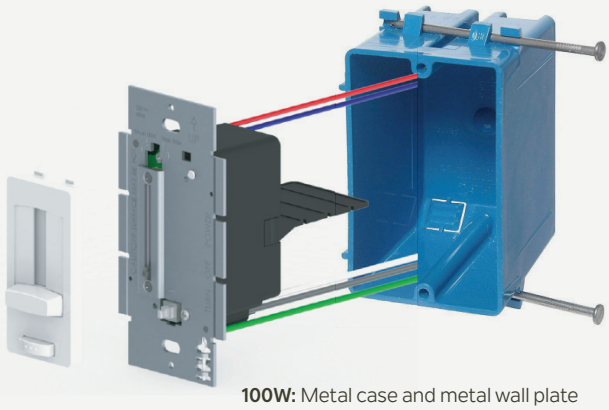
LED Driver + Dimmer

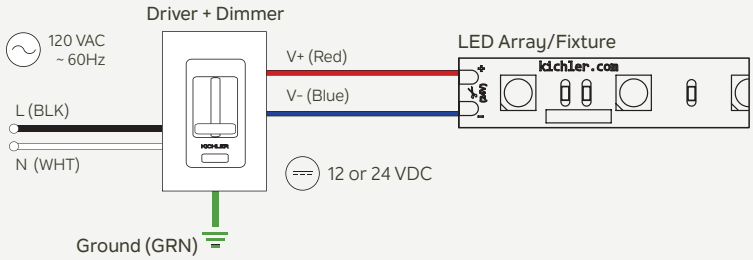
40W, 60W or 100W Constant Voltage LED Driver with Integrated Dimmer for Single Gang Box Mount

4DD12V040WH, 4DD12V060WH, 6DD24V060WH, 6DD24V100WH

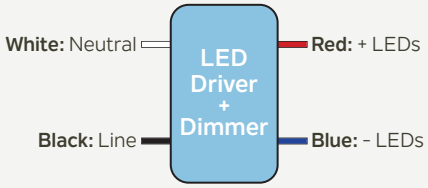


100W: Metal case and metal wall plate
40W & 60W: Plastic case and metal wall plate

Typical Application Diagram



Wiring Diagram



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

CV: Constant Voltage

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

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

5 YEAR WARRANTY

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1 - ORDERING INFORMATION

Part Number	Nominal AC Line Voltage (VAC)	Pout Max (W)	Pout Min (W)*	Vout Max (V)	Iout Max (V)	Vout Regulation
4DD12V040WH	120	40	8	12	3.3	11.1 - 12.9 (+/- 0.9V)
4DD12V060WH	120	60	10	12	5.0	11.1 - 12.9 (+/- 0.9V)
6DD24V060WH	120	60	3	24	2.5	22.2 - 25.8 (+/- 1.8V)
6DD24V100WH	120	100	5	24	4.2	22.2 - 25.8 (+/- 1.8V)

*Load must exceed Pout Min for proper operation.
Pout Min is a typical value and may vary from unit to unit.

CONTENTS OF BOX

Each SKU model includes the following accessories:

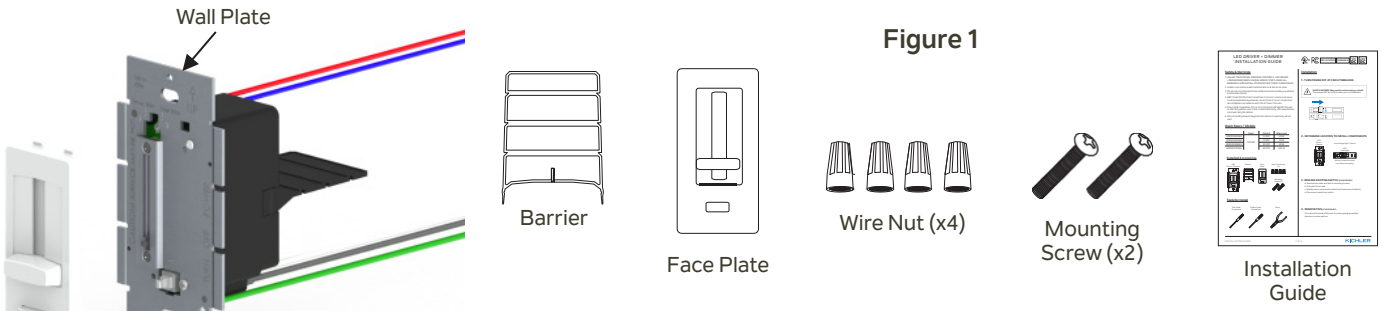


Figure 1

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**

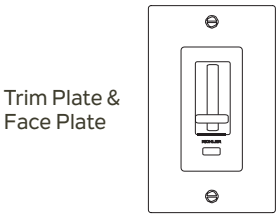
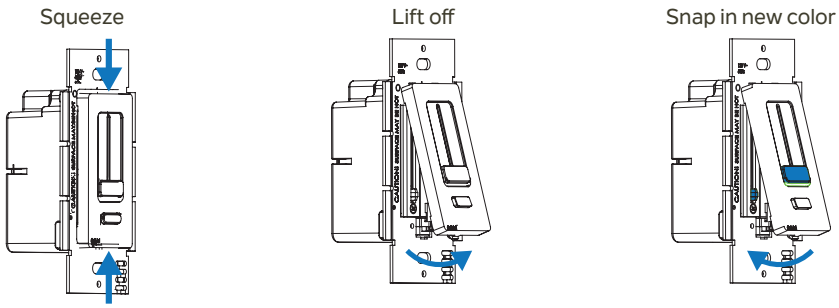


Figure 2

Face plates can be interchanged as shown:



LED Driver + Dimmer

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

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

3 - OUPUT SPECIFICATION (at 25°C AMBIENT TEMPERATURE)

	Units	Minimum	Typical	Maximum	Notes
Ouput Voltage (Vout)	Vdc		12, 24	3.3	See ordering information for details
Output Current (Iout)	A	0		3.3A 5.0A 2.5A 4.2A	• for 4DD12V040WH, 40W/12V • for 4DD12V060WH, 60W/12V • for 6DD24V060WH, 60W/24V • for 6DD24V0100WH, 100W/24V
Output Voltage Regulation	%		+/- 3.0		Includes AC line voltage, load, and voltage set point variations
Output Voltage Overshoot	%	-	-	20	The driver does not operate outside of the regulation requirements for more than 200 ms during power on
Ripple Voltage	≤ 10% of rated output voltage for each model				• Measured at nominal input voltage • Calculated in accordance with the IES Lighting Handbook, 9th edition
Dimming Range	%	1		100	As a % of light output
Start-up Time	ms		500		

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LED Driver + Dimmer

4 - ENVIRONMENTAL CONDITIONS

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

5 - EMC COMPLIANCE AND SAFETY APPROVALS

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

Safety Agency Approvals	
UL Listed	UL8750, UL2108, UL1598 / CSA 250.0-08
cUL	CSA 250.13-12

Safety					
	Units	Minimum	Typical	Maximum	Notes
Hi Pot (High Potential) or Dielectric Voltage-Withstand	Vdc	2500			• Insulation between the input (AC line and Neutral) and the output • Tested at the RMS voltage equivalent of 1768 Vac

LED Driver + Dimmer

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

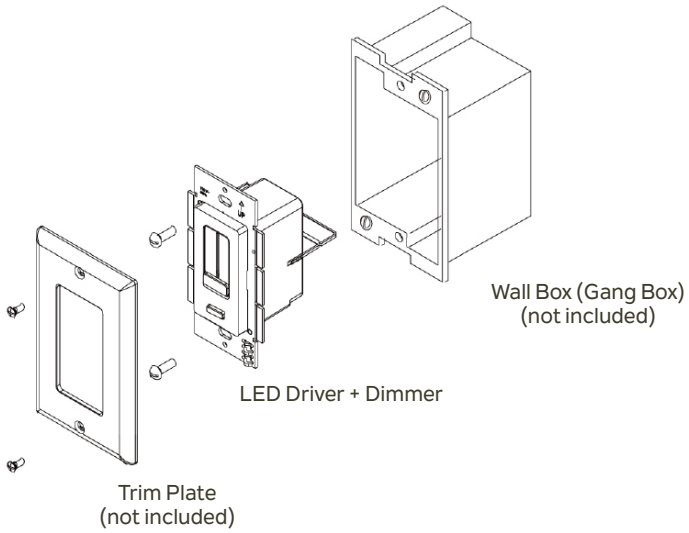
• Internal Over Temperature Protection
The LED Driver + Dimmer incorporates circuitry that prevents internal damage due to an over temperature condition. An over temperature condition may be a result of an excessive ambient temperature or as a result of an internal failure. When the over temperature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

LED Driver + Dimmer

7 - MOUNTING

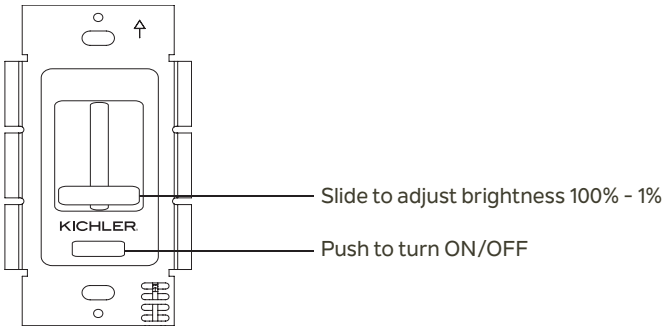
Figure 3

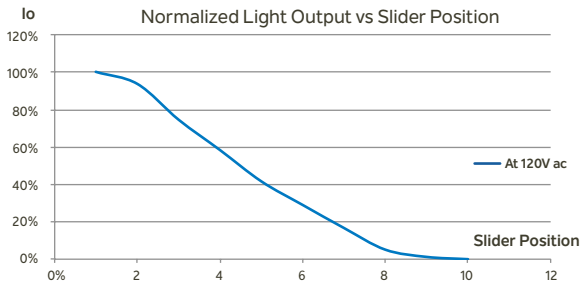


8 - OPERATION & DIMMING

Output voltage is adjustable via a sliding lever by user

Figure 4





LED Driver + Dimmer

9 - VOLTAGE DROP CHARTS

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

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

24V Voltage Drop & Wire Length Distance Chart

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

Example: 12V Voltage Drop & Wire Length Distance Chart

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

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.

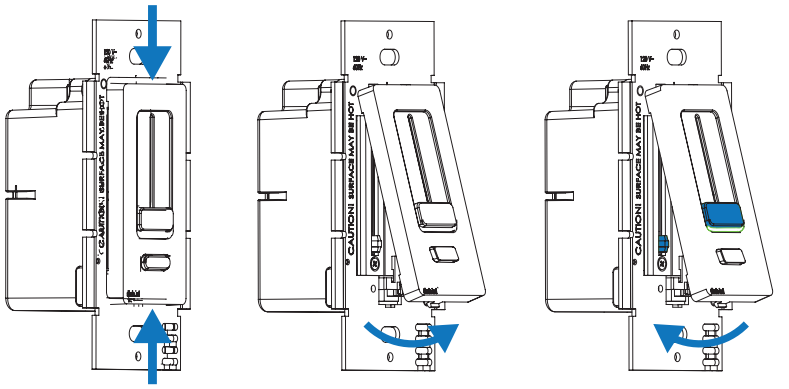
LED Driver + Dimmer

10 - VOLTAGE ADJUSTMENT

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

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

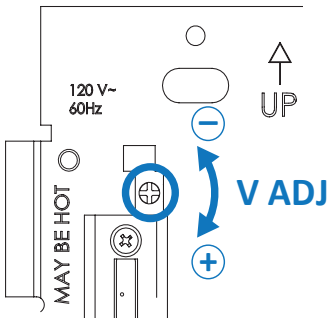


a. Gently squeeze top and bottom of face plate.

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



LED Driver + Dimmer

11 - MECHANICAL DETAILS

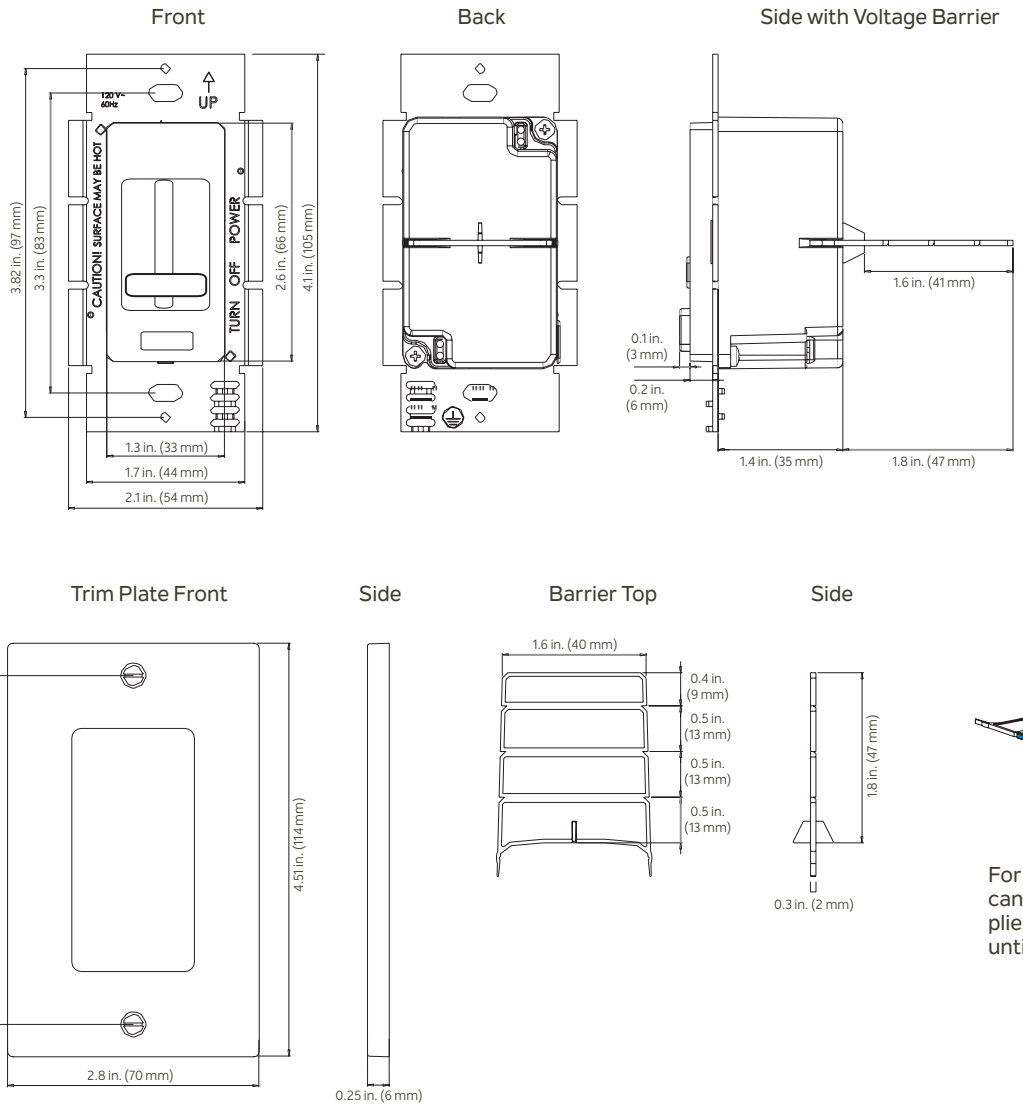
Packaging Options: Plastic case for 40W & 60W. Metal case for 100W. For 40W, 60W, & 100W, the wall plate is always made of metal.

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



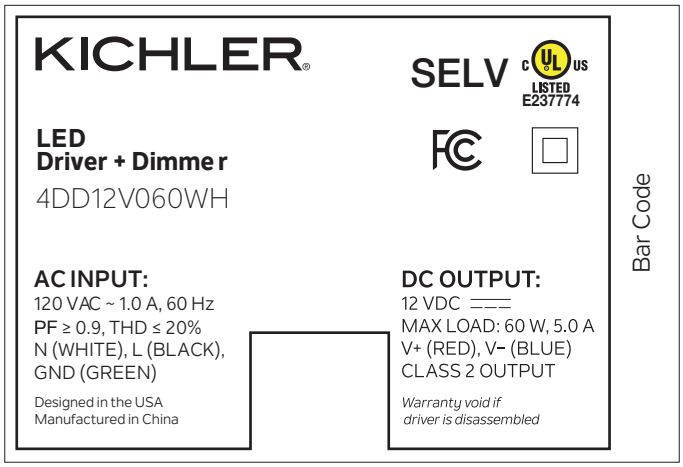
For shallow boxes, barrier can be shortened. Grip with pliers. Bend back and forth until fin breaks off.

LED Driver + Dimmer

13 - LABELING

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

Figure 8



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.
6. Suitable for indoor / dry installation.
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.

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