

WP003 - Why you can't mix LED drivers on an individual dimmer channel

At a system level, consideration must be given to mixing different LED chipsets on an individual dimmer channel. Generic dimmable mains LED drivers (typically based on flyback or quasi-resonant topologies) require the activation of a "bleeder" resistor around AC zero crossing to ensure the dimmer stays latched and does not misfire.

Indice's dimmable mains LED driver (INDICE0101) does not use a bleed resistor; instead it provides the necessary latching current through its innovative power control algorithm. Dimmable LED drivers that use bleeder circuits should not be mixed with Indice dimmable LED drivers as it can cause flicker on the entire system.

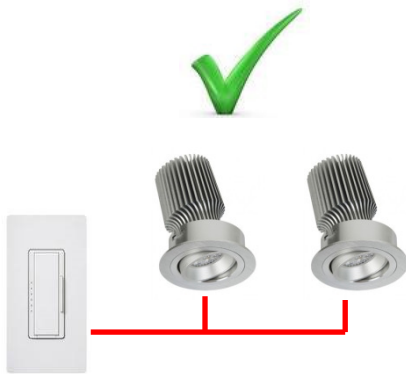


Figure 1: Only Indice LED driver enabled products



Figure 2: Mixed LED driver products

Triac (Leading edge) dimming

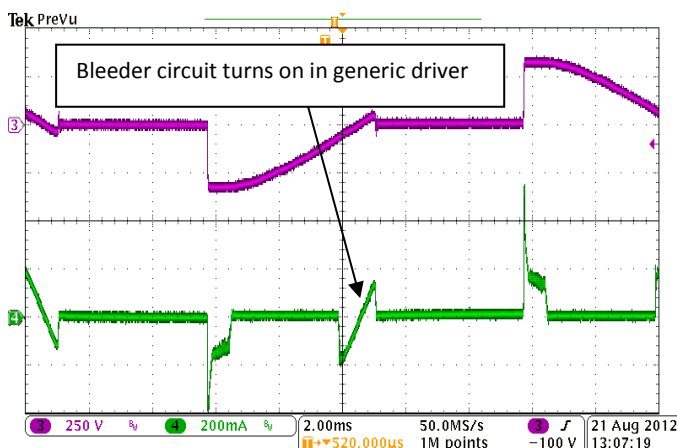


Figure 3: Generic LED driver with bleeder circuit

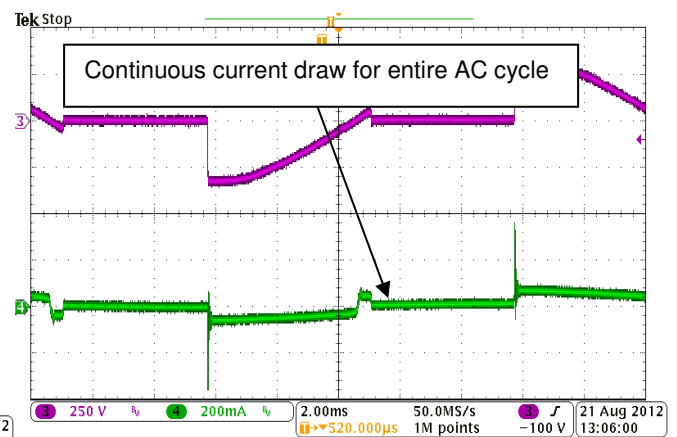


Figure 4: Indice LED driver, continuous current

Figures 3 and 4 show some key differences in the way Indice's LED driver works compared to generic solutions on a triac dimmer. When Indice's LED driver is connected to the same dimming system, the generic LED driver bleed circuit does not know when it should turn on and starts to switch rapidly causing the dimmer to flicker.

Electronic (Trailing edge) dimming

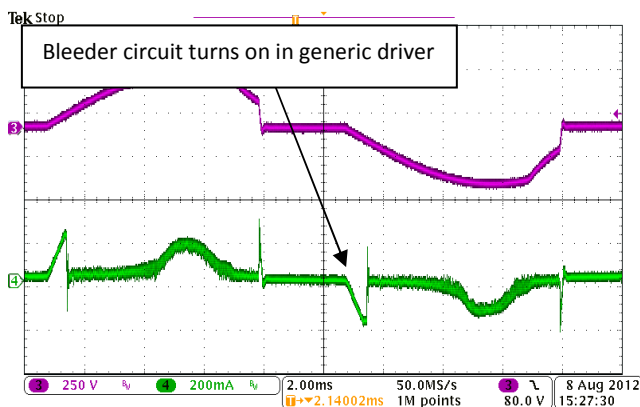


Figure 5: Generic LED driver with bleeder circuit

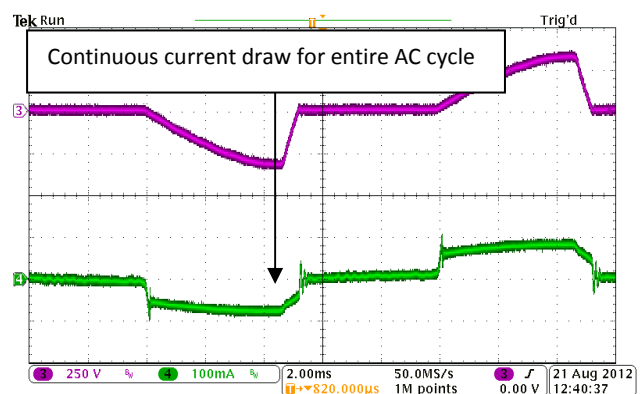


Figure 6: Indice LED driver, continuous current

Figures 5 and 6 show some key differences in the way Indice's LED driver works compared to generic solutions on an electronic dimmer. Very similar to a triac dimmer, the Indice LED driver presents a continuous current draw for the entire AC cycle ensuring the dimmer has its minimum power draw met.

If connected to the same system, the generic LED driver bleed circuit does not know when it should turn on and starts to switch rapidly causing the dimmer to flicker.

Conclusion

Indice strongly recommends against mixing Indice LED drivers with generic LED drivers on an individual dimmer channel to ensure any generic LED driver bleeder circuits do not get confused and cause the dimmer to flicker.