Application notes for DMX512 to analog converters

Doug Fleenor Design offers a number of products which allow DMX512-based controllers to operate analog devices such as older dimmers or dimming ballasts. However, the output circuit of the DMX to analog converter must be built to work correctly with the device being driven. The purpose of this application note is to describe the two forms of output circuits and the devices with which they are typically associated.

Current sourcing outputs

Our standard products have protected current sourcing outputs. This means that the output of the interface is the source of current to drive the dimmer/fixture. In addition, there are protection diodes which allow multiple analog voltage sources to be connected together. When multiple sources are connected and all of them have protection diodes like our interface, the result will be a "highest takes precedence" control scheme. This is a method in which the device (like a dimmer) will be driven to the highest level being produced by any of the controllers.

Current sinking outputs

Many lighting fixtures have a "ballast" or other control electronics which have a 0-10V current sourcing input. In the case of these fixtures, their control input is the source of current. It is up to the controller (the DMX to analog interface in this case) to "sink" the current coming from the fixture or ballast. There can be no protection diodes present in the DMX to analog interface's output circuit because they would block the flow of control current from the fixture/ballast.

Determining input requirements

There is a simple test which can typically be used to determine what type of input your device has and thus what type of drive circuit should be specified.

- Apply power to the device to be controlled (dimmer, ballast, fixture, etc.)
- Locate the 0-10V control connections on the device.
- Disconnect the control connections.
- If the dimmer/fixture turns off, the input requires a current sourcing driver.
- If the dimmer/fixture turns on, the input requires a current sinking driver.
- As a further test, short the two input connection terminals together (control common and the 0-10V input).
- If the dimmer/fixture was off and remains off after shorting the inputs, this further confirms that the input requires a current sourcing driver.
- If the dimmer/fixture was on and it turns off after shorting the inputs, this further confirms that the input requires a current sinking driver.

Conclusion

DMX512 to analog converters are supplied with current sourcing outputs unless otherwise specified. A simple test can be performed to determine which type of output driver is needed. When the output type is specified correctly, installation will go smoothly. If the incorrect output type is used, the system will not function correctly. Changing the output driver configuration requires the customer to return the interface for modification. An additional fee will be charged for this service.

An example of a current sourcing driver and a current sinking device:

| CURRENT SOURCING DRIVER

(DMX TO ANALOG INTERFACE) | DIRECTION OF CURRENT FLOW → | CURRENT SINKING DEVICE

(DIMMER/BALLAST/FIXTURE) |
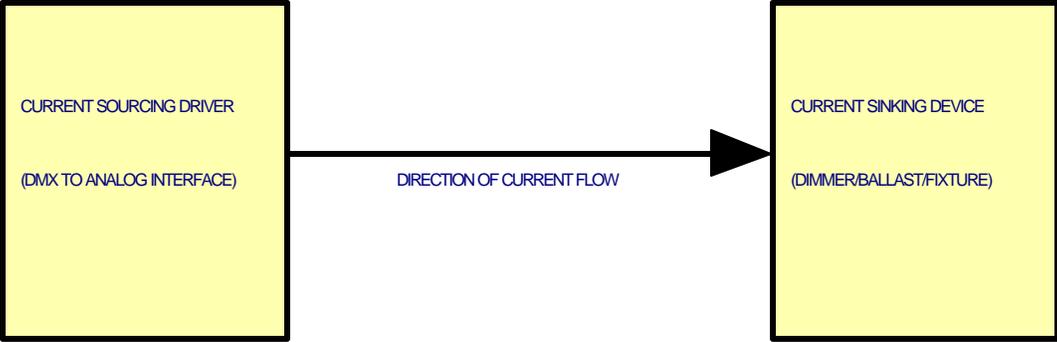
An example of a current sinking driver and a current sourcing device:

| CURRENT SINKING DRIVER

(DMX TO ANALOG INTERFACE) | ← DIRECTION OF CURRENT FLOW | CURRENT SOURCING DEVICE

(DIMMER/BALLAST/FIXTURE) |