

Crestron **ST-LT/STI-LT**
Lutron Interface Module

Operations Guide

Contents

Lutron Interface	1
Description.....	1
Functional Description	1
Physical Description.....	1
Leading Specifications.....	5
Setup.....	5
Identity Code	5
Dip Switch Settings for GRAFIK Eye Use	7
Preparation for Use.....	9
Programming.....	10
Problem Solving	16
Troubleshooting	16
Further Inquiries	16
Syntax.....	16
Return and Warranty Policies.....	17
Merchandise Returns / Repair Service	17
CRESTRON Limited Warranty	17
Appendix: GRAFIK Eye Commands	18
Format for Commands.....	18
GRX-AV-RS232 Command List	18
GRX-AV-RS232/ATC Command List	22

Lutron Interface

Description

Functional Description

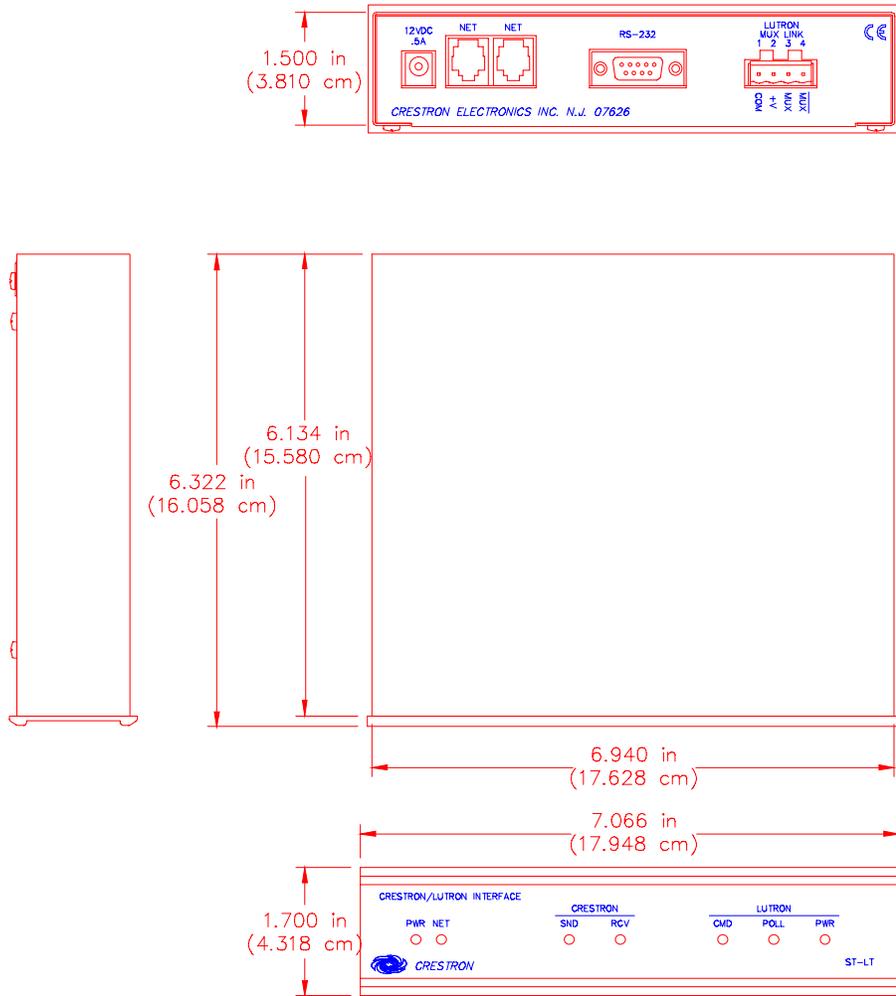
There are two CRESTRON Lutron Interface configurations available: ST-LT and STI-LT. Configuration differences depend on which power pack is supplied. The ST-LT includes a power pack for a 120V AC supply and the STI-LT includes a power pack for 220V AC. For purposes of this Operations Guide, the term ST-LT is used for either configuration.

The ST-LT is a device that permits the CRESTRON CRESNET II System or SmarTouch STS to interface with a Lutron GRAFIK Eye Lighting System. Future ST-LT production models shall permit an interface with the Lutron Homeworks System. If the ST-LT is part of the CRESNET II System, use of the supplied power pack is optional.

Physical Description

The ST-LT is housed in a black enclosure with silk-screened labels on the front and rear panels. On the front of the unit there are seven LEDs for indicating the unit's current status. All connections are made on the back of the unit. Refer to the physical views shown after this paragraph. There are four rubber feet on the base of the unit for stability and to prevent slippage.

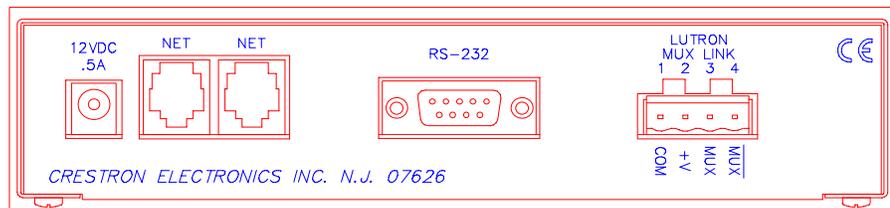
ST-LT Physical Views



ST-LT Ports

A number of ports are provided on the back of the ST-LT. Each has a silk-screened label. Refer to illustration and descriptions below.

ST-LT Ports



12 VDC .5 A

This DC power socket connector is used to supply external power via the supplied 500 mA power pack (1000 mA power pack for the STI-LT). If the ST-LT is part of the CRESNET II System, use of the supplied power pack is optional.

NET

These two 6-pin, 6-position RJ11 modular jacks are used to connect the ST-LT module to either the SmarTouch STS or CRESNET II remote control system. When the module is part of the CRESNET II system, power is provided via the NET connection; the supplied power pack need not be attached. Two NET ports are available so that network units can be daisy-chained together. Review the latest revision of the Network Modular Cable Requirements (Doc. 5682).

NOTE: Most 4-conductor phone cables are wired in a crisscross fashion and are not compatible with CRESTRON equipment.

If the power pack is attached when the ST-LT is part of the CRESNET II system, power is drawn from the power pack. The module does not load the network power, but the network power remains chained for additional network devices that are connected.

RS-232

This 9-pin (DB9) connector is a Lutron compatible RS-232 interface for connections to a PC running Lutron configuration and control software. This connector is equivalent to Lutron’s GRX-AV-RS232.

ST-LT Pinout (RS-232)

PIN	DESCRIPTION
1	n/c
2	TXD
3	RXD
4	n/c
5	GND
6	n/c
7	CTS
8	RTS
9	n/c

A standard DB9 male to DB9 female straight-through cable may be used to connect the RS-232 port of the ST-LT to a PC. This port is activated through the program running on the control system. Refer to “Programming” on page 10 for more details.

LUTRON MUX LINK

This 4-pin connector connects to the Lutron Mux Link Network. The Lutron’s network line (refer to the following table) is not compatible with the CRESTRON network line; do not connect to each other.

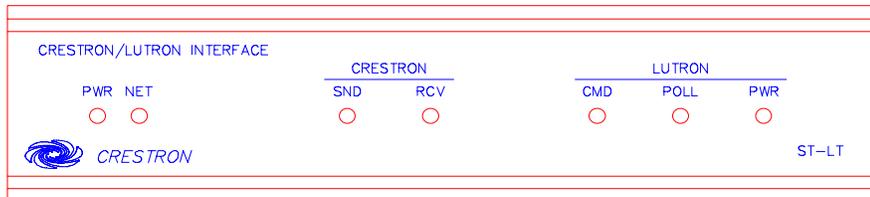
Description of Lutron Network Lines

LUTRON	DESCRIPTION
MUX*	DATA- Line
MUX	DATA+ Line
+V	Voltage Line
COM	Ground

ST-LT Indicators

There are seven LED indicators located on the front panel of the ST-LT. Refer to illustration and descriptions below.

ST-LT Indicators



PWR (Power)

This LED illuminates when 12 volts (from power packs) or 24 volts DC (from network) is supplied to the ST-LT.

NET

This LED remains illuminated when communication between either the SmarTouch STS or CRESNET II remote control system and the ST-LT is established. Illumination indicates that the SIMPL program currently loaded has a network device defined at the same ID as the ST-LT.

CRESTRON SND

This LED flashes when the ST-LT sends a command to the Lutron Mux Link Network.

CRESTRON RCV

This LED flashes when the ST-LT receives a command from the Lutron Mux Link Network.

LUTRON CMD

This LED illuminates when the Lutron Mux Link Network receives a command from the CRESNET II System via the ST-LT. Once the command is completed, the LED extinguishes.

LUTRON POLL

This LED illuminates when Lutron Mux Link polling occurs.

LUTRON PWR

This LED illuminates when voltage is supplied from the Lutron Mux Link Network.

Leading Specifications

The table below provides a summary of leading specifications for the ST-LT module. Dimensions and weight are approximations rounded to the nearest thousandth unit.

Leading Specifications of the ST-LT

SPECIFICATION	DETAILS
Power Requirements	12 or 24 VDC
Power Factor	2.5 Watts
CRESNET II Workshop	Version 5.24 or later
SIMPL Compiler	3.18.04 or later
CRESNET II Operating System	3.17.31 or later
SmarTouch Operating System	Any
STS VisionTools™ for Windows (STS/VTW)	Version 10.7 or later
STS Database	Version 10.7.100.02 or later
Dimensions & Weight	Height: 1.700 in (4.318 cm) Width: 7.066 in (17.948 cm) Depth: 6.322 in (16.058 cm) Weight: 2.100 lb (0.953 kg)

As of the date of manufacture, the unit has been tested and found to comply with specifications for CE marking.



Setup

Identity Code

Every equipment and user interface within the CRESNET II requires a unique identity code (NET ID). These codes are recognized by a two-digit hexadecimal number from 03 to FE. The NET ID of each unit must match an ID CODE specified in the “NET.ID” statement of the CRESNET II SIMPL-I program in order for the device to be addressed properly. The NET ID of each ST-LT has been factory set to 1C, but may be changed from the PC via STS/VTW software or the CRESNET II Workshop.

Change NET ID via STS/VTW Software

Attach the ST-LT to SmarTouch STS or CRESNET II system (verify that the STS/VTW software is running) and complete the following steps to change the NET ID.

1. Disconnect all network devices from the CRESNET II network or modular devices from the STS system, except for the one ST-LT that needs to have its NET ID code changed.
2. Select ViewPort from the Tools pull-down menu to open the “Crestron Performance Viewport” dialog box.
3. Select Set Network ID from the Options pull-down menu. The software checks the baud rate and then opens the “Set Network ID” dialog box.

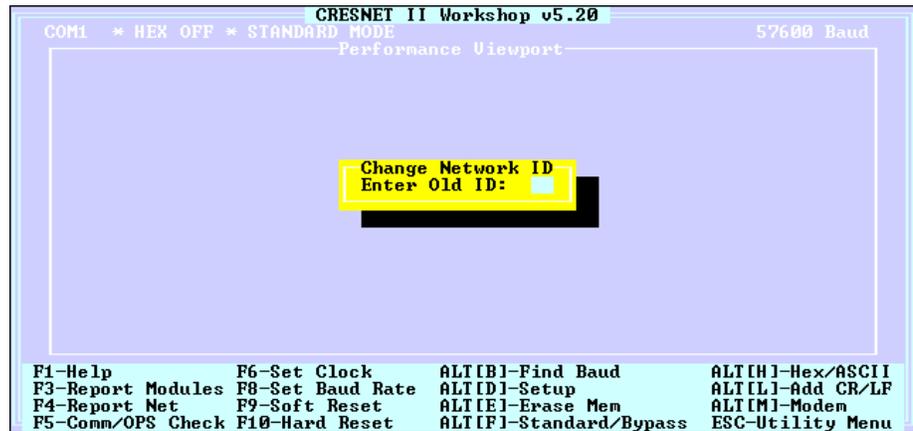
4. Notice the list of current network devices in the dialog box. Highlight the ST-LT.
5. The factory set NET ID of the ST-LT (1C) appears in the dialog box. Use the **scroll arrow** to assign the new NET ID.
6. When the newly assigned NET ID appears, select the Set ID button to initiate the change.
7. The software responds with a successful message to confirm the new NET ID.
8. To verify this procedure, select Report Network Devices from the Options pull-down menu. Confirm that the ST-LT has the new NET ID code.
9. Reconnect other network or modular devices that were disconnected in step 1.

Change NET ID via CRESNET II Workshop (Workshop v5.20 or later and OPS version 3.16.11 or higher required)

Attach ST-LT to CRESNET II system (verify that the workshop is open and running) and complete the following steps to change the NET ID.

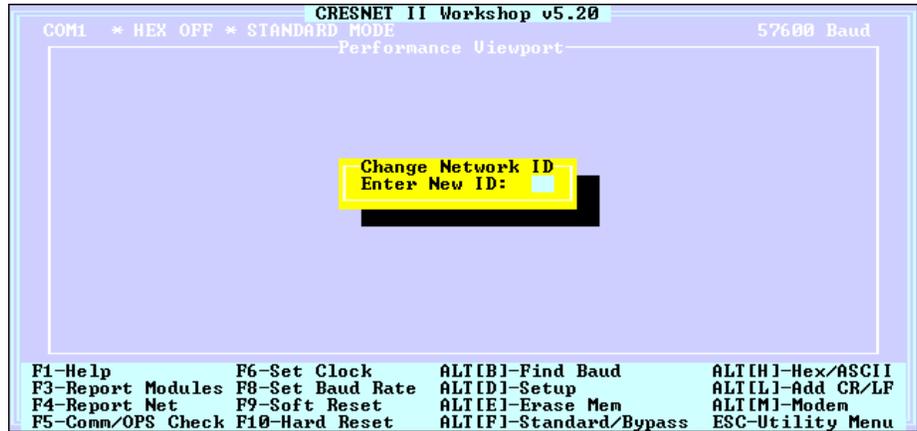
1. Disconnect all network devices from the CRESNET II network or modular devices from the STS system, except for the one ST-LT that needs to have its NET ID code changed.
2. Highlight performance Viewport from the UTILITIES MENU of the CRESNET II Workshop.
3. Depress the key combination ALT-I. The Workshop responds with the screen shown below and requests the old NET ID code for the ST-LT

Changing the NET ID - ST-LT Workshop Screens (1 of 3)



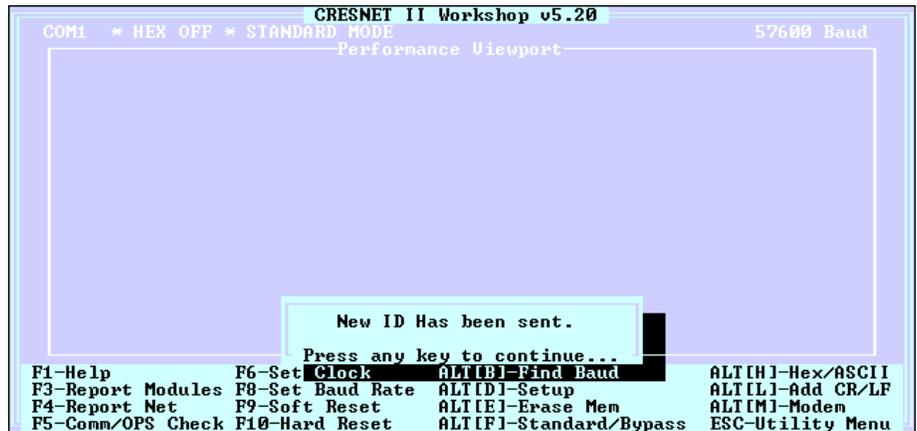
4. Enter the old NET ID code (in two-digit hexadecimal format) and depress ENTER. The Workshop responds with the screen shown after this step and requests a new NET ID code for the ST-LT.

Changing the NET ID - ST-LT Workshop Screens (2 of 3)



5. Enter a new NET ID code (in two-digit hexadecimal format) and depress ENTER. The Workshop responds with the screen shown below that displays a message stating the “New ID” command has been sent.

Changing the NET ID - ST-LT Workshop Screens (3 of 3)



6. To verify this procedure, depress F4 to perform a network poll. Confirm that the ST-LT has the new NET ID code.
7. Reconnect other network or modular devices that were disconnected in step 1.

Dip Switch Settings for GRAFIK Eye Use

An eight-position dip switch is mounted to the ST-LT PC board. The switch positions (switches 6 and 7 ON) are factory set for typical use of the ST-LT within a CRESNET II System or SmarTouch STS. However, in certain GRAFIK Eye systems, the switch positions may need to be altered.

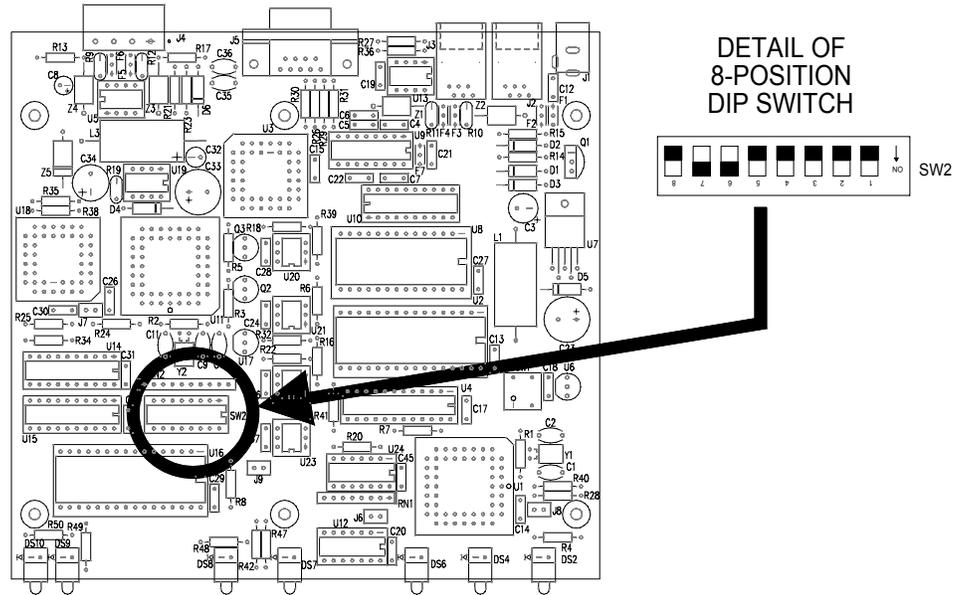
If it is determined that the switch settings must be changed, power down the ST-LT and complete the following steps.

1. Turn the unit over and place it top-side down on a soft, clean surface.
2. Loosen and remove four screws and washers that secure the top cover to the ST-LT.
3. Lift, turn the unit over, and place the unit down on its four rubber feet.

4. Slide the top cover toward the back panel while holding the ST-LT in place until the cover is free.
5. Locate the dip switch and notice the orientation (#1 - #8); refer to illustration below.

Location of Dip Switch on ST-LT PC Board

ST-LT PORTS



ST-LT LEDS

6. Refer to the table below for the dip switch settings for your particular application. Move the appropriate switch to the ON position to enable the desired function described in the table.

Dip Switch Functional Description for GRAFIK Eye Use

SWITCH	FUNCTION	DESCRIPTION
1	Zone Lock Retain	Zone locked units will remain in zone lock after a power outage.
2	Scene Lock Retain	Scene locked units will remain in scene lock after a power outage.
3	Sequence Retain	Sequencing units will again sequence after a power outage.
4	Sequence Type	ON: Sequence scenes 5 - 16 OFF: Sequence scenes 1 - 4
5	Not Used	
6	Raw Feedback	Unit will inform RS232 link when any button is pushed on a GRAFIK Eye main unit or accessory.
7	Scene Status	Unit will inform RS232 link when a new scene is selected.
8	Not Used	

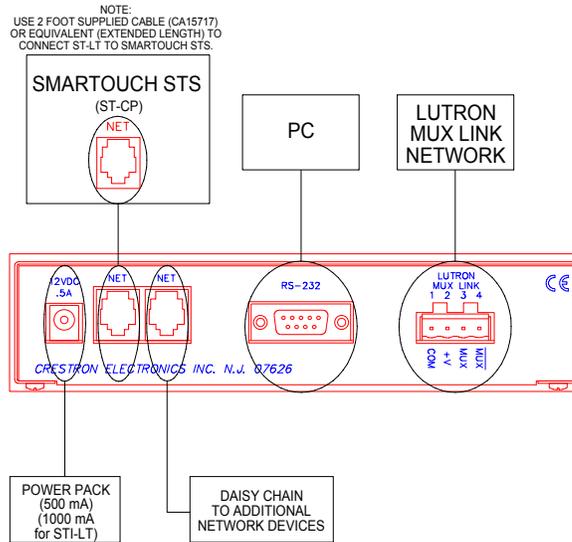
7. Replace the cover by sliding it over the unit and secure with four screws and washers.
8. Apply power to the ST-LT.

Preparation for Use

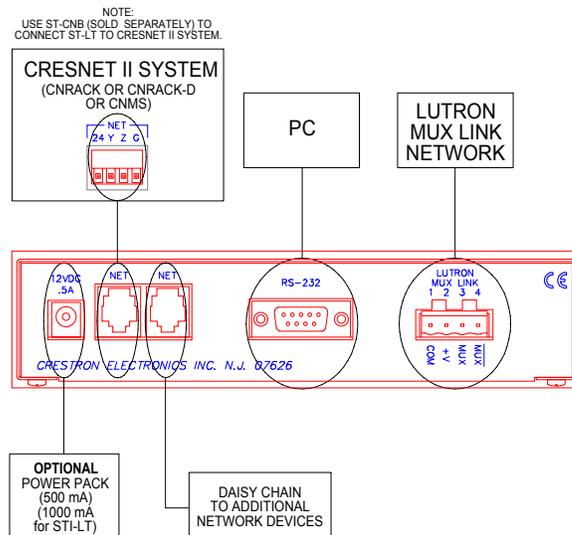
Refer to the two hookup diagrams below. The first diagram illustrates the connections to SmarTouch STS. The second diagram shows connections to the CRESNET II system. Other than making the power connection last, complete the connections in any order, regardless of whether the ST-LT is part of SmarTouch STS or the CRESNET II system.

NOTE: Refer to the latest revision of the CRESTRON Network Modular Cable Requirements (Doc. 5682) when making connections to the port labeled NET.

SmarTouch STS Hookup Connections for ST-LT



CRESNET II System Hookup Connections for ST-LT



Programming

Using STS/VTW Software

NOTE: The following description assumes that the reader has some knowledge of STS/VTW software. If not, please refer to the SmarTouch Tutorial that is available from the STS/VTW Help menu.

Use STS/VTW software (version 10.7 or higher and STS database version 10.7.100.02 or later) to include the ST-LT in lieu of a Lutron GRAFIK Eye device into a SmarTouch system. Once included, a command sequence or macro must be enabled via software. The macro prompts which MAIN-UNIT is controlled and dictates which actions are to be followed. The procedural steps that follow this paragraph provide the general course necessary to include the ST-LT into a SmarTouch system and build and assign a macro.

1. Select Open and Smartouch System from the File menu to open a specific SmarTouch system. The software displays the “SmarTouch Pro Editor” dialog box (formally known as “SmarTouch System Manager”).
2. Double click on the next available open device (DEVICE #) in the *Devices* section of the dialog box. The software displays the “Device Selection and Configuration” dialog box.
3. Define the device by selecting the Crestron Database, Lighting (as the type), Crestron (as the manufacturer), and ST-LT (as the Model). For this sample, replace DEVICE # with ST-LT in the [Name:] field. By default, a Net ID of 1C is assigned. The dialog box should appear as shown below; click OK.

Alternatively, the ST-LT can be selected by choosing Lighting, Lutron, and GRAFIK Eye via ST-LT in the appropriate fields.

Device Selection and Configuration Dialog Box

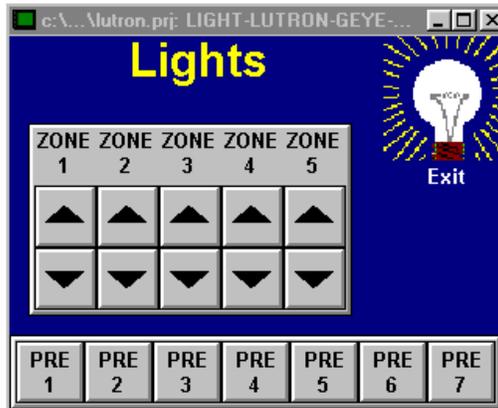
4. Once the ST-LT has been added to the SmarTouch system, functionality must be assigned to buttons residing on a lighting page.

Select Open and Project from the File menu to open the touchpanel project file. For this sample, the project has been named LUTRON.PRJ.

This lighting page, shown below, was taken from the VTW Template subdirectory, TST1500C.PRJ, page name LIGHT-LUTRON-GEYE-RS232.

- Open or create a lighting page with associated buttons. The STS Wizard uses template projects, many of which offer typical lighting pages. One such page is shown below. To use a page from the template, copy it to the touchpanel project and customize as needed. Refer to *Copy and Paste* from the STS/VTW Help menu for details.

Lighting Page Sample



HINT: An alternate method would be to address the MAIN-UNIT # when the button that opens the lighting page is depressed. Buttons on the lighting page can then be assigned individual (SCENE or ZONE) commands.

- While the lighting page is open, a macro must be defined to identify the MAIN-UNIT # and assign specific SCENE or ZONE commands. The MAIN-UNIT # assignment only needs to be sent once. If controlling multiple MAIN-UNITS, it can also be included and sent each time there is a SCENE or ZONE change. Select Create Macro from the Control menu to open the "Macro Edit" dialog box.
- Replace MACRO # in the [Name:] field with a relevant name such as Zone1-Up. The dialog box should appear as shown below.

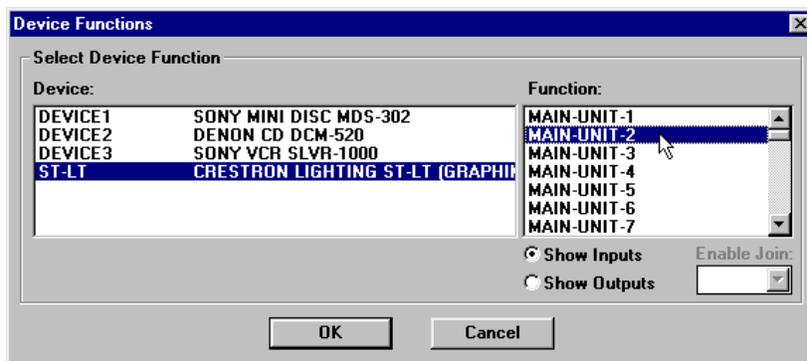
Macro Edit Dialog Box



The macro in this sample shall address MAIN-UNIT-2 and select ZONE-1-UP.

8. A macro is created by adding the appropriate commands and delays as required. Click the Insert Command button to open the “Device Functions” dialog box.
8. Highlight the ST-LT in the *Device* area to display the associated functions in the right-hand column.
9. Select MAIN-UNIT-2 as the desired function. The dialog box should appear as shown below; click OK.

Device Functions Dialog Box



11. The software returns to the “Macro Edit” dialog box. Notice that the first step of the macro addresses MAIN-UNIT-2. Click on Insert Command, ZONE-1-UP from the *Function* area, and OK. Once the macro is complete, select OK to close the “Macro Edit” dialog box.
12. Next, the function must be assigned to a specific button on the lighting page. With the lighting page open, right-mouse click on the ZONE 1 UP button and select Function from the pop-up.
13. The software displays the “Function” dialog box for that given button. Click on the [Macro:] field and select ZONE1-UP. The dialog box should appear as shown below; click OK.

Function Dialog Box

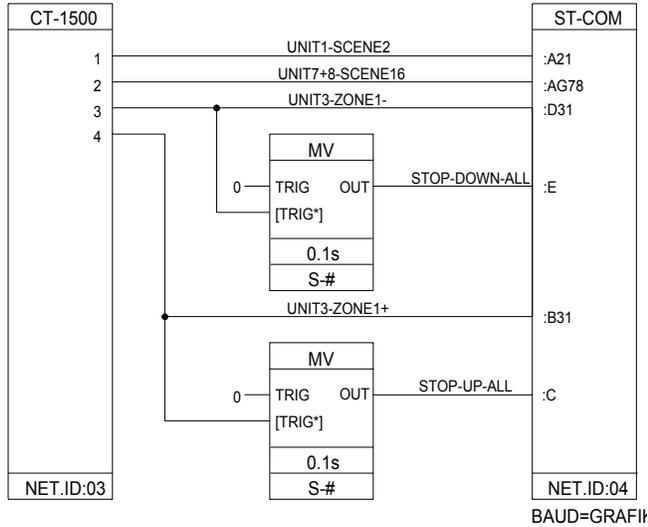


14. Additional macros should be created and assigned for each button on the lighting page that provides a function. Therefore, repeat steps 6 through 13 for the appropriate buttons.

SIMPL

SIMPL is CRESTRON’s programming language designed for easy implementation of the control system requirements. The best representation of SIMPL programming is the block diagram. A basic ST-LT SIMPL program is shown and described below.

ST-LT SIMPL Program

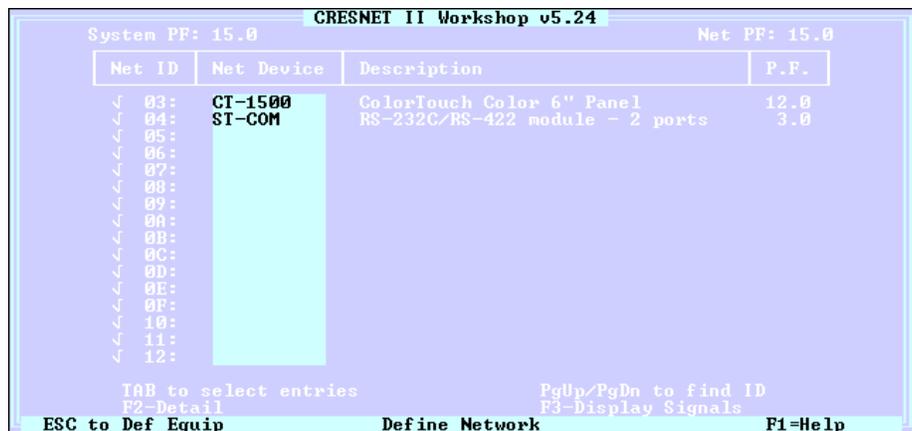


The sample ST-LT SIMPL program allows two scenes for the Grafik Eye; scene 2 on Main Unit 1 and scene 16 on Main Units 7 and 8. It also allows zone 3 to be ramped up and down. The MV symbols are used to detect the release of the UP and DOWN buttons which results in the transmission of the appropriate zone up/down stop commands.

Workshop

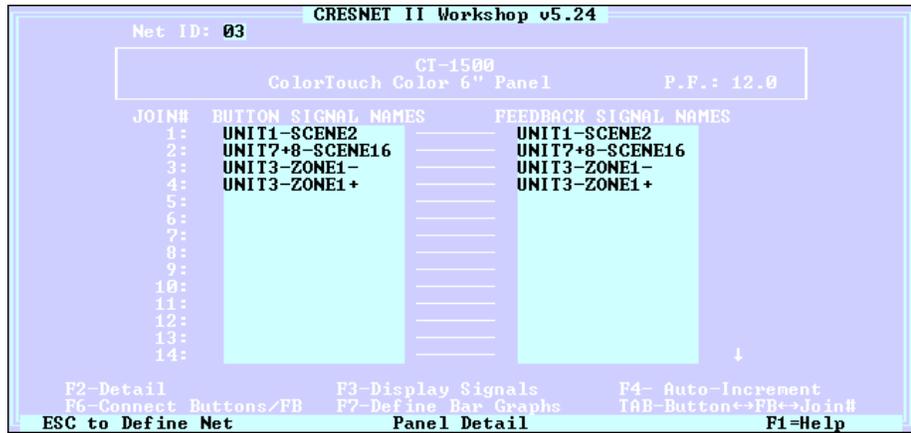
The CRESNET II Workshop is designed to simplify the various operations needed to program and run a CRESNET II control system. The series of screen displays shown below are accessible from the “Define Network” option of the SIMPL-I Menu in the CRESNET II Workshop. These screens are shown to clarify the means of assigning signal names for the SIMPL program in the previous illustration.

ST-LT Workshop Screens (1 of 4)

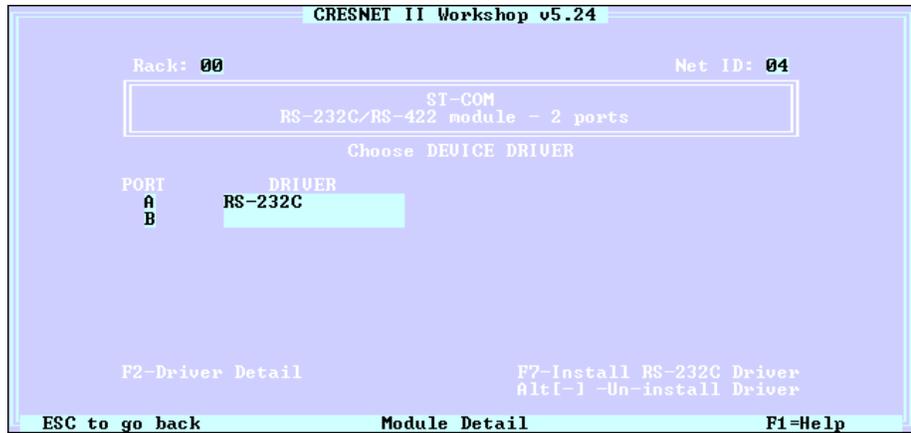


The ST-LT definition supports a subset of the ST-COM definition; use A_IN, A_OUT for serial string transmission as well as the regular “in” and “out” directions for hard-coding serial data.

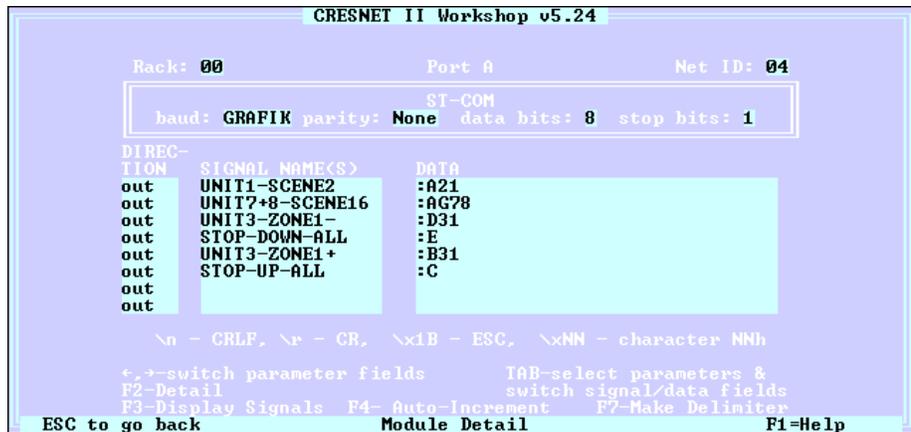
ST-LT Workshop Screens (2 of 4)



ST-LT Workshop Screens (3 of 4)



ST-LT Workshop Screens (4 of 4)



The ST-LT is defined as an “ST-COM, Port A”. Enter “GRAFIK” into the baud rate field to allow the ST-LT to communicate with the Grafik Eye unit. The fields for parity, data bits, and stop bits are not used and may be set to any value.

If Port B is defined to be 9600 N81, a RS-232 link to the Grafik Eye unit through the RS-232 port on the back of the ST-LT is permitted. The RS-232 port is bidirectional; data can be transmitted and received to/from the Grafik Eye. Typically, this port is used for debugging only. A standard DB9 male/DB9 female straight-through cable is used to go from this port to a PC.

The data field contains the command protocol for the Grafik Eye system. A description of commands, their operation, and examples are provided in the table below.

Commands for GRX-AV-RS232 and GRX-AV-RS232/ATC

OPERATION	CMD	PARAMETERS	EXAMPLES
Select Scene	A	<i>[scene][main units]</i>	:A21 select scene 2 on unit 1 :AG78 select scene 16 on units 7 & 8
Scene Lock	SL	<i>[+][or][-][main units]</i>	:SL release all units from scene lock :SL-6 release only unit 6 from lock :SL+45 additional lockout units 4 & 5
Request Scene Status	G	NONE	:G report scene status of all units on link
Sequence	SQ	<i>[+][or][-][main units]</i>	:SQ release all units from sequence mode :SQ-3 release only unit 3 from sequencing :SQ+68 add units 6 & 8 to sequencing
Zone Lock	ZL	<i>[+][or][-][main units]</i>	:ZL release all units from zone lock :ZL-1 release only unit 1 from lock :ZL+36 additionally lockout units 3 & 6
Zone Lower	D	<i>[main unit][zones]</i>	:D5 stop ramping down all zones on unit 5 :D3124 ramp down zones 1,2 & 4 on unit 3
Zone Lower Stop	E	NONE	:E stop ramping down all zones on all units
Zone Raise	B	<i>[main unit][zones]</i>	:B5 stop ramping up all zones on unit 5 :B3124 ramp up zones 1,2 & 4 on unit 3
Zone Raise Stop	C	NONE	:C stop ramping up all zones on all units
Set Time*	ST	<i>[hr][min][mth][day] con. [yr][dayofweek]</i>	:ST 1 35 10 26 95 5 set time and date to 1:35am, Thursday, October 26, 1995
Report Time*	RT	NONE	:RT report current time and date of control response ~:rt <i>hr min month day yr dayofweek</i>
Select Schedule*	SS	<i>[schedule]</i>	:SS1 start weekday schedule
Report Schedule*	RS	NONE	:RS which schedule is currently running response ~:rs <i>schedule</i>
Report Sunrise/Sunset*	RA	NONE	:RA report sunrise time and sunset time response ~:ra <i>rise_hr rise_min set_hr set_min</i>
Super Sequence Start*	QS	NONE	:QS start super sequence at first event
Super Sequence Pause*	QP	NONE	:QP stop super sequence at current event
Super Sequence Resume*	QC	NONE	:QC resume super sequence at next event

NOTE: Command operations denoted with an asterisk (*) are for GRX-AV-RS232/ATC only. For a more comprehensive description of commands refer to “Appendix: GRAFIK Eye Commands” on page 18.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange, or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number, and return address.
2. Products may be returned for credit, exchange, or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, Cresskill, N.J., or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee, plus shipping costs, on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended, or if it has been subjected to misuse, accidental damage, modification, or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced, or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supercedes all previous warranties.

Trademark Information

All brand names, product names, and trademarks are the sole property of their respective owners. Windows is a registered trademark of Microsoft Corporation. Windows95/98/Me/XP and WindowsNT/2000 are trademarks of Microsoft Corporation

Appendix: GRAFIK Eye Commands

NOTE: This entire appendix is a reprint of Lutron's technical reference material.

Format for Commands

The RS-232 interface is commanded by ASCII strings in the following format.

:	A	1	2	3	...	<CR>
		└──────────┘				
Clear	Command	Command				Carriage
Input		Parameters				Return
Buffer						

Notice that **capital letters** must be used for commands and there are no spaces between characters. To execute more than one command, enter a space instead of the carriage return and enter the next command. Any number of commands can be entered at one time, as long as the input buffer is less than or equal to 60 characters. The commands are executed in the order they are entered. When commands have been received by the RS-232 interface, the number of commands executed is reported by the unit to the RS-232 link. The format for this is a statement in the following form.

```
<CR><LF>~3 OK<CR><LF>
```

If unrecognizable data is received, an error statement in the following form is reported.

```
<CR><LF>~ERROR # 6 0 OK<CR><LF>
```

The first number indicates the type of error and the second number indicates the number of commands executed before the error. When referring to GRAFIK Eye Main Units as command parameters, GRAFIK Eye 1 refers to the GRAFIK Eye Main Unit addressed as A1; GRAFIK Eye 2 refers to the GRAFIK Eye Main Unit addressed as A2, and so on. Up to eight GRAFIK Eye Main Units can be on the MUX link.

GRX-AV-RS232 Command List

The following is a list of commands which can be used with both the GRX-AV-RS232 and the GRX-AV-RS232/ATC Interface Controls.

(A) Select Scene

This command selects desired scenes on the specified GRAFIK Eye Main Unit(s). The first parameter is the scene and the second is the GRAFIK Eye Main Unit(s) which selects that scene. If an invalid GRAFIK Eye number is encountered, the command only affects the GRAFIK Eye Main Units listed before the invalid entry. For scene 10 enter an "A"; for scene 11, enter a "B", and so on up to scene 16. Scene numbers outside the range of 0-G return an error statement.

Examples:

:A21<CR>	Select scene 2 on GRAFIK Eye Main Unit 1.
:AG45 A78<CR>	Select scene 16 on GRAFIK Eye Main Units 4 and 5; select scene 7 on GRAFIK Eye Main Unit 8.
:A0123 A145 A38<CR>	Turn off GRAFIK Eye Main Units 1, 2 and 3; select scene 1 on GRAFIK Eye Main Units 4 and 5; select scene 3 on GRAFIK Eye Main Unit 8.

(SL) Scene Lock

When a GRAFIK Eye Main Unit is selected by this command, it is locked in the current scene and does not allow lighting changes. To *scene lock* GRAFIK Eye Main Units, enter a “+” for the first parameter; to release GRAFIK Eye Main Units from *scene lock*, enter a “-”. For the second parameter, enter the GRAFIK Eye Main Units that need to be selected or deselected. If the “+” or “-” is omitted, all GRAFIK Eye Main Units are released from *scene lock*, except for those listed. Notice that all GRAFIK Eye Main Units can be released manually from *scene lock* by switching dip switch 2 from the ON to the OFF position. Also note that if another GRAFIK Eye accessory is holding a Main Unit in *scene lock*, neither this command nor dip switch 2 releases it.

Examples:

:SL<CR>	Release all GRAFIK Eye Main Units from <i>scene lock</i> .
:SL2<CR>	<i>Scene lock</i> GRAFIK Eye Main Unit 2 and release all others.
:SL-3<CR>	Release GRAFIK Eye Main Unit 3 from <i>scene lock</i> , while not affecting the status of other GRAFIK Eye Main Units.
:SL+68<CR>	<i>Scene lock</i> GRAFIK Eye Main Units 6 and 8 (in addition to the units already selected).
:SL-5678 SL+1 <CR>	Release GRAFIK Eye Main Units 5, 6, 7, and 8 from <i>scene lock</i> and <i>scene lock</i> GRAFIK Eye Main Unit 1, but do not change the status of 2, 3, and 4.

(G) Request Scene Status

This command returns the current scene of all eight GRAFIK Eye Main Units on the MUX link.

Example:

:G<CR>	<i>Request scene status.</i>
--------	------------------------------

The response is “~:ss” followed by a string of eight ASCII characters, one for each GRAFIK Eye Main Unit. Each character represents the current status of each GRAFIK Eye Main Unit. The scene is indicated by its number. Scene 10 is indicated by an ‘A’; scene 11 is indicated by a ‘B’, and so on up to scene 16. A ‘0’ is returned if the GRAFIK Eye Main Unit is OFF and an ‘M’ is returned if the GRAFIK Eye Main Unit is missing or not responding. An ‘R’ is returned if a master *raise* is being sent and an ‘L’ is returned if a unit is sending a master *lower*.

Example of Response:

```
<CR><LF>~:ss2L0MAR95 1 OK<CR><LF>
    Main Unit A1 is in scene 2
    Main Unit A2 is sending a master lower
    Main Unit A3 is OFF
    Main Unit A4 is missing
    Main Unit A5 is in scene 10
    Main Unit A6 is sending a master raise
    Main Unit A7 is in scene 9
    Main Unit A8 is in scene 5
```

(SQ) Sequence

This command determines which GRAFIK Eye Main Units are sequenced (changed from scene to scene with fade times set by GRAFIK Eye Main Units). Two sequences can be selected, depending on the setting of dip switch 4. If dip switch 4 is OFF, the GRAFIK Eye Main Units selected by this command sequence through scenes 1-4. If it is ON, they sequence through scenes 5-16. The command parameters are the same as for *scene lock*. Notice that all GRAFIK Eye Main Units can be taken manually out of *sequence* mode by switching dip switch 3 from the ON to the OFF position. Also note that if another GRAFIK Eye accessory is sequencing a Main Unit, neither this command nor dip switch 3 releases it.

Examples:

:SQ<CR>	Take all GRAFIK Eye Main Units out of <i>sequence mode</i> .
:SQ2<CR>	<i>Sequence</i> GRAFIK Eye Main Unit 2 and take all other GRAFIK Eye Main Units out of <i>sequence mode</i> .
:SQ+68<CR>	<i>Sequence</i> GRAFIK Eye Main Units 6 and 8 (in addition to the units already selected).
:SQ-3<CR>	Take GRAFIK Eye Main Unit 3 out of <i>sequence mode</i> , while not affecting the status of other GRAFIK Eye Main Units.
:SQ-5678 SQ+1<CR>	Take GRAFIK Eye Main Units 5, 6, 7, and 8 out of <i>sequence mode</i> and <i>sequence</i> GRAFIK Eye Main Unit 1, but do not change the status of 2, 3, and 4.

(ZL) Zone Lock

When a GRAFIK Eye Main Unit is selected by this command, the intensity of zone levels preset in its memory cannot be altered. The level of the zone can be changed, but preset memory is write-protected. The command parameters are the same as for *scene lock* and *sequence*. Notice that all GRAFIK Eye Main Units can be released manually from *zone lock* by switching dip switch 1 from the ON to the OFF position. Also note that if another GRAFIK Eye accessory is holding a Main Unit in *zone lock*, neither this command nor dip switch 1 releases it.

Examples:

:ZL<CR>	Release all GRAFIK Eye Main Units from <i>zone lock</i> .
:ZL2<CR>	<i>Zone lock</i> GRAFIK Eye Main Unit 2 and release all other GRAFIK Eye Main Units from <i>zone lock</i> .
:ZL+68<CR>	<i>Zone lock</i> GRAFIK Eye Main Units 6 and 8 (in addition to the units already selected).
:ZL-3<CR>	Release GRAFIK Eye Main Unit 3 from <i>zone lock</i> , while not affecting the status of other GRAFIK Eye Main Units.

(D) Zone Lower

This command causes the zones of the selected GRAFIK Eye Main Units to gradually decrease in intensity. The first parameter is the GRAFIK Eye Main Unit and the second is the zone(s) affected. Any zone numbers not listed are unaffected. If the command is given for a GRAFIK Eye Main Unit and no zones are listed, zones that are currently ramping down on that Main Unit stop. Invalid GRAFIK Eye numbers return an error statement.

Examples:

:D11357<CR>	Ramp down zones 1, 3, 5, and 7 of GRAFIK Eye Main Unit 1.
:D781 D32<CR>	Ramp down zones 8 and 1 of GRAFIK Eye Main Unit 7 and zone 2 of GRAFIK Eye Main Unit 3.
:D5 D52 D18<CR>	Stop all zones on GRAFIK Eye Main Unit 5 that are currently ramping down; ramp down zone 2 of GRAFIK Eye Main Unit 5 and zone 8 of GRAFIK Eye Main Unit 1.
:D1 D2 D3<CR>	Stop ramping down all zones on GRAFIK Eye Main Units 1, 2, and 3.

(E) Zone Lower Stop

This command cancels all *zone lower* commands. It is used as a short cut for sending the *D* command with no zones and all GRAFIK Eye Main Units.

Example:

:E<CR>	Stop all zones on all GRAFIK Eye Main Units that are ramping down.
--------	--------------------------------------------------------------------

(B) Zone Raise

This command causes the zone(s) listed on the given GRAFIK Eye Main Unit to gradually increase in intensity and has the same parameters as *zone lower*. Zone numbers not listed are unaffected. If the command is given for a GRAFIK Eye Main Unit and no zones are listed, any zones on the GRAFIK Eye Main Unit that are currently ramping up are stopped. Invalid GRAFIK Eye numbers return an error statement.

Examples:

:B11357<CR>	Ramp up zones 1, 3, 5, and 7 of GRAFIK Eye Main Unit 1.
:B781 B23<CR>	Ramp up zones 8 and 1 of GRAFIK Eye Main Unit 7 and zone 3 of GRAFIK Eye Main Unit 2.
:B1 B2 B3<CR>	Stop all zones on GRAFIK Eye Main Units 1, 2, and 3 that are currently ramping up.
:B5 B52 B18<CR>	Stop all zones on GRAFIK Eye Main Unit 5 that are currently ramping up; ramp up zone 2 of GRAFIK Eye Main Unit 5 and zone 8 of GRAFIK Eye Main Unit 1.

Zone Raise Stop

This command cancels all *zone raise* commands. It is used as a short cut for sending the *B* command listing no zones and all Main Units.

Examples:

:C<CR>	Stop all zones on all GRAFIK Eye Main Units that are ramping up.
:C E<CR>	Stop all zones that are being raised or lowered.

GRX-AV-RS232/ATC Command List

The following set of commands can be used **only** with the GRX-AV-RS232/ATC.

(ST) Set Time

This command sets the internal timeclock to the given time and date. The seconds are reset to 00 when the command is issued. Notice that the timeclock can be set directly through Lutron's GRAFIK Eye Timeclock software. There are six command parameters, with a space between each.

Parameter 1	Hour	0-23 (24 hour format)
Parameter 2	Minute	0-59
Parameter 3	Month	1-12
Parameter 4	Date	1-31
Parameter 5	Year	0-99
Parameter 6	Day of week	1-7

Examples:

:ST 2 14 7 30 71 6<CR>	Set time to 2:14 AM on July 30, 1971; the day of week is set to Friday.
:ST 17 4 10 31 95 3<CR>	Set time to 5:04 PM on October 31, 1995; the day of week is set to Tuesday.

(RT) Report Time

This command reports the current time and date of the internal timeclock. If this command is entered on a GRX-AV-RS232 unit, an error condition is issued.

Example:

:RT<CR>	Report time .
---------	---------------

The response is “:rt” and then a string of numbers indicating the time and date in the same order that it would be entered using the *set time* command.

Example of Responses:

<CR><LF>~:rt 2 14 7 30 71 6 1 OK<CR><LF>	The time is 2:14 AM on July 30, 1971; the day of week is Friday.
<CR><LF>~:rt 17 4 10 31 95 3 1 OK<CR><LF>	The time is 5:04 PM on October 31, 1995; the day of week is Tuesday.

(SS) Select Schedule

This command determines which schedule the GRX-AV-RS232/ATC is running. The GRX-AV-RS232/ATC executes the next event that was to occur in the schedule selected. The schedules themselves can only be altered through Lutron's GRAFIK Eye Timeclock software. The execution of a schedule can be temporarily suspended by turning dip switch 8 to the OFF position. There is only one parameter for this command, a number which selects the schedule.

- 0 = no schedule active
- 1 = "weekday" schedule
- 2 = "weekend" schedule
- 3 = "special 1" schedule
- 4 = "special 2" schedule

Any other value causes no schedule to be run.

Examples:

:SS 4<CR>	Start special schedule 4.
:SS 0<CR>	Stop timeclock from executing events.

(RS) Report Schedule

This command tells the unit to report the schedule that it is currently running. If this command is used on a GRX-AV-RS232 unit, an error condition is issued.

Example:

:RS<CR>	Report schedule .
---------	-------------------

The response is “:rs” followed by a number indicating the schedule that is running.

- 0 = no schedule active
- 1 = "weekday" schedule
- 2 = "weekend" schedule
- 3 = "special 1" schedule
- 4 = "special 2" schedule

Example of Responses:

<CR><LF>~:rs 0 1 OK<CR><LF>	No schedule is running.
<CR><LF>~:rs 3 1 OK<CR><LF>	Special schedule 3 is running.

(RA) Report Sunrise/Sunset Times

This command tells the GRX-AV-RS232/ATC to report the time that the sun rises and sets today, according to the unit’s internal astronomical timeclock. If this command is used on a GRX-AV-RS232 unit, an error condition is issued.

Example:

:RA<CR>	Report sunrise/sunset times .
---------	-------------------------------

The response is “:ra” followed by the sunrise time (hours then minutes) and the sunset time (hours then minutes).

Example of Response:

<CR><LF>~:ra 5 34 17 21 1 OK<CR><LF>	The sunrise is at 5:34 AM; the sunset is at 17:21 (5:21 PM)
--------------------------------------	-------------------------------------------------------------

(QS) Super Sequence Start

A *super sequence* is a command to the GRX-AV-RS232/ATC from a PC through Lutron’s GRAFIK Eye Timeclock software (part number GRXTC-WIN). It provides GRAFIK Eye Main Units with a user-selected set of scenes through which to sequence. This command initiates the preprogrammed *super sequence* starting from step 1. If a *super sequence* is not loaded into the unit, an error condition is issued. If the *super sequence* is running when this command is issued, it jumps immediately to step 1 and continues from that point.

Example:

:QS<CR>	Start <i>super sequence</i> .
---------	-------------------------------

(QP) Super Sequence Pause

This command stops the preprogrammed *super sequence* that is running at its current step. If a *super sequence* is not running, the command does nothing. If a *super sequence* has not been loaded using the GRAFIK Eye Timeclock software, an error statement is reported. The sequence can be restarted from this point by a *super sequence resume* command.

Example:

:QP<CR>	Stop <i>super sequence</i> at the current step.
---------	-------------------------------------------------

(QC) Super Sequence Resume

This command restarts a stopped *super sequence* by immediately selecting the next step. If a *super sequence* is not loaded, an error statement is reported.

Example:

:QC<CR>	Continue <i>super sequence</i> from the current step.
---------	-------------------------------------------------------

This page intentionally left blank.

This page intentionally left blank.

This page intentionally left blank.



Crestron Electronics, Inc.
15 Volvo Drive Rockleigh, NJ 07647
Tel: 888.CRESTRON / 201.767.3400
Fax: 201.767.7576 / BBS: 201.767.5506
<http://www.crestron.com>

*Specifications subject to
change without notice.*

Doc. 5694
03.98