



LED Power Supplies:

Since LEDs are intended to be efficient as well as long-lasting, it makes sense that the power supplies used to light them should also be efficient and long-lasting.

Properly regulated power supplies, whether switching or linear, magnetic or electronic, manage their output and protect the connected products. Regulation caps output voltage or current regardless of the load on the power supply. With an unregulated power supply, the rated voltage is delivered only at the rated load (wattage) of the supply.

For example, if a lighting product expecting 12 volts is powered by a regulated 12-volt power supply, the load can range from 0 to the maximum wattage of the supply and the output will not be higher than 12 volts (within a tolerance). With a similar unregulated unit, a 30-watt load on a 60-watt transformer may show an operating voltage of 14, 16 or 18 volts. This may lead to damage, either short or long-term, to either the lighting product or power supply, or both.

In some applications, this may not matter or can actually be useful (landscape lighting with long wire runs). But with products expecting specific voltage and current ranges, these may lead to premature product failure. Check the specification of the lighting product, or simply be safe by using regulated supplies.

The term “transformer”, by typical use in the lighting industry, refers to a power supply that delivers a specific voltage. Transformers are used where lighting components include their own components to manage current (amperage). LEDs rely on proper current for operation, not voltage.

The term “driver”, by typical use in the lighting industry, refers to a power supply that delivers a specific current (amperage) instead of a specific voltage. Drivers are used where the lighting components do not already include their own components to manage current.

“Switching” power supplies allow for a variety of input voltages and adjust internally to provide the rated output. Therefore, they are not designed to be dimmed on the line (primary) side. Supplies marked “constant voltage” or “constant current” typically act in the same fashion.

“Linear” power supplies generate an output proportional to their input. When the line (primary) side is dimmed, the output decreases similarly.

Regulated power supplies protect LED products from being overpowered, which can lead to shortened useful life, less efficiency and, sometimes, catastrophic failure.