

## **Control type: DMX 512**

DMX 512 is a common control protocol for LED products and is used in many applications. At the basic level, it can be a simple intensity control of a single zone and color. More commonly though, DMX 512 is used in complex systems that require mixing of multiple LED colors over many zones, as well as sequencing between multiple scenes.

### **DMX 512 Basics**

DMX 512-A is a digital communications protocol standard that is most commonly used to control stage lighting and theatrical effects such as moving lights, color changing lights, and fog machines. It is also a common control method for color changing LED applications and has become an ANSI standard.

The DMX 512 signal is basically a set of 512 separate intensity level commands, or channels, that are constantly being updated. Each command provides one of 256 steps that allow for a range of intensity levels from 0% to 100%. One or more LED drivers are addressed to a unique DMX channel, and those drivers, in response to the DMX channel commands, set the intensity level of the LEDs they operate.

For more information on the DMX standard go to [www.USITT.org](http://www.USITT.org) or [www.ESTA.org](http://www.ESTA.org).

### **DMX 512 Applications**

- Basic Applications
  - One or more LED zones of a single color that require the intensity level to be adjusted to one or more preset levels.
  - Simple three color (RGB-Red, Green, Blue) or four color (RGBW-Red, Green, Blue, White) where one zone is assigned to each color. The controller adjusts the intensity of each of these colors so that any possible color can be produced. This color mixing is either static or sequences in 10-20 steps.
  - These applications can be for indoor or outdoor lighting and exist in retail spaces, high end residences, and many commercial spaces.
- Complex Applications
  - A large number of LED zones are required for advanced lighting effects with color changing LEDs. There are multiple groups of RGB or RGBW LEDs and they require multiple cues and sequences.
  - These applications are mainly seen on building facades, retail and entertainment spaces, and in theatrical applications, but can be used in any space that calls for advanced color mixing effects.

### **Lutron Products**

- Basic Applications
  - Grafik Eye 3000/4000 systems with LUT-DMX interface

- Grafik 5000-7000 systems with LUT-DMX interface
- Grafik Eye QS products with QSE-CI-DMX interface
- Quantum products with QSE-CI-DMX interface

The capabilities of the Grafik Eye products listed above fit well into the basic LED functional requirements. Multiple scenes can be programmed with zones set at different intensity levels and fade rates.

- Complex Applications
  - Grafik Eye 3000/4000 systems with a GRX-IO or GRX-CC08 can provide contact closure connections to third party DMX control and automation systems.
  - Grafik 5000-7000 systems with a OMX-IO or OMX-CC08 can provide contact closure connections to other DMX systems, or can send custom RS232 commands to third party DMX systems.
  - Grafik Eye QS and Quantum products with a QSE-IO can provide contact closure connections to other DXM systems.

The Lutron products listed above can interface with DMX systems and products while providing the user interface that customers are familiar and comfortable with.