2 Holt Drive
Stony Point, NY 10980-1996
USA
+1 845 942-2800
+1 800 999-9574 (USA & Canada)
+1 845 942-2392 Fax

www.LightingServicesInc.com

CONTROLTrack 0-10V FAQ

1. **How does 0-10V dimming work?**
   - 0-10V dimming is analog dimming done through two low voltage control wires from the dimmer to the LED driver. These control wires are typically purple and grey (see driver diagram). The DC voltage over the control wires varies between zero and ten volts to change the intensity of the LED. At ten volts, the light will be at its max intensity or 100%. At zero volts, the light will dim to its minimum light level.

2. **Do I need to commission 0-10V fixtures?**
   - No, there is no commissioning or software needed when using 0-10V controllable fixtures.

3. **What is the difference between 0-10V and 1-10V?**
   - With 0-10V, the DC voltage varies between 1 and 10V to determine the intensity of the lighting. Below 1V, the fixture will output a minimum light level. This minimum light level can mean off or it can mean the low-end. If the fixture does not turn off below 1V, a relay would be needed to cut power to the circuit to turn the fixtures off. With 1-10V, this is the actual range for the intensity of the lighting which means the minimum and maximum light levels are at 1V and 10V respectively.

4. **What is the difference between sink and source?**
   - Sink and source in reference to 0-10V relates to the current that is used to drive the circuit and creates the changes in the DC voltage. In a 0-10V system, the controller and drivers are either sourcing (providing the current) or sinking (dissipating the current). For a driver and controller to be compatible with each other, one has to be the source of the current and one has to sink it. All LSI fixtures source the current and would require a dimmer that sinks the current.

5. **How many fixtures can I dim on a 0-10V control circuit?**
   - In order to determine the number of fixtures that can be controlled on a 0-10V circuit, you must know the current rating of the controller, the ability of the controller to handle the inrush current of the total load, and the sink/source capabilities of the controller and drivers on the circuit. The total load must be lower than the rating of the 0-10V controller and the controller must be rated to handle the total inrush current of the load.

6. **How far can the fixtures be from the 0-10V dimmer?**
   - The distance between the fixtures and the 0-10V dimmer depends on a number of variables including the gauge of the wire, the allowable voltage drop, and the source rating of the drivers. As a general rule, keeping the voltage drop below 0.3V is good practice. The equation to determine the maximum distance between the fixtures and the dimmer is:

$$d = \frac{V_D}{R \; x \; n \; x \; I}$$

   Where “d” is the distance of the wire run, “VD” is the voltage drop, “R” is the resistance of the wire per foot, “n” is the number of drivers, and “I” is the current sourced by each driver. It should be noted that this equation will give a recommended distance but other influences such as noise and inductance should be taken into account based on the site conditions.

7. **How do I troubleshoot 0-10V?**
   - Troubleshooting 0-10V is simple compared to other dimming protocols. The issue is either going to be a bad driver or wiring/dimmer issues. The first step would be to disconnect the purple and grey wires from the dimming circuit. Next, cause a short by touching the grey and purple wires together. If the driver is functioning properly, the fixture will dim to its lowest light output (usually about 10%). If the driver is working, this means that there is a fault in the wiring or the dimmer is bad. If the fixture does not respond to the short with the control wires, this would mean that there is a driver issue. The solution would be a replacement driver. Note: 0-10V control wires are polarity sensitive.

8. **How many control groups does LSI CONTROLTrack allow in 0-10V mode?**
    - LSI CONTROLTrack carries 3 conductors on the control side. This allows for 2 0-10 control zones. Control zone can be selected on every 0-10 fixture via a discretely hidden switch.

9. **How deep will LSI 0-10V fixtures dim?**
    - Standard 0-10 dimming is 10% but LSI also offers “Flicker Free” XIM dimming down to 1% on LX product.

10. **How do I dim LSI’s fixtures with Lumenetix modules with 0-10V?**
    - LSI offers its LumeLEX series fixtures with the Lumenetix tunable white LED module and 0-10V control. The fixture requires two channels of 0-10V – one controls the intensity of the light from 1-100% and the other controls the CCT from 1650K-8000K. This means that two 0-10V zones of control are needed for LSI’s Lumenetix fixtures.