Technical Article

Leviton Product Solutions and High Inrush LEDs

Product: EZ-MAX Plus, GreenMAX, Power Packs, and Occupancy Sensors **Article ID:** 11272012-BC/TB-01

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Summary: This article identifies concerns raised by high inrush loads attributed to newly-manufactured LED lights, and how Leviton product solutions address and mitigate these issues through superior relay technology.

Information:

Switching LED Lamps

The lamp inrush on switching LEDs has become a large area of concern in the lighting industry. Many lower-end relay systems in the lighting controls industry were designed purely for low inrush incandescent lighting without the consideration of emerging high inrush LED technology. The extremely high inrush on LEDs can cause these products to fail. Unlike lower-quality products, Leviton commercial relay systems (EZ-MAX Plus, GreenMAX), power packs, and occupancy sensors were designed to handle high-inrush capacitive LED drivers. As a result, our products are keeping pace with the rapid trend toward LED lighting while others fall short.

Leviton GreenMAX relays utilize mechanical latching relays, which are extremely robust compared to lower-quality, inexpensive versions and competitor imitations. Lower-quality products use electrically held relays, which are more prone to failure, especially when presented with LED high inrush challenges.

Dimming LED Lamps

On dimming LEDs the self-contained LED lamp inrush can reach up to two times RMS current at some points in the dimming curve, even though power and voltage drop as you dim. Common industry standards including UL, NEMA and NEC are all discussing the requirement for LED lamps to publish maximum current in addition to maximum wattage.

In the meantime, it is important to note that not all LEDs are manufactured or operate in the same way. This makes it important to consider what LEDs are being installed and communicating with the contractor to know the LED plans upfront for system design. Systems should be designed for 50% circuit capacity for dimmable LEDs.

Electrical vs. Latching Relays

In both Switching and Dimming LED lamps, initial high inrush current will remain an issue to consider in system planning. Leviton Solutions feature Mechanically Latching Relays, a technology significantly better suited for future LED incorporation.

Electrical Relays found in lower-quality and competitor products feature a traditional spring-coil operation mechanism. The relay must constantly be drawing power, which adds up to large amounts of phantom power consumption, generates a high amount of excess heat, and produces loud humming and buzzing noises. In addition, springs weaken over time, leading to eventual failures. During the duration of the high inrush, the spring mechanism may not be able to overcome the stronger magnetic fields created by the inrush. This may prevent the relay contacts from opening.

Leviton Latching Mechanical Relays have no springs, and do not need to be energized except when initially transitioning between Normally Open and Normally Closed states. This

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eliminates energy waste, heating concerns and noise. Our GreenMAX relay contacts are rated for 60 amps, which are more robust than traditional industry standards and can easily handle the high inrush currents presented with LEDs.

Contact: If you have any questions or concerns, please call LES technical support at (800) 959-6004.

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