Connecting Pixels to Pixel Controllers

OVERVIEW

All Light-O-Rama plug-n-show products are prewired and have correctly sized power supplies so the information in this document is pertinent but not something you need to know to use a plug-n-show product.

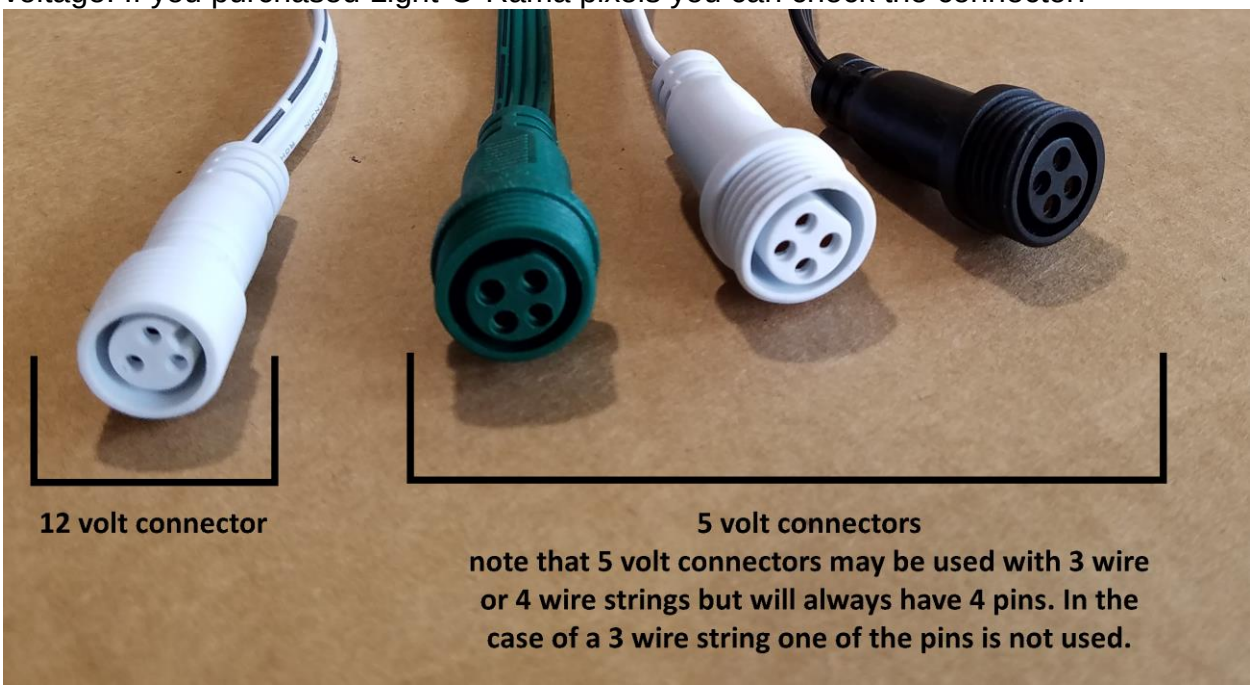
The following information is valid for all Light-O-Rama pixels and pixel controllers. This information is also valid for a majority of other manufacture's products. Please cross check with other manufacture's documentation when using their products. Please note: when referring to pixels we include pixels, bulbs and ribbon strips.

Voltage and Polarity are the most important factors that must be considered when connecting pixels to pixel controllers. If you get the voltage and/or polarity wrong then you may very well destroy the pixels and void any warranty.

POWER SUPPLY SELECTION

Light-O-Rama Pixels use either 5VDC or 12VDC. Your power supply must provide a constant, regulated voltage and enough power (wattage) for the LEDs to be powered.

1. Determine Voltage: The specification for the pixels purchased will indicate the voltage. If you purchased Light-O-Rama pixels you can check the connector:



2. Determine Wattage: The specification for the pixels purchased will include the wattage of the string. Add together the wattage of all strings you will be connecting to the controller. This is the total wattage required.

3. Check to see if Total Wattage is within the range of the controller's capacity. Most controllers (all Light-O-Rama controllers) are rated in amps of capacity. To determine the number of Amps you have divide the Total Wattage by the voltage being used.

For example:
Suppose the pixel strings are 5volts, 15 watts and there are16 strings.
Total Wattage = sum of all wattages = 15 watts x 16 strings = **240 Watts**
Real Amps = Total Wattage / voltage = 240 / 5 = **48 Real Amps**
With Amps we add an additional 10% for safety so the total required is:
Required Amps = **Real Amps** x 110% = **Real Amps** x 1.1 = 52.8 Amps

4. Select a power supply
The power supply has an input voltage / amperage and an output voltage / amperage.

The input voltage is the voltage that is found in your household wall sockets. In the USA the input voltage would be 120 Volts AC. The power supply must support the input voltage of your country. Many power supplies are universal and will support 95 to 240 volts input. Make sure your local voltage (120 or 240) is covered by the power supply. Sometimes there is a switch on the power supply to select 120 or 240. If that is the case make sure the switch is in the correct position.

The input amperage is the current that must be supplied. In general this is not an issue as the amperage is generally not large number. This is the same as any appliance you plug into a circuit. The circuit must provide enough current or the circuit breaker will trip.

The output voltage is the voltage that will be supplied to the LED Pixels. The output voltage of the power supply must match the voltage of the LED strings. Use of a power supply with an output voltage that exceeds the voltage of the Pixels will likely destroy them.

The output amperage of the power supply must be at least equal to the Require Amps.

In our example above, the Voltage was 5 volts and the Require Amps was 52.8 Amps In this case the MeanWell RSP-320-5 is a good choice. It provides 60 amps at 5 volts.

Both the Light-O-Rama Pixie16 and Pixcon16 controllers can handle 60 amps so they will work with this setup which has a 52.8 Amp load.

It is okay to get a power supply with too many amps. The amount of power used is equal to the Required Amps calculated above. So we could for example, use a 100 amp power supply to power this setup. Even though the card is only rated for 60 amps it is

not in danger because the maximum power used is the Required Amps (52.8 Amps) regardless of the output capacity of the power supply.

Can I use more than one power supply? Yes, the 16 port Light-O-Rama pixel controllers allow for two banks, or two power supply connections. Each bank requires power for the pixels attached to it. In the example above, each bank has an 8 strings and would have a 26.4 Amp Requirement (52.8 / 2). If the power supply has sufficient Amperage both banks can be connected to the single power supply. However each bank (side) of the controller can be connected to its own power supply. So in the example above, two 5 volt, 30 Amp power supplies could be used.

Can I connect multiple power supplies to the same input on a controller? NO… In the example above each bank could be powered by a 30 amp controller BUT you cannot connect two 15 amp controllers to the same bank to get the 30 amps. Some power supplies will "fight" one another when connected together.

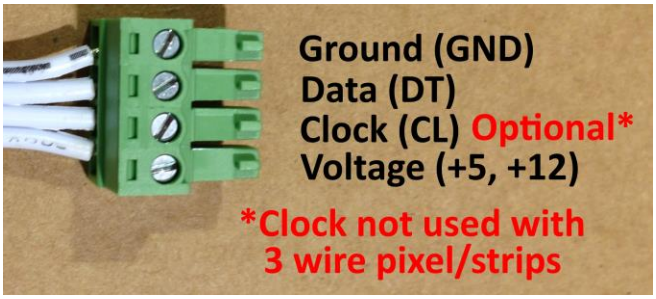
NEVER USE A HIGHER VOTAGE! …. Although it is safe to select a power supply with an Amperage (Amps) rating higher that necessary, NEVER use a voltage higher than specified. This will damage the pixels. All Light-O-Rama pixels have a 10% voltage tolerance so if you have a 5 volt string of pixels it is safe to run in the 4.5 volt to 5.5 volt range but if you go beyond this range the pixels will not perform as expected or be permanently damaged.

Wiring Pixels to Controllers

Most pixel strings use either three or four wires to connect to the pixel controller. All Light-O-Rama pixels strings are either 3 or 4 wire strings. Connecting the wires in the wrong polarity (wrong order) to a controller can destroy the pixel string and or the controller so it is very important that the connections be made correctly.

Connect wire to Light-O-Rama Controller

All Light-O-Rama controllers have the same type connector and the same wiring order.



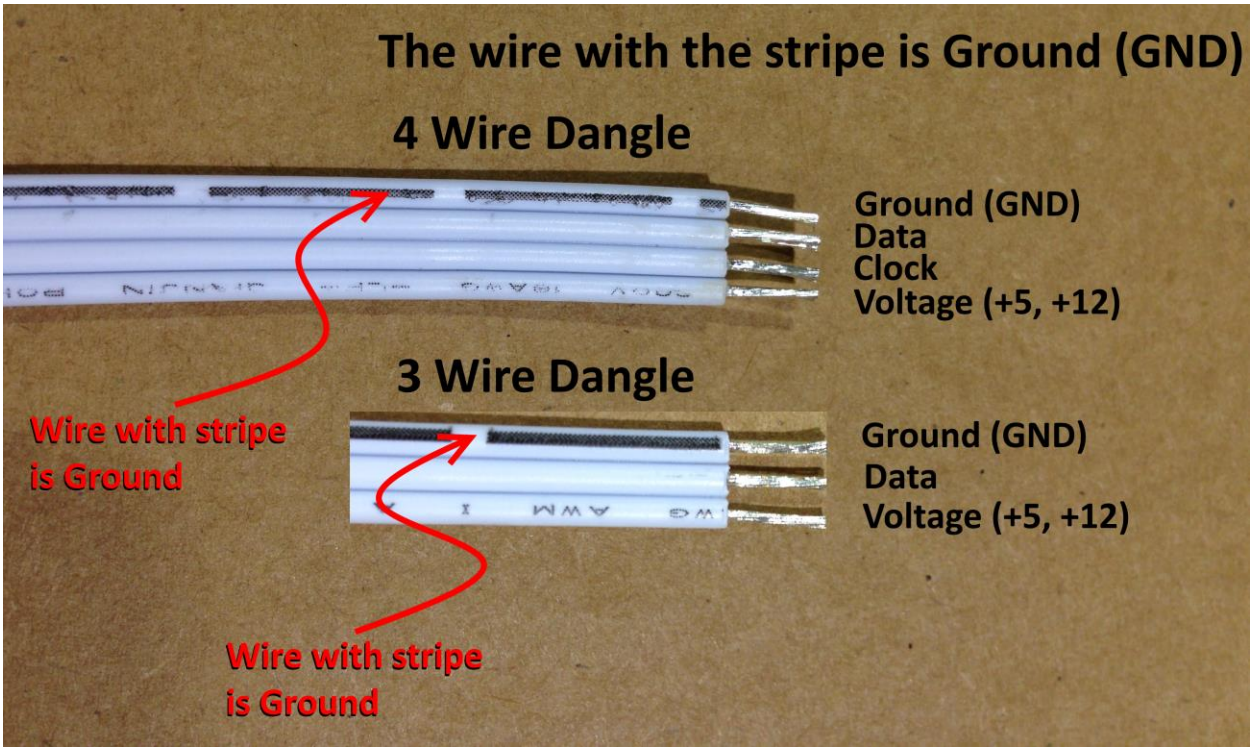
Same connector used for Light-O-Rama PixCon16, Pixie16, Pixie8 and Pixie4 pixel controllers.

Connect Pixel String to a Controller

If you are not using Light-O-Rama pixels then refer to the pixel specification for the correct property for each wire. The pixels will have three or four wires. There will always be a Ground wire and a wire that connects to the positive voltage. There will be one wire that is used for data. If it is a four wire pixel string then the other wire is used for clock.

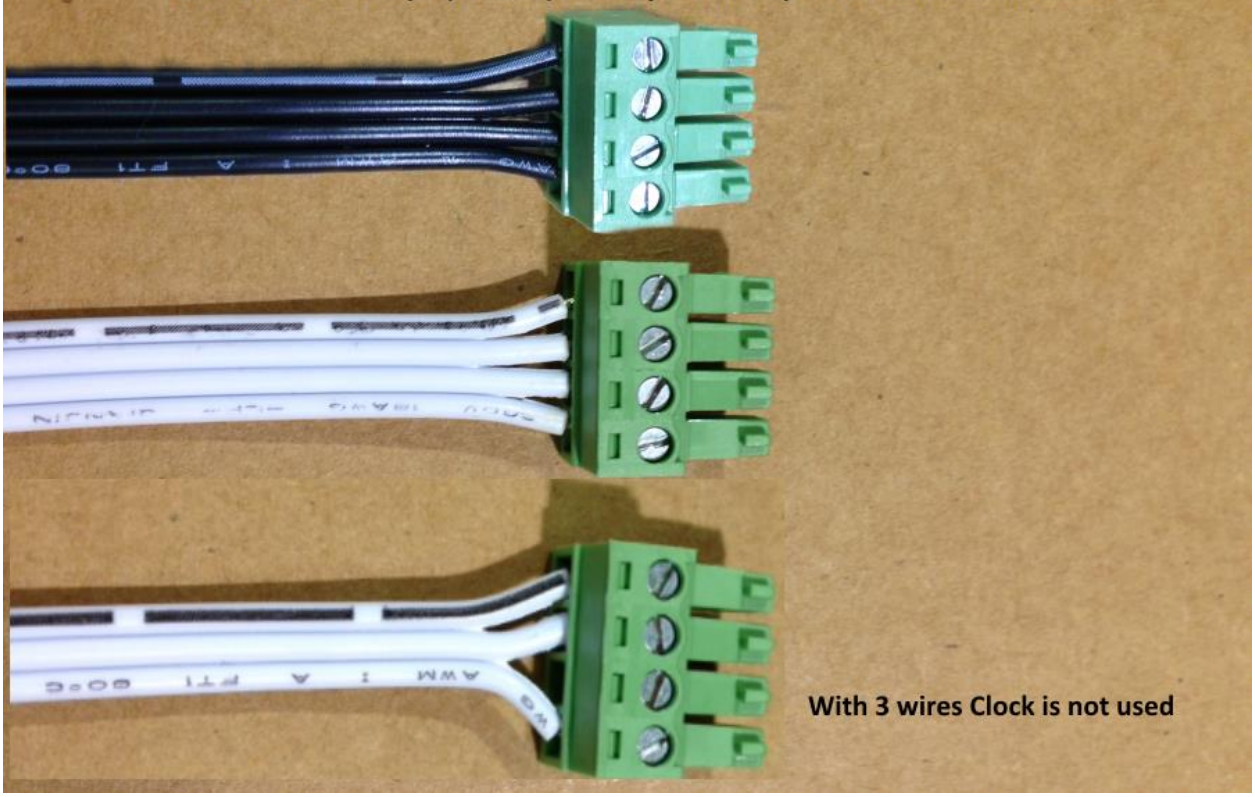
All Light O Rama Pixels come with a dangle. The dangle has a water proof connector on one end that connects to the Pixel String. The other end of the dangle has wires that are connected to a controller.

One of “outside” wires on the dangle will have a stripe on it. This wire is always Ground. The other “outside” wire is the + Voltage (either +5V or +12V). Between the Ground and the + Voltage there will be one or two wires. The wire next to Ground is Data. The other wire (with four wires pixels) is the Clock.



Light-O-Rama pixels with Light-O-Rama Controllers

Note: Wire with stripe (Ground) is always at the top in the connections below



With 3 wires Clock is not used