

## **General DMX Design Guide for LSI CONTROLTrack**

Designed to the same industry leading standards as all LSI Track Systems, CONTROLTrack allows the user to integrate DMX controlled track fixtures anywhere along a CONTROLTrack run. This gives designers and end users the ability to individually control a fixtures Intensity, Color Temperature (CCT) or Full Color gamut when these options are specified.

While the user interface of each DMX control system operates slightly differently and each track layout is unique to the venue, the process of addressing and re-addressing LSI DMX fixtures is always the same. Depending on the fixture specification the fixture can be addressed in one of two ways:

### **Manually Addressed**

1. Single Channel DMX fixtures (static white or UV fixtures), have three rotary or push-button encoders. These encoders are used to set the DMX address of that fixture from 1 to 512. The encoders can also be used to set the intensity of a fixture manually when DMX is not available or when stand-alone control is required. (See fixture user manual for details of stand-alone use)

### **Software (RDM) Addressed**

2. Multi-Channel DMX fixtures (CCT/full color fixtures) with Intensity, CCT, Saturation, and Hue **MUST** be addressed using an RDM enabled controller. As each RDM controller is slightly different, the user will need to refer to the manufacturer's user manual for details on setting a fixture start address. The DMX address of multi-channel fixtures can be from 1 to 509, for a 4-channel fixture, however the beginning address of each fixture must skip by 4 (1,5,9,13, etc.) Failure to leave space will result in undesired performance of the fixtures.

When an end user is ready to relocate a fixture, they will place the fixture in its new location and using one of the methods described above, set the new start address if required.

Each section of CONTROLTrack can be fed by only one DMX home run, they can also be daisy chained to another section of track, this DMX line can belong to only one DMX Universe. The control system, and the track layout will be critically important for the end user to know and understand. They must know which DMX universe is controlling each section of track. They will want to ensure multiple fixtures are not set to the same DMX address (when individual control is desired) and they will need to ensure no more than 32 fixtures are installed on one section of track at a time. Having multiple fixtures set to the same DMX address or having more than 32 devices on a single section of track will not harm the fixtures, but it will create a situation where the fixtures may not operate as expected. To ensure no more than 32 fixtures are placed on one section of track, it is recommended that each section be limited to less than 128 feet before a new DMX home run is begun. The allows a fixture density of at least 1 fixture for every 4 feet of track.

Things to know about the DMX512 protocol:

- One DMX Universe has 512 addresses. Each address controls an attribute of a fixture (Intensity, Saturation, Hue, CCT, etc.)
- One DMX home run can control up to 32 fixtures.
- One DMX Universe can be split into multiple home runs using an Opto-Splitter, each output of the splitter can control and additional 32 fixtures
- DMX must be daisy chain topology only, it cannot have "Y's", "X's", or "T's".
- DMX must be terminated at the end of the line with a 120-ohm resistor between the Data+ and the Data -, (LSI offers a stationary end feed terminator and a portable terminator)
- DMX, as a protocol, has a maximum run distance of 1,640 feet.
- When using DMX, the maximum single CONTROLTrack length can be no longer than 300 linear feet with a recommended length of less than 128'. (See above for additional details)