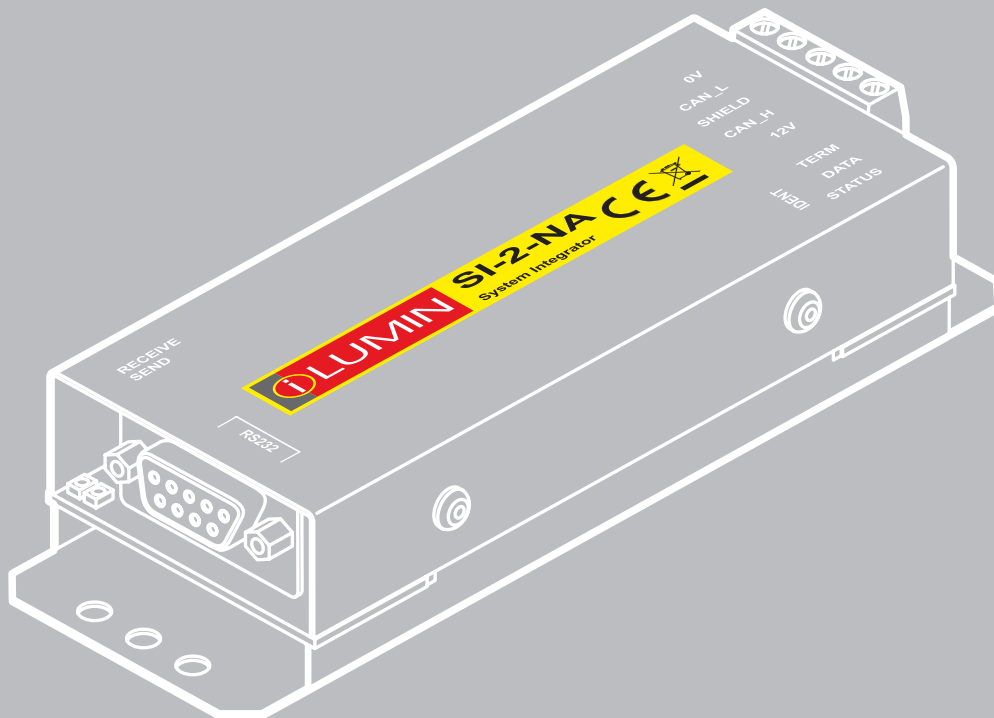


# SI-2 System Integrator

## Installation guide





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# Introduction

## Welcome

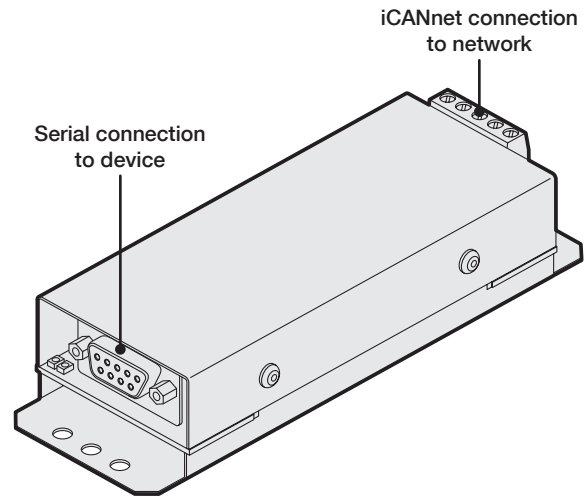
The SI-2 System Integrator provides a vital link point between any iCANnet network and a third party device such as an audio visual unit. The compact SI-2 System Integrator provides a 5-way connector block at one end for the iCANnet link and a 9-pin D-type female socket at the other end for the RS232 serial connection to the third party device.

Using the intuitive iCANsoft application, you can program the SI-2 to search for particular actions or messages received from other control units attached to the iCANnet network. When a received action or message matches a stored template, the SI-2 will send a control message to the device connected via the serial port.

Similarly, the SI-2 also monitors messages being sent back from the connected serial device and when any of those messages match those stored within its memory, a range of actions can be triggered on the iCANnet network.

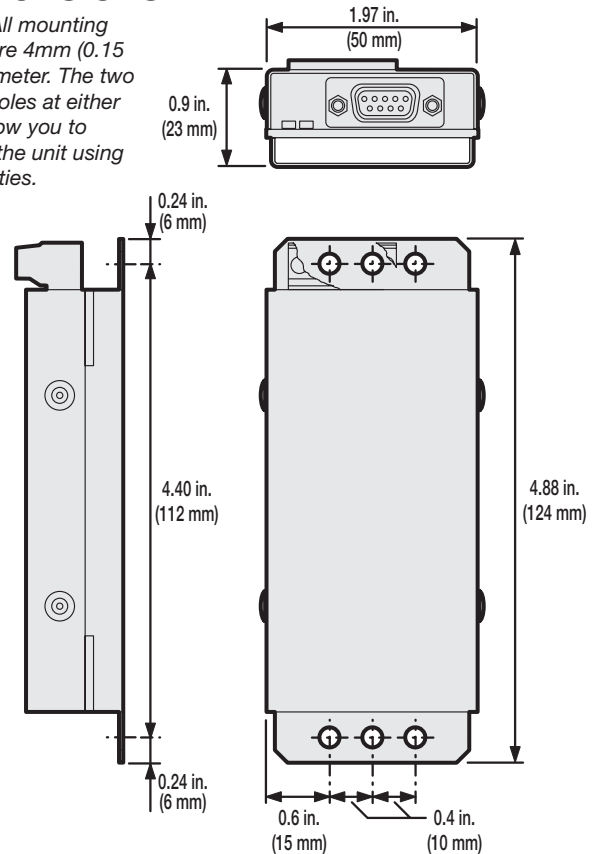
The SI-2 System Integrator can store up to 100 input and output messages together with their related actions. Additionally, the SI-2 can store up to 16 sequences, each of which can comprise up to 128 separate steps to allow multiple actions to be triggered by a single command.

## Supplied parts



## Dimensions

*Note: All mounting holes are 4mm (0.15 in.) diameter. The two outer holes at either end allow you to attach the unit using plastic ties.*



## Ambient atmosphere requirements

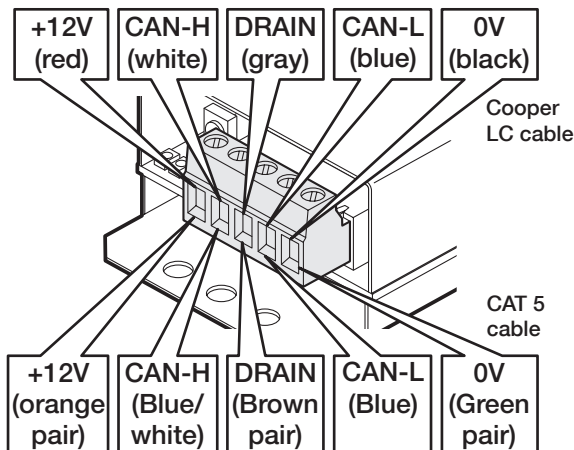
Temperature 0°C to +40°C (32°F to 104°F)

Humidity 0 to 95% non-condensing

# Connections

## iCANnet wiring

Cable connections to the iCANnet network are made to a removable 5-way connector block located at one end of the SI-2 unit:

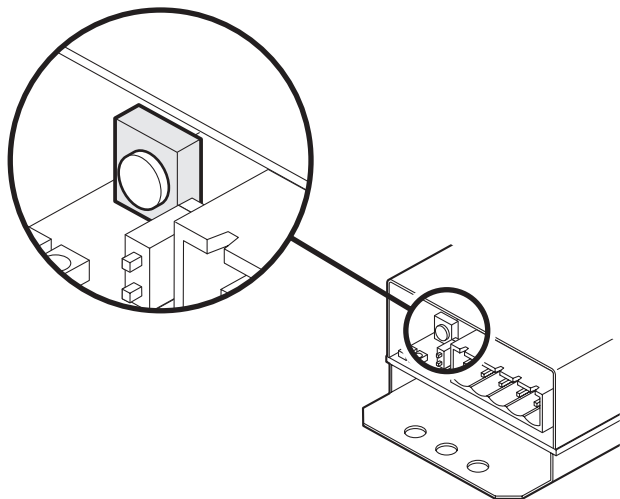


- Cable type: Cooper LC or CAT 5
- Maximum cable length: 1000 ft. (305 m) \*
- Devices per segment: 100 (without bridge or repeater)

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

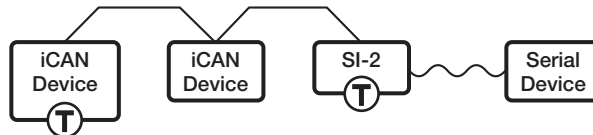
## iCANnet announce button

The SI-2 unit features a small button adjacent to the green connector which can be used to add the device to an iCANnet network. When pressed, the SI-2 will send an announcement message across the iCANnet network. Please see the section 'Adding the SI-2 to iCANsoft' for more details.



## iCANnet termination

The iCANnet link is a 'daisy chain' protocol that requires termination on the devices located at either end of the iCANnet chain.

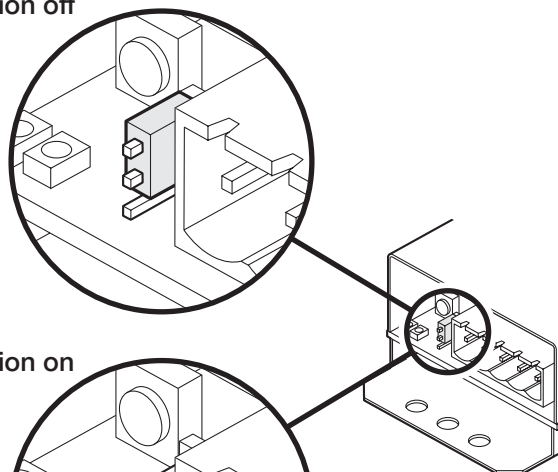


The SI-2 unit is supplied with termination enabled as standard. If it is not connected as an end device in the iCANnet chain, you need to disable termination.

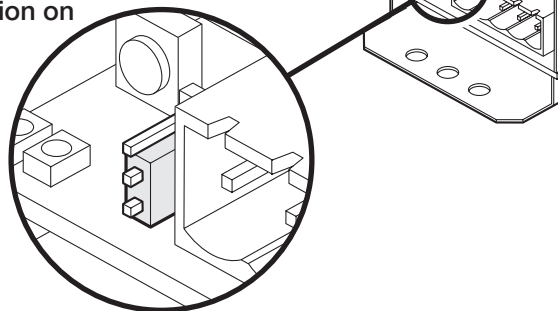
*Note: The connection to the serial device is treated separately and has no impact on whether or not the SI-2 should be terminated.*

To disable SI-2 termination, move the jumper from the lower two pins to the upper two pins, as shown here:

### Termination off

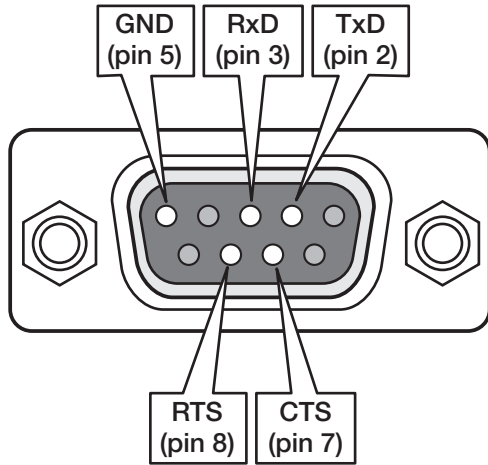


### Termination on



## Serial device connection

The SI-2 unit provides an RS232 link via a standard 9-pin D-type female connector. The SI-2 uses five pins of the D-type connector as shown below:



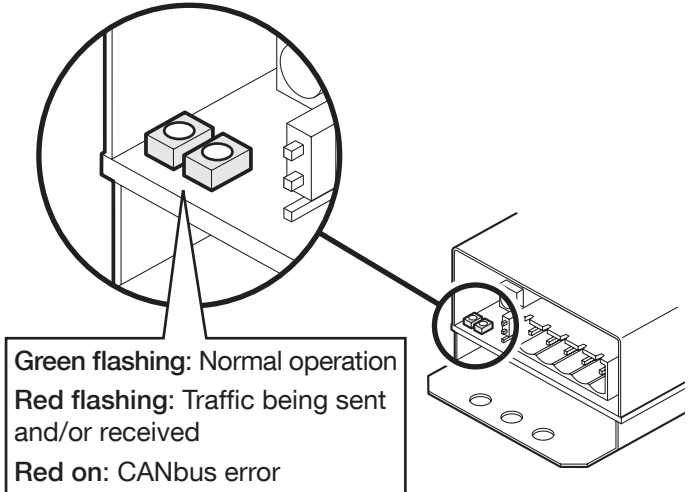
The various serial communication parameters used by the SI-2 serial port are all fully configurable using the iCANsoft application:

Baud rate	1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200
Data bits	7 or 8
Stop bits	1 or 2
Parity	None, Reserved, Even or Odd
Handshaking	Enabled or Disabled

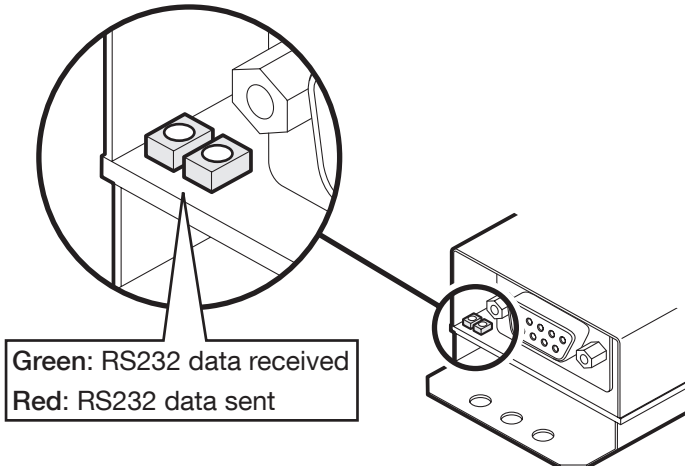
## Operation indicators

The SI-2 unit has a red and green indicator at either end to assist with configuration and troubleshooting.

### At the iCANnet end



### At the RS232 end




# Programming

This section provides details about programming items specific to the SI-2 system integrator within the iCANsoft application. For details about the general use of iCANsoft, please refer to the System manual.

## Adding the SI-2 to iCANsoft

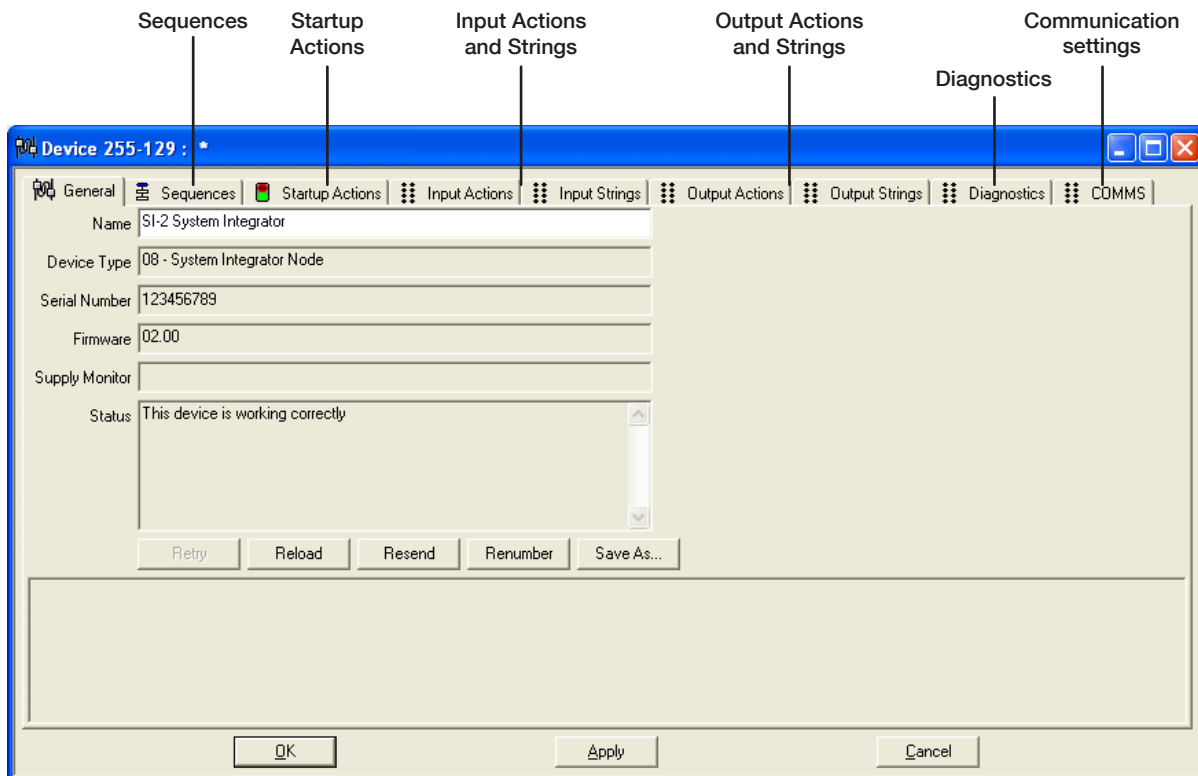
Once the SI-2 System Integrator has been connected to the iCANnet network, you can add it to the iCANsoft application in any of the following three ways:

- Within the iCANsoft main window, click the  icon,
- Within the iCANsoft main window, select 'Tools' > 'Advanced Network Search', or
- On the SI-2 unit, adjacent to the green connector block, press and release the small button to cause an announcement message to be sent across the network.

*Note: Where there are multiple SI-2 units installed on a network, you can use the announce button to pinpoint the device within iCANsoft. Its entry within the device list will appear in bold and the iCANsoft output section will provide device number details.*

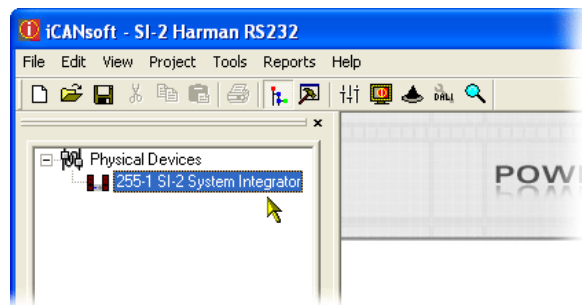
## The SI-2 configuration window

This tabbed window provides all of the options necessary to program the SI-2 unit.



## Viewing SI-2 details in iCANsoft

Once the SI-2 unit has been added to the iCANsoft application, it will appear in the devices list within the Workspace window:



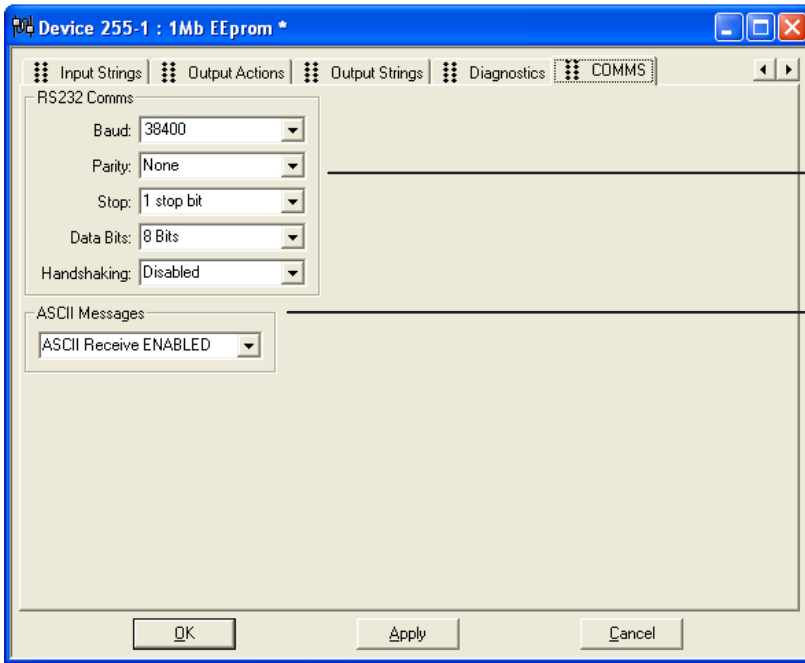
To view the configuration window for the SI-2 system integrator, double click its entry within the list.

# RS232 communication settings

Before the SI-2 system integrator can successfully communicate with the device to which it is connected, you must ensure that the RS232 communication settings of the device match those of the SI-2 unit. For details about discovering or changing the communication settings for the connected device, please refer to documentation supplied with it.

## To adjust SI-2 unit communication settings

- 1 Click on the 'COMMS' tab to display the following page:



Scroll buttons - if the main window size does not allow all tabs to be displayed at once, use these buttons to reveal hidden tabs.

Use this section to ensure that the SI-2 communication settings match those of the connected device.

This option determines how the SI-2 should deal with Virtual Control Messages. These are system level control messages, as opposed to your custom message strings which operate at device level. The SI-2 passes these special ASCII virtual control messages unchanged between the iCANnet network and the RS232 serial port according to the setting of this option.

*Note: The setting of this option does not affect the transfer of standard custom message strings.*

ASCII Messages DISABLED - Prevents any transfer of virtual control messages through the SI-2.

ASCII Receive ENABLED - Allows virtual control messages to flow only from the RS232 serial link to the iCANnet network.

ASCII Transmit ENABLED - Allows virtual control messages to flow only from the iCANnet network to the RS232 serial link.

Rx/Tx both ENABLED - Permits free flow of virtual control messages between the iCANnet and the RS232 serial port.

*Note: The 'COMMS' tab is the furthest right of all the tabs, you may need to use the horizontal scroll buttons in the top right corner to reveal the tab if the window size is limited.*

- 2 Use the options within the 'RS232 Comms' section to select the appropriate settings that match those used by the connected device.
- 3 Optionally, change the 'ASCII Messages' section to determine how special 'Virtual Control Messages' are transferred across the SI-2. Please refer to Appendix 1 for more details about Virtual Control Messages.
- 4 When all settings have been made, either click the Apply button to save without closing the window or click the OK button to save and close.

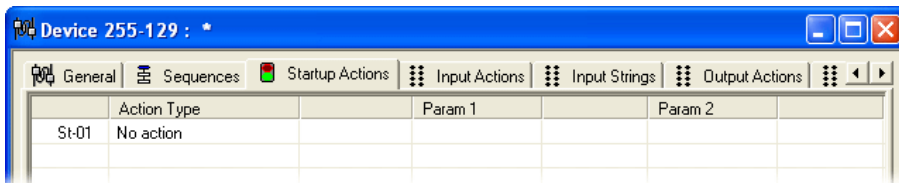


# Startup action

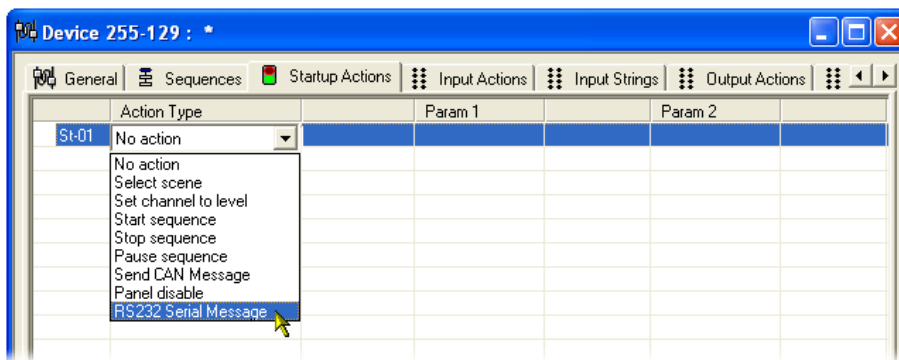
The Startup Actions tab allows you to optionally arrange for a particular action to be instigated every time that the SI-2 unit is powered on.

## To choose a startup action

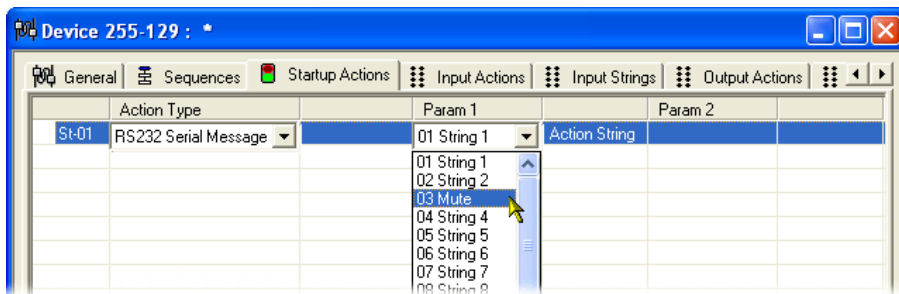
- 1 Click on the 'Startup Actions' tab to display the following page:



- 2 Click on the first entry to highlight it and also to show selection box for the 'Action Type' column. Click on the 'Action Type' down arrow to reveal the list of available options:



- 3 Select the required action type. Depending upon the chosen action, one or more of the 'Param' columns to the right will show their own selection options. You can use these to further define the action that should occur during the SI-2 startup phase.



*Note: When selecting the RS232 Serial Message option, the available output message strings can be viewed and altered within the 'Output Strings' tab.*

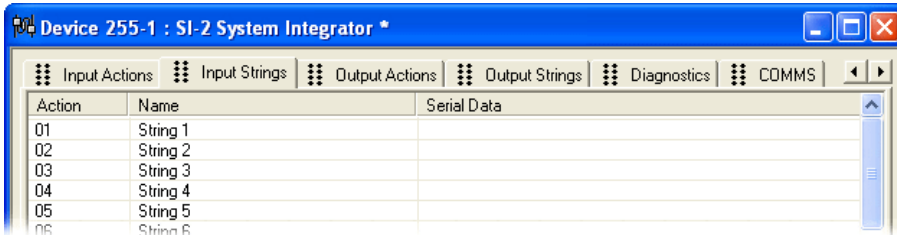
- 4 When all settings have been made, either click the Apply button to save without closing the window or click the OK button to save and close.

# Input strings

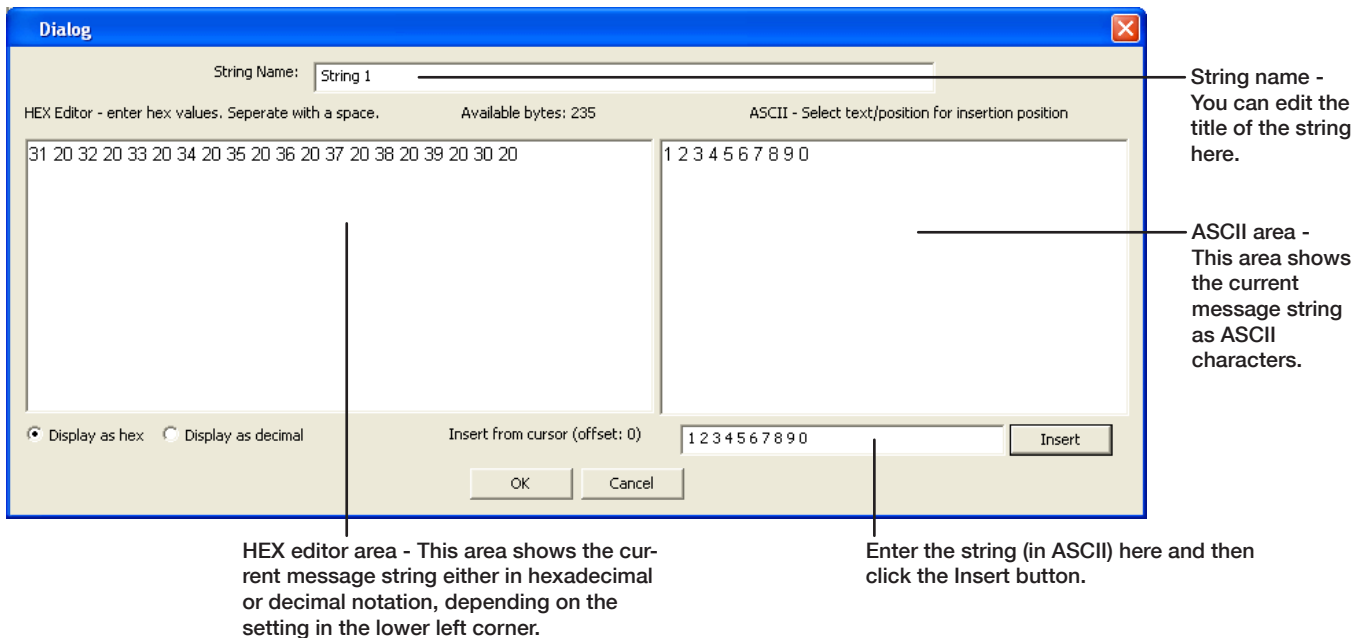
The 'Input Strings' tab is where you can define the messages that you expect to receive from the connected device. Once defined, you can then use the related 'Input Actions' page to determine what action the SI-2 should take when any particular message is received.

## To define or alter an input string

- 1 Click on the 'Input Strings' tab to display the following page:



- 2 Double click the required entry to display the following edit dialog box:



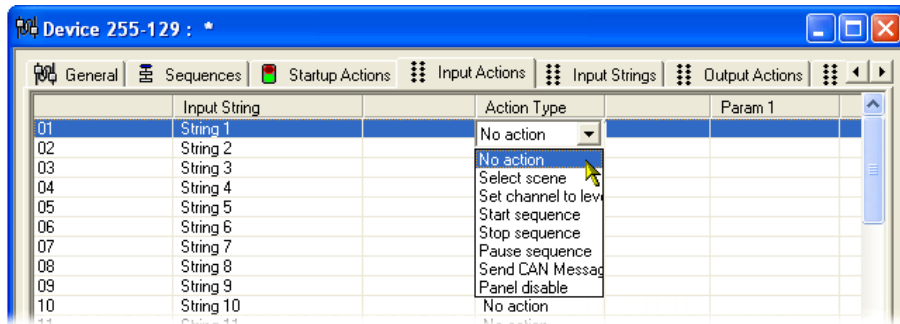
- 3 Using either the HEX editor area on the left or the 'Insert from cursor' field on the right, enter or edit the message string, as necessary.
- 4 When the message is complete, click the OK button to return to the 'Input Strings' page.
- 5 Within the 'Input Strings' page, you can enter/edit all other required strings and, when all settings have been made, either click the Apply button to save without closing the window or click the OK button to save and close.

## Input actions

The 'Input Actions' tab allows you to determine what should occur when a received message from the connected device matches one of those defined within the 'Input Strings' page.

### To define or alter an input action

- 1 Click on the 'Input Actions' tab.
- 2 Click on the required entry to highlight it and then click on the 'Action Type' down arrow to reveal the available actions:



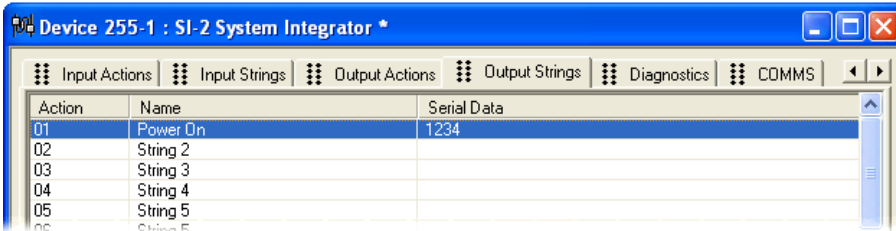
- 3 Select the required action. Depending upon the chosen action, one or more of the 'Param' columns to the right will show their own selection options. You can use these to further define the action that should occur whenever the related message string is received from the connected device.
- 4 Edit all other required actions and, when all settings have been made, either click the Apply button to save without closing the window or click the OK button to save and close.

# Output strings

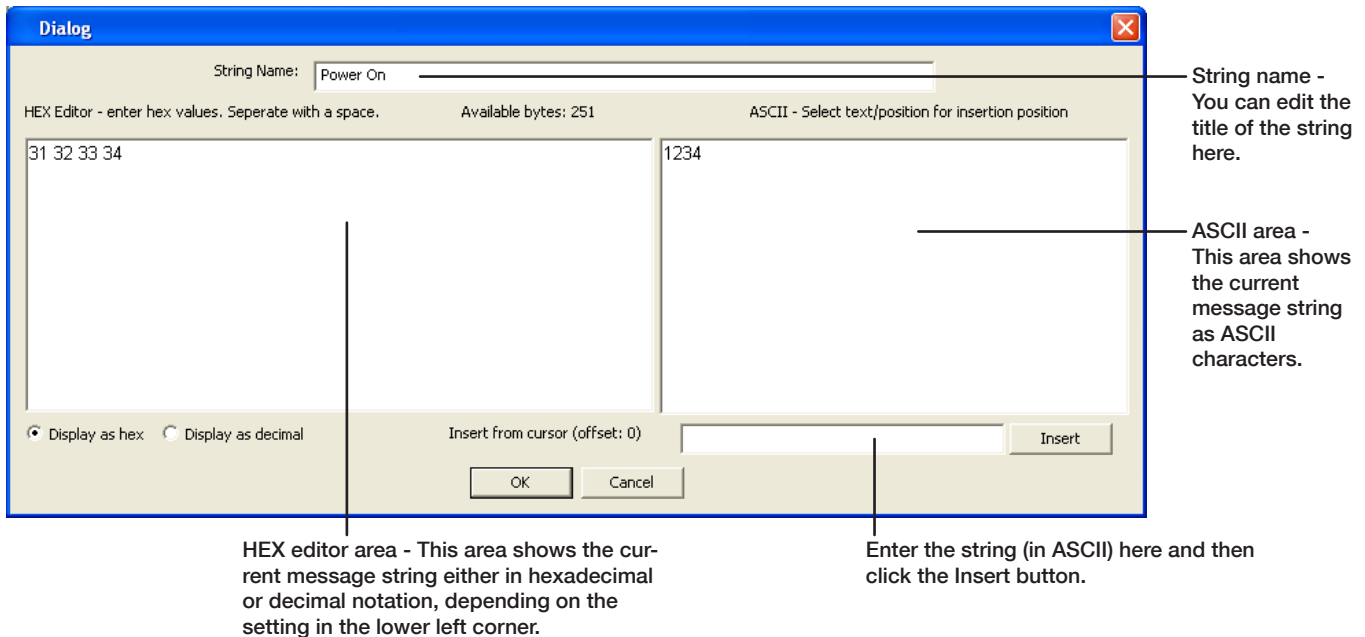
The 'Output Strings' tab is where you can define one or more message strings that need to be sent to the connected device, when prompted by certain iCANnet actions. Once defined, you can then use the related 'Output Actions' page to link iCANnet actions to the defined string message(s).

## To define or alter an output string

- 1 Click on the 'Output Strings' tab to display the following page:



- 2 Double click the required entry to display the following edit dialog box:



String Name: Power On

HEX Editor - enter hex values. Separate with a space. Available bytes: 251 ASCII - Select text/position for insertion position

31 32 33 34 1234

Display as hex  Display as decimal

Insert from cursor (offset: 0) [ ] [Insert]

[OK] [Cancel]

String name - You can edit the title of the string here.

ASCII area - This area shows the current message string as ASCII characters.

HEX editor area - This area shows the current message string either in hexadecimal or decimal notation, depending on the setting in the lower left corner.

Enter the string (in ASCII) here and then click the Insert button.

- 3 Using either the HEX editor area on the left or the 'Insert from cursor' field on the right, enter or edit the message string, as necessary.
- 4 When the message is complete, click the OK button to return to the 'Output Strings' page.
- 5 Within the 'Output Strings' page, you can enter/edit all other required strings and, when all settings have been made, either click the Apply button to save without closing the window or click the OK button to save and close.

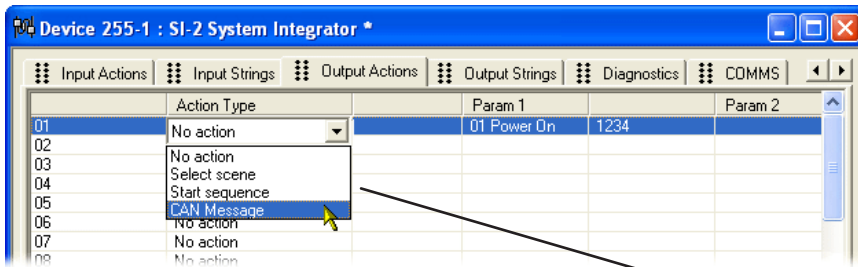
# Output actions

The 'Output Actions' tab allows you to link an action received via the iCANnet network, to a message string that will be sent to a connected device. Depending on the selected iCANnet 'Action Type' within this page, a number of parameters will become available to allow you to fully define the iCANnet action. In operation, when a received iCANnet action then matches the parameters defined within this page, the SI-2 unit will send the message string (from the Output Strings page) that corresponds to the row number (01, 02, 03, etc.) of the matched action on this page.

*Note: Ensure that the action type and parameters selected here exactly match those that are expected from the iCANnet network, otherwise the related string messages will not be sent.*

## To define or alter an output action

- 1 Click on the 'Output Actions' tab.
- 2 Click on the required entry to highlight it and then click on the 'Action Type' down arrow to reveal the available actions:



- 3 Select the required 'Action Type'. Depending upon the chosen action, one or more of the 'Param' columns to the right will show their own selection options. You can use these to further define the iCANnet action that will be used to trigger the message string.
- 4 Edit all other required actions and, when all settings have been made, either click the Apply button to save without closing the window or click the OK button to save and close.

### Action types

**Select scene** - Allows you to select an area and choose a particular scene within that area which will trigger an output action.

**Start sequence** - Allows you to define a sequence number, and optionally a particular step within that sequence, which will trigger an output action.

*Note: Sequence numbers from 1 to 16 coincide with sequences that may be programmed within the SI-2 unit itself. If a sequence number below 17 is monitored to cause an output action and is also used as an SI-2-contained sequence, then both events will take place simultaneously. To avoid any confusion it is suggested that sequence numbers of 17 or over are monitored, if dual actions are not required.*

**CAN Message** - Allows you to define the exact CAN message (from any iCANnet device) that will trigger an output action.

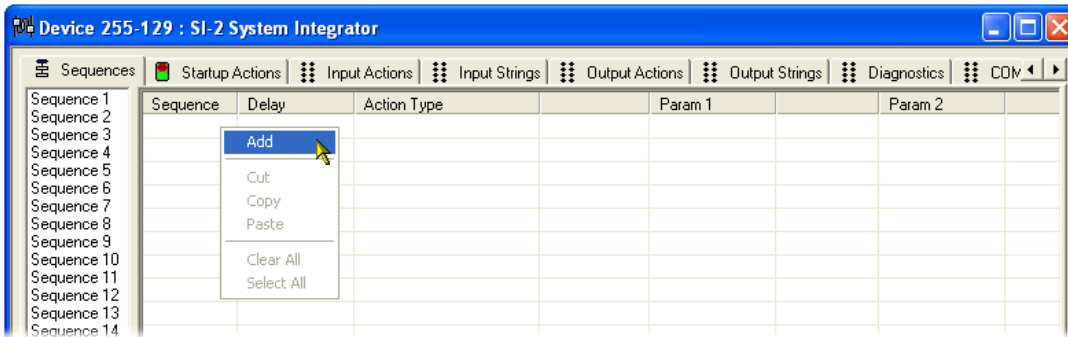
# Sequences

Sequences allow you to link a number of individual actions together, with or without a time delay between each, in order to cause multiple operations from a single trigger action. The SI-2 can store up to sixteen sequences of its own (each with up to 128 steps) that can be triggered by an action via the iCANnet network.

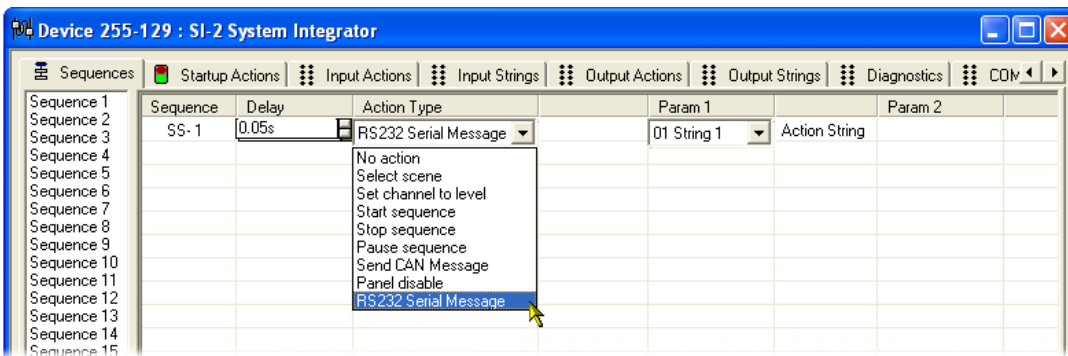
*Note: Sequence numbers monitored from 1 to 16 within the 'Output Actions' page coincide with the sequences that may be programmed within the SI-2 unit itself. If a sequence number below 17 is monitored to cause an output action and is also used as an SI-2-contained sequence, then both events will take place simultaneously.*

## To define a sequence

- 1 Click on the 'Sequences' tab to display the page.
- 2 Right click within the main panel area to display a popup menu. Select the 'Add' option to add a step to the sequence.



- 3 Optionally alter the delay option (introduces a time delay before the current action is launched).
- 4 Click the 'Action Type' down arrow and select the required action form the list. Depending upon the chosen action, one or more of the 'Param' columns to the right will show their own selection options. You can use these to further define the selected action.



- 5 Repeat steps 2 to 4 for each required step within the sequence. When all have been configured, either click the Apply button to save without closing the window or click the OK button to save and close.

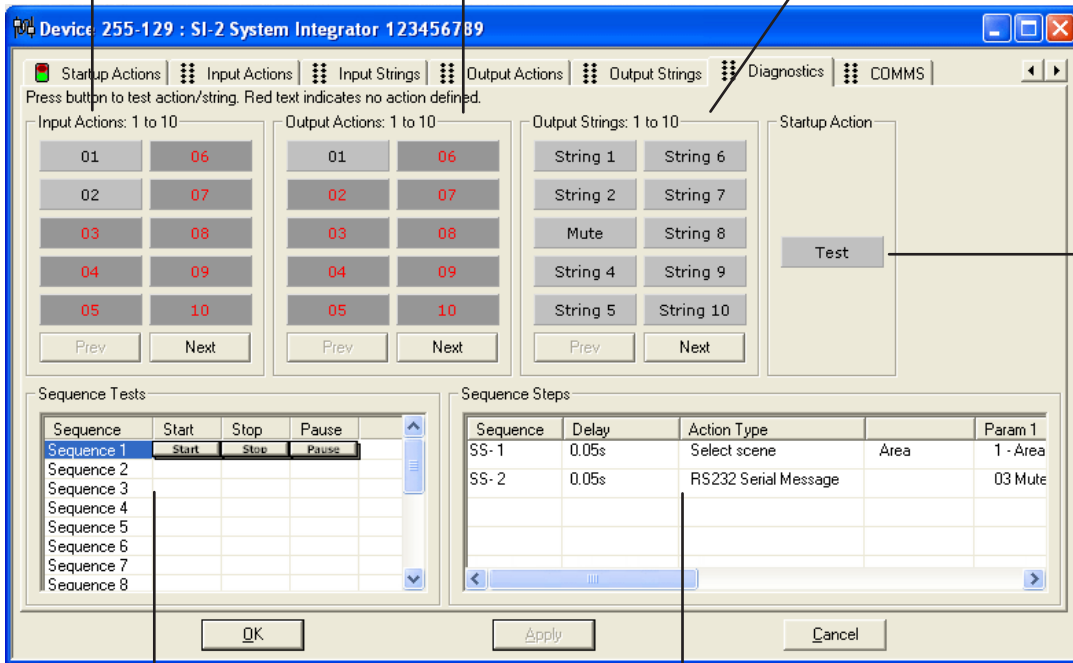
# Diagnostics

The Diagnostics page provides tools for testing all aspects of your SI-2 installation. The page is split into six separate areas as shown here:

Input Actions - allows you to simulate an incoming message from the serial device in order to trigger the associated actions on the iCANnet network.

Output Actions - allows you to simulate an action from the iCANnet network in order to cause a programmed output string to be sent to the serial device.

Output Strings - allows you to send any of the programmed output strings to the serial device independently of the triggering iCANnet action.



Startup Action - launches the action that has been configured to run at every SI-2 unit power up.

Sequence Tests - allows you to start, stop and pause any of the sequences that are programmed within the SI-2 unit.

Sequence Steps - displays the individual steps contained within the sequence selected on the left.

*Note: Test buttons shown with darker backgrounds and red text indicate that no action or string is associated for that particular entry.*

# Appendix 1

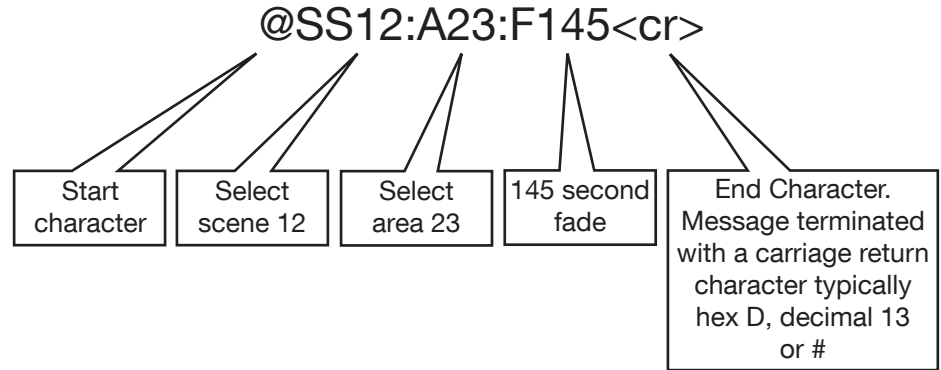
## ASCII virtual control messages

In addition to translating customised commands and messages between the iCANnet network and an RS232 device, the SI-2 can convert *Virtual Control Messages* between the network and the connected device.

Virtual control messages are used to control the system as whole, not individual devices. These message conversions are hard coded into the SI-2 unit and do not occupy any of the memory spaces reserved for customised commands.

This section provides an overview of the supported virtual control messages.

The general command syntax for virtual control messages is shown here:



### Command SS Select Scene

This message selects a scene in an area.

The syntax is: @SSxxx:Axxx:Fxxx<cr>

*SSxxx defines the scene number, where xxx is valid from 0 to 999. Scene 0 is OFF.*

*Axxx defines the Area Number, valid for 1 to 999.*

*Fxxx defines the Fade Time, valid for 0 to 999 for seconds.*

### Command SA Save Scene

This message saves the current levels to a scene in an area.

The syntax is: @SAxxx:Axxx<cr>

*SAxxx defines the scene number, where xxx is valid from 0 to 999 - Scene 0 saves to the current scene.*

*Axxx defines the Area Number, valid for 0 to 999.*

### Command RS Request Current Scene

This message requests the current scene number in an area.

The syntax is: @RSxxx<cr>

*RSxxx defines the Area Number, valid for 1 to 999.*

### Command RE Report Current Scene

This message reports the current scene number in an area.

The syntax is: @RExxx:Axxx<cr>

*RExxx defines the Scene Number, valid for 0 to 999.*

*Axxx defines the Area Number, valid for 1 to 999.*

### Command SC Set Channel Level

This message sets the level of a channel in an area.

The syntax is: @SCxxx:Axxx:Lxx:Fxxx<cr>

*SCxxx defines the channel number, where xxx is valid from 0 to 999. Channel 0 affects ALL channels in an area.*

*Axxx defines the Area Number, valid for 1 to 999.*

*Lxx defines the Level, valid for 0 to 99 in %, and FF for FULL (100%)*

*Fxxx defines the Fade Time, valid for 0 to 999 for seconds.*



### Command RC Request Channel Level

This message requests the level of a channel in an area.

The syntax is: @RCxxx:Axxx<cr>

*RCxxx defines the channel number, where xxx is valid from 0 to 999. Channel 0 requests ALL channels in an area (use with caution).*

*Axxx defines the Area Number, valid for 1 to 999.*

### Command RL Report Channel Level

This message reports the current level of a channel in an area.

The syntax is: @RLxxx:Axxx:Lxx<cr>

*RLxxx defines the Channel Number, valid for 1 to 999.*

*Axxx defines the Area Number, valid for 1 to 999.*

*Lxx defines the Level, valid for 0 to 99 in %, and FF for FULL (100%).*

### Command CR Raise

This message increments the area by 1% level

The syntax is: @CRxxx:Axxx <cr>

*CRxxx defines the channel number, where xxx is valid from 0 to 99. Channel 0 affects ALL channels in an area.*

*Axxx defines the Area Number, valid for 1 to 999.*

### Command CL Lower

This message decrements the area by 1% level

The syntax is: @CLxxx:Axxx <cr>

*CLxxx defines the channel number, where xxx is valid from 0 to 999. Channel 0 affects ALL channels in an area.*

*Axxx defines the Area Number, valid for 1 to 999.*

### Command SF Stop Fade

This message stops fading in an area.

The syntax is: @SFxxx:Axxx <cr>

*SFxxx defines the channel number, where xxx is valid from 0 to 999. Channel 0 affects ALL channels in an area.*

*Axxx defines the Area Number, valid for 1 to 999.*

### Command QS Start Sequence

This message initiates a selected sequence.

The syntax is: @QSxx:Sxxx:Nxxx:Axxx<cr>

*QSxx defines the sequence number, where xx is 1 to 16.*

*Sxxx defines the segment number where xxx is 1 to 255.*

*Nxxx defines the node number where xxx is 1 to 255.*

*Axxx defines the action (step) number where xxx is 0 to 128.*

### Command QP Pause Sequence

This message pauses a selected sequence.

The syntax is: @QPxx:Sxxx:Nxxx<cr>

*QPxx defines the sequence number, where xx is 1 to 16.*

*Sxxx defines the segment number where xxx is 1 to 255.*

*Nxxx defines the node number where xxx is 1 to 255.*

### Command QT Stop Sequence

This message halts a selected sequence.

The syntax is: @QTxx:Sxxx:Nxxx<cr>

*QTxx defines the sequence number, where xx is 1 to 16.*

*Sxxx defines the segment number where xxx is 1 to 255.*

*Nxxx defines the node number where xxx is 1 to 255.*

**Cooper Controls**

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Five (5) years from date of shipment for iLumin products and Two (2) years from date of factory invoice for Cooper Controls provided computers and/or software

We guarantee the performance of our system to specifications of your money back.

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 authorized 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.