Overview

The Spooky Eyes 1.0 is a lighting effects generator that controls the outputs of eight (8) LED channels which can be placed in a haunted scene, haunted house, or dark attraction. When a pair of LEDs is used with each output channel, this will give the appearance of eight creepy creatures lurking in the darkness. Each LED output channel will randomly blink in a variety of different ways providing a fantastic looking display for any dark scene. The speed, delay, and brightness of the LEDs can all be custom programmed by the user through the use of two onboard potentiometers.

As well as creating spooky eye animations, the controller can operate in two additional modes. These modes include sequencer and a random flash mode called 'sparkle' mode. 'Sparkle" mode is perfect for controlling indicator lights on custom control panels for props or simulating photo flashes in a crowd. As with the spooky eye modes, brightness, speed, and delay can all be custom programmed by the user.

Features

- 5 modes of operation
- 8-channels output
- Output current per channel : 250mA
- Operating voltage: 9VDC to 14VDC
- Reverse voltage protection
- Pushbutton mode control
- Brightness and rate (speed) controls
- Internal memory remembers last mode
- True non-repeating random algorithms
- Flange mount for easy installation
- Removable terminal blocks

Operation

Using the Spooky Eyes 1.0 controller is easy. Simply connect your LEDs to the controller as shown in the example diagram, connect the controller to a 12VDC source, and you are ready to go. The following paragraphs describe the various user controls.

Onboard LED Status

The onboard LED provides ON/OFF status. When the LED is red, the unit is powered on but in the OFF mode. When the LED is green, the unit is powered and operating normally.

Mode Pushbutton

Pressing the mode button cycles through each of the five (5) output modes. When power is removed, the internal memory of the controller remembers the last mode activated and restarts in that mode.

Brightness Control

The brightness adjustment knob controls the brightness of the output LEDs. Each of the eight (8) channels is controlled through Pulse Width Modulation (PWM) for efficient, high frequency dimming.

Rate Control

The rate adjustment knob controls the overall rate and speed of each mode.

OFF Mode Considerations for Battery Powered Controllers

When the unit is in OFF mode, the output driver is disabled, however, the microprocessor inside is in a quiescent state which is consuming a very small 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.

Recommend LEDs

We recommend using the Spooky Eye LED Board kits that are available at Eastern Voltage Research. These LED board kits include eight (8) LED boards and come with 16 LEDs and 8 current limiting resistors. These are available as build-it yourself kits as well as fully assembled.

If you do wish to build your own LED eyes, then we recommend T-1 or T-1 ¾ sized LEDs that operate between 10mA and 30mA output current.

Output Current Drive

Each output channel is capable of sinking 250mA and is not current limited. Current limiting resistors are required for each output channel and we recommend a maximum operational output current of 60mA per channel for thermal considerations. If current limiting resistors are not used, both the LEDs connected to the Spooky Eyes 1.0 as well as the internal driver circuitry will be damaged.

Current Limiting Resistors

Current limiting resistors are included with the Spooky Eye board kits, however, if you wish to customize the drive current or use your own LEDs, you can determine the proper R1 resistor value using the following equations:

R1 = (Vsupply – (n x Vfwd)) / LEDcurrent (See note below)

R1 = resistor value in k ohms (multiple by 1000 to get ohms)
Vsupply = power supply voltage of Spooky Eyes 1.0
n = Number of LEDs in series (typically 2 for two eyes)
Vfwd = LED forward voltage (see LED datasheet)
LEDcurrent = desired current in mA

Operational Modes

The following list are all the available modes included with the Spooky Eyes 1.0 LED controller:

Mode	Description
1	Output OFF
2	Spooky Eye Mode
3	Single Eye Mode
4	Sequencer Mode
5	Sparkle / Paparazzi Mode

Mode Descriptions

The following paragraphs describe the operation of the four primary modes of operation.

Spooky Eye Mode

In this mode, each pair of LED eyes turns on randomly until all LED eyes are ON. Once all LED eyes are illuminated, eyes will randomly 'blink' in a variety of different ways. This will occur for anywhere between 1 to 4 minutes at which point, all LED eyes will slowly and randomly turn off. After a short delay, the process will repeat. The RATE adjust will control how fast the eyes wake up and blink.

Single Eye Mode

In single eye mode, LED eyes will 'wake up" randomly and one at a time. When on, they 'blink' and then turn off. The process repeats. There are a number of different 'blink' events and they are randomized each time an LED eye 'wakes up.' The RATE adjust will control how fast this mode operates.

Sequencer Mode

This is the classic LED sequencer mode. In this mode, LEDs are illuminated one at a time sequentially back and forth. The RATE adjust will control how fast the LEDs move back and forth.

Sparkle / Paparazzi Mode

This mode gives the output a sparkling or strobe effect. Each LED is randomly flashed ON and then OFF. This mode can be used to simulate camera flashes in a crowd, provide random blinks for a custom control panel prop, or used with wall mounted LEDs to disorient guests in a haunted attraction. The RATE adjust controls how fast the LEDs flash.

Recommended Products from Eastern Voltage Research

Spooky Eyes 1.0 LED Boards

We recommend using the Spooky Eye LED Board kits that are available at Eastern Voltage Research. These LED board kits include eight (8) LED boards and come with 16 LEDs and 8 current limiting resistors. These are available as build-it yourself kits as well as fully assembled.

Pro Flicker LED Controllers

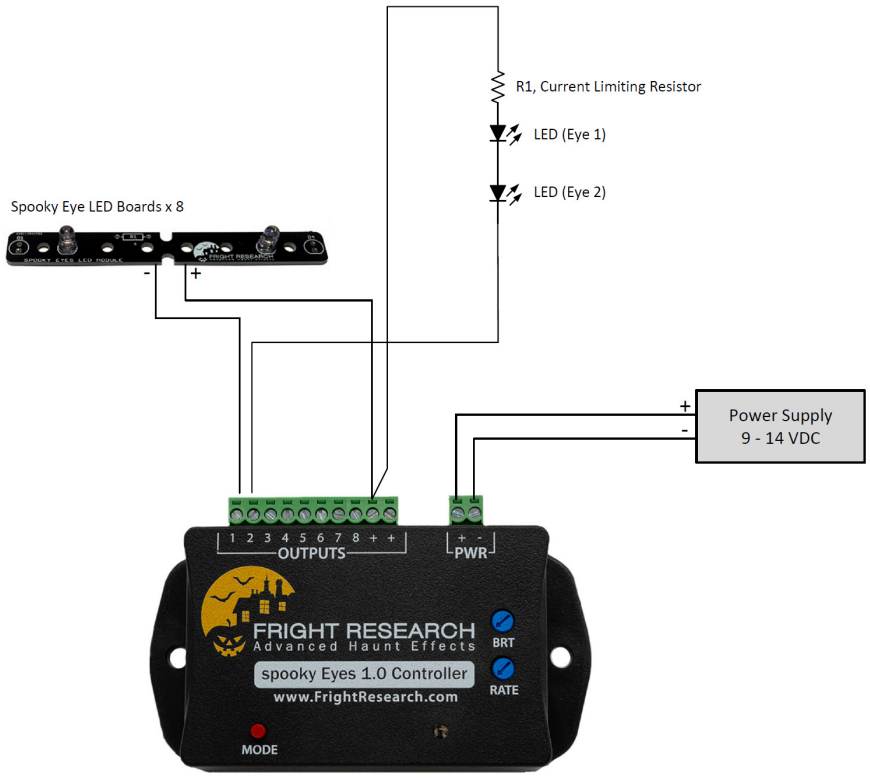
Our popular Pro Flicker line of LED controllers come in a variety of operational suites including Candle and Flame, Electrical Glitch, Neon Sign, and Halloween suites.

Visit the website below for purchasing the Spooky Eye 1.0 LED Boards and Pro Flicker LED controllers as well as other exciting products!

www.EasternVoltageResearch.com

Typical Set-up

Below is a wiring diagram of the typical application. Most customers will purchase either the assembled or kit version of our Spooky Eye LED Boards which include two (2) LEDs and the the proper current limiting resistor. You can also build your own LEDs as shown below using two (2) LEDs and a current limiting resistor.



Wiring / Installation Notes:

1. The positive "+" pad of the Spooky Eye LED boards connect to the "+" terminal on the Spooky Eyes 1.0 controller. For 8 channels, you would have four (4) wires each connecting to both "+" terminal block positions. The negative "-" pad of the Spooky Eye LED boards connect to the OUTPUT terminals, 1, 2, 3, 4, 5, 6, 7, and 8.

2. If building your own LEDs, make sure to use the proper current limiting resistor. The cathode side of the LED string would connect to the OUTPUT 1-8 terminal position and the anode side of the LED string would connect to the "+" terminal position.

3. Current limiting resistor example. A customer plans to use two (2) LEDs for their own monster eyes and is using a 12V power supply adapter. Each LED has a Vfwd of 2.0V (from datasheet) and maximum average current of 30mA. Since the maximum average current is 30mA, we want to operate at 20mA to operate the LEDs safely. So using the equation from the previous page:

   R1 = (Vsupply – (n x Vfwd)) / LEDcurrent

   0.4 kohms = (12V – (2 x 2.0V)) / 20mA

   Note: The resistance of R1 is given in kilo ohms, so 0.4k ohms would be a 400 ohm resistor. Since 400 ohm is not a standard resistance value, we choose a resistor with the closest value.