NLED OctoSequencer Controller

The NLED OctoSequencer is designed for those projects that require some dynamic LED control but require a very small form factor and/or low cost. This controller features 8 channels of individually controllable outputs, capable of up to 25mA each. Each output can be controlled by itself, and using the free software NLED Aurora Control, you can create LED sequences that are customized for your project. The single multi-use button allows easy control of the device's user functions, such as sequence up, power off, dimming, and power down timers. The large voltage range allows batteries or plug-in power supplies to be used. Designed for use in model cars, trains, and diorama, but that is a few of the many uses this controller could be utilized for.

Features:

- 8 Individually Controllable Channels, up to 25mA per channel
- Small Form Factor, 1.2" x 0.9" x 0.2"
- Single Multi-Use Button For User Interfacing, see Page 4.
- Wide Input Voltage Range 3v - 12v Compatibility. Regulated LED Voltage.
- Each Channel/LED's Current Is Individually Adjustable Using Resistors R1 - R8, See Page 4.
- User Selectable Automatic Power Off at 5, 10, & 15 Minutes.
- User Selectable Dimming Control, 100% or 50%
- Hardware and Firmware supports single color setups(ex. all blue), RGB, or RGB+W/U.V. configurations.
- NLED Aurora Control Software compatibility, connection via Mini USB
    Create and Upload(save) Custom Stand-Alone Color Sequences to the Controller From a Computer.
- Firmware Updatable/Upgradable Using A Serial Adapter and Free Software.
- Includes a Full 3 Year Warranty and Satisfaction Guarantee.
- Great for Model Cars, Trains, Traffic Signals, Dioramas,
        PC Case Mods , Fiber Optic Lighting, & More

Specification:

Input Voltage(V+)	3v - 12v
Logic Current Draw	< 30mA
Output	8 Channels
Output Regulation	Resistor*
Output Max Current	25mA
PWM Frequency	100Hz
Connector Spacing	0.1"
Main PCB Dimension	1.2" x 0.9" x 0.2"
Sequence Data Space	848 bytes(106 Frames)

*Each channel's current is controlled with a single resistor
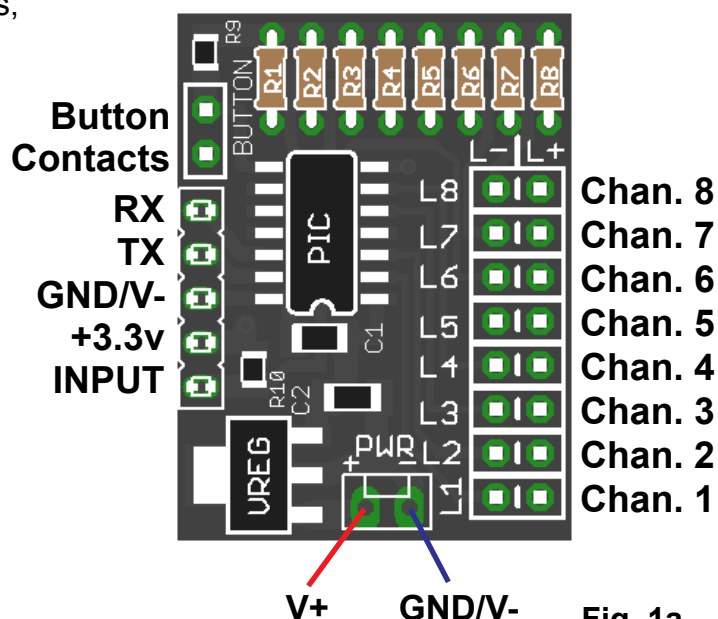   see Pg. 3 for details.

Button Contacts
RX
TX
GND/V-
+3.3v
INPUT

L8 — Chan. 8
L7 — Chan. 7
L6 — Chan. 6
L5 — Chan. 5
L4 — Chan. 4
L3 — Chan. 3
L2 — Chan. 2
L1 — Chan. 1

V+   GND/V-   Fig. 1a
See Pg. 2 For Detailed Layout Information

Pinout and Description

Fig. 2a

Button: A momentary, normally open, push button can be connected between button and GND/V-. Connecting Button to GND/V- triggers the controller functions.
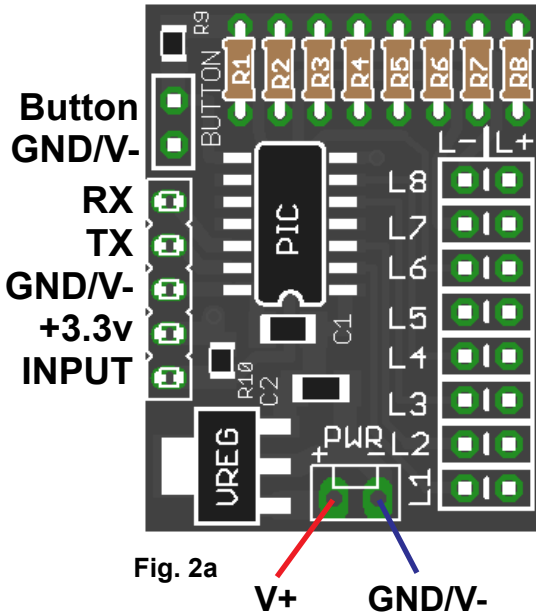
RX/TX: TTL Serial Input & Output. Used for interfacing with the software for uploading user sequences. Requires an adapter, such as a FTDI USB to Serial Adapter.

+3.3V: Regulated 3.3v from the source voltage.

INPUT: Not yet utilized.

V+: Connects to the source voltage of 3v to 12 volts.

GND/V-: Connects to power supply ground/V-

R1 - R8: Current limiting resistors for the LEDs. Each resistor's value is based on the color and required intensity. See Page 4 for details.

L1 - L8: LED Channels 1 - 8 connection pads.

L-: Connects to the LED cathode.

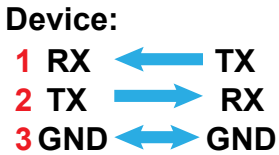**L+:** Connects to the LED anode.

RX-TX-GND Header Connection

Device:

1	RX	⟵ TX
2	TX	⟶ RX
3	GND	⟷ GND

Fig. 2b

Hookup and Wiring

Single Color LED Usage

USB Serial Adapter

Optional For Software Interfacing

Fig. 2c
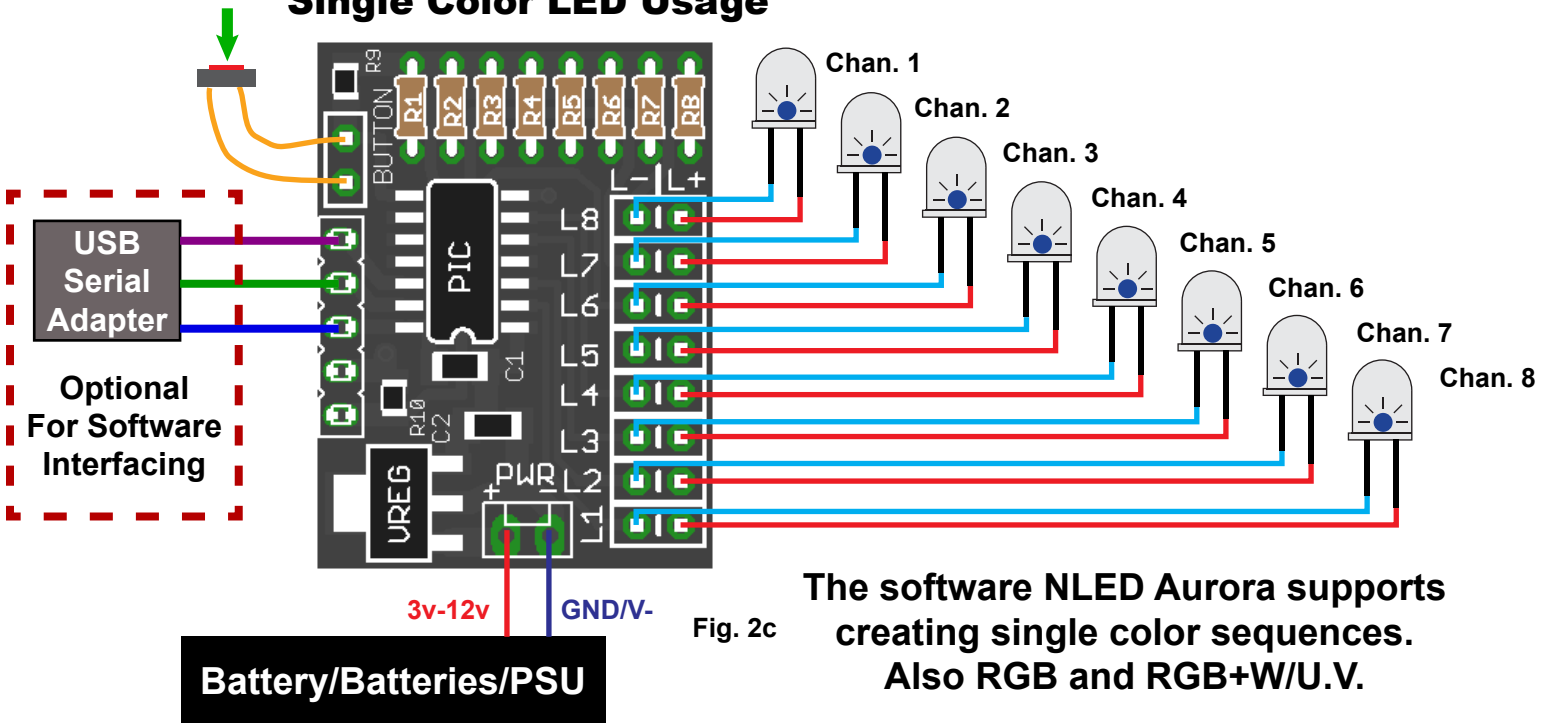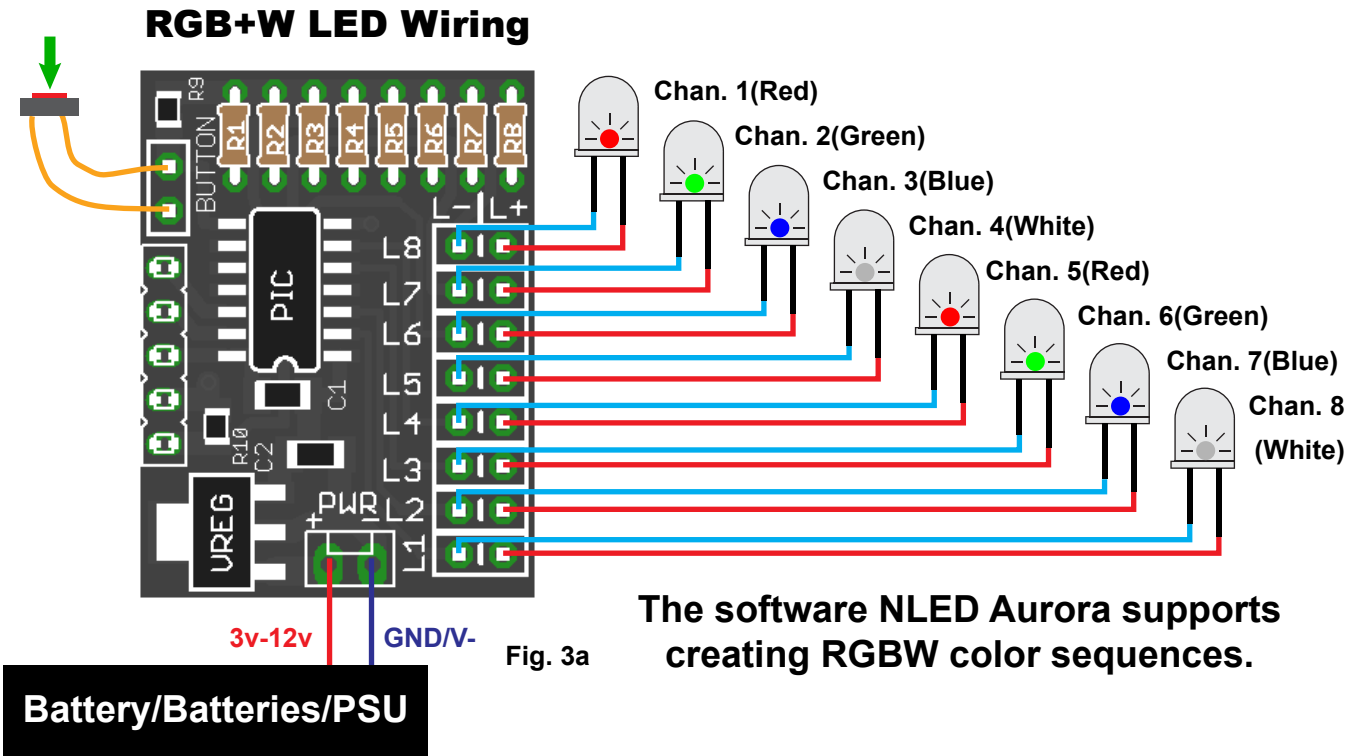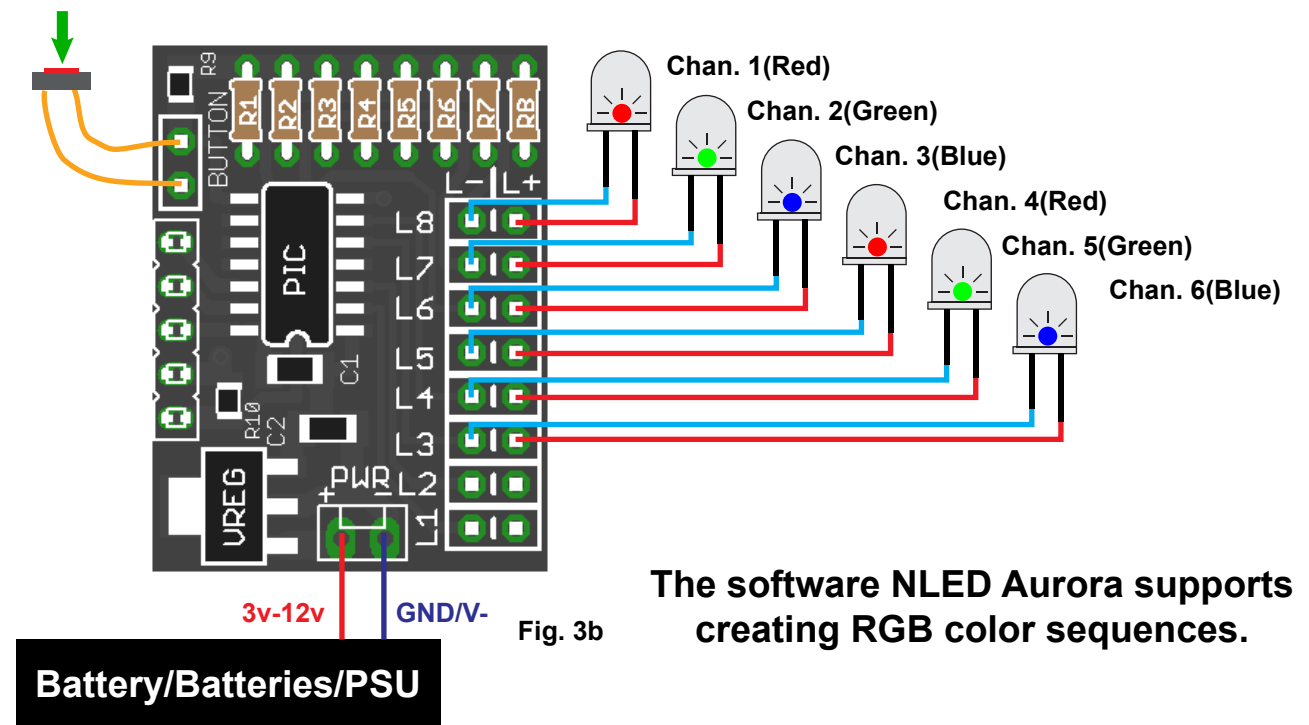
3v-12v   **GND/V-**

Battery/Batteries/PSU

The software NLED Aurora supports creating single color sequences. Also RGB and RGB+W/U.V.

Hookup and Wiring(Cont.)

RGB+W LED Wiring

Chan. 1(Red)
Chan. 2(Green)
Chan. 3(Blue)
Chan. 4(White)
Chan. 5(Red)
Chan. 6(Green)
Chan. 7(Blue)
Chan. 8
(White)

3v-12v   GND/V-   Fig. 3a

Battery/Batteries/PSU

The software NLED Aurora supports creating RGBW color sequences.

RGB LED Wiring(Common Anode or Cathode not Supported)

Chan. 1(Red)
Chan. 2(Green)
Chan. 3(Blue)
Chan. 4(Red)
Chan. 5(Green)
Chan. 6(Blue)

3v-12v   GND/V-   Fig. 3b

Battery/Batteries/PSU

The software NLED Aurora supports creating RGB color sequences.

Current Regulation - Resistors

Each LED channel has a single 1/6w(1.90mm x 3.40mm) leaded resistor that controls the current for that particular channel/LED. Every color of LED runs at a different voltage and has a different intensities(brightness). Having a resistor for each channel/LED allows different colors of LEDs to be controlled and allows the user to select the intensity of each channel/LED. Selecting the correct resistor values will allow the various colors to be mixed-and-matched and still appear to be the same intensity(brightness).

	Max Intensity*		Max Intensity*
Red	68Ω	Purple	5.6Ω
Green	62Ω	Turquoise	5.6Ω
Blue	1Ω	Cyan	5.6Ω
White	1Ω	Magenta	56Ω
Yellow	62Ω	Ultra-Violet	1Ω
Orange	56Ω		
Pink	5.6Ω		

NLED Aurora Control Software

Most NLED Controllers are compatible with the NLED Control software. The software is used to create a multitude of patterns and sequences on a computer then, upload them to the compatible controller for the device to run by itself, without a computer connection. The simple GUI makes it easy for anyone to create custom color sequences of any sort and upload them to the controller over the USB connection. Great for any LED project that requires custom color sequences. In addition to standalone sequences, it also supports USB Live Control, send packets over USB to the device for direct control of the outputs. It supports single color, RGB, or RGBW LED configurations. Entirely GUI based and easily to navigated.

This controller supports Fades, Instants, and Linked sequences. Linked sequences allow a user to create 2 or more sequences, and arrange to have them play one after the other, after running a user selectable amount of times.

Software usage requires a TTL serial adapter, such as an FTDI USB to serial adapater in order to interface with this controller. Please see Page 2, figures 2b and 2c for details on connecting the adapter to the controller.

Visit www.NLEDshop.com/nledaurora to download and to find more information.

Button Usage

The controller has a single mult-use button. Pressing and holding down allows the user to access the 8 states. While the button is held down, the LED channels will indicate the state of the button press by lighting the LEDs up to the state number.

1: Changes Sequence Up   **5: Disables Power Down Time Out**
2: Changes Sequence Up   **6: Sets Power Down Time Out to 5 Minutes**
3: Turns off the LEDs   **7: Sets Power Down Time Out to 10 Minutes**
4: Toggles Dim Mode   **8: Sets Power Down Time Out to 15 Minutes**

Firmware Updates Using The Bootloader

This device includes a bootloader feature. It allows the firmware on the device to be upgraded with new features and bug fixes using an USB cable and a small computer program. The bootloader entry method is: with the device powered off, while holding down the button, power up the device. Wait a second or two. The device's LED channel 1 should be blinking if it entered bootloader mode and will stay steady on if in bootloader mode and successfully communicating with the host computer. When the software is started, you must follow the included instructions to select the correct COM port and to start the connection.

After the device is connected, please follow the instructions found at www.NLEDshop.com/bootloader. That is also where the software download links can be found. Please note that this device requires the basic or serial bootloader type, not the H.I.D. version. And bootloader updates require a TTL serial adapter, such as a FTDI USB to serial adapter.

Device Dimensions
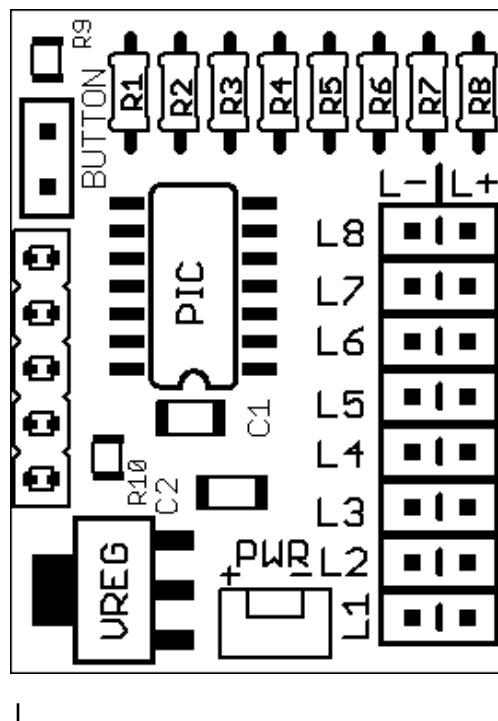
PCB Height: 1.2" (30.5mm)

PCB Width: 0.9" (23mm)

Fig. 5a

Have Any Ideas For Future Updates?

Northern Lights Electronic Design, LLC is constantly looking to make our products better and improve upon our designs. If you have any ideas for future products, updates to current products, or features that you would find useful, please Contact Us at Sales@NLEDshop.com. There is a good chance your ideas could be utilized, you could also receive coupons or free items for your feedback.