

# COB LED vs TIR LED Fixtures

## B: Reduce LED Drivers by -75% and Cut Energy Use by -37%

LEDs require a minimum forward voltage to properly operate electrically.

Each LED driver in the market has a maximum forward voltage and wattage rating per LED driver. The maximum forward voltage for most LED drivers is 55 in the 25-to-60-watt range.

To determine the forward voltage of an individual discrete TIR optical LED fixture the forward voltage of each LED utilized in the fixture must be multiplied by the number of LEDs in the LED array to determine the total forward voltage of a specific discrete TIR optic LED fixture.

100% of Clarté Lighting architectural LED fixtures utilize individual discrete LED TIR optics with a reduced forward LED voltage per fixture.

Since COB LED arrays utilizes more total LED's the operating forward voltage is higher than a discrete TIR optically designed fixture. Each COB LED array will have a forward voltage published rating for each LED array.

Due to Clarté Lightings' PAR8 and PAR16 scale optical fixtures low forward voltage and minimal wattage per LED optical array, up to 4 Clarté LED fixtures can be operated from a single LED driver.

### Benefits of Operating up to 4 Fixtures Per 1 LED Driver

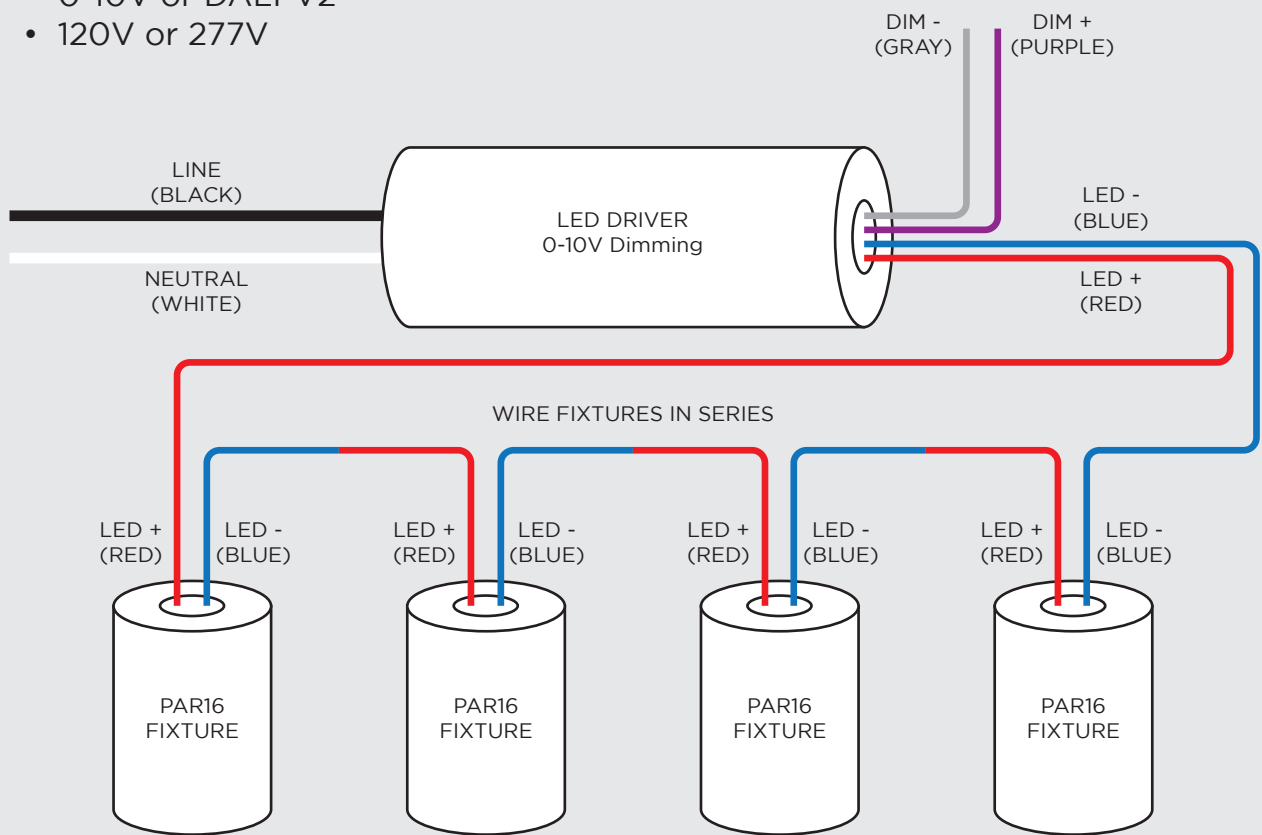
- Reduced material first cost of the system
- Reduced install cost of the system
- Reduced long-term maintenance cost with up to 75% fewer drivers installed
- Reduced energy consumption by -37% per fixture

Using a single LED driver to power 2, 3, or 4 fixtures reduces both the number of drivers needed and energy consumption. This approach can cut LED drivers by up to 75% and reduce energy use by 37%.

For example, a 1" PAR8 fixture at 500 milliamps consumes 10 watts with one driver, but when multiple fixtures are powered by a single driver, only 6.25 watts are used, achieving both a 75% reduction in drivers and a 37% energy savings, while maintaining the same light output.

### 4 Fixtures Operating from 1 LED Driver

- 0-10V or DALI-V2
- 120V or 277V



Due to the higher forward voltage of COB LED array fixtures only 1 COB LED array can be installed per LED driver.

### Clarté Lighting TIR Discrete LED Forward Voltages

PAR8 scale optical array = **11.2**  
 PAR16 scale optical array - 2.79 x 3 = **8.37**  
 PAR20 scale optical array - 2.79 x 6 = **16.74**

### Typical COB Array Forward Voltages

CREE XLAMP® CHA0410 LED = **36**  
 CREE XLAMP® CHA0612 LED = **36**  
 CREE CHA0825 LED = **36**  
 Bridgelux BXRH-30E0300-A-8x = **35.2**  
 Bridgelux BXRH-30E0600-A-73 = **36.4**  
 Bridgelux BXRH-30E1000-B-8x = **36.6**  
 Bridgelux BXRH-30E3000-D-73 = **36.4**  
 Xicato XOB6903010X331 = **31.6**  
 Xicato XOB9903015X3632 = **34**  
 Xicato XOB14953050X3621 = **39.6**