SCA0410 & SCA1210

Wall Mounted Adaptive Dimming Controllers
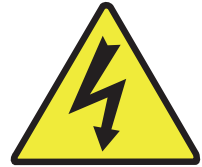
Contents

WARNING HAZARDOUS VOLTAGES
DISCONNECT FROM SUPPLY
BEFORE REMOVING COVERS

NO USER SERVICEABLE PARTS INSIDE
SERVICE BY QUALIFIED PERSONNEL ONLY

WARNING

- To reduce the risk of fire or electric shock,

  DO NOT expose this device to rain or moisture.

  DO NOT energise unless the front cover is in place.

- This device must be earthed.

- Installation, programming and maintenance must be carried out by qualified personnel.
  iLight cannot accept responsibility for repairs or modifications that are not competently
  executed and in accordance with service or upgrade information.

CE CE compliant to all relevant standards


IMPORTANT:
### This manual contains operational information and troubleshooting advice.
PLEASE RETAIN THIS MANUAL FOR FUTURE REFERENCE

The information contained in this product manual is correct at the time of publication, however iLight reserve the right to make changes to the content of this product manual without prior notice. The latest revision of this manual can be downloaded by visiting our website at www.ilight.co.uk


Installation

Location

- Source Controllers must be located in a dry, well ventilated location where the ambient temperature is within the range of +2°C to 40°C (humidity of +5 to +95% non-condensing).

- Source Controllers are designed to be mounted vertically on a stable, horizontal surface. It is important to orientate the unit correctly to allow for effective airflow for ventilation.
  It is recommended to leave 100mm distance between the Source Controller and walls or other equipment either side of the unit.

- A Source Controller may be connected directly to trunking of depth 50mm or less (see right, top).

- Where trunking depth is greater than 50mm, a gap of 50mm is recommended to allow for adequate airflow for ventilation (see right, bottom).

- Allow adequate space for future maintenance of the unit. Do not install in a location that will later be inaccessible.
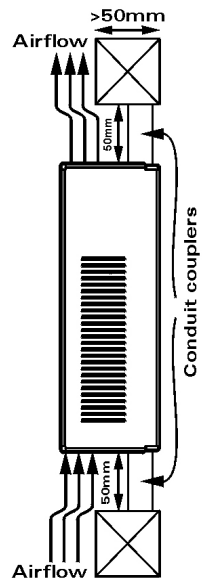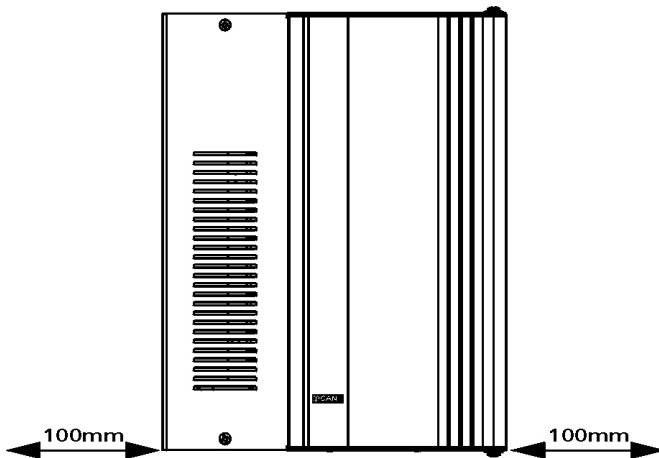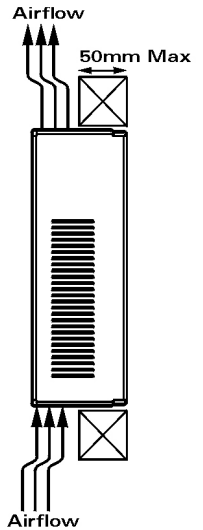
Mounting

Remove the unit cover to gain access to the fixing holes.

4 Channel version shown
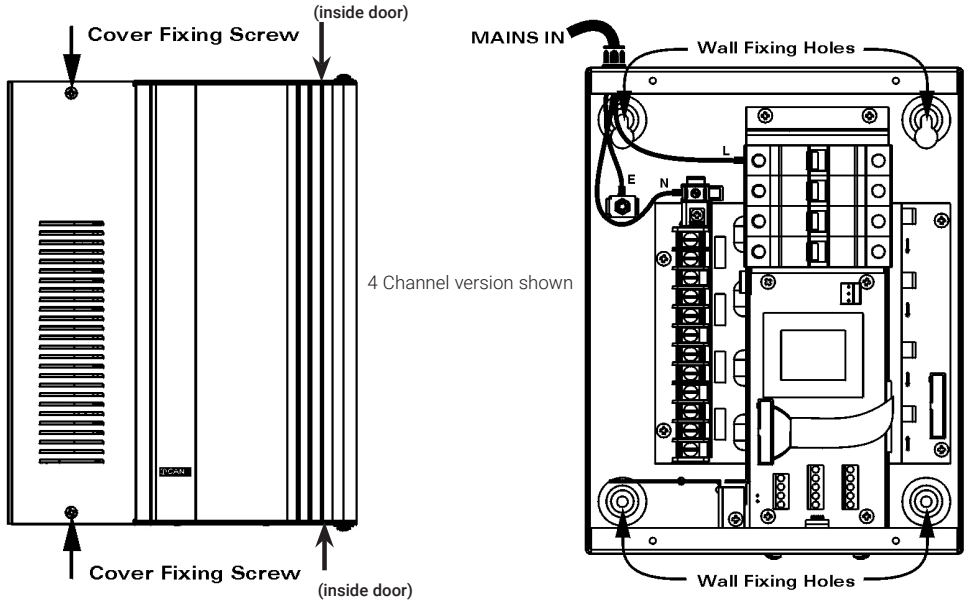
Four screws hold on the cover of the Source Controller; two are visible from the front and two are visible only when the MCB cover door is opened. There is no need to remove the MCB door.
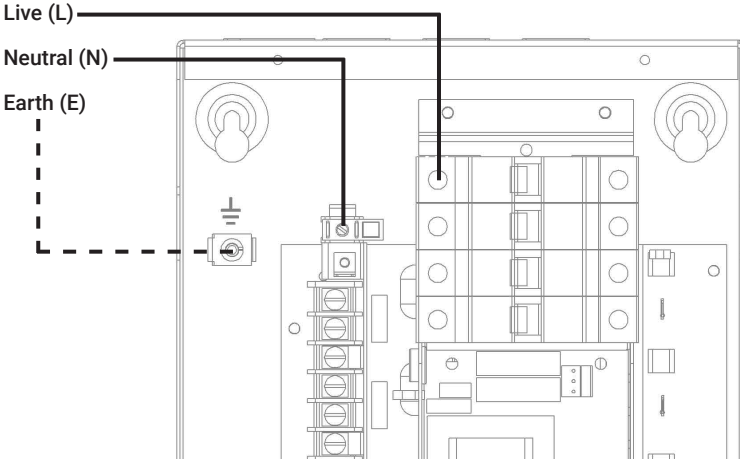
Load Connections

It is essential that the correct Source Controller is used according to load type. Consult the table below if you are unsure about load type before connecting the load to the Source Controller.

IMPORTANT: Failure to use the correct Source Controller or load type has the potential to damage the Source Controller, load, or both and is not covered by product warranty.

Model	Supply (phases)	Compatible Load Types	Max. Load per Channel (@230V) (~W / A)
SCA0410	Single Phase only	Leading & Trailing-edge, mains & LV (tungsten, halogen).	2300W / 10A
SCA1210	Single or Three Phase	Leading & Trailing-edge, mains & LV (tungsten, halogen).	2300W / 10A

Connecting the Supply

SCA0410 - Single Phase Supply

Live (L)

Neutral (N)

Earth (E)

SCA1210 - Three Phase Supply

Live (L1)

Live (L2)

Live (L3)

Earth (E)

Neutral (N)

SCA1210 - Single Phase Supply

Live

Earth (E)

Neutral (N)

Note: For single phase wiring the live supply cable will need to be applied to channel MCBs 1, 2 & 3
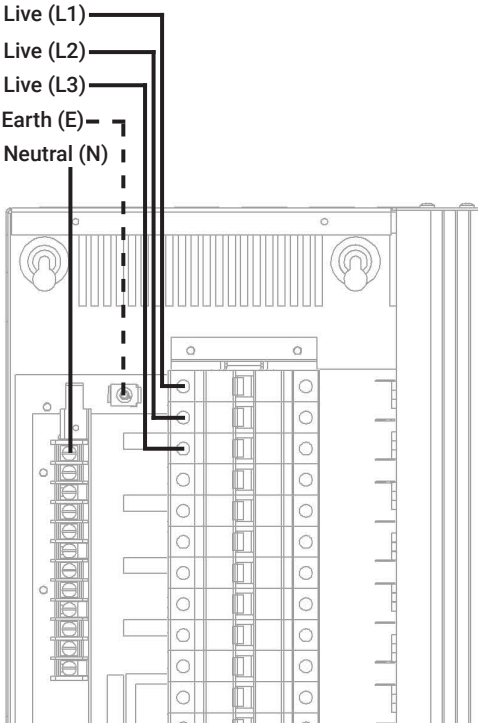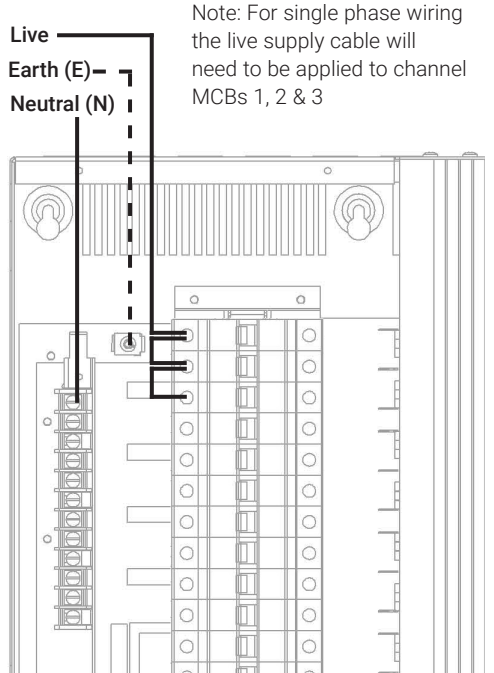
Three-phase Operation

SCA1210 maintains output terminal order according to channel number, rather than grouping the outputs together by phase.

For SCA1210, the output LEDs to the right-hand side of the unit are grouped by phase. This is because each of the three Power PCBs are controlling each of the phases.

Therefore, if the second LED down on the right side of the unit is on, and the circuit needs to be isolated, this corresponds to the second output of phase L1, which is output channel 4 and therefore breaker number 4 on the Source Controller.
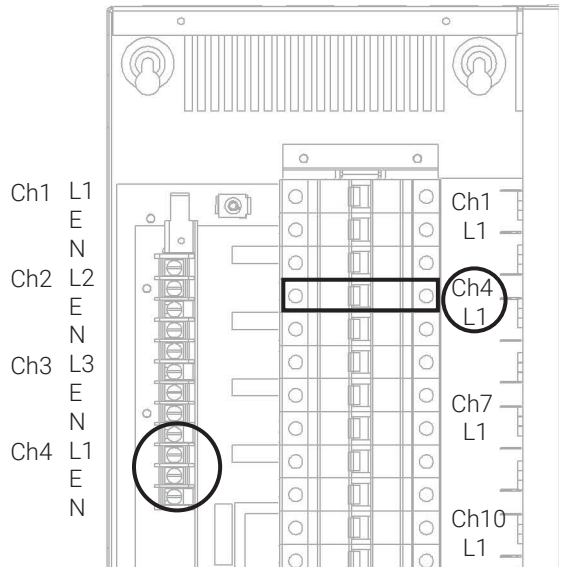

Network Connections

Network Cable Topology

The iLight Network is of CAN bus (Controller Area Network) standard. A maximum of 100 devices can be added to the network on a single run. NOTE: Device quantity can be increased with a BN-2-D Network Bridge/Repeater unit.

The network must be wired in a 'daisy-chain' radial configuration, resulting in two end-of-line positions for the CAN pair. The order that devices are situated on the network is not specific, but power must be evenly distributed across the network for powering Control Plates, Interfaces and other input devices. Additonal power supplies may be required.

Simple Network Example
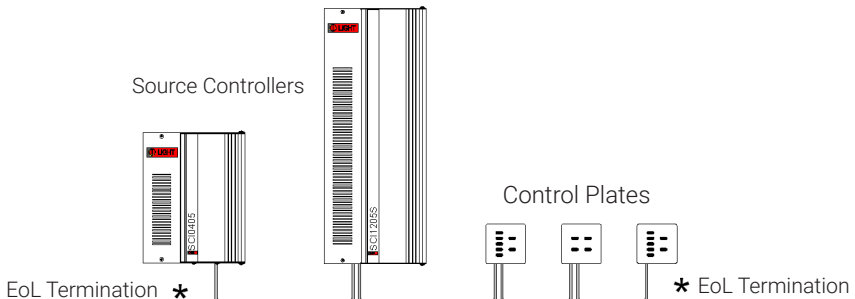
Connection to the network

Connections for the iLight network are located on the CPU card at the bottom of the unit with the cover removed.

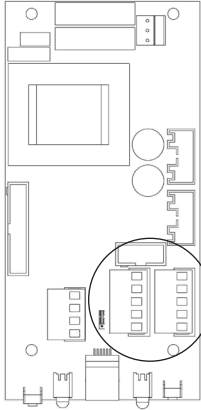Maximum segment distance: 500m (1640 ft). Devices per segment: 100 (without bridge or repeater)

Consult iLight for information on alternative cable types.

There are two 5-way green connectors for the network. Either of these may be used (as an in and an out) or a single used with the network cable doubled-up to it. Please observe the standard wiring colour codes as follows:

Function	iCANnet Cable Colours
0V	Black
CAN L	Blue
Shield	Silver
CAN H	White
+VDC	Red

IMPORTANT NOTE: Connecting a mains potential cable to the iLight Network terminals is likely to damage the unit and others connected, and invalidate warranty.

Network Termination

Applies 120ohm resistor to the iLight network. Required at each end of the network cable run only.
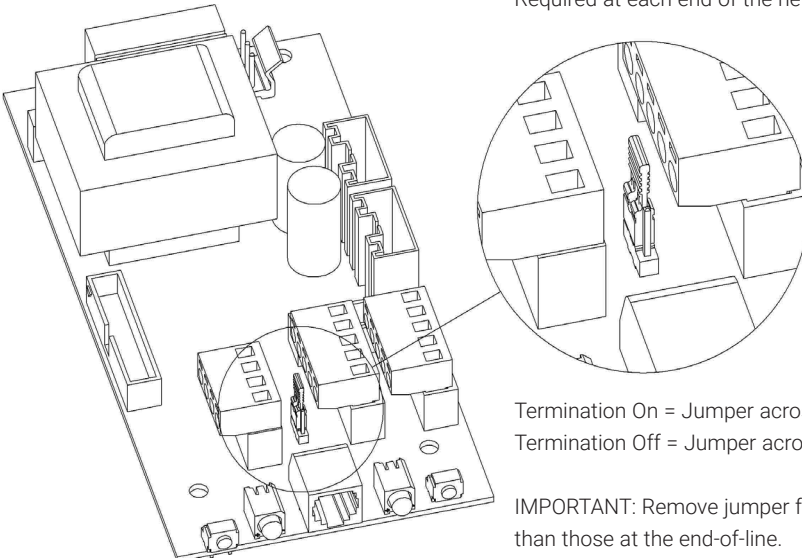
Termination On = Jumper across lower pins
Termination Off = Jumper across upper pins

IMPORTANT: Remove jumper for all devices other than those at the end-of-line.

Service Switches and LEDs

These switches and LEDs are located at the base of the unit.
The two service switches on the source controllers are used for the following:

- Entering Diagnostic Mode.

- Putting the Source Controller in override mode.
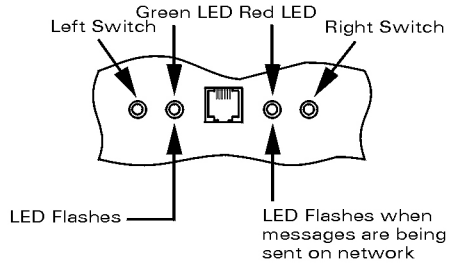
- Sending a message to identify the device on the network.

- Sending a message to identify the device on the network.

The LEDs indicate the following:

- Normal operation:
  Steady green LED blinking 1 x per second.
  Red LED off.

- Message transmission and receipt indicated by red LED flashing for duration of data transmission.

- Override status: Both LEDs flashing together or just red flashing and green off.

NORMAL RUNNING MODE

Left Switch   Green LED   Red LED   Right Switch

LED Flashes

LED Flashes when messages are being sent on network

DEVICE IDENTIFICATION

Left Switch   Green LED   Red LED   Right Switch

Press and Release

LED Flashes to indicate message sent

ICANnet Fault

Left Switch   Green LED   Red LED   Right Switch

LED flashes   LED on
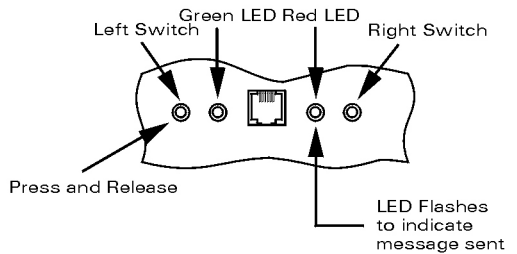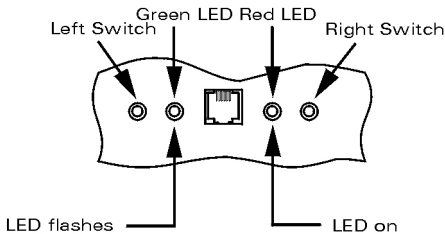
ICANnet error status will occur when a Source Controller is not connected to an iCAN network for any reason. Once either connected to a network of one or more other devices which are powered the error status will be removed. It is still possible to enter Diagnostic mode if a Source Controller is in iCANnet error status.

ENTERING DIAGNOSTIC MODE

Green LED Red LED
Left Switch   Right Switch

Press and hold
for 10 seconds

When in Diagnostic
Mode Red and Green
LEDs flash
simultaneously

OVERRIDE MODES

Green LED Red LED
Left Switch   Right Switch

Successive short
pushes

When in Diagnostic
Mode Red and Green
LEDs blink
simultaneously, in all
On and OFF modes
RED LED flashes only

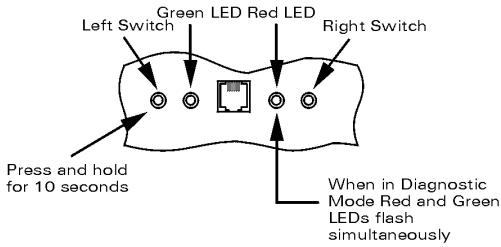## SEQUENTIAL TEST MODE

Green LED Red LED
Left Switch   Right Switch

When in sequential test
mode red LED double blinks.
At the end of the test both
LEDs blink simultaneously.

When in Diagnostic
Mode a short push of
the right hand button
starts a step sequence
through all channels.

EXITING DIAGNOSTIC MODE

Green LED Red LED
Left Switch   Right Switch

Press and hold for
10 seconds

When back to normal
operation mode the
Green LED flashes slowly

Override Mode

Placing the unit into override mode allows for testing of the Source Controller outputs regardless of how the unit is currently programmed. This is useful for ttesting power to circuits prior to the system being commissioned or for fault finding where it can be used to test if there is an issue with the Source Controller output(s) should this be suspected.

When the Source Controller is placed into override mode it will no longer respond to commands sent over the iLight network.

Override mode can also be used to restore power to outputs if control is lost or temporarily removed to allow lighting to remain on until control is restored.
NOTE: Override mode only affects the outputs on the Source Controller on which it is activated.

To exit diagnostic / override status follow the steps shown. If power is cycled to the Source Controller then this will also take the unit out of override mode and it will start up in the default running status.
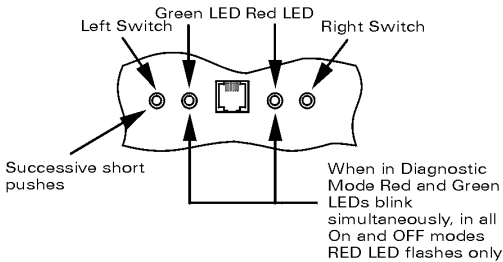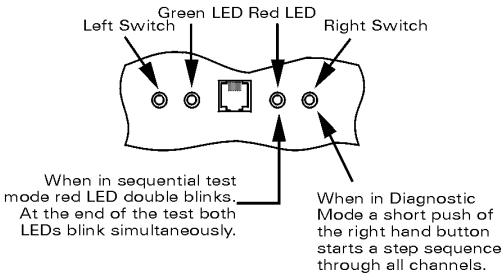
RS485 Connection

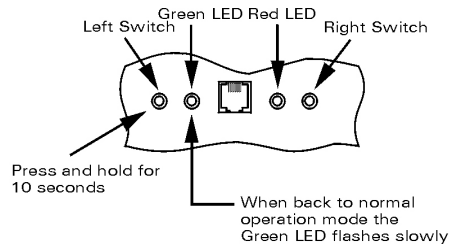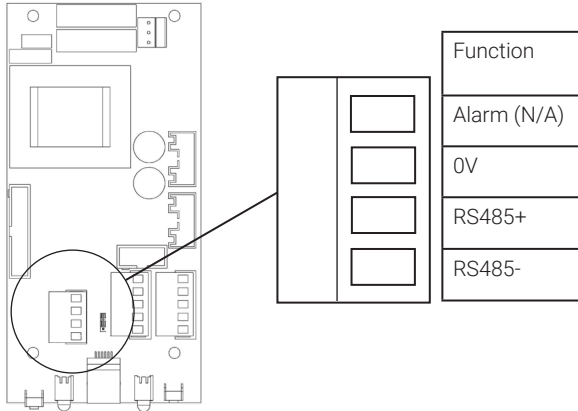Source Controllers have an RS485 port located on the CPU PCB which allows for direct serial integration with the iLight network. If multiple Source Controllers are linked on the iLight network then only a single RS485 connection is required in order to potentially control all devices.

Use CAT5 FTP or equivalent data cable for the RS485 connection.

Function
Alarm (N/A)
0V
RS485+
RS485-

The pin marked Alarm should be ignored. This feature is covered in the Alarm Input section.

This port can also be adapted to be used as a DMX input port for DMX control of the Source Controller's outputs. It cannot be used for this purpose if it is already being used as an RS485 port. This feature is covered in the 'Output Control by DMX Input' section.

IMPORTANT NOTE: Connecting a mains potential cable to the RS485/DMX terminals is likely to damage the unit and others connected, and invalidate warranty.

RS485 Data Format

- Baud Rate: 9600
- 8 Data Bits
- 1 Stop Bit
- No Parity

RS485 Message Format

Please refer to the RS485 Serial Integration article on the iLight Technical Support site for a full glossary of available RS485 messages.

RS485 Message Glossary

Virtual control messages are used to control the system, and not individual devices. The message is transmitted across the iLight CAN network to all other devices.

@SSxx:Axx:Fxx<cr>   This message selects a scene in an area.
SSxx defines the scene number, where xx is valid from 00 to 99. Scene 00 is OFF.
Axx defines the Area Number, valid for 01 to 99.
Fxx defines the Fade Time, valid for 00 to 99 seconds.

@SAxx:Axx<cr>   This message saves the current levels to a scene in an area.
SAxx defines the scene number, valid from 00 to 99. Scene 00 saves to the current scene.
Axx defines the Area Number, valid for 01 to 99.

@RSxx<cr>   This message requests the current scene number in an area.
RSxx defines the Area Number, valid for 01 to 99.

@RExx:Axx<cr>   This message reports the current scene number in an area.
RExx defines the Scene Number, valid for 00 to 99. Scene 00 is OFF.
Axx defines the Area Number, valid for 01 to 99.

@SCxx:Axx:Lxx:Fxx<cr>   This message sets the level of a channel in an area.
SCxx defines the channel number, valid from 00 to 99. 00 affects ALL Channels in an Area.
Axx defines the Area Number, valid for 01 to 99.
Lxx defines the Level, valid for 00 (0%) to FF (100%).
Fxx defines the Fade Time, valid for 00 to 99 for seconds.

@RCxx:Axx<cr>   This message requests the level of a channel in an area.
RCxx defines the channel number, valid from 00 to 99. 00 requests ALL Channels in an Area.
Axx defines the Area Number, valid for 01 to 99.

@RLxx:Axx:Lxx<cr>   This message reports the current level of a channel in an area.
RLxx defines the Channel Number, valid for 01 to 99.
Axx defines the Area Number, valid for 01 to 99.
Lxx defines the Level, valid for 00 (0%) to FF (100%).

@CRxx:Axx <cr>   This message increments the area by 1% level.
CRxx defines the channel number, valid from 00 to 99. 00 affects ALL Channels in an Area.
Axx defines the Area Number, valid for 01 to 99.

@CLxx:Axx <cr>   This message decrements the area by 1% level.
CLxx defines the channel number, valid from 00 to 99. 00 affects ALL Channels in an Area.
Axx defines the Area Number, valid for 01 to 99.

@SFxx:Axx <cr>   This message stops fading in an area.
SFxx defines the channel number, valid from 00 to 99. 00 affects ALL Channels in an Area.
Axx defines the Area Number, valid for 01 to 99.

DMX Input Connection

Source Controllers have an RS485 port located on the CPU PCB which allows for direct serial integration with the iLight network. This port can be converted into an input connection for DMX control of the Source Controller by a lighting desk, for example. **To enable DMX control a DI-1 DMX Input PCB must be fitted to the Source Controller.**

| Function |
|---|
| Alarm (N/A) |
| 0V |
| DMX+ |
| DMX- |
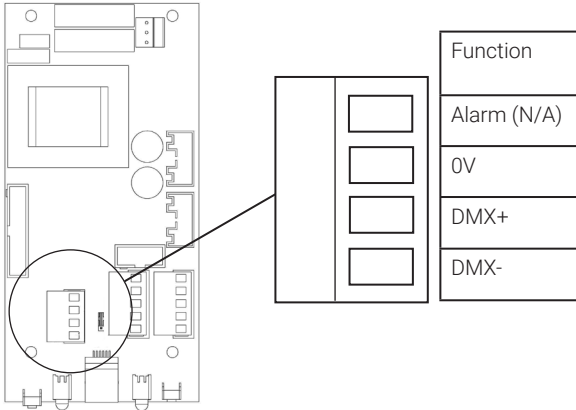
Use Belden 9729 or equivalent data cable for the DMX connection.

The pin marked Alarm should be ignored. This feature is covered in the Alarm Input section.

The port cannot be used for DMX input if it is already being used as an RS485 port.

DMX input is per Source Controller, meaning that this conversion and connection must be made to all Source Controllers that are required to be controlled via DMX input.

- A maximum of 32 devices can occupy a single DMX segment (including the Source Controller) with a total cable length of 300m.

- DMX must be terminated at the end-of-line with a 120ohm value resistor, as per the CAN network.

- Source Controllers will act like a DMX device and DMX addressed must be assigned to each output of the Source Controller. By default this is 1-4 or 1-12.

- The DMX address is assigned to each output through iLight programming software, and each output can be assigned a value between 1 and 512. Any outputs assigned to the same DMX address will therefore respond as a group.
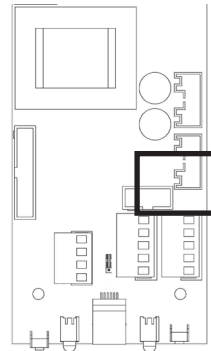
(Above) The DI-1 DMX Input card plugs into the 10-pin socket on the CPU card. The Source Controller's power must be reset after installation in order for it to recognise the PCB.

For more information on DMX control and wiring topology, please consult the 'Introduction to DMX' article available at www.iLight.info.

Alarm Input Connection

Source Controllers have an Alarm Input located on the CPU PCB which allows for direct connection of a volt-free contact closure input from a fire or security system.

When a contact closure occurs across the normally-open Alarm and 0V terminal on the Source Controller, an alarm scene is triggered which is broadcast across the iLight Network to all other devices.

The default scene setting is all channels to 100%. Control Panels are also configured by default to be locked when the alarm link is in place to disable manual override of the lighting during an alarm.

Upon release, channels will return to the last selected scene levels and Control Panels will be re-enabled.

Function
Alarm
0V
N/A
N/A
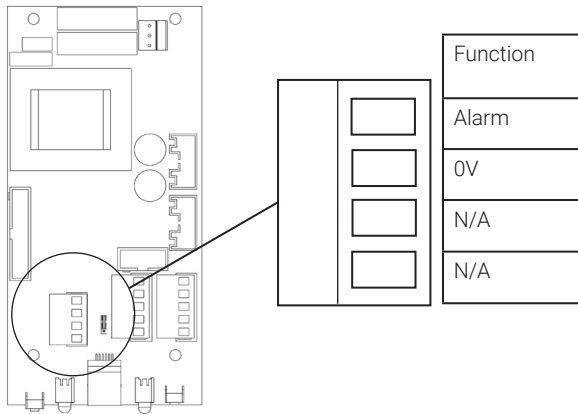
The Alarm Scene can be reconfigured when the Source Controller is programmed and it is possible to set other devices on the network to ignore the alarm status if control must be maintained to some outputs or Areas.

NOTE: The Alarm connection cannot be adapted for use as a volt-free inputs for other purposes, such as sensors. UIG2 Universal Interfaces, UIM Mini Universal Interfaces and UIS Sensor Interfaces are required for additional input requirements to the iLight Network.

Troubleshooting

The loads are not switching on when I first power up the Source Controller.
Check for voltage on the output terminals to ensure that this is not a wiring issue to the load(s). Make sure that the green CPU card status LED is blinking slowly (1x per sec).
If you have already connected up the networked Control Plates or Touchscreens to the unit then try selecting the factory scenes from these.
You can override the unit to get the lighting on to 100%. Please refer to the Override Mode instructions on page 9.

There are one or more outputs stuck on and cannot be turned off.

First, check the alarm status is not active as this will set all channels to full. If the alarm status is not active, cycle the power to the device. This will reset the controller. If the fault doesnt clear, contact the iLight helpdesk

The Source Controller has power but none of the outputs can be controlled from Control Plates or Touchscreens.
Make sure that the green CPU card status LED is blinking slowly (1x per sec). Check to see if the red LED to the right of this flashes when operating the lights. You may need to test your network cable in case there is a break or a broken connection somewhere.
Check that the black ribbon cable is fully inserted into the 26 pin socket.
If no LEDs are lit on the CPU card of the Source Controller, but power is present, this suggests that the CPU board or its transformer has a fault and may need replacing or repairing.
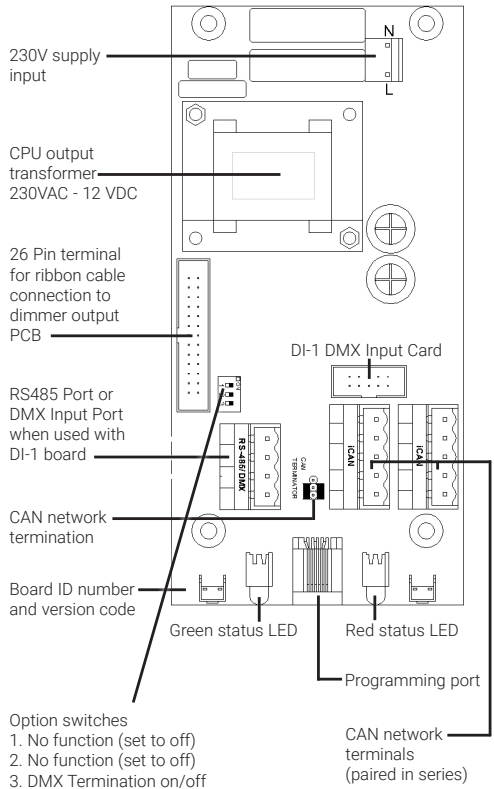
I am using Device Editor and cannot find the Source Controller when searching for devices.
Please see above suggestions. Also, press the button to the left of the green LED on the CPU board to ping the Source Controller. This should make it appear in the search window and display a message in the iLight network monitor window.

If your issue is not covered by any of the above please contact iLight Technical Support. The email address and telephone number can be found on the back page of this manual.

CPU PCB Schematic

This is the single-phase CPU PCB EM6774 found in both the SCA0410 & SCA1210 controllers.

230V supply input

CPU output transformer 230VAC - 12 VDC

26 Pin terminal for ribbon cable connection to dimmer output PCB

DI-1 DMX Input Card

RS485 Port or DMX Input Port when used with DI-1 board

CAN network termination

Board ID number and version code

Green status LED

Red status LED

Programming port

Option switches
1. No function (set to off)
2. No function (set to off)
3. DMX Termination on/off

CAN network terminals
(paired in series)

iLight Technical Support

Tel: +44 (0)844 324 9100   (available Mon-Fri 9am-5pm GMT)

Email: cctechsupport@signify.com

www.iLight.co.uk

All products manufactured by iLight are warranted to be free from defects in material and workmanship and shall conform to and perform in accordance with Seller's written specifications.

This warranty will be limited to the repair or replacement, at Seller's discretion, of any such goods found to be defective, upon their authorized return to Seller. This limited warranty does not apply if the goods have been damaged by accident, abuse, misuse, modification or misapplication, by damage during shipment or by improper service.

There are no warranties, which extend beyond the hereinabove-limited warranty, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS.

No employee, agent, dealer, or other person is authorised to give any warranties on behalf of the Seller or to assume for the Seller any other liability in connection with any of its goods except in writing and signed by the Seller. The Seller makes no representation that the goods comply with any present or future federal, state or local regulation or ordinance. Compliance is the Buyer's responsibility.

The use of the Seller's goods should be in accordance with the provision of the National Electrical Code, UL and/or other industry or military standards that are pertinent to the particular end use. Installation or use not in accordance with these codes and standards could be hazardous.

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iLight
Usk House, Lakeside, Llantarnam Park,
Cwmbran, NP44 3HD, UK
t: +44 (0)1923 495495   e: enquiries@ilight.co.uk
www.ilight.co.uk

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