Using Your Dimmable Driver

About this Document

This document provides general usage notes for the Mean Well ELN-60-48D and ELN-60-48P constant current dimmable LED drivers. It is meant for those who already have a dimming controller. It does not cover the construction of a DIY dimmer circuit; please see our DIY dimmer document for guidelines on creating your own manual dimmer.

Driver Overview

The difference between the D and P model is how the dimming circuitry works. The D model uses an analog 1-10VDC reference signal whereas the P model uses a PWM (pulse width modulation) signal to control LED intensity.

Both drivers accept 90-264VAC input and can power between 8-14 LEDs (CREE XR and XP Series LEDs). Do not try to use less than 8 LEDs because the minimum driver output voltage is 24V. Pushing 24V through less than 8 LEDs will likely destroy them.

The current output is factory set to 1.3A, which is maximum current output for these drivers.

The D drivers are compatible with controllers such as the ReefKeeper and Profilux, and the P model is compatible with drivers such as the ReefAngel. Please consult your controller manufacturer for specific compatibility notes. Chances are 99% of the time, if you have a dimmable driver, either the D or P model is compatible with it.

Turning Down SVR2

Before you go any further, you should turn down SVR2. This is done by opening the driver up and gently turning SVR2 counter-clockwise with a small screwdriver as far as it will turn before applying power. If you are powering a string of XP-G LEDs only, and want to run them at full current, 1.3A (1300mA), you can skip this step. See page 4 for a picture of where to located SVR2.

Wiring the Driver and LEDs Together

Wiring LEDs is done by strings in series. Each string is a series circuit wired + to – (or – to +, depending on where you start) starting from one LED power wire on the driver, from LED to LED, to the other LED power wire on the driver. Below, there is a string of 10 Royal Blue LEDs wired to one driver, + to – all the way around. Do NOT power the driver until wiring is complete. You risk burning out your LEDs, a very expensive mistake.
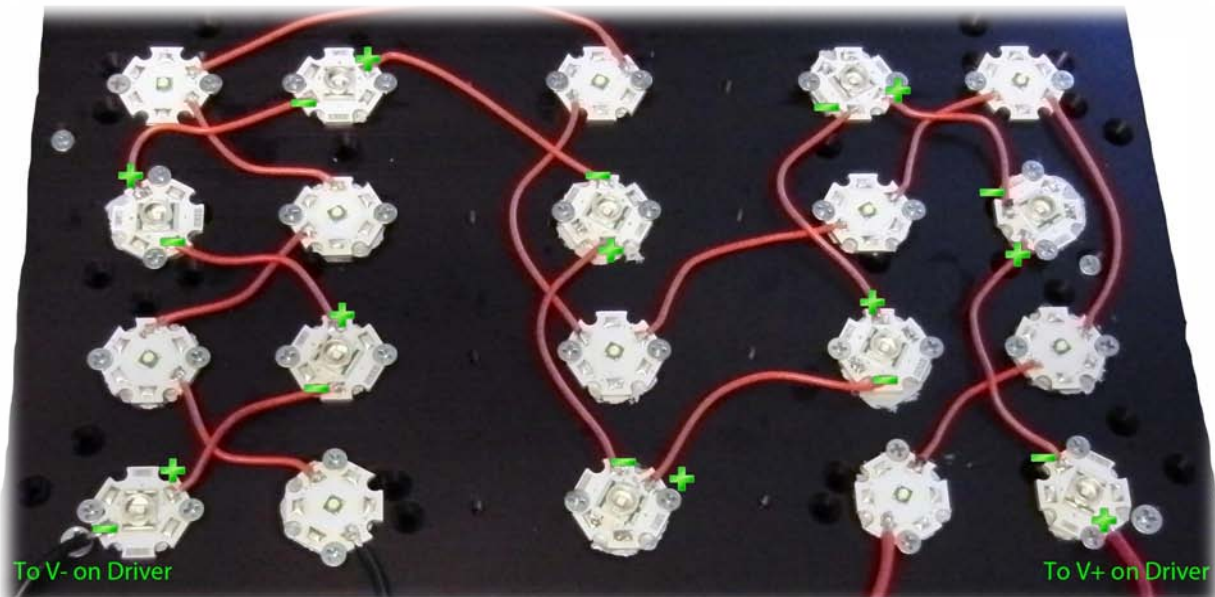

Wiring the Driver to AC Power

The AC Line and Neutral, or ACL and ACN wires, which are brown and blue, connect to the power cord included in our kits. Strip the white and black wires of the power cord (green is ground and unused) and attach them to the blue and brown wires on the driver with the included wire nuts. Order is not important because AC current alternates. Obviously, this step is dangerous because you are working with 120AC current. Have a licensed electrician assist you with this step.
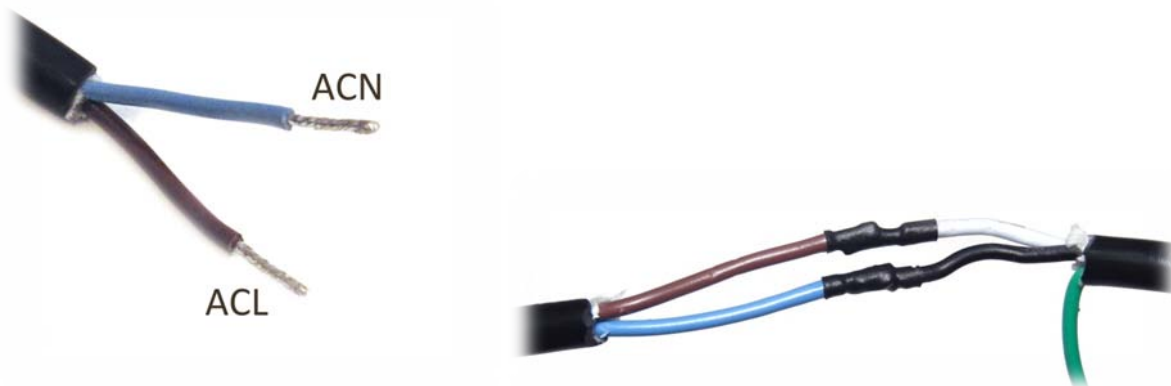
Wiring the Driver Dimmer Wires
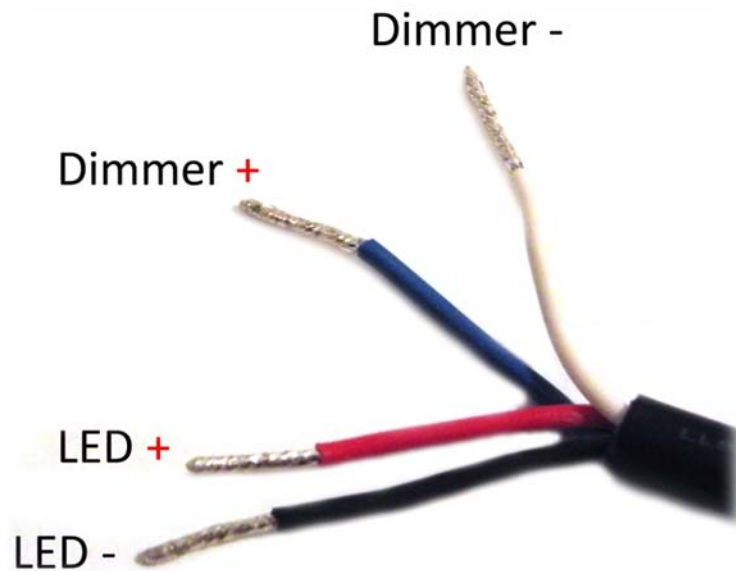
There are 4 output wires on a dimmable driver as in the above photo. The dimming wires, DIM + (blue), and DIM – (white), simply hook up to the respective ports on your controller or dimmer. Dimmable drivers must have the dimmer wires hooked up to a controller or dimmer or the LEDs will not light up. No dimming signal = 0% brightness.

If you do not have a dimming circuit or controller, you can test by applying a voltage to the Dimmer + and Dimmer – wires on the driver. This voltage can range from 1-10V. A 1V reference voltage will light the LEDs to 10% brightness, whereas a 10V reference voltage will light the LEDs to 100% brightness. You likely have something around your house that can supply a reference voltage. A "wall wart," 9V battery, or even a AA battery can be used for testing.

Adjusting Driver Current

To adjust the driver output current, open the driver and rotate SVR2. Counter-clockwise rotation lowers output current and clockwise rotation raises output current. The maximum output current of the D and P model drivers is 1.3A. 1.3A is the factory default setting and can burn out LEDs that cannot accept this much current.
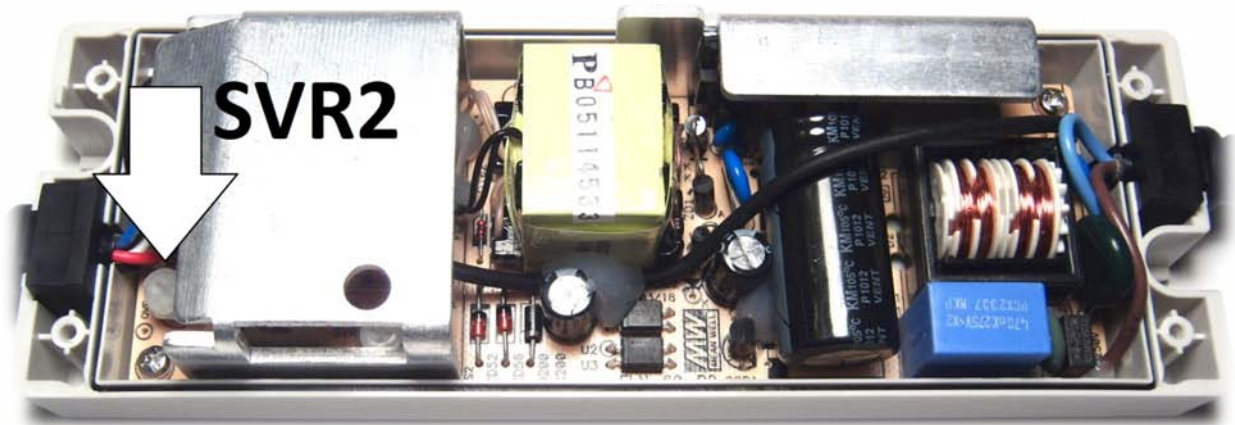
Adjusting Driver Current with a Multimeter

To adjust the driver output to a specific value, you must first wire a multimeter into your LED string and second, you must ensure the DIM+ and DIM- wires are connected to a dimmer. The dimmer should be set to full brightness.

The multimeter should be wired into your LED string exactly the same as an LED, + to -. In fact, if you just pretend it is an LED you will have no problem measuring current. If you wire the multimeter in backwards, it will still work, but your measurements will be negative instead of positive.

To set your multimeter up for measuring current, move the RED probe plug to the 10A socket and rotate the knob to the 10A position. Multimeters can differ in operation. Please consult your multimeter manual for model specific operating instructions.

As in the photo below on the right, have a friend firmly hold the probes in a gap in the LED string. We had to remove a wire in an existing setup for this example. If either probe loses contact with a solder pad on either LED, do NOT re-touch it to the LED until power has been removed from the driver for a few minutes, and then start over from the beginning.

The following should be complete before applying power to the driver:

- SVR2 has been gently rotated counter-clockwise until it stops (set to minimum current)
- DIM+ and DIM- wires on driver are connected to a dimmer
- Dimmer is set to 100% brightness (10VDC)
- Multimeter is turned on and set up to measure current
- Multimeter is wired into LED string as if it were an LED

Once all of the above have been completed, power the driver and rotate SVR2 clockwise until the readout on the multimeter displays the desired output current for 100% brightness. In the below photos, the current begins at .25A, or 250mA. SVR2 was rotated clockwise until the desired current was reached (in this case .75A, or 750mA). When measuring current, you can ignore the – sign because we are only interested in the absolute amount of current flowing through the LED string. Switching the multimeter leads around would have would have flipped the sign around to + in our example.

Now that you have set the current on your driver by rotating SVR2, un-plug the driver, replace the cover, and re-wire your LED string.