

## 0-10v Dimming Explained

0–10v dimming is one of the first and simplest electronic lighting control systems. The control signal is a DC voltage that varies between zero and ten volts. Zero volts being the minimum dimming level and ten volts being maximum dimming level.

**Because it is so simple there is virtually no dimmer compatibility issues between drivers using 0-10v dimming and 0-10v dimmers or dimming systems, not like you might find with Phase cut (MLV/ELV) dimming.**

There are two recognized standards with 0-10v dimming, *current sourcing*, and *current sinking*. Current Sourcing is when the controller sends voltage the driver. Current sinking is when the driver supplies the voltage to the dimmer or controller.

When installing 0-10v wiring, it is recommended to limit the distance between the dimmer and the driver. It is also critical to ensure separating 0-10v wire runs from line voltage wire runs.

The separation is critical because higher-voltage wiring can induce alternating current voltage into lower-voltage signal wiring, causing the lighting to produce undesirable effects and safety issues.

0-10v wire running parallel to power cables for a fair distance would need to be shielded. This is particularly difficult when control wires must be run inside closed and previously wired walls.

0-10v wires or terminals can be identified buy their colors. Positive is violet (purple) and gray is negative. There is a mandatory color change effective the beginning of 2022. NEMA Bulletin No. 119 states the following quote from page 2 of the bulletin.

“Division formed a Joint Section Committee with a goal of deciding on a replacement color for the gray control conductor now typically used. A decision was made that pink is an acceptable color for this conductor”.

In addition, it states:

“To assist in compliance with the new requirement, section 410.69 allows permanent re-identification of gray-colored control conductors where they are visible and accessible. Marking tape, painting, or other effective means are permitted.”