>135 ft.</td>
<td>108 ft.</td>
<td>90 ft.</td>
<td>77 ft.</td>
<td>68 ft.</td>
<td>56 ft.</td>
</tr>
<tr>
<td>10 AWG</td>
<td>784 ft.</td>
<td>397 ft.</td>
<td>263 ft.</td>
<td>197 ft.</td>
<td>158 ft.</td>
<td>131 ft.</td>
<td>112 ft.</td>
<td>98 ft.</td>
<td>82 ft.</td>
</tr>
</tbody>
</table>

**Example: 12V Voltage Drop & Wire Length Distance Chart**

1. Determine load size. Let’s assume load is 55W. Round up to the nearest load.
2. Determine distance from LED Driver + Dimmer to load. Let’s assume the distance is 20 ft. Round up to the nearest distance.
3. It is then recommended to install 12 AWG to eliminate excess voltage drop.
10 - VOLTAGE ADJUSTMENT

LED Driver + Dimmer can provide a 1V boost if the fixture is showing noticeable light degradation.

1. Pop off face plate, as shown in Figure 5.
2. Use a small screwdriver to adjust output voltage by turning adjustment dial clockwise, as shown in Figure 6.

---

**Figure 5**

a. Gently squeeze top and bottom of face plate.
b. Lift face plate from housing.
c. Insert face plate back into top housing groove. Position housing slider and brightness (bottom level) and pop on face plate.

**Figure 6**

- UP
- MAY BE HOT
- 120 V~60Hz
- V ADJ
- +
11 - MECHANICAL DETAILS

Packaging Options: Plastic case for 40W & 60W. Metal case for 100W. For 40W, 60W, & 100W, the wall plate is always made of metal.

I/O Connections: Flying leads, 18 AWG on both AC and DC leads, 152mm (6”) long, 105°C rated, stripped by approximately 9.5mm and tinned. All wires, on both input and output, have a 600V insulation rating. There is a ground wire attached to the wall plate.

Ingress Protection: IP20 rated

12 - OUTLINE DRAWINGS

Figure 7

For shallow boxes, barrier can be shortened. Grip with pliers. Bend back and forth until fin breaks off.
13 - LABELING

The 4DD12V060WH is used in Figure 8 as an example to illustrate a typical label.

---

14 - SAFETY WARNINGS / DISCLOSURES

1. UNLIKE TRADITIONAL DIMMING CONTROLS, THE LED DRIVER + DIMMER REQUIRES UNIQUE WIRING STEPS. READ ALL WARNINGS AND INSTALLATION INSTRUCTIONS THOROUGHLY.

2. Install in accordance with national and local electrical code regulations.

3. This product is intended to be installed and serviced by a qualified, licensed electrician.

4. NEC Code 725.136: Class 1 and Class 2 circuits in same enclosure must be separated by a barrier unless Class 2 circuit conductors are installed in accordance with 725.41 Class 1 circuits. For example, Non-Metallic (NM) cable is considered a Class 1 circuit conductor. Therefore, if both high voltage and low voltage circuits are installed with NM cable then the voltage barrier is not required for installation.

5. Only install compatible 12V or 24V Constant Voltage DC fixtures or warranty will be void.


7. To compensate for voltage drop, ensure applicable gauge in-wall rated wire is installed between control and fixture.

8. Do not modify product beyond instructions or warranty will be void.