



Dimmer selection guide.

Guide to Dimming LEDs

Overview

This Guide to Dimming LEDs answers typical questions encountered by Magtech Industries concerning LEDs dimmable applications.

In response to the need to dim LED light-engines, and after an extensive engineering research and development program Magtech has developed a number of different dimmers including: constant voltage output, constant current and constant power.

Facts about LED Lighting

Why Use LED Lighting?

- LED lighting provides an excellent source of illumination, long life, safe and energy efficient.
- The LED Low-voltages contribute to extended LED life and increased safety.
- Small fixture sizes and low heat.
- Common applications include residences, display lighting, task lighting, and product highlighting.

What Is LED Lighting?

LED lighting uses a driver to reduce the 120VAC line voltage to a low-voltage signal, usually 3VDC to 36VDC with or without constant current drive. This lower voltage is then used to power the LED.

Where Is the Driver Located?

Depending upon the fixture style, a driver may be mounted remotely or as an integral part of the fixture.

Does Dimming Affect LED?

Dimming will not affect the already long life expectancy of the LED; it may actually increase life expectancy due to heat reduction on the LED. Small color shifting may occur rarely.

Different Way of Dimming

Magtech products are using a number of different ways of dimming.

- PWM dimming – probably the most common way of dimming. This system is good only for constant voltage LED devices (LED with series resistor), It will not work with LED devices that have internal drivers. Mostly used in signage market.
- Constant Current Dimming - most effective way of dimming. This system is good for all LEDs engines. This system is changing the current going thru the LED therefore changing the light output, it may cause some color shifting with old LEDs.
- Constant Power Dimming – This system is used in AC controlled dimming. This way is controlling the power the LED will receive, effect is similar the constant current. Very good for retrofit ad residential applications.

Different Dimmer Controllers

Magtech products are using a number of different ways of controlling dimming. There are two main techniques:

- AC dimming – this system is using a wall dimmer (recommended trailing edge) to change the AC power coming from the power company , the result is chopped wave with less energy than the original AC signal. This system is very easy to use and does not need any additional wiring, making it perfect for retrofit and residential use.
- 0 – 10V dimming – this system can use a number of devices to control the dimmer. This system need additional low voltage wiring but is much more accurate them AC dimming.
 - 0 – 10V controller: This will use an active controller that can output 0 to 10V usually using a computerize control.
 - 0 – 10V wall dimmer: This will use a current sinking wall dimmer (passive) that can take a low voltage control input of 0 – 10V and sink a minimum of 5mA. This is good for in room applications.
 - Potentiometer: This will use a 2 terminal or 3 terminal potentiometer (normally 2Kohm), this is a very low cost solution for all applications.

Available Devices from Magtech

Magtech offers a wide range of devices for all type and size off dimming:

- LP1090 or LP1060-DIM: is a constant voltage dimmer using PWM, the control can be done by 0-10V controller or 0 – 10V wall dimmer or a potentiometer. This product is very good for signage.
- CC3512: is a constant current dimmer, the control can be done by 0-10V controller or 0 – 10V wall dimmer or a potentiometer. This product is very good high power LEDs.
- B12-DIM, LP1017-DIM,LP1020-DIM, LP1025-DIM: these are constant power and constant current dimmer, the control can be done by a **“electronic low-voltage dimmers”**. This product is very good for high power LEDs. Please see *“Anz152 - AC Dimming”* for more information.