



AC08-5A

240v AC

Light Controller

User Manual

Version 1.1

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1. IMPORTANT NOTICE

This controller operates at 240v AC mains voltage. Such a voltage is extremely dangerous and can result in death or injury. Extreme care should be taken when working with such voltages, if you are not competent at working with such voltages, contact a local electrician for advice and assistance.

This controller is supplied uncased and you use the controller at your own risk. The controller must be mounted inside a suitably protective enclosure.

The power supply to the controller must be protected with a suitably sized fuse (13 amp max) and RCD (Residual current device).

Always ensure the controller is turned off and isolated from the mains supply before touching or working on or near the controller, or anything connected to the outputs of the controller. Do not touch any part of the controller when powered up.

Each output of this controller is protected with a 5 amp fast acting fuse for additional safety. If any of these fuses blow they must be replaced with an equivalent type fuse. We suggest changing the fuses to lower values to match the power requirements that you need for each output. ***Under no circumstances should fuses exceeding 5 amps be installed.***

Each output of the device is fitted with some low-power heat sinks and the components are rated for up to a maximum of 5 amps. We however do not recommend prolonged use of high current through the outputs. The controller is designed for use in a light show environment, with lights turning on and off intermittently. It is not designed for continual, constant high current draw through the outputs.

Only lighting should be connected to the outputs. The use of inductive loads such as AC Motors and Pumps is not recommended and may not work with this controller.

Only incandescent style lighting should be used. Whilst the new-style low-energy bulbs may work, often such bulbs do not support dimming.

Low voltage lighting and LED lighting may be used with the controller. Note however that where the lights contain a transformer or power adaptor, effects such as dimming, etc may not work reliably, and slight delays may be experienced in turning lights on or off due to capacitors etc in the circuitry of the transformers etc. We recommend the use of our DC08 controller for low voltage DC lighting.

The controller does not provide any earth terminal for the outputs. If your connected lights require an earth these must be suitably wired to the earth of the power supply. If a metal enclosure is used, this must be connected to the earth of the power supply.

The PCB contains a status LED which flashes when no network is connected and remains static when the network is running and healthy. The LED is not a POWER light and should not be used as an indication of presence or absence of power.

2. Building a Network

In order for the computer to be able to control the lights, the controllers and computer need to be on a RS-485 based network. This is a serial network, capable of reliable transmitting of data over a distance.

The network starts at the computer, but since computers do not usually have an RS-485 port a converter is required. These can take the form of either:

- RS-242 to RS-485 converter (for older computers with serial COM ports).
- USB to RS-485 converter.

The recommended USB-RS485 converter, shown below, has been tested with the SyncroLight controllers and software. The converter is available for sale, with full installation instructions, on the SyncroLight website.



The network is a 2-wire network, which connects to each controller in a linear multi-drop arrangement, connecting to each controller in turn. The network should not contain any spurs or loops.

To ensure reliable data transmission it is often recommended that RS-485 networks are terminated with a resistor between the two wires. The AC08 has a built in resistor for network termination, to activate this a 'closed pin jumper' should be added to the controller PCB where

indicated. Only the controller at the very end of the network should be terminated. We can supply a termination jumper free of charge upon request. Just let us know at time of order or send us a self addressed, stamped envelope.

Please note that network termination is totally optional, in most cases the network will work fine without any termination whatsoever. It is only usually large, long or high speed networks in which termination is essential. If you find messages on the network are being lost (i.e. lights not coming on/ going off as expected), then it may be worth ensuring you terminate the network correctly. The SyncroLight controllers keep a count of the number of corrupt messages to aid in identification of poor network performance.

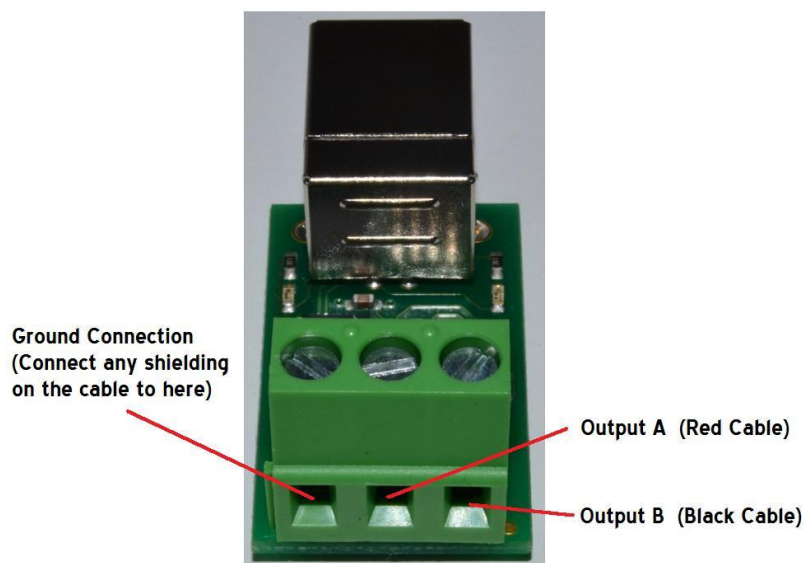
We strongly recommend the use of shielded network cable (available on the SyncroLight website) to minimise interference from electrical cables and equipment. When running network and power cables around your light display to controllers and lights, try and run the network cable away from power cables to minimise any risk of electrical interference. Don't worry if you have to run the network cables alongside power cables, you'll probably be Ok. Just remember where you have done so and revisit this area should you have any communication problems on the network.

The shielding of each cable should be joined at each controller and connected to the ground connection provided on the USB-RS485 converter.

Each controller on the network is given a unique numeric address, often called either, controller address, controller id or device id. This controller address, which has a value between 1 and 255, is used by the software to identify and address each output on the network (i.e. Controller Id 3 Channel 1).

New controllers come with a default id of 1, which can easily be changed using the SyncroLight Device Manager Software.

We recommend the use of 2-core shielded cable for the network connections. Terminal connections on the controllers are labelled A, B and GND. Outputs of the USB-RS485 converter are as shown below.



Where the wire colours are red and black, we suggest using the red wire to connect to the 'A' terminals and black wire to connect to the 'B' terminals. Adopt your own colour code if you have different colour wire.

3. Wiring the Controller

Please ensure you have fully read and understood the important notes in Section 1, before attempting to wire the controller.

Power

The power supply should be connected to the terminals labelled 240v AC Input, LIVE and NETRAL. The power supply must be protected by a fuse and Residual Current Device (RCD).

Outputs

The controller has 8 outputs (channels) each of which are individually controllable. Equipment, such as light strings, should be connected to the controller as follows:

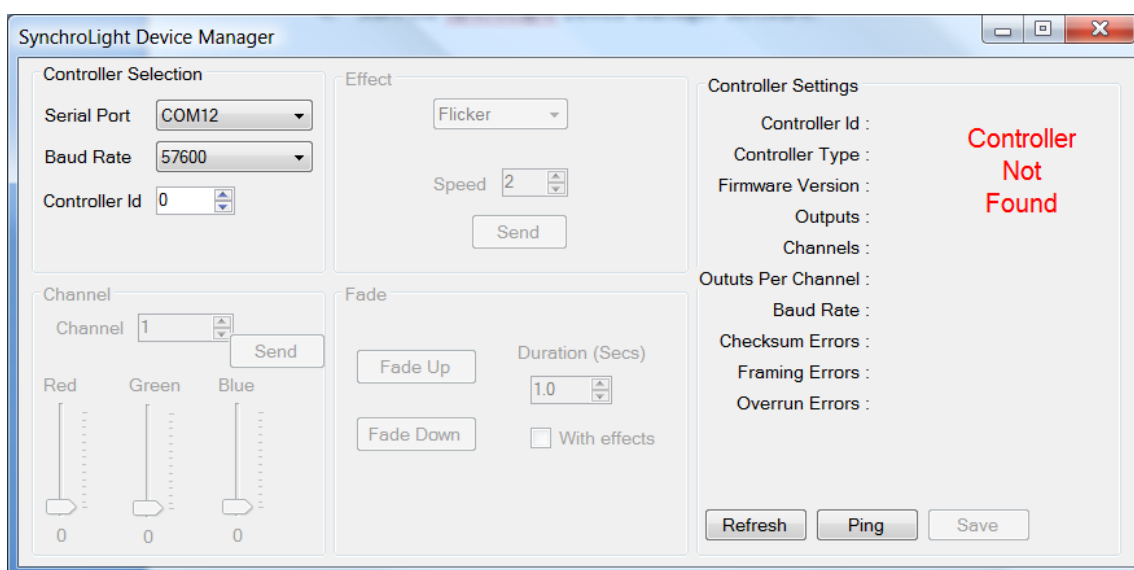
- The Neutral wire (usually Blue) to the equipment is connected to the bank of connections labelled 'NEUTRAL OUTPUTS'.
- The Live wire (usually Brown) is connected to one of the live outputs, labelled live outputs 1 to 4 and Live Outputs 5 to 8.

Network

The RS485 network is wired to the connections on the controller labelled RS485 A, B and GND.

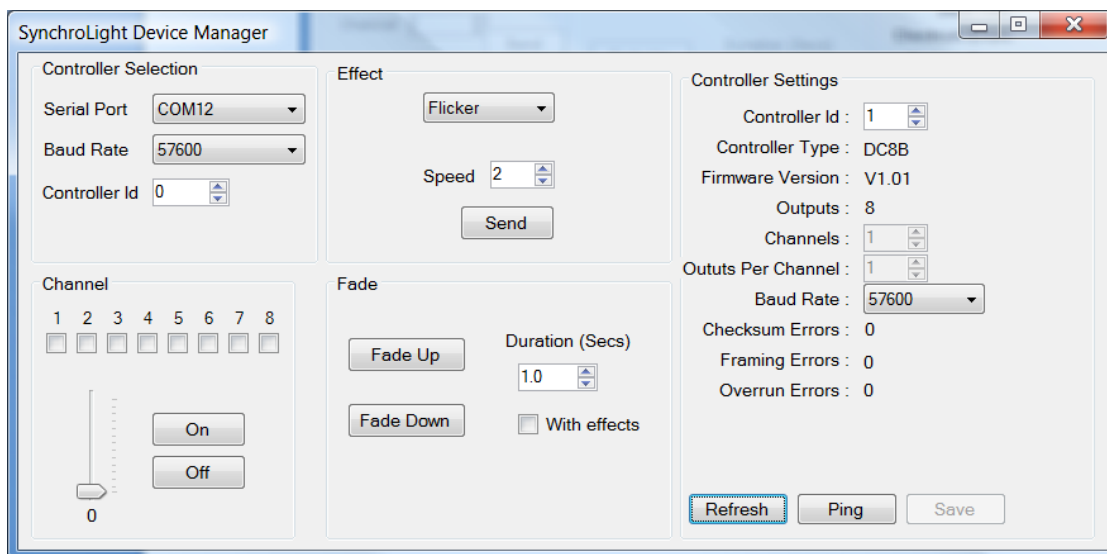
4. Testing and Configuring the Controller

1. Without any network or lights connected, turn on the power to the controller. The status indicator LED should flash to indicate the controller is running but has no network connected.
2. Turn off the power to the controller.
3. Connect the controller to the computer via the USB-RS485 converter (or similar RS-485 interface). If you have multiple controllers, just connect **one** to the network for testing.
4. Start the SyncroLight Device Manager Software. The screen should look like the one below.



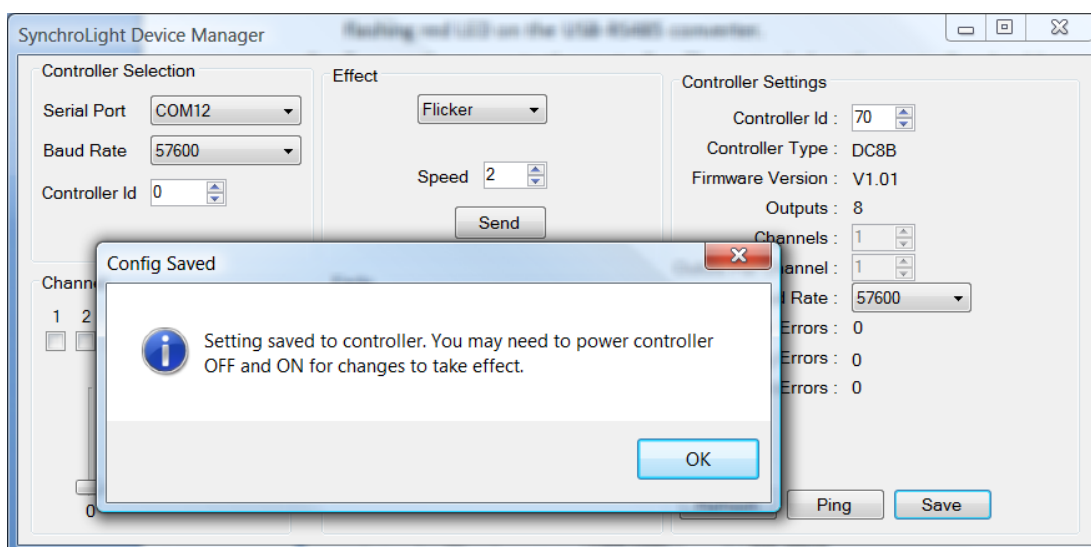
5. Select the appropriate Serial Port from the drop down list for your RS-485 network.
6. Ensure the Baud rate is set to 57600 and controller id set to 0.
7. If you have the USB-RS485 converter you can verify that RS-485 network is active by a little flashing red LED on the USB-RS485 converter.
8. Turn on the power to the controller. The status indicator LED on the controller should now stay lit to indicate an active network. (The little red LED on the converter will continue to flash).

- If you press the 'Refresh' button on the controller, the controller's details should appear on the right of the window as shown below.



Note: Controllers can have an Id between 1 and 255 inclusive. Address 0 is a special 'broadcast' id that can be used in the Device Manager, ALL controllers will respond to this id. This is useful for testing a controller if you have forgotten its id! (Just ensure only one controller is connected though as all controllers will respond).

- You can now change the default baud rate and id of the controller using the controller settings on the right. If you make any changes press 'Save' and turn the controller off and on as directed (Screen below shows the controller id being changed to 70).



11. You can now connect the lights to your controller and test each channel in turn using the Device Manager software. Check one of the Channel check boxes on the left hand side and press the ON button or move the brightness slider up. The lights connected to channel 1 of your controller should come on. Repeat this to test all 8 channels.

