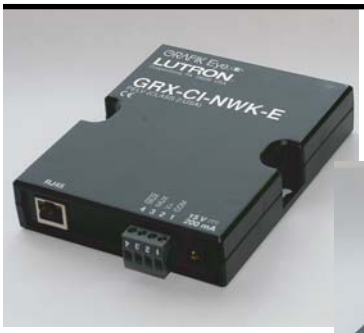
GRAFIK Eye®

Operation Instructions
Occupant Copy

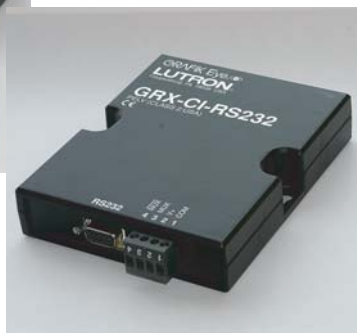
Please Read

GRX-CI-RS232, GRX-CI-NWK-E, GRX-IA-CI-RS232, and GRX-IA-CI-NWK-E Control Interfaces

Class 2/PELV Devices 15V⎓ 200mA



GRX-CI-NWK-E



GRX-CI-RS232

Description

Up to eight *GRAFIK Eye* Control Units can be interfaced with your personal computer or auxiliary audio/visual equipment via TCP/IP communication over Ethernet (GRX-CI-NWK-E) or RS232 (GRX-CI-RS232). The interface can be used to execute Control Commands and allow for Status Monitoring.

Control Commands

The Control Interface can send commands from a PC or A/V equipment to a maximum of eight *GRAFIK Eye* Control Units. The following commands are available:

Select Scene. Select any scene on any *GRAFIK Eye* Control Unit.

Scene Lock. Prevent changes to *GRAFIK Eye* Control Unit(s) from any remote location.

Request Scene Status. Request the current scene of every *GRAFIK Eye* Control Unit in the system.

Read Zone Intensity. Read the zone intensities on a specified *GRAFIK Eye* Control Unit.

Set Zone Intensity (requires 3500/4500 Series Control Unit). Change the intensities of the given zones on a specified *GRAFIK Eye* 3500 or 4500 Series Control Unit in the given fade time.

Sequence. Begin sequencing scenes 1 to 4 or 5 to 16 (DIP-switch selectable) on selected *GRAFIK Eye* Control Unit(s).

Zone Lock. Prevent permanent changes to preset levels of *GRAFIK Eye* Control Unit(s).

Zone Raise/Lower. Raise or lower any zone on any *GRAFIK Eye* Control Unit.

Refer to the *GRAFIK Eye* RS232 Protocol and Command Set on the enclosed CD for detailed command descriptions and information on configuring your PC or auxiliary A/V equipment for use with Lutron's RS232 interfaces.

Status Monitoring

The Control Interface will allow a PC or auxiliary A/V equipment to monitor a *GRAFIK Eye* system. The following commands are available:

Raw Feedback (DIP switch 6 ON). Report all button presses and releases on all *GRAFIK Eye* Control Units and Accessory Controls.

Scene Status (DIP switch 7 ON). Report scene status changes on all *GRAFIK Eye* Control Units. Scene status may be changed by Control Units, Accessory Controls, or sequences.

Communication Settings: NWK-E

To configure your device to talk to the *GRAFIK Eye* Ethernet Interface, open a Telnet session with the following default IP address, port, and login information.

Default IP Address: 192.168.250.1
Default Port: 23 (Telnet Port)
Default Login for Connection 1: 'nwk'
Default Login for Connection 2: 'nwk2'

If you wish to send these commands from a PC, run the Microsoft® Windows® Telnet program or an equivalent program.

Communication Settings: RS232

To configure your device to talk to the *GRAFIK Eye* RS232 Interface, use the data conventions listed below.

9600 BAUD
8 DATA BITS
1 STOP BIT
NO PARITY

If you wish to send these commands from a PC, run the Microsoft® Windows® Hyper Terminal program or an equivalent program. Then, select Local Echo, Line Feed, and Carriage Return inbound and outbound. This allows you to see the characters that you are typing as well as keep the responses from overwriting typed characters.

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DIP Switch Operation

The settings of the DIP switches affect the interface operation between *GRAFIK Eye* Control Units and your PC or auxiliary A/V equipment. Control Units and Accessory Controls must be uniquely addressed for use with the Control Interface. For addressing, see the *GRAFIK Eye* Installation Guide included with the Control Units. The Control Interface will default to address 16, unless addressed in fixed address mode (see below). DIP switch options:

DIP Switch 1: ZONE LOCK RETAIN;

DIP Switch 2: SCENE LOCK RETAIN; and

DIP Switch 3: SEQUENCE RETAIN:

In the event of a power outage, the Control Interface will retain which *GRAFIK Eye* Control Units were in Zone Lock, Scene Lock, and Sequence modes (set using the Control Interface), respectively. Upon returning power, Control Units that had been in Zone Lock, Scene Lock, or Sequence mode (set using the Control Interface) will stay locked or sequencing if the DIP switches are in the ON position. When these DIP switches are in the OFF position, this information will **not** be restored upon power up. These DIP switches do not affect Zone Lock, Scene Lock, or Sequence mode set by a GRX-AV in 4Q mode.

DIP Switch 4: SEQUENCE TYPE: Set the scene range that *GRAFIK Eye* Control Units will sequence using the SEQUENCE command. In the OFF position, *GRAFIK Eye* Control Units will sequence scenes 1 to 4. In the ON position, they will sequence scenes 5 to 16.

DIP Switch 5: FIXED ADDRESS: If you want to add an Control Interface to a Data Link that already has a GRX-CI-NWK-E, GRX-CI-RS232 or GRX-CI-PRG, the fixed address option must be used by setting DIP Switch 5 ON. DIP Switches 1 to 4 are then used to address the Interface. Refer to the addressing table.

The Sequence Type (DIP switch 4) that will run when using the SEQUENCE command of the Control Interface is determined by the address of the Control Interface. Even addresses (2, 4, etc.) will sequence scenes 1 to 4, and odd addresses (1, 3, etc.) will sequence scenes 5 to 16.

A fixed address Control Interface can only do one of the following modes at any time: Zone Lock (ZL), Scene Lock (SL), or Sequence (SQ).

Note: Use the fixed address option only if there is a GRX-CI-PRG, GRX-CI-RS232, or GRX-CI-NWK-E already on the Data Link.

DIP Switch 6: RAW FEEDBACK

Setting DIP switch 6 of the Control Interface in the ON position will report when a button has been pushed or released on a *GRAFIK Eye* Control Unit or Accessory Control. The response will be formatted as follows:

[address][button data]

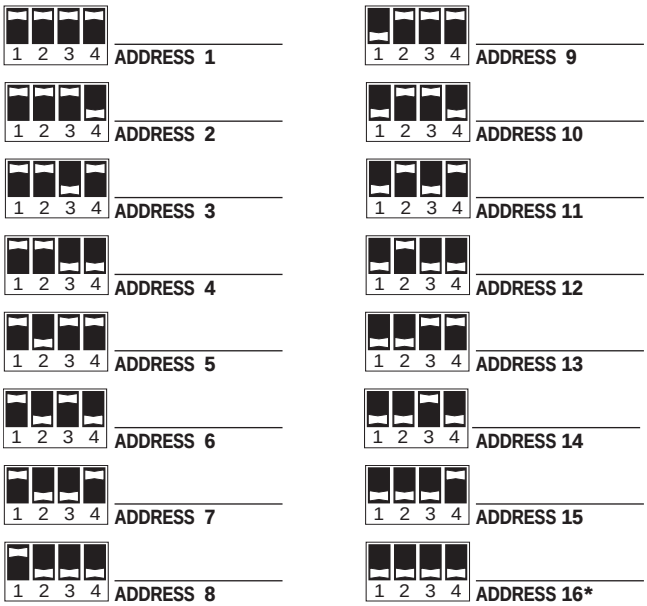
address - address of *GRAFIK Eye* Control Unit or Accessory Control where button was pressed or released

button data - what action was taken as a result of the button press or release

The first parameter is the address of the *GRAFIK Eye* Control Unit or Accessory Control where a button was pushed or released. A capital letter indicates a button was pushed, and a lowercase letter indicates a button was released. The table opposite lists how addresses will be reported by raw feedback.

The second parameter, ***button data***, varies based on the function of the *GRAFIK Eye* Control Unit or Accessory Control. Functions can be separated into four major categories: scene selection/fine tuning, special functions, partitioning, and mastering.

Addressing Table



*Reserved for GRX-CI-PRG, if present in the system.

DIP Switch Operation (continued)

Unit Type	Addressed as	Address Reported
Control Unit	A1	A or a
	A2	B or b
	A3	C or c
	A4	D or d
	A5	E or e
	A6	F or f
	A7	G or g
	A8	H or h
Accessory Control	1	I or i
	2	J or j
	3	K or k
	4	L or l
	5	M or m
	6	N or n
	7	O or o
	8	P or p
	9	Q or q
	10	R or r
	11	S or s
	12	T or t
	13	U or u
	14	V or v
	15	W or w
	16	X or x

Scene Selection/Fine Tuning (e.g., GRX-3100, 3500, 4100, and 4500; NTGRX-4S, 4S-IR, and 2B-SL; GRX-4S-DW; and GRX-CIR)

The second parameter, ***button data,*** represents the scene that was selected by the pressed or released button. Characters 1 to 16 represent scenes 1 to 16, and 0 represents the OFF scene. For a Control Unit, a Master Raise is indicated by a 17, while a Master Lower is indicated by an 18. For a fine tuning control, such as NTGRX-2B-SL, a 1 indicates that the Raise or top button has been pushed, and a 0 indicates that the Lower or bottom button has been pushed.

Example of raw feedback:

D3: button press selecting scene 3 on *GRAFIK Eye* Control Unit addressed as A4

d3: button release after selecting scene 3 on *GRAFIK Eye* Control Unit addressed as A4

Special Functions (e.g., NTGRX-4Q and GRX-AV)

The second parameter, ***button data,*** will be a value representing which functions are active. If the address parameter is a lowercase letter, no functions are active. Available functions and their values are: Sequence = 1, Zone Lock = 2, Scene Lock = 4, Fade Override (NTGRX-4Q) = 8, Panic (GRX-AV) = 16. Values are added if more than one function is active.

Example of raw feedback:

J6: zone lock and scene lock are active on the Accessory Control addressed as 2

j1: no functions are active on the Accessory Control addressed as 2

Partitioning and Mastering (e.g., NTGRX-4M, NTGRX-4PS, and GRX-AV)

The status of these functions cannot be decoded by the Control Interface.

DIP Switch 7: SCENE STATUS: In the ON position, the Control Interface will return the current scene of all eight *GRAFIK Eye* Control Units on the Data Link when a new scene is selected. The response will be a ":ss", followed by a string of eight ASCII characters, one for each *GRAFIK Eye* Control Unit. Each character represents the scene of each *GRAFIK Eye* Control Unit.

Character	Control Unit Status
0	off
1	scene 1
2	scene 2
3	scene 3
4	scene 4
5	scene 5
6	scene 6
7	scene 7
8	scene 8
9	scene 9
A	scene 10
B	scene 11
C	scene 12
D	scene 13
E	scene 14
F	scene 15
G	scene 16
H	temporary scene
M	missing/not responding
R	sending Master Raise
L	sending Master Lower

The current scene can also be obtained by using the Request Scene Status command; see the *GRAFIK Eye* RS232 Protocol and Command Set on the enclosed CD.

Example of Scene Status response:

:ssM180R2D2<CR><LF>

Control Unit A1 is missing
Control Unit A2 is in scene 1
Control Unit A3 is in scene 8
Control Unit A4 is off
Control Unit A5 is sending a Master Raise
Control Unit A6 is in scene 2
Control Unit A7 is in scene 13
Control Unit A8 is in scene 2

DIP Switch 8: Unused.

Device Communication Information (GRX-CI-NWK-E Only)

Server Description

The GRX-CI-NWK-E is running a Telnet server that allows up to two connections at a time. The server defaults to run at IP Address 192.168.250.1 and Port 23 (default Telnet Port).

A PC, touch screen, or any device that can initiate a Telnet client connection and send ASCII strings makes a connection to the server at the above address and port. After connecting, the device waits for a login name. After logging in, the device waits for ASCII strings to perform commands. These strings can be found in the *GRAFIK Eye* RS232 Protocol and Command Set on the enclosed CD.

Example sequence of events

login: nwk<cr>
connection established<cr><lf>
:A21<cr>
~1 OK<cr><lf>

Description of the sequence of events

- A connection is made by a Telnet client to the GRX-CI-NWK-E at IP address 192.168.250.1 Port 23.
- Once connected, the GRX-CI-NWK-E sends 'login: ' back to the Telnet client. Note: The last character in 'login: ' is a space.
- The Telnet client sends 'nwk' followed by a Carriage Return (CR; adding a Line Feed after the CR is OK).
- GRX-CI-NWK-E responds with 'connection established' followed by a Carriage Return and Line Feed.
- GRX-CI-NWK-E then waits for the ASCII strings that can be found in the *GRAFIK Eye* RS232 Protocol and Command Set on the enclosed CD.
- Telnet client Sends ':A21' followed by a Carriage Return (adding a Line Feed after the CR is OK) to select scene 2 on *GRAFIK Eye* Control Unit at address 1.
- GRX-CI-NWK-E responds with '~1 OK' followed by a Carriage Return and Line Feed to indicate that one command was executed properly.

Connection 1 and Connection 2

- Connection 1 and Connection 2 can both be running at the same time. The two connections act exactly the same except for one characteristic: Connection 1 will allow another connection with the correct login name to disconnect an existing connection to Connection 1.
- Connection 2 will reject any other attempts to connect to Connection 2 if there is already a device connected to Connection 2.

Changing Default Communication Settings

Default IP Address: 192.168.250.1
Default Subnet Mask: 255.255.255.0
Default Gateway: 0.0.0.0
Default Connection 1 Login: ‘nwk’
Default Connection 2 Login: ’nwk2’

To configure your device from the default network settings, use the Lutron Device IP program included on the CD provided.

Install on Windows® XP, 2000, or 98SE, and run the program. Click Discover Devices, and the program will search for Lutron devices and report back the settings. Enter your network setting changes and click Update Device to change the settings. The device is now updated and does not need to be rebooted.

The following RS232 commands have also been added to the *GRAFIK Eye* RS232 Protocol and Command Set on the enclosed CD for reading and changing network settings.

Note: Before using the commands below to change the GRX-CI-NWK-E default network settings, you must first change your computer’s IP address to 192.168.250.xxx (where xxx is not 1) in order to connect to the device. (IP address change is not required when using using Lutron Device IP program.)

Set IP Address: ‘sip xxx.xxx.xxx.xxx<cr>’
Example: ‘sip 192.168.250.1<cr>’
Response: ‘~1 OK’
Read IP Address: ‘rip<cr>’
Response: ‘~ip: 192.168.250.1 1 OK’

Set Subnet Mask ‘ssm xxx.xxx.xxx.xxx<cr>’
Example: ‘ssm 255.255.255.0<cr>’
Response: ‘~1 OK’
Read Subnet Mask: ‘rsm<cr>’
Response: ‘~sm: 255.255.255.0 1 OK’

Set Gateway ‘sgw xxx.xxx.xxx.xxx<cr>’
Example: ‘sgw 192.168.250.100<cr>’
Response: ‘~1 OK’
Read Gateway: ‘rgw<cr>’
Response: ‘~gw: 192.168.255.100 1 OK’

Set Login Name ‘sln [connection #] [existing login] [new login]<cr>’
Example: ‘sln 2 nwk2 lutron<cr>’’
Response: ‘~1 OK’
Read Login Name: ‘rln [connection #]<cr>’
Example: ‘rln 2<cr>’’
Response: ‘~ln: lutron 1 OK’
Note: Login names can be a maximum of 8 characters and cannot include spaces.

The settings above will not take effect until after a reset or power cycle. The ‘rst<cr>’ command will close all connections and reset the device.

LED Information (NWK-E models)

LED 1: Power: Lights continuously when Data Link Pins 1 and 2 (common and power) are wired correctly or optional transformer is plugged in.

LED 2: Ethernet Link: Lights continuously when a connection is established, and flashes when there is activity on the Ethernet link.

LED 3, 4, and 5: Unused.

LED 6: Data Link TX: Flashes when the interface is transmitting information on the *GRAFIK Eye* Link.

LED 7: Data Link RX: Flashes when the interface is receiving information on the *GRAFIK Eye* Link. When properly wired and *GRAFIK Eye* Control Unit(s) addressed, flashes continuously.

RJ45 Jack LEDs: Left LED lights continuously when the Ethernet link is established, and flashes when there is activity on the Ethernet link. Right LED lights continuously when a 100BaseT connection is established, and is off when a 10BaseT connection is established.

LED Information (RS232 models)

LED 1: Power: Lights continuously when Data Link Pins 1 and 2 (common and power) are wired correctly.

LED 2 and 3: Unused.

LED 4: RS232 Link TX: Flashes when the Control Interface is transmitting information on the RS232 Link.

LED 5: RS232 Link RX: Flashes when the Control Interface is receiving information on the RS232 Link.

LED 6: Data Link TX: Flashes when the Control Interface is transmitting information on the *GRAFIK Eye* Link.

LED 7: Data Link RX: Flashes when the interface is receiving information on the *GRAFIK Eye* Link. When properly wired and *GRAFIK Eye* Control Unit(s) addressed, flashes continuously.

Please refer to the enclosed CD for the product Specification Sheets and Operation Manuals, Ethernet Device IP program, and RS232 Protocol information.

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