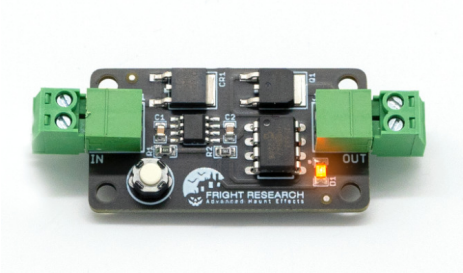
FRIGHT RESEARCH
Advanced Haunt Effects

Pro Flicker Multi-Function LED Controller
Halloween Effects Suite



Overview

The Halloween version of the Pro Flicker LED controller contains a set of specialized patterns that are tailored for Halloween displays, haunted houses, light fixtures, signs, and props.

This Pro Flicker LED controller with its 32MHz onboard processor and 5kHz PWM output along with its advanced pattern generation, that includes artificial intelligence (AI) based prediction algorithms, creates extremely realistic candle, flame, and other effects. Software based low pass filtering is also employed to provide smooth and organic modulation without the sharp transitions and flickering common with inexpensive and inferior flicker controllers. With a high frequency 5kHz PWM output, there is none of the annoying "flickering" that is often visible with inexpensive LED dimmers and other controllers.

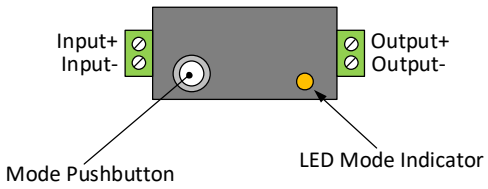
A single pushbutton allows the user to cycle through a wide array of output patterns with varying intensities, modulation, and flickering. Internal memory allows the device to resume the previously selected output mode in the event power is loss to the device. This is also useful for permanent installations where a single operating mode is required continuously even when power is cycled.

The Pro Flicker LED controller can be used with LEDs, low voltage incandescent, and halogen bulbs.

Features

- Artificial Intelligence (AI) Forward Prediction
- True non-repeating random algorithms
- 30 modes of operation
- For use with LEDs (dimmable types)
- Incandescent and halogen lights
- Single button operation
- Onboard LED mirrors the output mode
- Memory saves mode during power loss
- Operating Voltage: 7VDC to 24VDC
- Max. Load Current: 3A (TBC)
- Reverse Voltage Protection
- Flange mount for easy installation
- Removable terminal blocks

Connection Diagram



Operation

Using the Pro Flicker LED controller is extremely simple. Simply connect the light source to the output terminals as shown in the previous diagram and use the pushbutton to cycle through the various modes. Each press of the pushbutton will advance the operational mode by one. After all modes have been cycled through, the unit will enter OFF mode. In this mode, the output to the LED driver is disabled.

If the event you do not have an external light connected, there is an onboard LED which will illuminate and reflect the specific mode that is chosen.

Onboard LED Status

There is an onboard amber LED that mirrors the output modulation. This is useful for setting the mode without having an output connected, or if the output light is located in an area that is separate from where the controller is located.

OFF Mode Considerations for Battery Powered Controllers

When the unit is in OFF mode, the output driver is disabled, however, the microprocessor inside is still in a quiescent state which is consuming a minute amount of power. If you are using a battery source, it is recommended to use an external switch to disconnect power from the controller when not in use.

Discrete LEDs and Current Limiting Resistors

The output driver of the Pro Flicker controller is not current regulated, therefore if you plan on using discrete LEDs, you will need to use the proper current limiting resistors with the LEDs. Current limiting resistors should be utilized to ensure the maximum continuous current is not exceeded per the LED's datasheet.

Please note, that LED bulbs and other commercially packaged LEDs that are labeled for 12V or 24V use, generally already have the proper current limiting resistors installed.

Output Current Capability

The output driver stage of the Pro Flicker LED controller uses a high power, ultra-efficient N-channel switching MOSFET utilizing advanced Pulse Width Modulation (PWM) technology at a frequency of 5kHz to reduce the "flickering" annoyingly present with low frequency LED drivers.

The maximum output current of the Pro Flicker LED controller is 3A. (TBC)

Halloween Suite Modes

The following list are all the available modes included with the Pro Flicker LED controller for the Halloween Suite.

Note, there are additional OFF modes between sections to assist in the finding and selection of a particular mode.

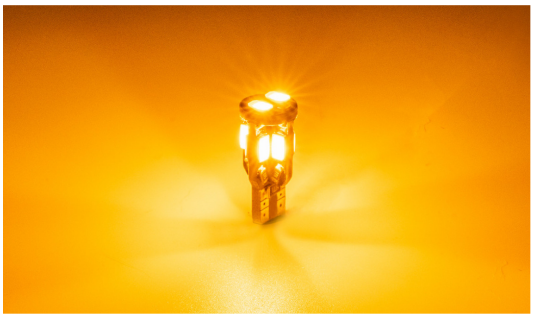
Mode	Description	Brightness
OFF	**Output OFF**	
1	Steady Output	100%
2	Steady Output	75%
3	Steady Output	50%
4	Steady Output	25%
5	Steady Output	10%
6	Slow burning ember	
7	Burning Torch	
8	Windy flame	
9	Candle flame	
10	Raging torch	
11	Turn signal flash	
12	Strobe light – slow	
13	Strobe light – medium	
14	Strobe light – fast	
15	Strobe light – stroboscopic	
OFF	**Output OFF**	
16	UFO Pulsating Light	
17	Pulsating ramp – slow	
18	Pulsating ramp – medium	
19	Pulsating ramp – fast	
20	Pulsating ramp – very fast	
21	Neon light – fast flicker	
22	Neon light – fast flicker with extended ON defect	
23	Neon light – fast flicker with igniter defect (extended OFF)	
OFF	**Output OFF**	
24	Electrical flicker – subtle	
25	Electrical surge – subtle	
26	Electrical surge – major defect	
27	Distant thunderstorm	
28	Thunderstorm overhead	
29	Intense thunderstorm	

Note: As we are continually striving to improve our products, the included modes listed above may be changed and updated at any time without notice and/or inclusion in this datasheet.

Types of LEDs that cannot be used

There are some LEDs and spotlights that include their own regulation and/or filter circuitry inside them. These LEDs will not be able to work with these flicker controllers as the internal regulator circuitry will filter out the high frequency modulation of the flicker controller and prevent it from changing the brightness of the LED. Generally, if the LED or spotlight is relatively expensive, it most likely will have internal regulation circuitry.

Additional Products from Eastern Voltage Research



High Brightness Candle Flame LED

These high brightness Candle Flame LEDs were custom designed to provide the most realistic candle and flame color available. They were specifically designed for use with the Pro Line Flicker controllers. The LEDs were designed with a color temperature of 1900K to match that of a true candle flame.

- Color: Yellow-Orange (1900K)
- Brightness: 300 Lumens @ 12VDC
- Input Voltage: 7-12VDC
- Input Current: 175mA @ 12VDC
- Socket type: Compatible with 194 / 168 bulbs
- Wire can also be soldered directly to the bulb

Visit the website below for purchasing these candle flame LEDs as well as additional information.

www.EasternVoltageResearch.com

Mode Descriptions / Applications

The following paragraphs detail the operating modes of the Pro Flicker Halloween suite and how they can be used in your specific application.

Steady Output

Steady output is when the connected light is continuously ON with no pattern generation. There are a number of brightness levels from 10% to 100% all controlled through high frequency PWM modulation. The Pro Flicker PWM outputs operate at an output frequency of 5kHz so there is no perceptible "flicker" visible as one might see with 60Hz fluorescent lights or low quality LED light dimmers.

Candle and Flame Modes

The Halloween suite includes five (5) special candle and flame modes. Use these modes when you wish to simulate a small burning candle, a smoldering firepit, an old oil burning lantern, or a raging fireplace.

Strobe Light

Strobe light modes are when the output light is rapidly turned ON and then turned OFF. There are five (5) different strobe modes with flash rates varying from slow to very fast. The fastest mode can be used as a stroboscope to freeze motion.

Pulsating Ramp

The pulsating ramp modes are when the output light will start completely OFF and smoothly ramp up to maximum brightness and then back in reverse to completely OFF. There are five (5) pulsating ramp modes of varying speeds.

Neon Light

The neon light modes work best when used with LED neon signs. These modes simulate common neon flickering and defects that would typically be encountered in traditional high voltage neon light tubes. The extended ON defect is an electrical surge defect where the neon light periodically become very bright while the extended OFF defect simulates a faulty igniter circuit and the neon light periodically turns OFF.

Electrical Glitch / Flicker

Electrical glitch modes simulate a faulty electrical or wiring system and/or light. These work best for simulated fluorescent light tubes, but can be used for any type of lighting. Electrical flicker is when there is a sudden drop-out of electric and the light will dim periodically, while an electrical surge is when the light periodically gets brighter.

Thunderstorm

There are three (3) modes that simulate the lightning flashes of a thunderstorm. These are useful if you want to use LED strobe lights to simulate lightning flashes against your home or other haunted house, or to use behind shaded windows in an indoor environment to simulate an outside thunderstorm. Each of the three (3) modes is of varying intensity from a far away approaching thunderstorm to a high intensity thunderstorm.

Custom Pattern Programming

Even though the number of operating modes in the Pro Flicker controller is quite impressive, customers sometimes do have a unique light pattern that they need for a specific application. We do offer custom pattern programming for the Pro Flicker controllers.

Other Program Suites

The Pro Flicker controller is also available in the following suites.

- Candle and Flame Suite
- Electrical Glitch Suite
- Neon Light Suite
- Halloween Suite