

## RI-2 Relay Interface



CE DEVICE NO:

 **COOPER**  
Lighting Solutions

RI-2

Made in the UK by:  
Cooper Lighting Solutions  
Usk House, Lakeside, Lakeside Park,  
Cwmbran, NP44 3SD, UK  
E +44 (0)1922 626655  
info@cooperlighting.co.uk  
cooperlighting.com

For technical support call:  
1-800-353-2879 - North America  
+44 (0)844 32 49 100 - International

Interior use only, install in Type I environment  
Mains Supply Requirements: 120-240VAC, 50-60Hz, 8-16A 15/30A  
USE COPPER CONDUCTORS RATED  
90°C MINIMUM

UTILISEZ LES CONDUCTEURS DE COBRE  
CLASSÉES  
MINIMUM 90°C

UTILISEZ LES CONDUCTEURS DE COBRE  
A EVALUÉ E 90°C

 **WARNING HAZARDOUS VOLTAGES  
DISCONNECT FROM SUPPLY  
BEFORE REMOVING COVER**

**AVERTISSEMENT! ELÉMENTS SOUS  
TENSION À L'INTÉRIEUR!  
DÉBRANCHER AVANT D'OUVRIR.**

**ADVERTENCIA VOLTAJES  
PELIGROSOS DENTRO.  
DESCONECTE LA FUENTE DE  
ALIMENTACIÓN ANTES DE ABRIR.**

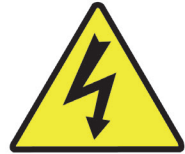
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## WARNING HAZARDOUS VOLTAGES DISCONNECT FROM SUPPLY BEFORE REMOVING COVERS

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.
- Cooper Controls cannot accept responsibility for repairs or modifications that are not competently executed and in accordance with service or upgrade information.



CE compliant to all relevant standards

# Introduction

RI-2 provides a versatile interface between an iLight system and other control systems. This compact unit can be mounted virtually anywhere. It has eight inputs, which may be programmed to be either digital or analogue. The unit also has eight volt-free mains rated low power relays. These allow a wide range of external equipment to be controlled. All inputs and outputs are fully programmable as to their function.

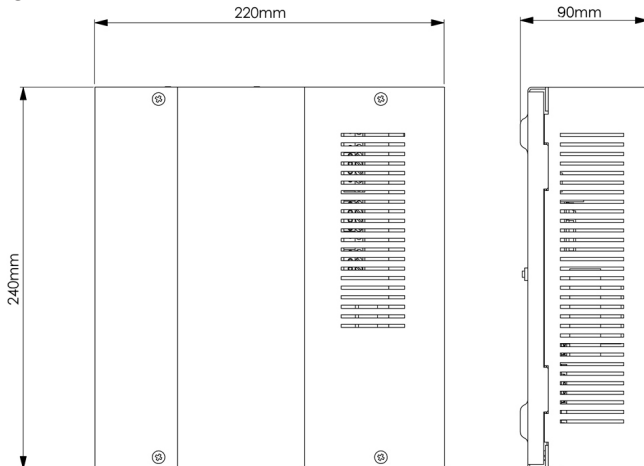
This interface allows the iLight iCANnet™ network to control other systems and other systems to communicate with the iCANnet™ network. RI-2 may be programmed to control curtains & blinds, screens, AV and other presentation equipment as well as controlling contactors for heavier power applications. With the control inputs set to analogue, any 0-10V source can be programmed to control system functions. The unit could also be programmed such that system sequences could be activated by a motion detector or other devices on the iCANnet™ network. The adaptability and versatility of this product make it an essential item in larger, more sophisticated venues where more than just lighting control is required.

### Weight:

Packed: 2.6 kg

Unpacked: 2.4 kg

# Dimensions



# Specification

### Electrical

Supply: 230 volts +/- 10% 50/60 Hz 1 Amp  
(optionally, 127 volt 60 Hz)

Protection: Requires external circuit breaker  
Internal Electronics fuse only

### Load Types:

8 x Volt free relays – changeover contacts rated  
230volts +/-10% 50/60Hz 3A resistive max

### Terminal Sizes:

iCANnet™ cable size: 5 x 1.5mm<sup>2</sup>

Control input cable size: 10 x 1.5mm<sup>2</sup>

Switch output cable size: 9 x 1.5mm<sup>2</sup>

Audio Visual Port cable size: 2 x 1.5mm<sup>2</sup>

Relay output cable size: 24 x 1.5mm<sup>2</sup>

### Memory:

FLASH memory to be able to upgrade software  
EEPROM for program and sequence memory

### Environmental Data

Temperature: 2°C to 40°C

Humidity: +5 to 95% non-condensing

## 8 Relay Outputs

- Can be wired to provide low voltage or line voltage outputs.
- Do not mix low voltage and line voltage on relay output terminals
- Normally open and Normally closed terminals available for each relay
- Low voltage volt free outputs
- Line voltage rated at 3 Amps AC for general use, resistive, incandescent lamps (tungsten), electric discharge (ballast) loads and ¼ HP AC motor loads for use at 120 VAC.
- LED diagnostic indicators for relay status

## 8 Analog / digital inputs

Individually programmable as analog or digital inputs

### Analog input mode:

- Suitable for use with rotary and linear variable resistors
- Reads input voltages from 0 – 10 VDC
- Inputs protected for use up to 12 VDC

### Digital input mode works with:

Switch closure from the IN to Common

- For use with both momentary and maintained inputs
- Minimum momentary input pulse duration 20 msec
- Switch will see up to 60uA when closed

Open collector NPN active low circuit

- On-state voltage  $\leq 500\text{mV}$  and capable of sinking 60uA
- Collector-emitter leakage current  $\leq 10\text{ uA}$
- Collector-emitter voltage  $\geq$  supply voltage

Actively driven circuit

- Active low voltage  $\leq 500\text{mV}$  and capable of sinking 60uA
- Active high voltage  $\geq$  supply – 1 volt
- All analog / digital inputs wire with 2 part connectors with screw terminals. Wire sizes 12 AWG (4mm<sup>2</sup>) to 24 AWG (0.25mm<sup>2</sup>).

## 8 Digital Outputs

- LED indication of switched output status
- Configurable as digital control channels
- Outputs will drive a single LED, or two LEDs in a series with up to 20mA of current; exact current will depend upon the forward voltage drop of the LED used.
- Outputs are actively driven high and low to TTL voltages with an internal series impedance of 220 ohms.
- All digital outputs wire with 2 part connectors with screw terminals. Wire sizes 12 AWG (4mm<sup>2</sup>) to 24 AWG (0.25mm<sup>2</sup>).

### Support for multiple control protocols

- 2 sets of terminals for the iCANnet network
- RS485 connection to third party devices
- DMX 512A output to third party devices

### 2 Alarm switch inputs

- For integration with emergency control devices and building management systems
- For DC use only
- Maximum open circuit voltage, 5V

# Mounting

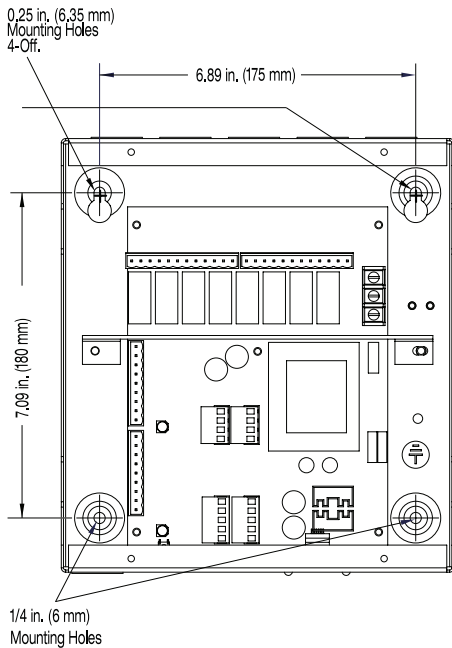
## Location and spacing

The RI-2 Interface should be installed in a dry ventilated location, where ambient conditions are maintained within the requirements of the unit.

The unit has ventilation slots on its sides to allow convection cooling and under no circumstances should these be blocked. Allow 50mm above and below the unit if trunking with a depth greater than 50mm is used.

## Mounting Holes

The unit is provided with four 1/4in (6mm) diameter fixing holes for wall mounting. The mounting holes can be accessed by undoing the four screws on the front cover and removing it.



# Supply Wiring

## Connecting the Supply

This unit requires a nominal 240V single phase supply (Live, Neutral, and Earth) with 1A capability.

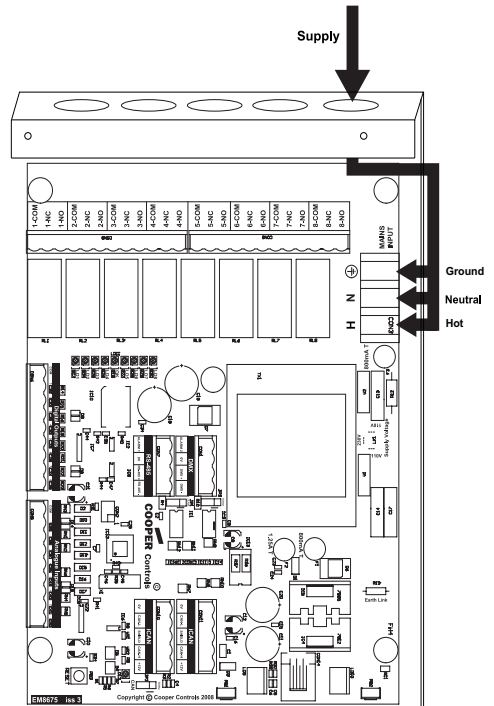
Keep the supply wiring segregated from the relay connector cabling.

Ensure all supply connections are fully tightened.

A knockout, suitable for a 3/4" (19mm) cable gland, is provided for the supply entry point.

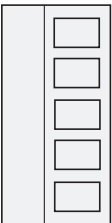
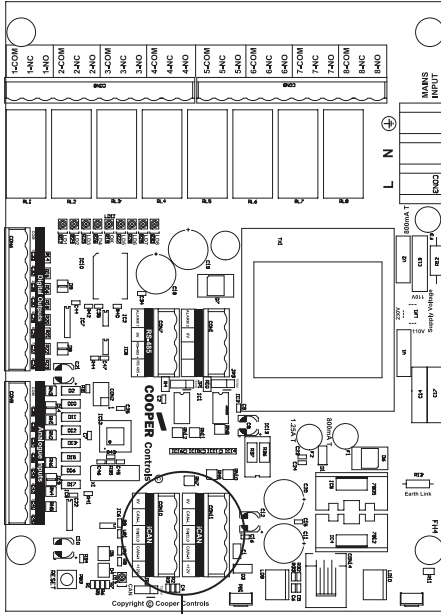
## Wire Gauge for Supply Terminals

Terminals suitable for wire sizes from 22AWG (0.34mm<sup>2</sup>) to 12AWG (4mm<sup>2</sup>).



# iCAN Network Connections

Two removable 5 way connector blocks are provided for the connection of iCAN network cables. The iCAN terminals on the board are connected in parallel wiring. An appropriate cable gland should be fitted to each knockout hole to protect the cabling from damage.



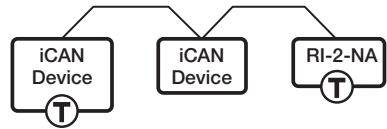
Function	iCANnet Cable	CAT5/6 Colour
0V	Black	Green pair
CAN L	White	Blue
Shield	Silver	Brown pair
CAN H	Blue	Blue/white
+12Vdc	Red	Orange pair

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

\* A maximum segment distance of 3200 ft. (1000 m) is possible if an additional 12V power supply is used.

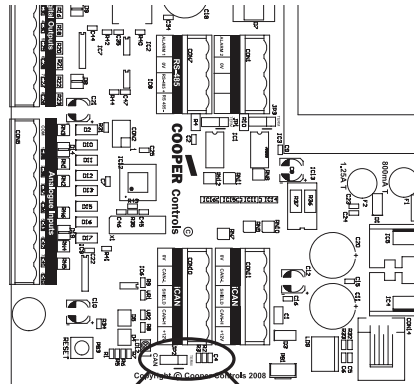
iCAN devices are 'daisy-chained' on the network. Spurs from the Network are not permitted and will result in communications problems. Devices on an iCAN network can be wired in any order. Termination is required at both ends of the network.

## Network Termination

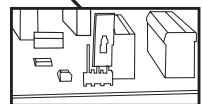


T - Indicates where a termination is required.

The RI-2 has built-in network termination. If the RI-2 is at the end of the network, ensure the CAN TERM jumper is fitted in the Termination On position.



**Termination OFF**



**Termination ON**

## Relay Outputs

There are 8 Relay Outputs that can be wired to provide low voltage or line voltage outputs.

- Normally open and Normally closed terminals available for each relay
- Low voltage volt free outputs
- Line voltage rated at 3 Amps AC for general use, resistive, incandescent lamps (tungsten), electric discharge (ballast) loads and ¼ HP AC motor loads for use at 120 and 240 VAC.
- Do not mix low voltage and line voltage on relay output terminals
- Controlled as channels 1-8

Connections are made via two 12-way 2 part connectors with screw terminals.

**Wire Gauge for Relay Outputs:** Terminals suitable for wire sizes from 24AWG (0.25mm<sup>2</sup>) to 12AWG (4mm<sup>2</sup>).

The unit is supplied with knockouts, suitable for 3/4" (19mm) cable glands, for relay output wiring. An appropriate cable gland should be fitted to each knockout hole to protect the cabling from damage.

## Analog/Digital Inputs

The unit has eight inputs which can be configured via software for either digital or analog input signals.

- Individually programmable to be analog or switch inputs
- Analog inputs accept 0 – 10VDC signals

Note: Wire distance from the device to the RI-2 should not exceed 32 feet (10m).

Connections are made via a 9-way two part connector with screw terminals.

The unit is supplied with knockouts, suitable for 3/4" (19mm) cable glands, for analog/digital input cabling. An appropriate cable gland should be fitted to the knockout hole to protect the cabling from damage.

Wire Gauge for inputs: terminals suitable for wire sizes from 24AWG (0.25mm<sup>2</sup>) to 12AWG (4mm<sup>2</sup>).

## Digital Outputs

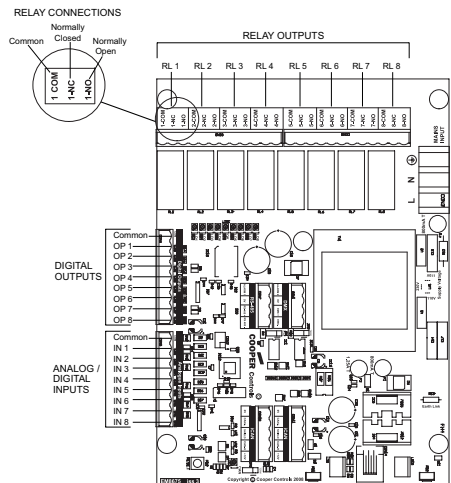
The unit has eight digital outputs. These can be configured as:

- LED drive indicators of switched output status
- Digital control channels
- Controlled as channels 9-16

Connections are made via the 9-way two part connector with screw terminals.

**Wire Gauge for Digital outputs:** terminals suitable for wire sizes from 24 AWG (0.25mm<sup>2</sup>) to 12 AWG (4mm<sup>2</sup>).

The unit is supplied with knockouts, suitable for 3/4" (19mm) cable glands, for digital output wiring. An appropriate cable gland should be fitted to the knockout hole to protect the cabling from damage.



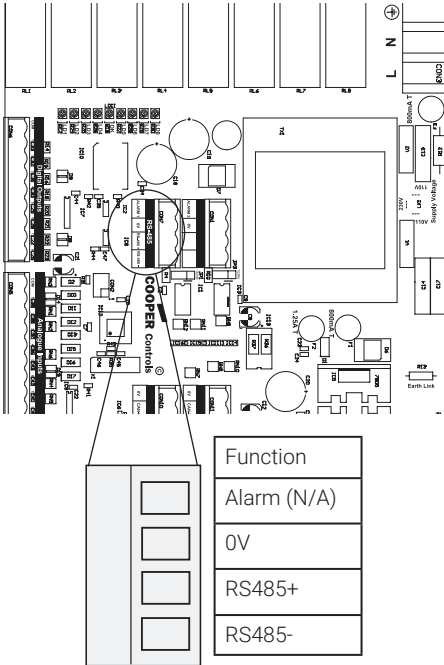
# RS485 Connections

An RS485 port is provided for connection to third party devices or PC integration.

The settings are:

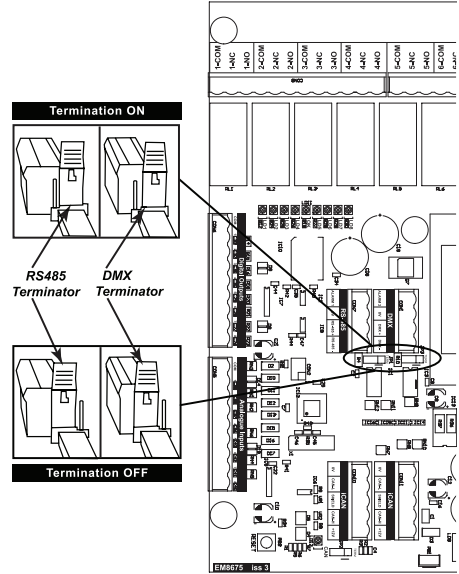
- Baud Rate: 9600 Baud
- Data Structure: No parity, 8 data bits, 1 start bit, 1 stop bit.

A removable 4 way connector block is provided for the connection of RS485.



# RS485 & DMX Terminations

RS485 and DMX networks are daisy-chained. Devices at either end of the network must be terminated. If the RI-2 is at the end of the network, ensure the appropriate jumper is fitted in the termination ON position, as in the following diagram:

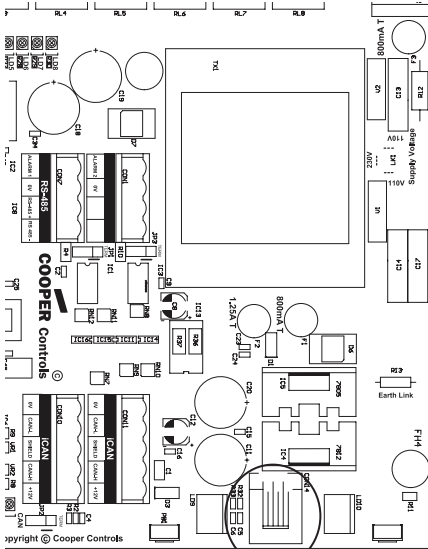




## RJ12 Connector

An RJ12 connector is also fitted, for factory & commissioning use.

Note: It is not recommended to connect to this port for normal operation.

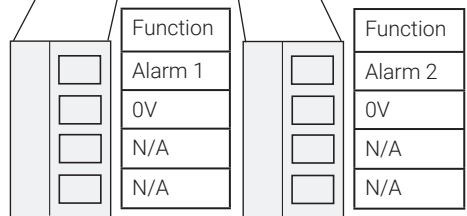
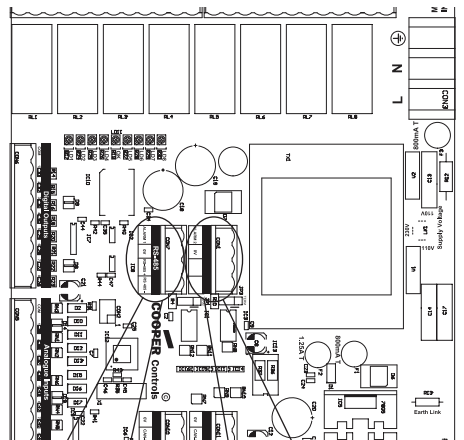


RJ12 Connector located on the base of the unit

## Alarm Inputs

The default action for the alarm inputs is for all outputs to switch on. These inputs are designed for integration with emergency control devices and building management systems, using volt-free switch inputs.

The default action for the alarm inputs is for all mapped DMX channels to output 255, digital outputs drive high, and relay outputs close. They will then remain in this state, regardless of any other command received, until both alarm inputs are open again.



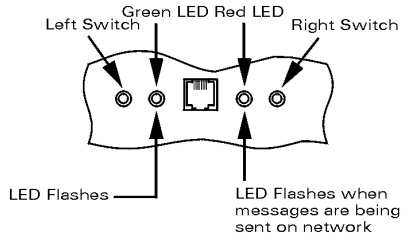
# Service Switches and LEDs

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.

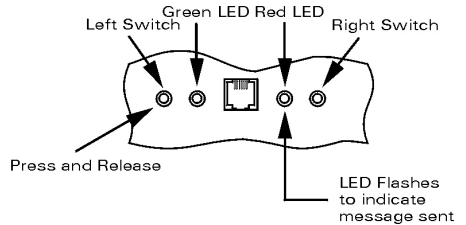
## NORMAL RUNNING MODE



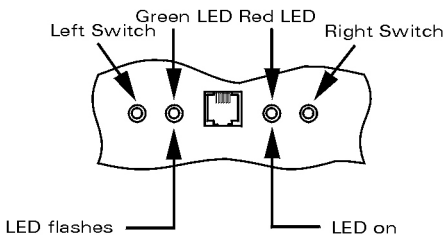
The LEDs indicate the following:

- 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.

## DEVICE IDENTIFICATION

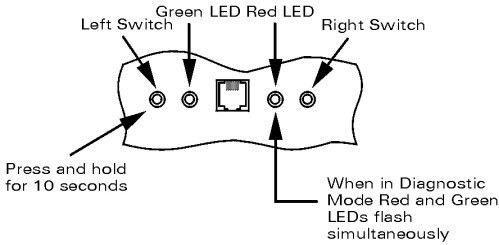


## iCAN Network Comms Error

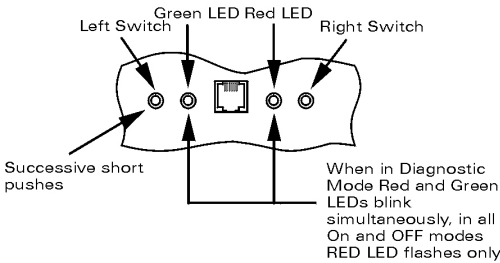


iCANnet error status will occur when a Source Controller is not connected to an iCAN network for any reason. Once either connected to a network of one or more other devices which are powered the error status will be removed. It is still possible to enter Diagnostic mode if a Source Controller is in iCANnet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

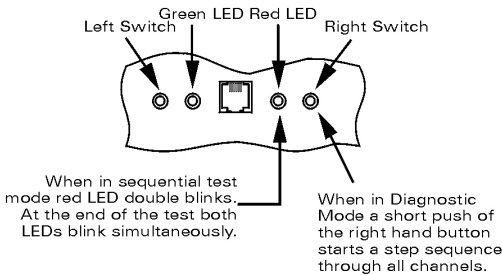
## ENTERING DIAGNOSTIC MODE



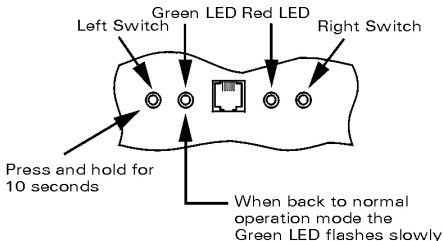
## OVERRIDE MODES



## SEQUENTIAL TEST MODE



## EXITING DIAGNOSTIC MODE



## 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 testing 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.

## iLight Technical Support

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

Email: [cctechsupport@cooperlighting.com](mailto:cctechsupport@cooperlighting.com)

Web: [www.iLight.co.uk](http://www.iLight.co.uk)

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All products manufactured by Cooper Lighting Solutions and identified with the iLight product series mark are warranted to be free from defects in material and workmanship and shall conform to and perform in accordance with Seller's written specifications. For detailed warranty information, contact Cooper Lighting Solutions.

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.



FM 664349



### Cooper Lighting Solutions

Usk House, Lakeside, Llantarnam Park,

Cwmbran, NP44 3HD, UK

t: +44 (0)1923 495495 e: [info@cooperlighting.co.uk](mailto:info@cooperlighting.co.uk)

[www.cooperlighting.co.uk](http://www.cooperlighting.co.uk)