ETH-08

Ethernet

8 Output

LED Pixel Controller

User Manual

Version 1.2

June 2016

1. Overview

This SyncroLight controller is suitable for controlling addressable LED strips and Pixels. It is designed for use with our SyncroLight Software suite.

The latest version of the SyncroLight Software can be downloaded from www.syncrolight.co.uk. This controller requires version 2.2.0 or higher.

The basic version of the software package allows up-to 16 channels and is free to download and use, however as this pixel controller can support 1000's of pixels we recommend you purchase the Professional Licence to get full use from this product.

The controller is supplied as a fully assembled PCB. We recommend the controller is mounted inside a suitable enclosure. If used outdoors a suitable weatherproof enclosure must be used.

This controller connects to the PC running over a 10/100 Ethernet based connection.

LED Pixels / LED strips must be purchased separately.

This controller supports 8806, 2801, 2811 and 2812 based pixels.

Each of the 8 outputs of the controller is individually configurable. Each output can be configured to run different types of pixels simultaneously, although you must ensure the voltage requirements of the pixels are the same (i.e. you CANNOT mix 12v pixels and 5v pixels on the same controller)

This controller can support a maximum of 900 Channels per output and 7200 Channels per controller. However, for most applications we recommend a maximum of 3000 pixels per controller.
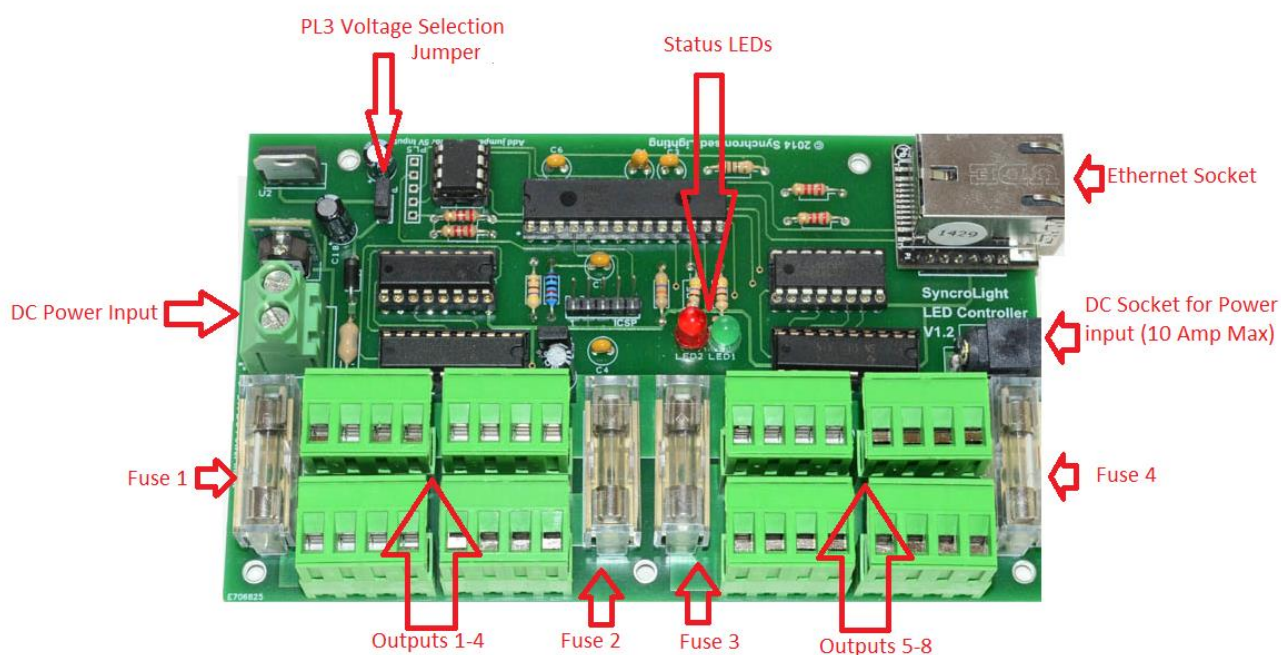
2. Power Supply

A suitable DC power supply is required to power the controller and LED lights. The power supply must be a suitable match for the power requirements of the LED lights.

IMPORTANT NOTE:

The controller can run from any DC voltage in the voltage range 5v to 24v DC.

BEFORE connecting power, the controller MUST be configured for the operating voltage you are using.

The PCB jumper at position PL3 must be added/removed depending on your required operating voltage.

PCB jumper PL3 must be PRESENT for 5v DC operation.

PCB jumper PL3 jumper must be Removed for 7 to 24v DC operation.

The controller will be damaged if power is applied with the jumper incorrectly set.

The controller is fitted with four 5 amp fuses. Each fuse protects 2 outputs. Fuse 1 protects outputs 1 and 2, Fuse 2 protects outputs 3 and 4 etc.

The PCB is also protected by a small in-line fuse. In the unlikely event of this blowing, this can normally be replaced by any electrical engineer.

For most applications 5 amp fuses will be sufficient. For higher amperages we recommend injection of power directly to the LED strips/pixels further down the chain. These power injection points should also be protected by additional external fuses. (Note: To get consistent LED brightness most strips and pixels require power injection at the start of each set).

For convenience, the controller contains 2 power input points. These are located on opposite sides of the controller.

- 2.5mm DC Socket – Suitable for use up-to 10 Amps input only.
- High amperage Screw Terminal Block

3. Network connection

This controller can be connected to any 10/100 Ethernet switch or router. The controller is designed for connection to home networks or private LANs only. It is not designed for connection directly to the internet.

The controller comes pre-configured with the following factory settings:

IP Address :   192.168.168.130
Network Mask: 255.255.255.0
Network Gateway: 0.0.0.0
Multicast IP Address : 224.0.0.1
MAC Address: AA 02 03 04 05 06

All controllers come with a user configurable MAC address, (i.e. they do not contain a unique MAC address). If you run multiple controllers on the same network the default MAC Address MUST be changed such that each device on your network has a unique MAC address.

To initially connect and configure the controller, you must ensure you connect a PC or LAPTOP to the same IP address range as the controller (e.g. Set your PC's IP Address to 192.168.168.100) and ensure these values do not conflict with any other devices or equipment on your network.

Once you have connected to the controller, you can change the controllers IP address as required and then set your PC's IP address back to its original setting.

The controllers are designed to work with fixed IP addresses rather the DHCP assigned IP addresses.

The controller and software uses Multicast IP addresses and therefore any network routers/switches between computer and controller must not block multicast network traffic.

Once you have the controller powered up, connected and your PC configured to the same network IP range, you can then start the SyncroLight *"Device Manager – Ethernet"* program. (This is installed as part of the SyncroLight software package available at www.syncrolight.co.uk – You require version 2.2.0 or above for this controller).
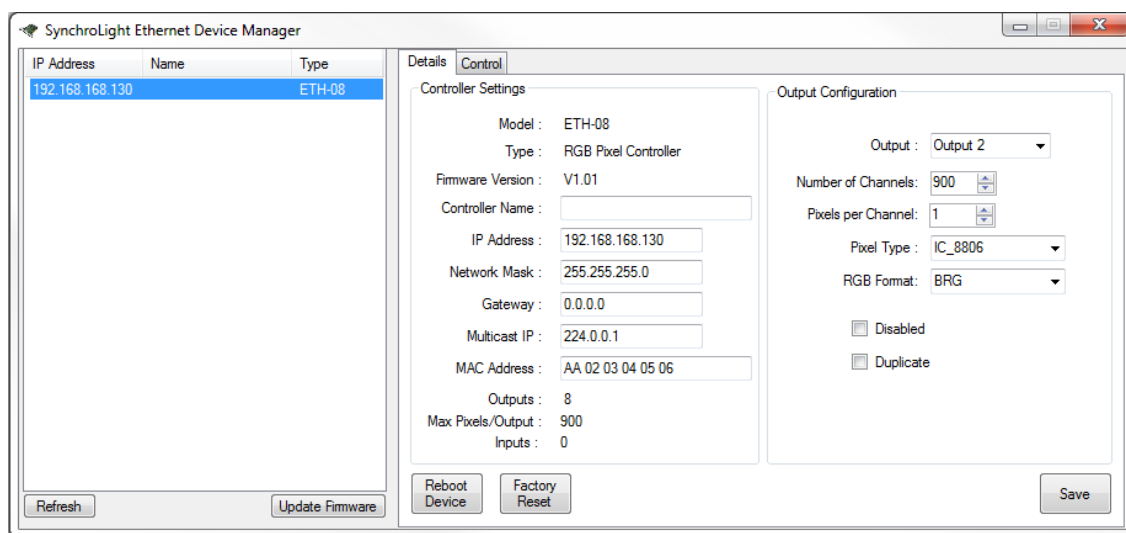
Once you start the Device Manager you should see the ETH-08 controller is listed in the left hand window. If you select this controller you will see all the controller's details in the left hand window.

You can now configure the IP Address, Network Mask and Gateway in accordance with your Home network or private LAN. If you are running multiple controllers remember to also change the MAC address to ensure each device has a unique MAC address.

Once you have changed the network settings, click the save button and then reboot the device by pressing the "Reboot Device" button or by temporarily removing power from the controller.

4. Multiple Controllers

If you have multiple ETH-08 controllers, ensure each controller has a different IP Address and MAC address.

With the Ethernet Device Manager all controllers found on the network will be listed in the panel on the left hand side. You simply select the appropriate controller to configure it.

If you have multiple controllers and you want all connected LEDs to do the same on both controllers, set both controllers to have the same "Multicast IP" address (e.g. both set to the default value of 224.0.0.1). Within the SyncroLight Software, simply use this Multicast IP address rather than the IP address of the controller when setting up your channels in the software.

5. LED Status Indicators

The controller contains two LEDs, these indicate the current status of the controller as follows:

Red Flashing / Green off – Running but no computer connected

Red On / Green Flashing - Computer connected (SyncroLight Software running)

6. Output Configuration

Each of the 8 output for LED strips / Pixels can be individually configured as shown below:

Number of Channels: This defines the number of controllable channels, generally 1 channel equals one pixel, but this can be changed by the "Pixels per Channel" setting.

Pixels per Channel: With this set to 1 each LED/Pixel will be individually controllable via the software (i.e. Channel 1 = LED1, Channel 2 = LED2, etc.) If you do not wish to control every LED individually you can set this value so that multiple LEDs will illuminate together. For Example if set to 5, 5 LEDS will now all illuminate together, so Channel 1 will be LEDs 1-5, Channel 2 will be LEDs 6 – 10 etc.

Pixel Format: Select this to match the type of LED strip / Pixel string you are using.

RGB Format: This defines the RGB order and varies between strips and suppliers. If you find that when you use Red, the Blue LED illuminates, try different RGB Format settings until you get the correct colour LEDs illuminating.

**Disabled** : If checked, this will disable the output.

Duplicate: By checking this box you can set the output to be a duplicate of another output.

Once you have changed any settings press the save button.

Tip: For best performance always set the 'Number of Channels' to reflect the actual number of channels/LEDs you are using and disable any outputs that are not used.

7. Testing the Outputs

Once you have configured your outputs and connected your lights, you can test them by clicking on the Control Tab of the Ethernet Device Manager. You can then select an Output and Channel and then move the Red, Green, Blue sliders to manually control the colour of your LEDs.
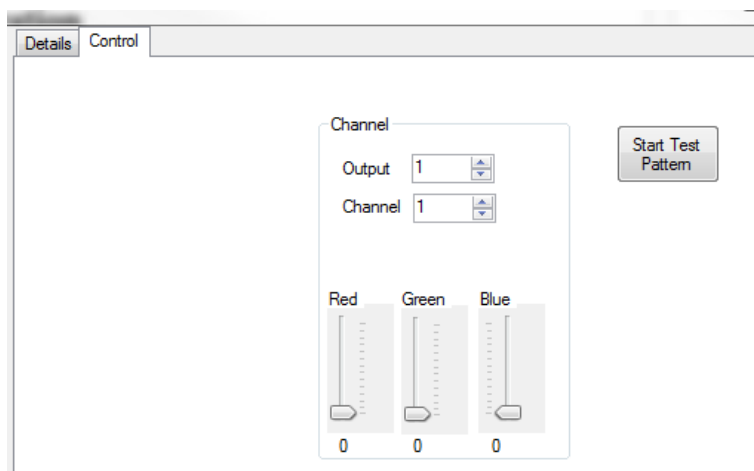
Tip: Using Channel 0 will control ALL configured LEDs on that output.

This screen also has a Test button which starts playing a test colour sequence.

8. Configuring Channels in the Show Designer

To use your controller from the Show Designer you need to correctly configure a network and channels. You can either setup basic channels/segments or use the Pixel Grid to create animation effects.

The steps below explain how to create a basic Display Item with Segments and Channels. If you wish to use the Pixel Grid please see Chapter 9.

Step 1 : Create an SyncroLight Ethernet Network

Start the SyncroLight Show Designer software, open or create a show and then open the Configuration Editor (File/Configuration Editor menu item) as shown below.
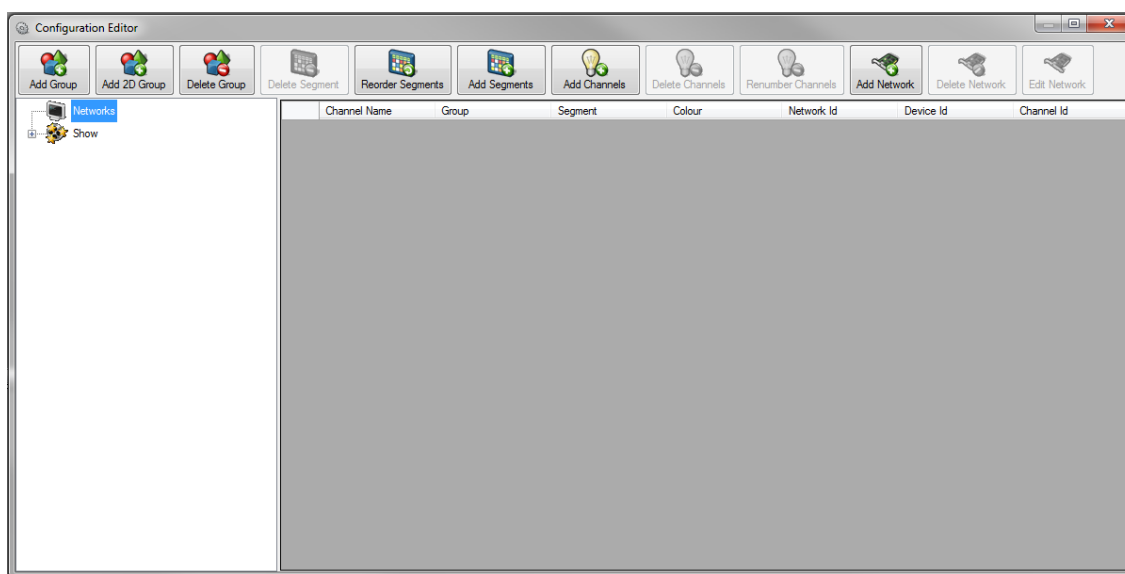
Next press the "Add Network" Button and select "SyncroLight (Ethernet)" from the popup window. In this example we are calling this network "Net 2", but you can give this network any name.
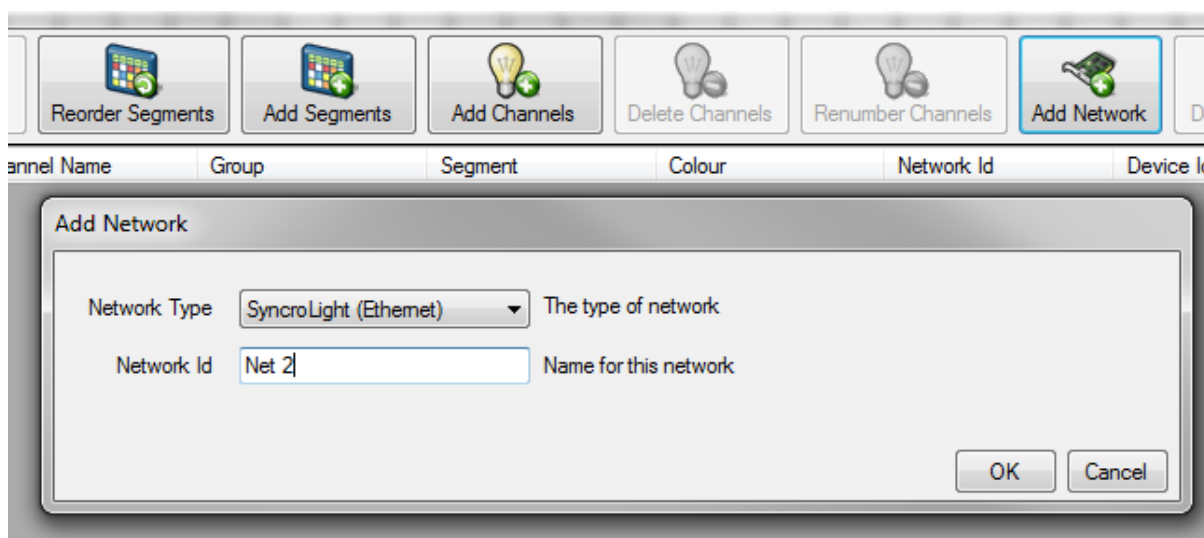
Now press OK to create the network.

You should now be able to see the network in the left hand window as below (Press the small + button to expand nodes on the list if required).
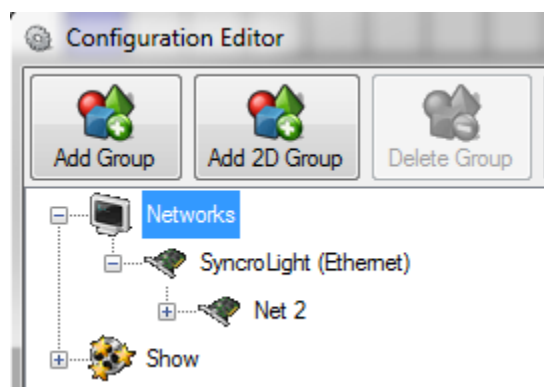

Step 2 : Creating Channels

In the Configuration Editor (File/Configuration Editor menu in the Show Designer), press the "Add Group" Button. You will then get the screen to allow you to create a Display Item (Group) and create segments and channels for the group.
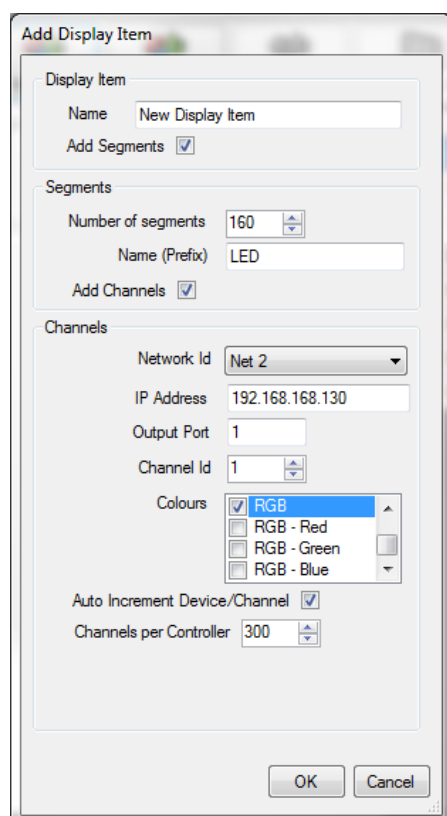
In the example screen above we are creating 160 Channels on our Ethernet network "Net 2", using output 1 of the Ethernet Controller 192.168.168.130

Once you press OK the group and channels will be created for you. You should be able to see the "New Display Item" group just created along with all its channels.

Note that the #1 in Device Id "192.168.168.130#1" indicates the output port 1 on the controller.
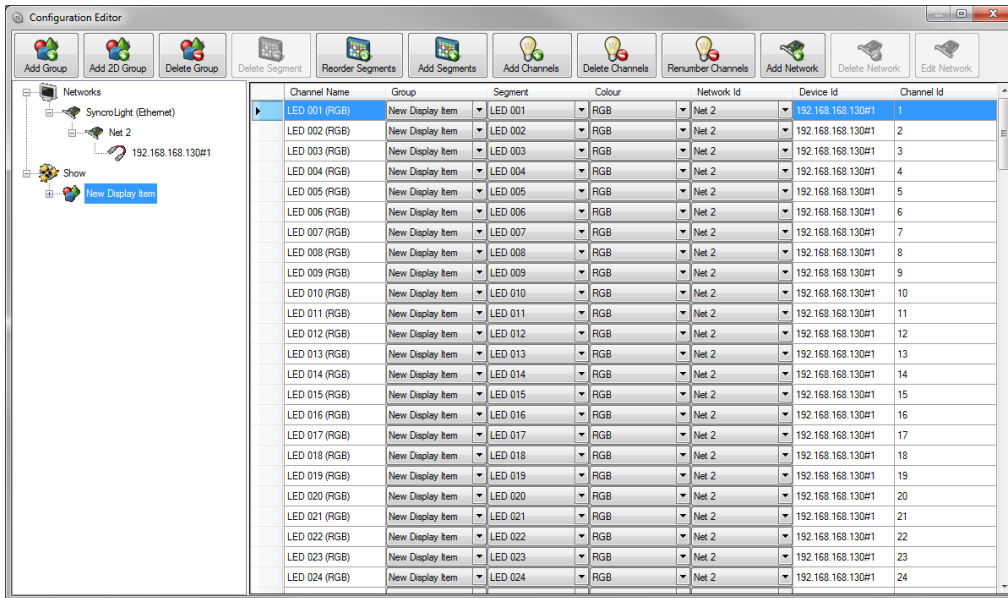
Step 3 : Creating Events and Playing the Sequence

You can now create events and effects in the Show Designer in the usual way. (Please see the SyncroLight Show Designer user manual for more details).
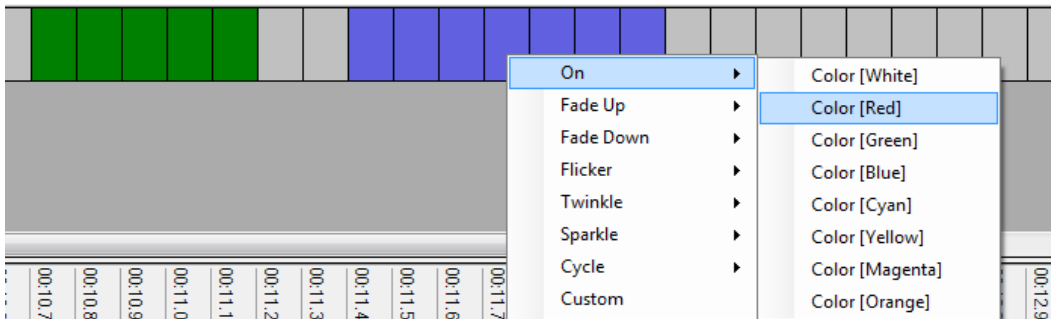
To play your sequence on the controller ensure you check the "Control Lights" item in the view menu.

9. Configuring a Pixel Grid in the Show Designer

If the LED strip / Pixels are to be arranged in a grid layout, you can use the Show Designers Pixel Grid to create colour effects and animations.

Step 1 : Create an SyncroLight Ethernet Network

Follow the instruction given in the previous section to create the Ethernet Network.

Step 2 : Create the Pixel Grid

In the Configuration Editor of the Show Designer, click the "Add 2D Group" Button. You will then get the Pixel Grid Properties screen as shown below.
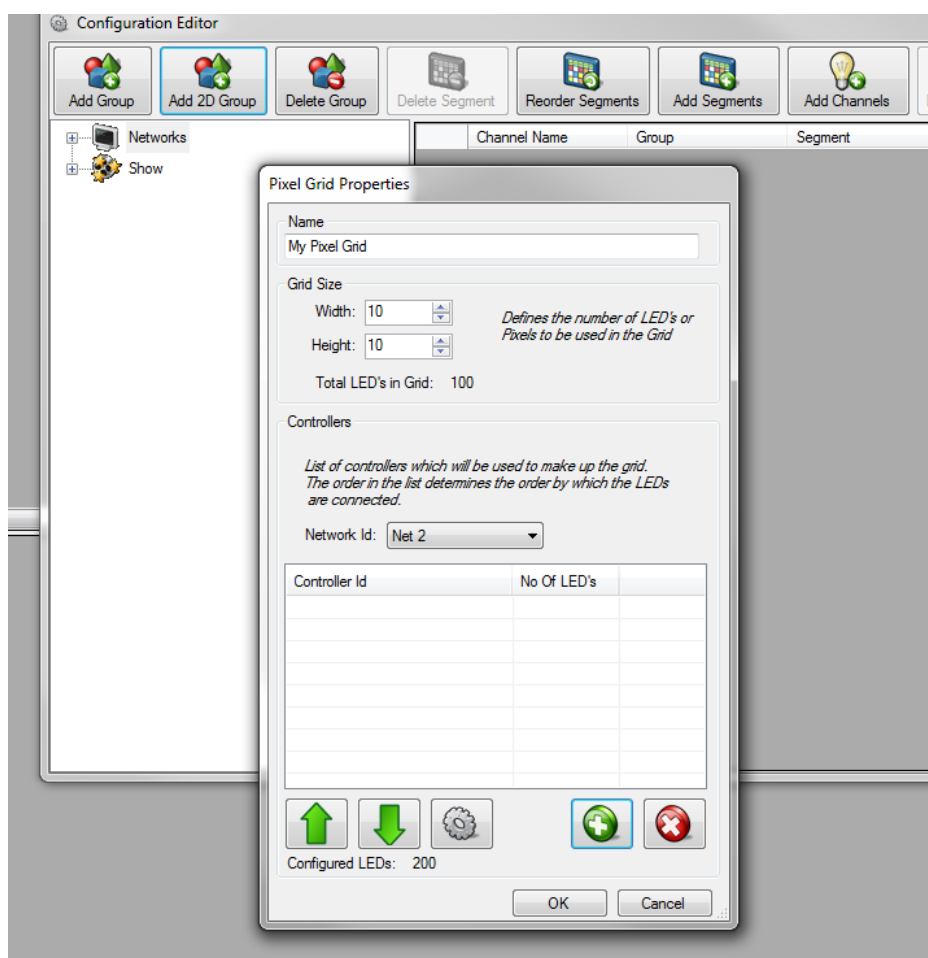

Use this screen to define the size of the grid you would like to use.

Next ensure you select the Ethernet network that you just created and then click the "+" button to assign controllers to the grid.
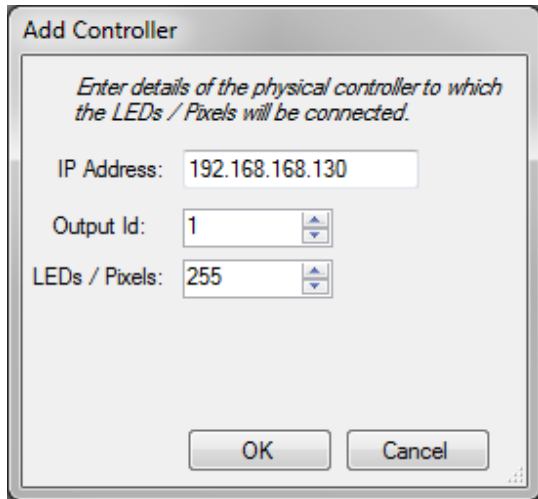
Once you have added a controller it will appear on the list as shown below. If you are using multiple controllers or outputs, create multiple controller entries and use the up/down arrow buttons to set the order of the controllers as required. (This order determines the order in which controllers are used in the Pixel Grid wiring).
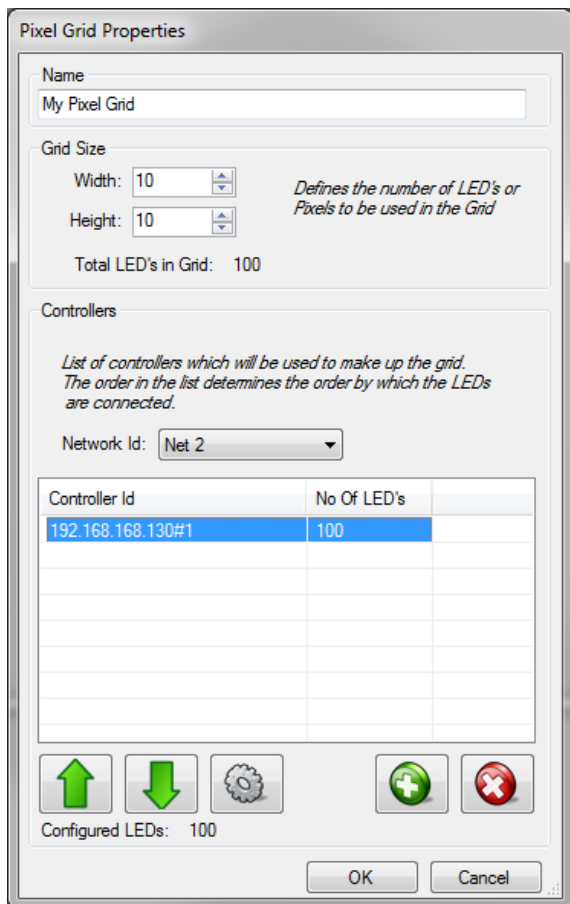
Press OK to create the Pixel Grid and Channels.

Step 3 : Define the Wiring for the Pixel Grid

The software now needs to know how the Grid of LEDs will be physically wired. To do this select the Pixel Grid in the Configuration Editor and press the "Pixel Grid Wiring" button.
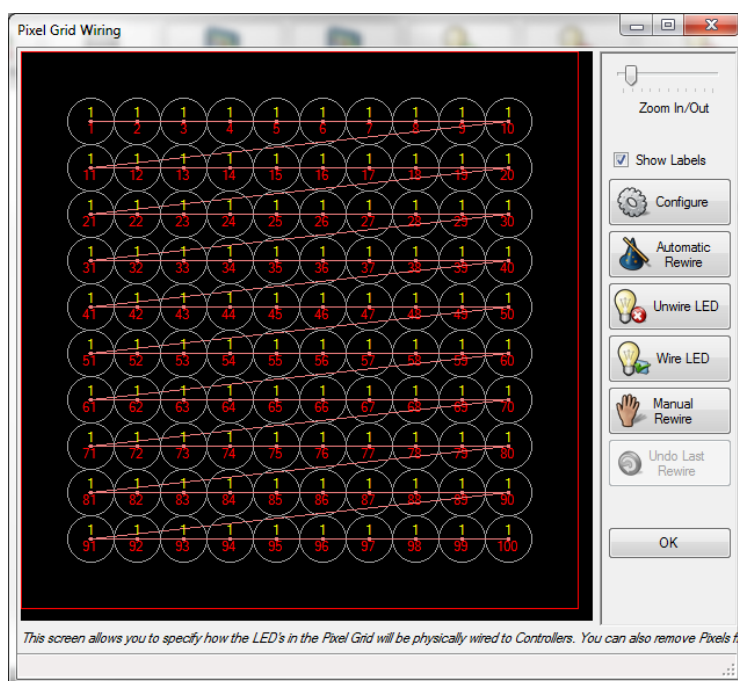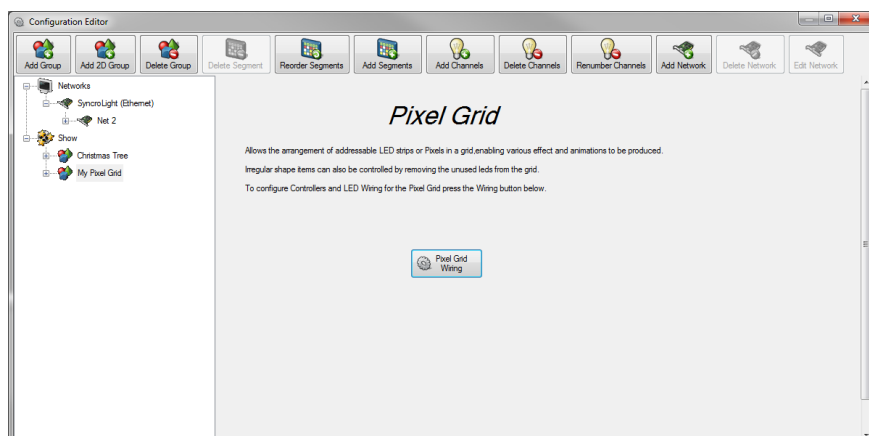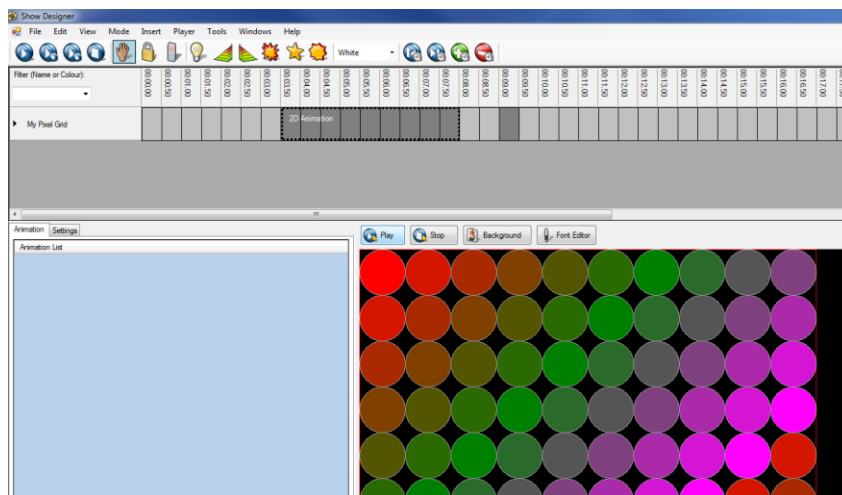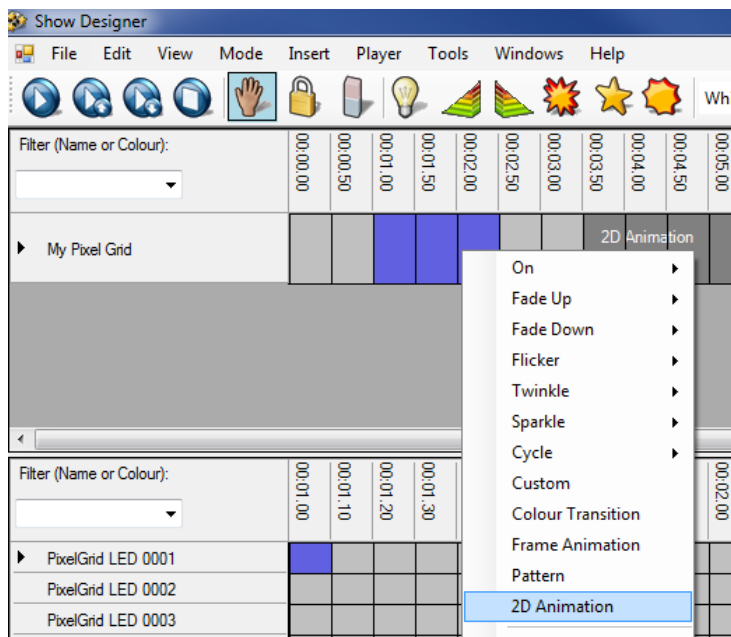

You can then use this screen to define the physical layout / wiring of pixels in the grid.

The easiest way to define the wiring is with the "Automatic Rewire" button and choosing options which match your layout. For more complex layouts you can manually define the layout with the "Manual Rewire" button.

Step 4 : Create your Pixel Grid animations

In the Show Designer you can then create special Pixel Grid effects and animations by selecting "Frame Animation" and "2D Animation" from the popup menu. (Select some cells on the Pixel Grid Group and then press the right mouse button).

More details on creating animations can be found in the SyncroLight Show Designer User Manual.

To play your sequence on the controller ensure you check the "Control Lights" item in the view menu.