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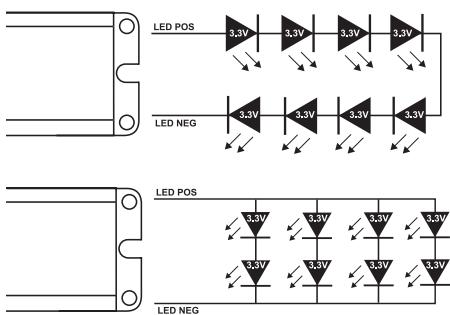
EMERGENCY LIGHTING INSIDER

Tools and Tips to Help Contractors Succeed

Auto-Sense: The Key to LED Compatibility

Whether performing under normal power or emergency power, the key factor required to operate LEDs in a fixture is supplying the correct DC voltage. The LED board (sometimes referred to as an LED array or also a 'light engine') needs a specific forward voltage in order to collapse the P/N junction of the diode, allowing current to flow through the LED which then emits photons that our eyes see as visible light. A fixture's internal AC (or "normal") driver is the key component that converts the incoming AC line power to the appropriate DC power for the LEDs during normal operation. This small detail is critical for fixture operation, but is generally not a factor of consideration to the installing contractor since compatibility between the driver and LED array has already been established by the manufacturer. But what does the contractor do if they wish to install an emergency driver on the fixture? **Just like a normal driver, the emergency driver must deliver the proper DC voltage needed to illuminate the array.**

Figure A:
The same number of LEDs, with similar lumen output characteristics, are arranged differently in a circuit and require different voltage considerations.



LEDs in Series

In this example, (8) 3.3V LEDs would require the driver component to deliver a forward voltage of 26.4VDC.

LEDs with Four Parallel Strings

In this configuration, the same LEDs would require the driver component to deliver a forward voltage of 13.2VDC, but with an increase in mA.

Since forward voltage is normally a concern for the manufacturer, and not the installer, this data is typically not published, making it difficult to determine the needed operating voltage for the LEDs when selecting an emergency driver. Adding to this challenge is that, while LED boards may look and perform the same, the voltage requirements will vary depending on the series/parallel design of the individual LEDs (see Figure A.) These factors add an unknown element to properly selecting an emergency driver. **To alleviate this problem, IOTA developed Auto-Sense forward voltage in ILB Constant Power emergency drivers.** Most indoor ambient LED fixtures are classified as 'Class 2' luminaires, meaning they operate the LEDs at a voltage output no greater than 60 VDC while maintaining less than 100-watts of output power. IOTA Auto-Sense allows the emergency driver to detect the required voltage across the full Class 2 range (10-60VDC) and deliver the proper voltage needed to operate the LED array, whether it is 12V, 24V, 48V, etc. Some emergency driver manufacturers offer product options for specific voltage ranges, such as 3V-20V or 12-39V, leaving it up to the contractor to figure out what is required. By offering Auto-Sense across the Class 2 voltage range, IOTA has removed the guess-work out of selecting the proper emergency driver when it comes to electrical compatibility.



Selecting an emergency driver with the most comprehensive forward voltage range, such as IOTA ILB emergency drivers with Auto-Sense, reduces the chances of voltage incompatibility with the LED array. This means avoiding returns of incorrect products and wasted labor re-installing proper emergency solutions.

Class 2 and Non-Class 2 Forward Voltages

IOTA offers LED emergency drivers to operate with Class 2 electrical designs (max 60 VDC AND max 100-watts of power) as well as non-Class 2 systems where either the voltage exceeds 60 VDC OR the power exceeds 100-watts (or both). Class 2 electrical systems are also referred to as low-voltage, limited energy systems and provide more inherent safety with regards to the risk of electrical shock/risk of electrical shock. The UL standard used to qualify class 2 electrical systems is UL 1310. Class 2 designed luminaires are found in the interior ambient space while non-class 2 luminaires tend to be found in industrial high bay applications. Not all industrial high bay luminaires are designed with non-class 2 electrical systems so it is important to understand the forward voltage requirements.



For more information on IOTA emergency lighting solutions, contact us at 1-800-866-4682 or visit www.iotaengineering.com