

Common Neutral Interaction

Overview

Common neutral interaction is interaction or “cross talk” between at least two dimmers that share the same neutral wire. When solid-state dimmers are operating, voltage spikes occur and are transmitted onto the neutral wire. Normally this is of little concern, except when the neutral wire is common to two or more phases of a 120V/208V, 3-phase, 4-wire system. Under this condition, the voltage spikes may feed back to the dimmers via the common neutral wire, causing interaction between the dimmers.

Symptoms

- Lights flicker steadily at certain dimmer settings.
- Lights flash to “full” output at certain dimmer settings.
- Light level of a dimmer on one phase inadvertently changes when a dimmer on another phase is adjusted.

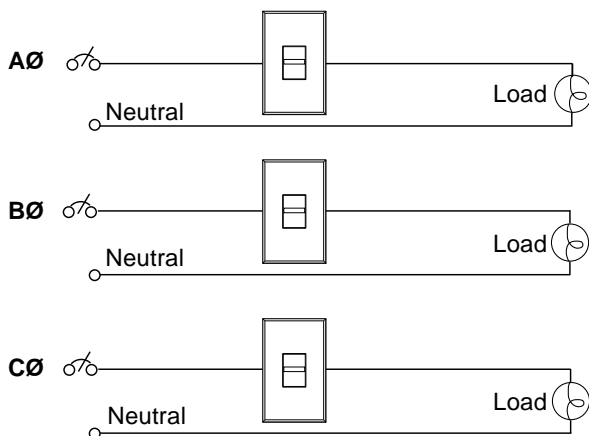
Recommendations

Lutron recommends the following methods to avoid common neutral interaction:

1. Separate neutrals
2. Filter chokes

1. Separate Neutrals

The best way to avoid common neutral interaction is to run a separate neutral wire for each phase of the 3-phase system (see below).

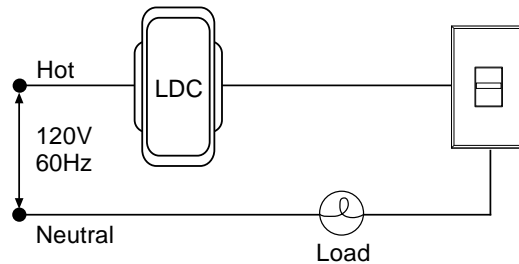


2. Filter Chokes

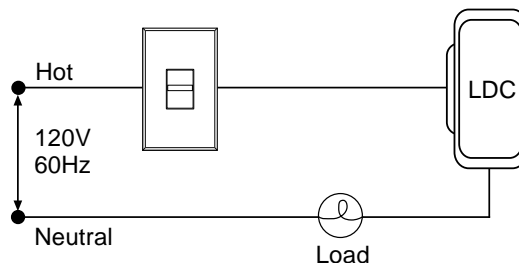
If it is not possible to run separate neutrals for each phase (e.g., an application with existing wiring), you can use filter chokes to “clean up” the voltage spikes creating the interaction. One filter choke is required for each dimmer. The filter choke makes an audible buzz, so care should be taken to mount it in an area where the noise will not be objectionable.

Filter chokes can be wired in series on either the line side or the load side of the dimmer (as shown below).

Line Side Installation



Load Side Installation



The following filter chokes are available from Lutron:

Model	Rated Capacity
LDC-10-TCP	600-1200W
LDC-16-TCP	1200-1920W

Note: For more information on Lutron filter chokes, see our Lamp Debuzzing Coil specification sheet, P/N 360-212.

Worldwide Technical and Sales Assistance

If you need assistance call the toll-free **Lutron Technical Assistance Hotline**. Please provide exact model number when calling.

(800) 523-9466 (U.S.A., Canada, and the Caribbean)
Other countries call (610) 282-3800

Our address on the Web is <http://www.lutron.com>

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