

RGB LED Controller and DMX Decoder Plus RF Remote Control
12-Channels, 12 or 24 VDC
Part No. RGB-DMX-12



The [RGB LED Controller and DMX Decoder](#) is an easy, versatile, and cost effective way to control your RGB LED strips. With twelve channels on the controller, you can control up to four 4-wire Red-Green-Blue 12 or 24 volt DC LED strips at a time. The controller does all the hard work of synchronizing the RGB colors on all four strips, so you don't have to.

Simply apply the correct DC voltage to the input of the controller and the controller will generate synchronized pulse dimming signals on twelve separate output channels (red, green and blue for each strip). Output is 12 or 24 VDC, matching the driver you use. Pre-programmed with 33 modes, the RGB LED Controller is ready to use.

The RGB LED Controller and DMX Decoder has adjustable dimming and speed functions; up to 256 levels for each. Brightness can be adjusted on any static or dimming mode, and speed can be adjusted on any dynamic mode. The RF remote control has a range of over 100 feet and works through walls.

A built in LCD screen shows the current mode, so you always know which mode you are in. In addition to the 33 pre-programmed modes, the controller has 4 DMX modes. In the DMX control mode the controller can be connected to an Easy Stand Alone device or any DMX console, and

used as a DMX decoder. The RGB LED Controller and DMX Decoder has a XLR3 male or female interface for DMX compatibility, as show below on the left.



XLR3 male and female ports



12-channel output and power ports

Two mounting brackets are also included for securing your device. The two options for mounting your device are shown below:



Opposite corner mounts on base



Opposite corner mounts on top portion

Extend your installation almost without limits using amplifiers, also called “boosters” or “repeaters.” Amplifiers require their own power supplies (drivers.) They work with 12 or 24 volt drivers. With these amplifiers as building blocks, you can build an installation that is very large. Refer to the diagrams at the end and contact us if you are unsure how to engineer the system.

Specifications

Controller Dimensions:	7.60" x 4.75" x 1.25" 193 mm x 121 mm x 32 mm
Remote Dimensions:	3.12" x 1.57" x 0.30" 79 mm x 40 mm x 8 mm
Channels:	12: Red, Green and Blue x 4
Output Frequency:	740 Hertz
Operating Temperature:	-4 to 158°F (-20 to 70°C)
Voltage:	12 or 24 Volts DC
Sustained Power:	360 watts at 12 VDC output. 30 amps total. 2.5 amps per channel. 360 watts at 24 VDC output. 15 amps total. 1.25 amps per channel.
Peak Power:	720 watts at 12 VDC output. 60 amps total. 5 amps per channel. 720 watts at 24 VDC output. 30 amps total. 2.5 amps per channel.

Features

- RF hand-held remote controller lets you select operating modes:
 - Power on/off.
 - “||” Pause button: stops a color sequence.
 - BRT + or -: brightens or dims the lights on static modes.
 - Speed + or -: increases or decreases the speed on dynamic modes.
 - Mode + or -: toggles between the pre-programmed modes.
- Remote controller works through walls. Over 100 foot range in benign electromagnetic environment.
- Four buttons on the controller allow for adjustment of mode, speed, and brightness.
- Smooth pulse width modulation dimming all the way down to 0%.
- Power off memory function.
- LED Controller buttons:
 - Mode: Selects the next mode, or returns to current mode if on dim/speed adjustment screen.
 - Set: Switches to dimming mode if current mode is static, or speed mode if current mode is dynamic.
 - Up: Selects the next mode, or increases brightness/speed if in dim/speed mode.
 - Down: Returns to previous mode, or decreases brightness/speed if in dim/speed mode.

- XLR3 male and female interface
- Converts standard DMX signal to analog signal suitable for driving 12 VDC or 24 VDC LED lighting, such as our LED strips.
- Analog output is 12 channels, typically 4 sets of Red, Green and Blue. Outputs are pulse width modulation (PWM) signals and dim Red, Green and Blue in unison using the pre-programmed modes or independently under direction of the DMX input signal.
- SET function on controller allows you to set the decoder's lowest address so it uses the address you desire from your DMX program. Each decoder has a DMX device address you can set.
- 33 pre-programmed modes and 4 DMX modes, as listed on the next page.

Applications

- Any application requiring conversion of DMX to PWM signals for driving LEDs. Provides 4 X 3 = 12 channels of output, suitable for 4 Red-Green-Blue devices or 12 different white channels, for example.
- An economical and easy solution for full color LED control systems. Use with 12 or 24 Volt DC Red-Green-Blue LED lights, including strips and modules.
- Downlighting and uplighting features.
- Hotels, restaurants, office buildings, homes and casinos, wine cellars, bars, home entertainment centers.

Detailed Wiring Instructions

EnvironmentalLights.com provides detailed wiring instructions for our LED linear lighting (flex strips, superflat rope, modules and rigid strips.) In addition, we provide the design criteria charts that tell you how many feet, LEDs, modules, reels or other units you can put on a) each branch and b) each drive unit. A drive unit can be a controller, decoder or amp. This document is [LED Color-Mixing Linear Lighting Manual](#). Please be sure to check this document for relevant information for your installation. This controller is fairly easy to wire. For larger installations, you need to follow our basic guidelines to get the outstanding results you seek.

Mode	Description
<i>Static</i>	
1	Static Red
2	Static Green
3	Static Blue
4	Static Yellow
5	Static Magenta
6	Static Cyan
7	Static White
<i>Dynamic</i>	
8	Color change - 7 colors
9	Color change - 6 colors
10	Color flash on/off - 7 colors
11	Color change - Red/Green
12	Color change - Red/Blue
13	Color change - Green/Blue
14	Color change - RGB
15	Color flash on/off - Red/Green
16	Color flash on/off - Red/Blue
17	Color flash on/off - Green/Blue
18	Color flash on/off - RGB
19	Fade - 6 colors
20	Fade - Red/Green
21	Fade - Red/Blue
22	Fade - Green/Blue
23	Pulse - RGB
24	Pulse - Red/Green
25	Pulse - Red/Blue
26	Pulse - Green/Blue
27	Pulse - Red
28	Pulse - Green
29	Pulse - Blue
<i>Dimmer</i>	
30	Red
31	Green
32	Blue
33	Custom color
<i>DMX Control</i>	
34	1 Channel
35	3 Channels
36	12 Channels
37	Pre-set demo

DMX Control Modes

When in Mode 34, 35, 36, or 37 the RGB LED Controller and DMX Decoder switches into DMX decoder mode. Details of each mode are listed below:

Mode 34

In this mode only one channel is used as a dimmer switch. Any RGB LED strips connected to the device will light up as white, with RGB all on. By increasing or decreasing the value of the channel, you will be controlling the brightness of the white light from the RGB strips. You can choose to link together multiple decoders and have the signal from each decoder drive the dimming for all connected strips. Conversely, you can change the set address on each decoder for individual control (in groups of 4) of the LED strips connected to each decoder.

For example, if three decoders are linked together and all set to address 1, then all 12 branches (4 strips x 3 decoders = 12 strips total) of RGB LED strips can be controlled in sync through address 1. However, if you want to control each group of 4 strips individually, then the address on the second decoder should be set to address 2, and the third decoder to address 3, and so on. This allows the DMX console to dim the 4 strips of lights on each device separately, using the specified address that the decoder is set to.

Mode 35

This mode uses 3 channels for RGB control. Any RGB LED strips connected to the device will be controlled simultaneously through the 3 channels. By increasing or decreasing the value of the channel, you will be controlling the amounts of Red, Green, or Blue for all RGB strips. You can choose to link together multiple decoders and have the signal from each decoder drive the dimming for all connected strips. Conversely, you can change the set address on each decoder for individual control (in groups of 4) of the LED strips connected to each decoder.

For example, if three decoders are linked together and all set to address 1, then all 12 branches (4 strips x 3 decoders = 12 strips total) of RGB LED strips can be controlled in sync through address 1, 2, and 3. However, if you want to control each group of 4 strips individually, then the address on the second decoder should be set to address 4, and the third decoder to address 7, and so on. This allows the DMX console to control red, green, and blue for the 4 strips of lights on each device separately, using the specified addresses that the decoder is set to.

Mode 36

This mode uses 12 channels for RGB control of each individual strip connected to the decoder. Any RGB LED strip that is connected to the device will be controlled individually through the 12 channels (3 channels x 4 strips = 12 channels total). If the decoder is set to address 1, then address 1, 2, and 3 will control Red, Green, or Blue on strip 1. Address 4, 5, and 6 will control Red, Green, or Blue on strip 2. Address 7, 8, and 9 will control Red, Green, or Blue on strip 3. Lastly, address 10, 11, and 12 will control Red, Green, or Blue on strip 4.

You can choose to link together multiple decoders and have the signal from each decoder drive the RGB control for all groups of strip 1, strip 2, strip 3, and strip 4. Conversely, you can change the set address on each decoder for individual control of all LED strips connected to each decoder.

For example, if three decoders are linked together and all set to address 1, then address 1, 2, and 3 will control Red, Green, or Blue on strip 1 for all decoders. Address 4, 5, and 6 will control Red, Green, or Blue on strip 2 for all decoders. Address 7, 8, and 9 will control Red, Green, or Blue on strip 3 for all decoders. Lastly, address 10, 11, and 12 will control Red, Green, or Blue on strip 4 for all decoders.

However, if you want to control each RGB LED strip individually, then the address on the second decoder should be set to address 13, and the third decoder to address 25, and so on. This allows the DMX console to control red, green, and blue for each RGB strip on each decoder separately, using the specified addresses that the decoder is set to.

Mode 37

In this mode one channel is used to address 12 channels on the decoder. All RGB LED strips connected to the device will light up in sync, with one of the 33 pre-set modes. This is an ideal mode for demonstrating each pre-set scene, without having to manually toggle through modes using the remote or buttons on the controller. For example, by adjusting one channel in the Easy Stand Alone software, any of the 33 pre-set modes can be chosen for demonstration.

Please take the following precautions:

1. This equipment, like all electrical equipment, should be installed by a qualified person.
2. Do not expose these LEDs, dimmers or power supplies to intense electro-magnetic fields, including lightning.
3. The controllers and power supplies are not waterproof. Keep them dry.
4. Always observe proper polarity.

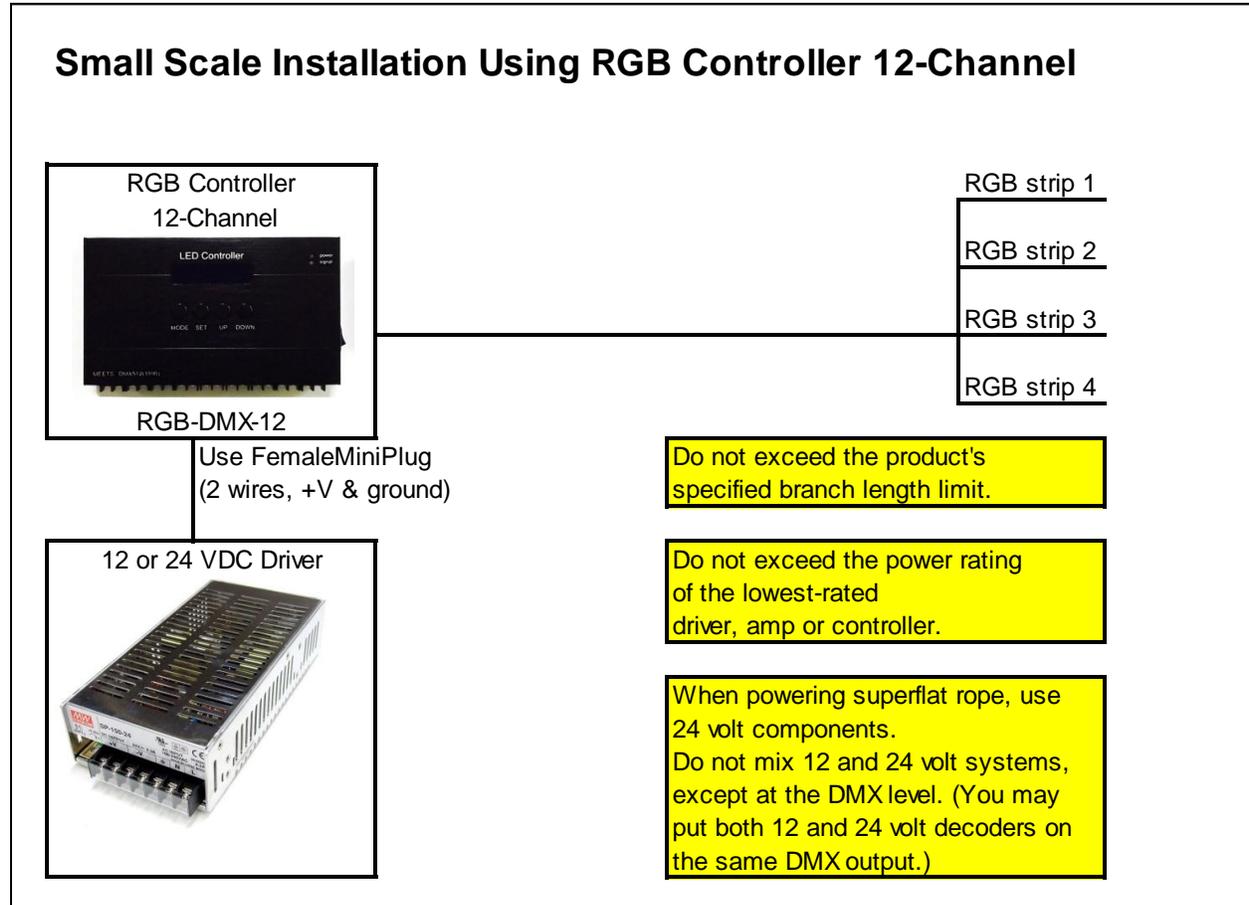
When installing LED lighting, it is a good idea to follow this “dry-run” procedure:

1. Be sure you have everything you need before you start.
2. Lay out your lights and power supply on the floor or table.
3. There is some resistance in the LED lighting. If you see any color fading or dimming at the end of a long run, you may have too many LEDs for your power supply and you might need a bigger supply or shorter runs. Use a bus structure as described in [rgb_manual.pdf](#). Call if you need assistance with larger projects.
4. Connect everything and test it to be sure it works and you have it connected properly. It is unlikely, but possible, that some part of your system is defective or was damaged during shipment. If that is the case, it will be very helpful to you to know that before you do all the work involved in installing custom LED lighting systems. You will also know if you damage anything during installation, which is really helpful in trouble-shooting because manufacturing defects and installation damage typically have very different solutions.

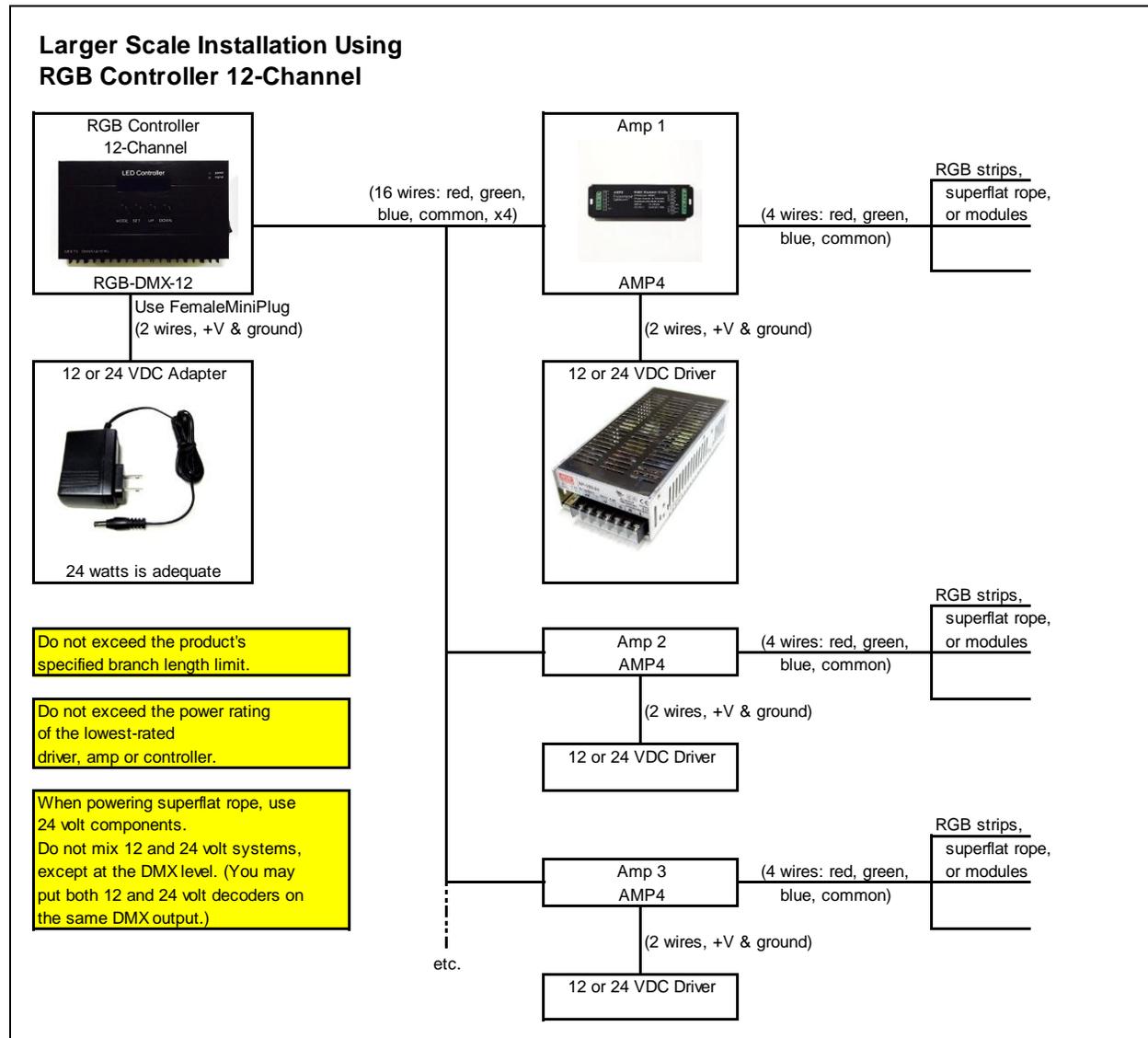
Once you have tested the system successfully, you are ready to install it. We recommend you install LEDs, electronic controls and dimmers in such a way that you have access to them in case they fail. All electrical components can fail.

Circuit Diagrams for the RGB 12-Channel Controller

This is a detailed wiring diagram for the RGB Controller and DMX Decoder 12-Channel, being used solely as a controller. Detailed wiring instructions for our LED linear lights are available in “rgb_manual.pdf.” Ask for it, if you haven’t seen it.

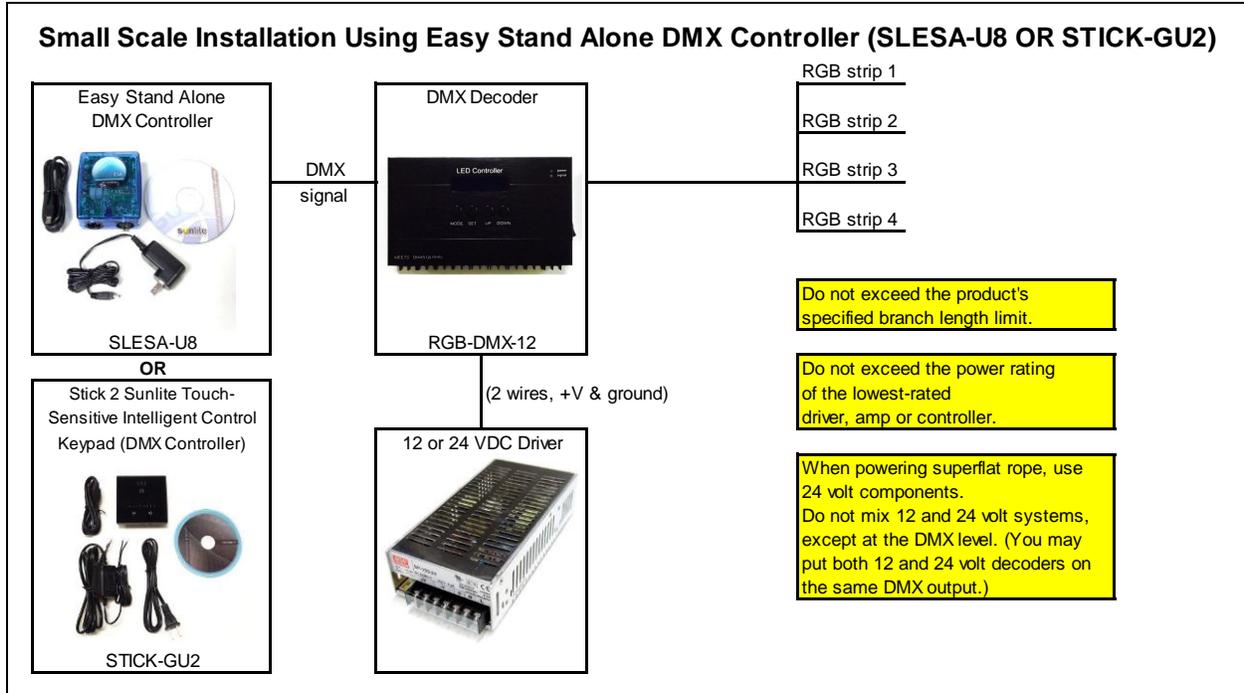


Circuit Diagrams for the RGB 12-Channel Controller (Continued)



Circuit Diagrams for the RGB DMX Decoder

This is a detailed wiring diagram for the RGB Controller and DMX Decoder 12-Channel, being used solely as a DMX decoder. In addition to using the SLESA-U8 or STICK-GU2, you can also directly connect to any DMX console with a DMX out signal.



Circuit Diagrams for the RGB DMX Decoder (Continued)

