Overview

GRX-4000 Series Control Unit

GRAFIK Eye® LP Lighting Control Panel
Table of Contents

Step-by-Step Instructions

Install System

<table>
<thead>
<tr>
<th>STEP</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mount Wallboxes</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Mount Panels</td>
<td>2-4</td>
</tr>
<tr>
<td>3</td>
<td>Control Wiring</td>
<td>5-7</td>
</tr>
<tr>
<td>4</td>
<td>Feed and Load Wiring</td>
<td>8-9</td>
</tr>
<tr>
<td>5</td>
<td>Set Address Switches</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Set Function Switches</td>
<td>11</td>
</tr>
<tr>
<td>7</td>
<td>Install Wallstation</td>
<td>12</td>
</tr>
</tbody>
</table>

Start Up System

<table>
<thead>
<tr>
<th>STEP</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Activate Loads in Bypass</td>
<td>12</td>
</tr>
<tr>
<td>9</td>
<td>Activate Control Units</td>
<td>13</td>
</tr>
<tr>
<td>10</td>
<td>Assign Load Types</td>
<td>14</td>
</tr>
<tr>
<td>11</td>
<td>Address GRX-4000 Control Units</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>Remove Bypass Jumpers</td>
<td>16</td>
</tr>
<tr>
<td>13</td>
<td>Check System</td>
<td>16</td>
</tr>
</tbody>
</table>

Set Up System

<table>
<thead>
<tr>
<th>STEP</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Assign Primary Zones</td>
<td>17</td>
</tr>
<tr>
<td>15</td>
<td>Set Up Non Dim Zones</td>
<td>18</td>
</tr>
<tr>
<td>16</td>
<td>Set Low or High End (optional)</td>
<td>19</td>
</tr>
<tr>
<td>17</td>
<td>Set Normal/Emergency Switch</td>
<td>20</td>
</tr>
<tr>
<td>18</td>
<td>Set Up Scenes on the GRX-4000</td>
<td>21</td>
</tr>
<tr>
<td>19</td>
<td>Set Up Wallstation</td>
<td>22-23</td>
</tr>
</tbody>
</table>

Reference Sheets

Set Up System

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Save options</td>
</tr>
<tr>
<td>26</td>
<td>16 and 24 zone GRX Control Units</td>
</tr>
<tr>
<td>27</td>
<td>Control Directory</td>
</tr>
<tr>
<td>28</td>
<td>Circuit Selector Functions, Address, 2Link ™ options</td>
</tr>
</tbody>
</table>

Look Inside a Panel

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>LP1—3</td>
</tr>
<tr>
<td>33</td>
<td>LP4—8 and LPGP24</td>
</tr>
</tbody>
</table>

Load Wiring

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>34</td>
<td>Fluorescent Wiring Information</td>
</tr>
<tr>
<td>35</td>
<td>Neon Application Information</td>
</tr>
</tbody>
</table>

Troubleshooting Guide

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>Troubleshooting Guide</td>
</tr>
</tbody>
</table>

Maintenance

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>Maintenance</td>
</tr>
</tbody>
</table>

Glossary of Terms

<table>
<thead>
<tr>
<th>Page</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>Glossary of Terms</td>
</tr>
</tbody>
</table>
**STEP 1: Mount Wallboxes**

Use wallboxes with a minimum depth of 2-3/4" (70 mm) for Wallstations and 3-1/2" (89 mm) for GRX-4000 Series Control Units.

Multigang installations may require spacers between wallboxes. Mount wallboxes flush to 1/8" (3 mm) below finished wall surface. Finished wall should not have gaps around the wallbox of greater than 1/8" (3 mm).

*For More Information...*
See instructions packaged with each control.
See Installer’s video GRX-V-INST, available from Lutron.

**STEP 2: Mount Panels**

**LP1-3 Series**
*(Dimensions and Conduit Entry)*

When surface mounting, the keyhole accepts a maximum of 1/4" (6 mm) mounting bolt. This size is recommended.

When flush mounting, mount the panel flush to 1/8" (3 mm) below finished wall surface.

LP Panels must be mounted within 7° of true vertical.

![LP1-3 Series Diagram](diagram.png)

**Caution!** This equipment is air cooled - vents must not be blocked or you will void the warranty.
Step 2: Mount Panels (continued)

**LP4-8 Series**
(Dimensions and Conduit Entry)

For More Information . . .

Look inside an LP1 through 3 ...................... 32

Look inside an LP4 through 8 ...................... 33

**Caution!** This equipment is air cooled – vents must not be blocked or you will void the warranty.
**Step 2: Mount Panels (continued)**

LP1-3  
(Suggested Mounting)

LP4-8  
(Suggested Mounting)

**Notes:**

- Panel generates heat. Mount only where ambient temperature will be 0 °C-40 °C (32 °F-104 °F).
- Reinforce wall structure as required for weight and local codes.
- Panel clearances are 12” (305 mm) above and below and 0” to each side. (allow room for Class 2/PELV clearance).
- Indoor use only. NEMA, Type 1 enclosure, IP2O.
- Relative Humidity < 90% non-condensing.
- LP Panels must be mounted within 7° of true vertical.
- Components in LP Panels emit noise, mount where audible noise is acceptable.

### Weight w/o Packaging

<table>
<thead>
<tr>
<th>Panel</th>
<th>Max BTUs/Nr.</th>
<th>Weight w/o Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP1</td>
<td>90</td>
<td>24 lbs (11Kg)</td>
</tr>
<tr>
<td>LP2</td>
<td>170</td>
<td>25 lbs (12Kg)</td>
</tr>
<tr>
<td>LP3</td>
<td>250</td>
<td>27 lbs (13Kg)</td>
</tr>
<tr>
<td>LP4</td>
<td>330</td>
<td>68 lbs (31Kg)</td>
</tr>
<tr>
<td>LP5</td>
<td>410</td>
<td>71 lbs (32Kg)</td>
</tr>
<tr>
<td>LP6, LPGP24</td>
<td>490</td>
<td>74 lbs (34Kg)</td>
</tr>
<tr>
<td>LP7</td>
<td>570</td>
<td>77 lbs (35Kg)</td>
</tr>
<tr>
<td>LP8</td>
<td>650</td>
<td>80 lbs (36Kg)</td>
</tr>
</tbody>
</table>

**Warning!** CE marked panels with 13A circuit breakers are intended for industrial or commercial installations.

**Caution!** Dimming Panels will hum slightly and internal relays will click while in operation. Mount where audible noise is acceptable.

**Caution!** Mount panel so line (mains) voltage wiring will be at least 6 feet (1.8 m) from sound or electronic equipment and its wiring.

**Caution!** This equipment is air-cooled. Vents must not be blocked or you will void the warranty.

For More Information . . .

- Look inside an LP1 through 3. ..................32
- Look inside an LP4 through 8. ..................33
STEP 3: Control Wiring

Control Link Specifications

- Total length of Control Link may be no more than 2,000 feet. This distance is based on proper shielding on the twisted shielded pair, and on #12 AWG wire on the wires to terminal 1 and terminal 2 of the Control Link. If unapproved cable or smaller wire is used, this limit is affected:

<table>
<thead>
<tr>
<th>Terminal 1 &amp; 2 Wires Sizes</th>
<th>Max. Control Link Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>#12 AWG</td>
<td>2000 ft. (600 m)</td>
</tr>
<tr>
<td>#14 AWG</td>
<td>1400 ft. (425 m)</td>
</tr>
<tr>
<td>#16 AWG</td>
<td>900 ft. (275 m)</td>
</tr>
<tr>
<td>#18 AWG</td>
<td>600 ft. (180 m)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Terminal 1 &amp; 2 Wires Sizes</th>
<th>Max. Control Link Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2.5 mm²</td>
<td>600 m (2000 ft.)</td>
</tr>
<tr>
<td>#1.0 mm²</td>
<td>450 m (1500 ft.)</td>
</tr>
<tr>
<td></td>
<td>200 m (650 ft.)</td>
</tr>
</tbody>
</table>

Notes:
- Make wire connections inside the wallbox and LP panel or in a junction box (by others) within 8 ft. (2.4 mm) of the terminal.
- All control wiring is Class 2/PELV. Do not place any of these wires in with line voltage (mains voltage) wiring.
- The order of controls within the control wiring is not important.

Questions on wiring? Lutron may be able to help with charts of Wallstations versus distance.
### STEP 3: Control Wiring (continued)

#### Link A 1-to-1 Wiring (1 to 1, 2 to 2, 3 to 3, . . .)

To additional Control Units, Wallstations, Panels, or Control Interfaces

- 2 # 12 AWG (2.5 mm²) from terminals 1 to 1 and 2 to 2
- 2 # 18 AWG (1.0 mm²) twisted, shielded pair from terminals 3 to 3 and 4 to 4–Belden #9461 or Alpha #2211 are recommended
- All four wires are available in one cable from Liberty Cable at 1-800-530-8998. Liberty P/N is Lucorn 12/22-RBL

---

**Notes:**

- Use the wire connector required by local code (those shown are common in the USA).
- Connect the Drain/Shield to terminal ‘D’, if this terminal is available. The Drain is a bare wire – care must be taken so that it does not touch ground (earth) or wallstation circuitry.
STEP 3: Control Wiring (continued)

Link B Wiring (C to C, + to +, – to –)

All five wires are available in one cable from Lutron (P/N GRX-CBL-46L).

To panels where Link B controls circuits. A Lutron LT1 (Link Terminator) should be used to terminate Link B at the last panel.

Typical Wiring: DMX to Link B (2Link™ only)

Wires must be daisy-chained and capped off at both ends of Link B.

DMX Cable Wiring Table

<table>
<thead>
<tr>
<th>DMX Cable Type</th>
<th>Wire</th>
<th>From Circuit Selector</th>
<th>To DMX Jack (Pin #)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belden 9729/89729:</td>
<td>(2) drain/shield white black black red drain/shield white black green red</td>
<td>C + –</td>
<td>C (1) + (3)* – (2)* – (4) + (5)</td>
</tr>
<tr>
<td>Lutron GRX-CBL-DMX-250/500:</td>
<td>drain/shield white black black green red</td>
<td>C + –</td>
<td>C (1) + (3)* – (2)* – (4) + (5)</td>
</tr>
</tbody>
</table>

* Wire in daisy-chain configuration as follows: C to C, + to +, and – to –.
Feed and Load Wiring

STEP 4: Feed and Load Wiring

Feed Wiring (Mains Voltage Wiring)

LP4-LP8 Panels are supplied with main lugs that accept one #14 (2.5 mm²) through #2/0 AWG (50 mm²) wire. Maximum feed is 60A (39A 230V CE, 48A 240V AU). Preferred entry is from the bottom left of the panel, but may be run from the right side at the bottom, left side at the bottom, or top as well.

LP1-LP3 Panels are not supplied with main lugs. Feed wiring is terminated at the branch breakers. Branch breakers accept one #14 AWG (1.5 mm²) through one #8 AWG (8 mm²). Maximum feed is 20A (13A 230V CE, and 16A 240V AU). Preferred entry is from the bottom left of the panel.

Load Circuit Wiring

Output terminal blocks accept one #14 AWG (1.5 mm²) through #10 AWG (4. mm²) or two #18 AWG (1.0 mm²) through #16 AWG wire. Preferred entry is from the top of the panel.

Caution! LP panels require entry of wires as specified. Improper entry will block serviceable parts, and impede air flow through the panel.

Caution! Common Neutrals are not permitted. Run separate Neutrals for each load circuit.

IMPORTANT!

Temporary Lighting

You do not need to install a temporary distribution panel. Place load wires into the appropriate terminal blocks.

Each Input Breaker can supply power to a load while the bypass jumper protects the dimmer from load faults.

Caution! Verify that the LP Panel is fed from the correct voltage. A feed miswire or loss of a feed neutral can cause overvoltage damage to the equipment.
**STEP 4: Feed and Load Wiring (continued)**

### Load Wiring for LP Module:
For all load types except ELV, Hi-lume® FDB or Eco-10™ fluorescent dimming ballasts.

**Load Wiring for ELV Module:**
For incandescent* and dimmable reverse phase control electronic low voltage loads.

* Load type 5-1 must be selected at the Circuit Selector regardless of the load type.

**Load Wiring for TVM Module:**
For 0-10V, PWM, and Tridonic® DSI loads. Each TVM controls two consecutive circuits of lighting and are the first circuits in the panel. Maximum low-voltage ballast control current: 50 mA per zone, 750 mA per panel.

**Notes:**
- For 230V and 240V panels, ‘Hot’ is referred to as ‘Live’. Therefore, terminals will be labeled DL and L.
- Run wiring so that line (mains) voltage wiring will be at least 6 ft. (1.8 m) from sound or electronic equipment and its wiring.

**For More Information . . .**
- Fluorescent Wiring Information .................34,35
- Neon Application Information .................36,37

---

**Caution!** Verify with electronic low voltage transformer or ballast manufacturer that product can be controlled with a phase control dimmer before bypass jumpers are removed.

**Warning!** CE marked panels are appliances. A distribution panel must provide a main circuit breaker that does not exceed the rating of the panel.
## STEP 5: Set Address Switches

<table>
<thead>
<tr>
<th>Control</th>
<th>Action</th>
<th>Address</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRX-IT NTGRX-1S</td>
<td>No switches for addressing.</td>
<td></td>
<td>The address of a Control Unit is set later in this guide.</td>
</tr>
<tr>
<td>GRX-PRG</td>
<td>Automatically assigned.</td>
<td>Control 16</td>
<td>Setting Switch 1-8 requires knowledge of intended function.</td>
</tr>
<tr>
<td></td>
<td>Must set switches BEFORE installing these controls.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Set Switches 1-4 on each Wallstation and Interface Control to a unique address.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALL OTHERS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Caution!
Do not install controls in wallbox without setting the Address and Function Switches.

### For More Information . . .
See One-Line Diagram from submittals.
See Installer’s Video GRX-V-INST available from Lutron.
**Set Function Switches**

### Wallstation or Control Interface

<table>
<thead>
<tr>
<th>Function Set by DIP Switches on Wallstation/Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 6</td>
</tr>
<tr>
<td>5 6</td>
</tr>
<tr>
<td>5 6</td>
</tr>
<tr>
<td>5 6</td>
</tr>
<tr>
<td>5 6</td>
</tr>
</tbody>
</table>

**NTGRX-4S, NTGRX-4S-IR, NTGRX-4B, GRX-4S-DW, EGRX-4S, EGRX-4S-IR, GRX-CIR w/GRX-IT**

- Select Scenes 1-4
- Select Scenes 5-8
- Select Scenes 9-12
- Select Scenes 13-16

**EGRX-8S, EGRX-8S-IR, GRX-CIR w/GRX-8IT**

- Select Scenes 1-8
- Select Scenes 9-12
- Select Scenes 13-16

**NTGRX-4PS**

- Not Applicable
- Not Applicable
- Not Applicable
- Not Applicable

**NTGRX-4M**

- Fifth button turns Control Units On only.
- Not Applicable
- Not Applicable
- Fifth button turns Control Units Off only.

**NTGRX-2B-SL**

- Select Scenes 1 and Off
- Select Scenes 9 and 10
- Select Scenes 13 and 14
- Panic Control
- Fine Control
- Tuning Control
- Partition Status
- Zone Lockout
- Sequence Scenes 5—16

**EGRX-2B-SL**

- Input 1 Scene 1
- Input 2 Scene 2
- Input 3 Scene 3
- Input 4 Scene 4
- Input 5 Off
- Input 1 Scene 5
- Input 2 Scene 6
- Input 3 Scene 7
- Input 4 Scene 8
- Input 5 Off
- Input 1 Scene 9
- Input 2 Scene 10
- Input 3 Scene 11
- Input 4 Scene 12
- Input 5 Off
- Input 1 Scene 13
- Input 2 Scene 14
- Input 3 Scene 15
- Input 4 Scene 16
- Input 5 Off
- Input 1 Scene 5
- Input 2 Scene 6
- Input 3 Scene 7
- Input 4 Scene 8
- Input 5 Off
- Input 1 Scene 9
- Input 2 Scene 10
- Input 3 Scene 11
- Input 4 Scene 12
- Input 5 Off
- Input 1 Scene 13
- Input 2 Scene 14
- Input 3 Scene 15
- Input 4 Scene 16
- Input 5 Off
- Input 1 Scene 5
- Input 2 Scene 6
- Input 3 Scene 7
- Input 4 Scene 8
- Input 5 Off
- Input 1 Scene 9
- Input 2 Scene 10
- Input 3 Scene 11
- Input 4 Scene 12
- Input 5 Off
- Input 1 Scene 13
- Input 2 Scene 14
- Input 3 Scene 15
- Input 4 Scene 16
- Input 5 Off

**GRX-AV**

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Output Type</th>
<th>Maintained Outputs</th>
<th>Maintained Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 1</td>
<td>Sequence 1-4</td>
<td>Sequence 5-16</td>
<td>Sequence 5-16</td>
</tr>
<tr>
<td>Input 2</td>
<td>Zone Lockout</td>
<td>Zone Lockout</td>
<td>Zone Lockout</td>
</tr>
<tr>
<td>Input 3</td>
<td>Scene Lockout</td>
<td>Scene Lockout</td>
<td>Scene Lockout</td>
</tr>
<tr>
<td>Input 4</td>
<td>Panic</td>
<td>Panic</td>
<td>Panic</td>
</tr>
<tr>
<td>Input 5</td>
<td>Off</td>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

**GRX-RS232**

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Maintained or Momentary Inputs</th>
<th>Momentary</th>
<th>Maintained</th>
<th>Maintained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch Function</td>
<td>1 Zone Lock</td>
<td>2 Scene Lock</td>
<td>3 Sequence</td>
<td>4 Sequence Type</td>
</tr>
<tr>
<td>On</td>
<td>Retain</td>
<td>Retain</td>
<td>Retain</td>
<td>5-16</td>
</tr>
<tr>
<td>Off</td>
<td>Retain</td>
<td>Retain</td>
<td>Retain</td>
<td>1-4</td>
</tr>
</tbody>
</table>

**GRX-PKG**

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Maintained or Momentary Inputs</th>
<th>Momentary</th>
<th>Maintained</th>
<th>Maintained</th>
</tr>
</thead>
<tbody>
<tr>
<td>On</td>
<td>Retain</td>
<td>Retain</td>
<td>Retain</td>
<td>5-16</td>
</tr>
<tr>
<td>Off</td>
<td>Retain</td>
<td>Retain</td>
<td>Retain</td>
<td>1-4</td>
</tr>
</tbody>
</table>
STEP 7: Install Wallstations

After wiring, setting address switches, and setting function switches, mount the Wallstations. Refer to detailed mounting instructions packaged with each control.

STEP 8: Activate Loads in Bypass

A. Complete load wiring.
B. Check that the bypass jumpers are in place.
   These jumpers protect the dimmers from load faults and must be used to check load wiring when it is installed or modified.

   **Warning!** The input breaker of Circuit 1 powers the control wiring as well as Circuit 1's dimmer and load. Steps 8 and 9 should be performed concurrently.

   **Caution!** Verify that the LP Panel is fed from the correct voltage. A feed miswire or loss of a feed neutral can cause overvoltage damage to the equipment.

C. Turn circuit breaker 1 ON.
   The load should energize, the breaker should not trip, and total load current must be within the Circuit Breaker's limit and less than 16A.

D. Repeat 'C.' for each circuit with completed load wiring.

   **Warning!** DO NOT remove bypass jumpers at this time.

   **Caution!** For proper dimming performance fluorescent lamps must be operated at full intensity for 100 hours prior to dimming. See Maintenance Reference sheet in the Reference Section of this guide.

**Note:** For those who purchased Start Up with their Lutron Dimming System — you may want to stop here and have the Lutron Field Engineer set-up the system. Please call for a Start Up visit at least 10 working days before your requested date.
STEP 9: Activate Control Units

Once all controls are installed and wiring verified, turn control breaker 1 ON.

**Warning!** The input breaker of Circuit 1 powers the control wiring as well as Circuit 1's dimmer and load.

Check that the **Power OK** LED at the top of the Circuit Selector is ON. If the **Power OK** LED is OFF, turn OFF the control circuit breaker (breaker 1), check for a short between wires 1 and 2, or 2 and ground. Turn control circuit breakers ON for all panels.

Push scene buttons on Wallstations. All GRX-4000 Series Control Units and Wallstations should act in parallel (e.g., pressing scene 1 on a Wallstation will select scene 1 on all Control Units, pressing a master raise button will raise all zones).

**Notes:**
- Lights will not dim at this point.
- NTGRX-4PS, and NTGRX-4M will be inactive until Control Setup steps are completed.
- GRX-AV will be active only if set to affect scenes 1-4 and OFF (switches 5, 6, 7, and 8 all UP).
- NTGRX-2B-SL will be active only if set to affect scene 1 and OFF (switches 5, 6, and 7 all UP).
- Check for miswires if the controls do not act as described.

**For More Information...**

Troubleshooting Guide ..................................... 38,39
STEP 10: Assign Load Types

Assigning Load Types is done using the Circuit Selector located in each LP panel.

To view present load types:
Press button 5 to step through the Value displays until Load Type LED lights. Use buttons 1 and 2 to view present load type of each circuit. Note that ‘- - - ’ in the Value display means a Load Type is not assigned to the circuit.

If load types are already assigned, compare them to the Circuit Directory (if provided). If there are no changes to be made, go to Step 11.

To change load types:
A. Press and hold buttons 1 and 5 until SELECT VALUE LED blinks once per second.
B. Press button 5 to step through the Value displays until the Load Type LED lights.
C. Choose circuit number with buttons 1 and 2.
D. Use buttons 3 or 4 to choose the appropriate Load Type (see below for Load Type Display).
E. Repeat Steps C and D for each circuit.
F. Press and hold buttons 1 and 5 until the VIEW VALUE LED lights.

Notes:
- The Value window will display the software revision level of the Circuit Selector 20 minutes after the last button press.
- Mark all changes to the Circuit Selector’s values on a Circuit Directory for future reference.

Load Type Display
- - - Unassigned (All intensities except 0 = On)
1 - 1 Incandescent, Tungsten
2 - 1 Fluorescent: Lutron Hi-Lume FDB or Eco-10
2 - 2 Fluorescent: Lutron Tu-Wire™
2 - 3 Fluorescent: 0-10V, with TVM module
2 - 4 Fluorescent: PWM, with TVM module
2 - 5 Fluorescent: Tridonic® DSI, with TVM module
3 - 1 Neon/Cold Cathode
4 - 1 Non-Dim: All intensities except 0 = On
4 - 2 Non-Dim: Intensities above 60% = On, below 40% = Off
5 - 1 Electronic Low Voltage
6 - 1 Magnetic Low Voltage

Warning! Failure to correctly assign Load Type may damage loads—especially certain Electronic Transformers, Electronic Ballasts, and Motors. Verify with transformer or ballast manufacturer that product can be dimmed with phase control dimming before setting to any Load Type other than Non-Dim.
STEP 11: Address GRX-4000 Control Units

Note: If using a 16 or 24 zone Control Unit, address these first. Address Control Unit as follows:

A. Push and hold top and bottom scene buttons until scene LEDs begin to cycle.
B. Push FADE button until ‘A-’ is displayed in the FADE window. If A(1-8) appears, then go to D since the Control Unit is already addressed.
C. Push MASTER button once. The control will automatically choose the next available address. Note the address of each (A1-A8) on the Control Directory on Page 27. If a Control or Circuit Directory already exists, push MASTER and buttons to have the address match these directories.
D. Press and hold the top and bottom scene buttons until the scene LEDs stop cycling.

Repeat Steps A-D on all GRX-4000 Series Control Units.

As soon as a GRX-4000 Series Control Unit is addressed, check that the Data OK LED begins to flash on the Circuit Selector. Flashing indicates that the panel recognizes the communication from a GRX-4000 Series Control Unit.

Note: As soon as a GRX-4000 Series Control Unit is addressed, Wallstations will no longer have any affect on the GRX-4000 Series Control Units. The Wallstation communication will be reestablished later.

LED Status
1. Flashes once per second.
2. Blank.
3. Flashes rapidly*.

Meaning
Control link data OK.
No data present on link or Control Breaker (breaker 1) is Off.
Incorrect data detected, possible causes: terminal 3 or 4 is not properly connected, or terminals 3 and 4 are miswired.

For More Information . . .

16 and 24 zone GRX Control Units ......................28
Troubleshooting Guide ......................38,39

* The Circuit Selector may take up to 1 minute to properly identify a device on the link. During this time, a rapid flashing pattern may be observed.
STEP 12: Remove Bypass Jumpers

After all load wiring has been checked, turn circuit breakers OFF and loosen all the screws of each bypass jumper. Remove and store the bypass jumpers for possible future use.

Turn circuit breakers ON.

Warning! Confirm that Load Types were correctly assigned. Some loads may be damaged if dimmed - especially certain electronic transformers and electronic ballasts and motors.

Caution! For proper dimming performance fluorescent lamps must be operated at full intensity for 100 hours prior to dimming. See Maintenance Reference sheet in the Reference Section of this guide. Loosen all 3 screws of each bypass jumper. Remove and store the bypass jumpers for possible later use.

Caution! Reuse the bypass jumper whenever work has been done on a load. Damage caused by short circuits and miswiring is not covered in the product warranty.

STEP 13: Check System

Until zones are assigned, all circuits will be controlled by the first zone of the GRX-4000 Series Control Unit addressed to ‘A1’. Locate zone 1 of this ‘A1’ control (referred to as A1 1 in the Circuit Selector) and use it to check that all circuits dim smoothly and perform as expected. (This address was set in Step 10.)

Notes:
If the system has already been set up, scenes will work and A1 1 will not control all circuits. Circuits with Unassigned or Non-Dim 4 Load Types will not dim, but will only turn on and off.

For More Information . . .

Control Directory..............................................29
Assign Primary Zones

STOP!

Before proceeding, you must have one or more of the following:

- Preassigned set-up
- Knowledge of how the system is to operate.
- Plans and specifications from owner’s representative on how the system is to be set-up.
- Owner or owner’s representative present.

### What should each scene be used for?
Examples include - Breakfast, Lunch, Meeting, Accenting, etc...

### How long should it take for the lights to fade from scene to scene and to off?
Examples include - 1 second fade to “Meeting” scene, 10 minute fade to “Lunch” scene so customers do not notice, 20 second fade to “Off” scene to leave room before the lights go out, etc.

### Do I have a 2Link™ option?
If so . . . see Link Hierarchy options in the Reference Section.

---

**STEP 14:** Assign Primary Zones

A. Press and hold buttons 1 and 5 until the SELECT VALUE LED flashes once per second.

B. Press button 5 repeatedly until the Zone Assignment w/Circuit Schedule LED lights.

C. Select the primary zone assignment.
   - **GRX 4000 Series:** Press button 3 or 4 to select both Control Unit and zone assignment. Example - If the control desired is addressed to ‘A2’ and the zone desired is the 3rd from the left, use buttons 3 and 4 to get ‘A23’ as a value for the appropriate circuit.
   - **6000 Series or DMX512:** Press button 3 or 4 to select zone assignment (1—512).

D. Use buttons 1 and 2 to change to the next circuit and then repeat Step C. Do this for all affected circuits. Record each circuit’s control and zone on a Circuit Directory.

E. Press and hold buttons 1 and 5 until the VIEW VALUE LED lights.

---

**Notes:**

- The Circuit Selector’s display will go out automatically 20 minutes after the last button press.
- More than one circuit can be assigned to the same zone.
- Zone Capture™ is an alternate method for assigning zones. It is described in the Circuit Selector Functions Reference Sheet.
- 2Link only- The Link A and Link B LEDs located next to the Value window indicate which Link is being assigned as per the Hierarchy. To set the Hierarchy, see the reference sheet on 2Link options in this guide.

---

For More Information . . .

16 and 24 zone GRX Control Units ...................26
**Set Up Non Dim Zones**

**STEP 15: Set Up Non Dim Zones (GRX-4000 Series only)**

For each zone assigned to a circuit with a Non-Dim Load Type, the LEDs on a Control Unit can be made to match the load intensity as shown:

**A.** Press and hold the top and bottom scene buttons until scene LEDs begin to sequence.

**B.** With ‘LS’ in the FADE window, press the zone button of the Non-Dim zone until the top 4 or 5 LEDs are on.

**Notes:**
- The Circuit Selector Load Type must be set for Non-Dim on each circuit assigned to this zone.
- With 4 LEDs, the load will operate on a Last On, First Off basis. Load turns ON at the end of a fade to full and OFF at the beginning of a fade from full.
- With 5 LEDs, the load will operate on a First On, First Off basis. Load turns ON at the beginning of a fade to full and OFF at the beginning of a fade from full.

Repeat Step B for all zones controlling a Non-Dim Load Type.

**C.** Press and hold top and bottom scene buttons until scene LEDs stop sequencing.

**D.** Repeat Steps A - C for all other GRX-4000 Series Control Units with Non-Dim zones.

*Lutron ships GRAFIK Eye Control Units with all zones set for dimming.* For each zone that controls a circuit with a dimmable load type, the LEDs should match the load intensity as shipped.

---

**For More Information . . .**

See Owners Video GRX-V-CPT available from Lutron.
Set Low or High End

**STEP 16: Set Low or High End** (optional)

**Note:** Low End and High End light levels are set automatically when load type is assigned. This step is to be done if the default settings need to be changed.

**Warning!** Do not reduce the Low End or increase the High End on a Fluorescent Load Type. This will decrease lamp life and may damage the ballasts.

**Warning!** Do not increase the High End, of Neon/Cold Cathode. This may overdrive the lamps and cause decreased tube life.

To change the setting:

A. Press and hold buttons 1 and 5 until the SELECT VALUE LED lights.

B. Press button 5 repeatedly until the Low End Trim LED or the High End Trim LED lights.

C. Use buttons 1 and 2 to go to the circuit that needs to be changed.

D. Use buttons 3 and 4 to reset the trim as desired. The load will go to the new setting while in this mode despite the GRX control’s intensity.

**Notes:**

- Low End and High End ranges are limited to avoid overlapping.
- ‘1’ is the minimum Low End and ‘99’ is the maximum High End.
- ‘Value’ is a relative number. It is not a % intensity, but rather a reference point to help set other circuits, if desired.

Record the new trim setting on a Circuit Directory so that it is documented.

E. Use buttons 1 and 2 to go to another circuit that needs to be changed and repeat Step C.

F. Press and hold buttons 1 and 5 until the VIEW VALUE LED lights.

**Note:** The Circuit Selector’s display will go out automatically 20 minutes after the last button press.
**STEP 17: Set Normal/Emergency Switch (Non-Essential/Essential)**

**Note:** This step is only performed if there are any panels with Emergency (Essential) Lighting Circuits on the job.

Panels are shipped with Switch 6 (located at the base of each Circuit Selector) in the center position for operation without any Emergency (Essential) Lighting Circuits.

Identify a panel supplied with Normal (Non-Essential) power. Move its Switch 6 to the left position.

For all the Emergency (Essential) Lighting Panels, move Switch 6 to the right position.

In this arrangement, the Emergency (Essential) Lighting Panel will "sense" the Normal (Non-Essential) Panel’s power. When Normal (Non-Essential) power is removed, the Emergency (Essential) Lighting will go to ‘ord’ override levels (factory set to 100%).

Loss of Normal (Non-Essential) power can be simulated by turning off all connected Normal (Non-Essential) Panel’s Control Breakers.

When Switch 6 is in its center position (as shipped), terminal 5 has no affect on the Circuit Selector operation.

**Notes:**

- If there is no Normal Panel, a PS-CIP can be used to create an external ‘sense’ line. Contact Lutron.
- Override ("ord") Level is factory set to full output (100). If less than full output is needed, contact Lutron.
**STEP 18: Set up scenes on GRX-4000**

Scenes are the preset light levels and fade times stored in the Control Unit. To create a scene, set the appropriate intensity for each ZONE. To recall a scene, simply press one of the scene buttons. The first button recalls scene 1; the second, scene 2; and so on. The last button turns lights off.

For example, typical scene settings for a living room might be:

<table>
<thead>
<tr>
<th>Scene</th>
<th>Activity or Event</th>
<th>Light Levels for Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cove Lights</td>
</tr>
<tr>
<td>1</td>
<td>Family Gathering</td>
<td>70%</td>
</tr>
<tr>
<td>2</td>
<td>Entertaining</td>
<td>80%</td>
</tr>
<tr>
<td>3</td>
<td>Reading</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>TV</td>
<td>20%</td>
</tr>
</tbody>
</table>

Although scenes 1 through 4 can be selected at the GRAFIK Eye Control Unit, all GRAFIK Eye Control Units are capable of storing up to 16 scenes. Scenes 5 through 16 can be selected using Wallstations.

**How to set up lighting scenes**

**NOTE:** The Control Unit must be in normal operating mode.

To set up scenes 1 through 4:

1. **Select a scene.** Press the Scene button for the scene you want to adjust. (First button for scene 1, second button for Scene 2, and so on.) Note that the last button is the “Off” Scene. You do not set intensities for this button.

2. **Set each zone’s light levels.** Press ZONE ↑ and ↓ to adjust each ZONE visually to the correct intensity for this scene. (ZONE LEDs show intensity. Each LED represents ~15% intensity change. In this example, ZONE 6 is set to 60%.)

3. **Set scene’s FADE-in time.** Press FADE ↑ and ↓ to make FADE-in time anything from 0-59 seconds or 1-60 minutes*. (A scene’s FADE-in time is how long it takes light intensities to adjust to their new levels when the scene is selected. FADE-in from the OFF scene can be up to 5 seconds maximum.)

Repeat this process for each scene specified for the Control Unit. Note that you can also set up a “FADE-to-off” time. Press the OFF button and adjust FADE as desired.

*The S and M indicators under the FADE window show whether FADE is “M”inutes or “S”econds. To set FADE in minutes, you press FADE ↑ to scroll through 1-59 seconds until the “M” lights. FADE is now expressed in minutes. To get back to seconds, press FADE ↓ until the window shows “S”econds.
STEP 19: Set Up Wallstations

All Wallstations (except NTGRX-1S) must be set up to make a Control Unit(s) “listen” to button presses on the Wallstation.
- Only one Wallstation can be set up at one time.
- A Control Unit can also be made to “listen” to another Control Unit and is therefore listed with the Wallstations below.

Follow the following chart for each Wallstation.

Notes:
- Wallstations cannot be made to “listen” to each other, but a GRX-4000 Series Control Unit can be made to “listen” to more than one Wallstation.
- When it is desired for two GRX-4000 Series Control Units to always respond to each other’s button presses, the first Control Unit must be set up to respond to the second Control Unit’s buttons, and then the second Control Unit must be set up to respond to the first Control Unit’s buttons.
- An NTGRX-1S is wired directly to the GRX-4000 Series Control Unit that is to “listen” to it. No setup is required.
- GRX-PRG and GRX-RS232 do not require this setup.

<table>
<thead>
<tr>
<th>Control (only 1 at a time)</th>
<th>Place Control to ‘Talk’ in Set-Up Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRX-4000 Series Control Unit</td>
<td>Press and hold first and the fifth buttons of the GRX-4000 Series Control Unit.</td>
</tr>
<tr>
<td>NTGRX-4S NTGRX-4S-IR GRX-4S-DW EGRX-4S EGRX-4S-IR</td>
<td>Press and hold first and fifth buttons on Wallstation until its LEDs cycle sequentially. <strong>Note:</strong> GRX-CIR only has 1 LED. Use the GRX-IT to press the first and fifth buttons.</td>
</tr>
<tr>
<td>EGRX-8S EGRX-8S-IR GRX-CIR w/GRX-IT/8IT</td>
<td></td>
</tr>
<tr>
<td>NTGRX-4B</td>
<td>Press and hold first and fourth buttons on Wallstation until its LEDs cycle sequentially.</td>
</tr>
<tr>
<td>NTGRX-4PS</td>
<td>Press and hold first and fifth buttons until LED 1 blinks.</td>
</tr>
<tr>
<td>NTGRX-4M</td>
<td>Press and hold first and fifth buttons until LED 1 blinks.</td>
</tr>
<tr>
<td>NTGRX-2B-SL EGRX-2B-SL all other functions</td>
<td>Press and hold both buttons of the NTGRX-2B-SL or EGRX-2B-SL until its LEDs blink.</td>
</tr>
<tr>
<td>GRX-AV</td>
<td>Press and hold the Program Switch until its LEDs react like the Wallstation whose function is being simulated.</td>
</tr>
</tbody>
</table>
### Make Control Unit “Listen”

<table>
<thead>
<tr>
<th><strong>Wallstations and Control Interfaces</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Make Control Unit “Listen”</strong></td>
</tr>
<tr>
<td>Press and hold another Control Unit’s Scene 1 button until its LEDs flash. To make it stop “listening”, hold OFF button until LEDs go dark.</td>
</tr>
<tr>
<td>Press and hold Scene 1 on a Control Unit until its LEDs blink in unison. Repeat Scene 1 hold procedure for the other Control Units to be affected. (To remove, hold OFF button until LEDs go dark.)</td>
</tr>
<tr>
<td>Choose two Control Units on either side of a Partition. Press and hold Scene 1 on a Control Unit until its LEDs flash. Repeat Scene 1 hold on the other Control Unit. Press the next button on the NTGRX-4PS. Choose another pair of Control Units. Repeat Scene 1 hold procedure for each of the NTGRX-4PS buttons. To remove, hold OFF button on each Control Unit until LEDs go dark.</td>
</tr>
<tr>
<td>Choose a Control Unit to be toggled by the NTGRX-4M. Press and hold Scene 1 on the Control Unit until its LEDs flash. Repeat Scene 1 hold on other Control Units to be toggled. Press the next button on the NTGRX-4M. Choose a Control Unit to be toggled. Repeat Scene 1 hold procedure for all 5 of the NTGRX-4M buttons. Button 5 only turns ON or OFF (it does not toggle). To remove, hold OFF button on the Control Unit until its LEDs go dark.</td>
</tr>
<tr>
<td>Choose two Control Units on either side of a Partition. Press and hold Scene 1 on a Control Unit until its LEDs flash. Repeat Scene 1 hold on the other Control Unit. To remove, hold OFF button on each Control Unit until LEDs go dark.</td>
</tr>
<tr>
<td>Press and hold Scene 1 on a Control Unit until its LEDs blink in unison. Repeat Scene 1 hold procedure for the other Control Units to be affected. To remove, hold OFF button until LEDs go dark.</td>
</tr>
<tr>
<td>See above instructions for the simulated Wallstation.</td>
</tr>
</tbody>
</table>

### Take Control Out of Set-Up Mode

<table>
<thead>
<tr>
<th><strong>Wallstations and Control Interfaces</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Take Control Out of Set-Up Mode</strong></td>
</tr>
<tr>
<td>Press and hold first and fifth buttons of the original GRX-4000 Series Control Unit until LEDs stop sequencing.</td>
</tr>
<tr>
<td>Press and hold first and fifth buttons on Wallstation until all LEDs stop cycling.</td>
</tr>
<tr>
<td>Press and hold first and fourth buttons on Wallstation until all LEDs stop blinking.</td>
</tr>
<tr>
<td>Press and hold first and fifth buttons on Wallstation until all LEDs stop blinking.</td>
</tr>
<tr>
<td>Press and hold first and fifth buttons of the NTGRX-4PS until all LEDs stop blinking.</td>
</tr>
<tr>
<td>Press and hold first and fifth buttons of the NTGRX-4M until all LEDs stop blinking.</td>
</tr>
<tr>
<td>Press and hold both buttons of the NTGRX-2B-SL or EGRX-2B-SL until all LEDs stop blinking.</td>
</tr>
<tr>
<td>Press and hold both buttons of the NTGRX-2B-SL or EGRX-2B-SL until all LEDs stop blinking.</td>
</tr>
<tr>
<td>If the GRX-AV’s LEDs are sequencing, press and hold the Program Switch until the LEDs stop sequencing. If the GRX-AV has 1 LED blinking, press the program switch repeatedly until there are no blinking LEDs.</td>
</tr>
</tbody>
</table>

**Repeat for all Wallstations**
Congratulations!

Your state of the art dimming system is complete!

Now:
- Place a copy of the Control Directory with each LP Panel.
- Replace the covers.
- Give the customer a copy of this guide.

The rest of this guide is REFERENCE MATERIAL.

Lutron is very interested in your comments on this Installer’s Guide and on its products. Please call (800) 523-9466 with any comments or suggestions. Thank you for your help.
Save Options

The GRAFIK Eye 4000 Series Control Units allow selection of several different Save Options. Follow these steps to access the Save Options.

1. **Enter setup mode.** Press and hold Scene 1 and OFF buttons for about 3 seconds until scene LEDs start cycling.

2. **Select Sd.** Press FADE up until Sd is displayed in the FADE window.

3. **Select Save Options.** Press MASTER up and down to select between the Save Options:
   - **Sd** *Save by Default.* Changing a zone's intensity level or fade time permanently changes the preset scene. To temporarily change a light level, see “How to adjust light levels temporarily” on page 8.
   - **Sb** *Save by Button.* TEMPORARY ZONES LED is normally ON and all intensity and fade changes are temporary unless the TEMPORARY ZONES LED is turned OFF with the TEMPORARY ZONES button.
   - **Sn** *Save Never.* TEMPORARY ZONES LED is permanently ON and cannot be turned OFF. In this mode, all intensity changes are temporary.
   - **4S** *Four Scenes.* This only allows the four Scene buttons, OFF button, IR receiver and the MASTER up or down to operate. All other buttons on the Control Unit are disabled.
   - **bd** *Button Disable.* All buttons on the Control Unit are disabled. IR Receiver, and Wallstations are still functional. (Setup mode is still accessible by repeating Step 1.)

4. **Exit setup mode.** Press and hold Scene 1 and OFF buttons until scene LEDs stop cycling.
GRX-4116/4516 and GRX-4124/4524 Control Units

The 16 and 24 zone GRAFIK Eye Control Units offer an expanded number of zones that can be controlled from a single wall station. The zone intensity LEDs on the GRX-4x16 or GRX-4x24 will display the light level of eight zones at a time. Other sets of zones may be displayed and controlled by pressing the Zone Select Button.

Addressing

The GRX-4x16 and the GRX-4x24 Control Units take multiple, consecutive addresses. The GRX-4x16 Control Unit takes up two consecutive addresses, and the GRX-4x24 Control Unit requires three. To ensure there are sufficient addresses available, any GRX-4x16 and/or GRX-4x24 Control Units in the system should be addressed first.

Assigning Zones

When assigning zones use the chart on the right as a guide to see how zones are displayed on the Circuit Selector.

<table>
<thead>
<tr>
<th>If Control Unit's Addresses are . . .</th>
<th>Zones on the Control Unit . . .</th>
<th>Will appear on the Circuit Selector . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1, A2, A3</td>
<td>1—8</td>
<td>A11—A18</td>
</tr>
<tr>
<td></td>
<td>9—16</td>
<td>A21—A28</td>
</tr>
<tr>
<td></td>
<td>17—24</td>
<td>A31—A38</td>
</tr>
<tr>
<td>A2, A3, A4</td>
<td>1—8</td>
<td>A21—A28</td>
</tr>
<tr>
<td></td>
<td>9—16</td>
<td>A31—A38</td>
</tr>
<tr>
<td></td>
<td>17—24</td>
<td>A41—A48</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A6, A7, A8</td>
<td>1—8</td>
<td>A61—A68</td>
</tr>
<tr>
<td></td>
<td>9—16</td>
<td>A71—A78</td>
</tr>
<tr>
<td></td>
<td>17—24</td>
<td>A81—A88</td>
</tr>
</tbody>
</table>

Note: The chart at right is for a GRX-4x24, which uses three addresses. A GRX-4x16 will have two addresses.
# Control Directory

## Area: A1

<table>
<thead>
<tr>
<th>Zone</th>
<th>Zone Description</th>
<th>Zone</th>
<th>Zone Description</th>
<th>Zone</th>
<th>Zone Description</th>
<th>Zone</th>
<th>Zone Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>1</td>
<td>A2</td>
<td>1</td>
<td>A3</td>
<td>1</td>
<td>A4</td>
<td>1</td>
</tr>
<tr>
<td>A1</td>
<td>2</td>
<td>A2</td>
<td>2</td>
<td>A3</td>
<td>2</td>
<td>A4</td>
<td>2</td>
</tr>
<tr>
<td>A1</td>
<td>3</td>
<td>A2</td>
<td>3</td>
<td>A3</td>
<td>3</td>
<td>A4</td>
<td>3</td>
</tr>
<tr>
<td>A1</td>
<td>4</td>
<td>A2</td>
<td>4</td>
<td>A3</td>
<td>4</td>
<td>A4</td>
<td>4</td>
</tr>
<tr>
<td>A1</td>
<td>5</td>
<td>A2</td>
<td>5</td>
<td>A3</td>
<td>5</td>
<td>A4</td>
<td>5</td>
</tr>
<tr>
<td>A1</td>
<td>6</td>
<td>A2</td>
<td>6</td>
<td>A3</td>
<td>6</td>
<td>A4</td>
<td>6</td>
</tr>
<tr>
<td>A1</td>
<td>7</td>
<td>A2</td>
<td>7</td>
<td>A3</td>
<td>7</td>
<td>A4</td>
<td>7</td>
</tr>
<tr>
<td>A1</td>
<td>8</td>
<td>A2</td>
<td>8</td>
<td>A3</td>
<td>8</td>
<td>A4</td>
<td>8</td>
</tr>
</tbody>
</table>

## Area: A2

<table>
<thead>
<tr>
<th>Zone</th>
<th>Zone Description</th>
<th>Zone</th>
<th>Zone Description</th>
<th>Zone</th>
<th>Zone Description</th>
<th>Zone</th>
<th>Zone Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A5</td>
<td>1</td>
<td>A6</td>
<td>1</td>
<td>A7</td>
<td>1</td>
<td>A8</td>
<td>1</td>
</tr>
<tr>
<td>A5</td>
<td>2</td>
<td>A6</td>
<td>2</td>
<td>A7</td>
<td>2</td>
<td>A8</td>
<td>2</td>
</tr>
<tr>
<td>A5</td>
<td>3</td>
<td>A6</td>
<td>3</td>
<td>A7</td>
<td>3</td>
<td>A8</td>
<td>3</td>
</tr>
<tr>
<td>A5</td>
<td>4</td>
<td>A6</td>
<td>4</td>
<td>A7</td>
<td>4</td>
<td>A8</td>
<td>4</td>
</tr>
<tr>
<td>A5</td>
<td>5</td>
<td>A6</td>
<td>5</td>
<td>A7</td>
<td>5</td>
<td>A8</td>
<td>5</td>
</tr>
<tr>
<td>A5</td>
<td>6</td>
<td>A6</td>
<td>6</td>
<td>A7</td>
<td>6</td>
<td>A8</td>
<td>6</td>
</tr>
<tr>
<td>A5</td>
<td>7</td>
<td>A6</td>
<td>7</td>
<td>A7</td>
<td>7</td>
<td>A8</td>
<td>7</td>
</tr>
<tr>
<td>A5</td>
<td>8</td>
<td>A6</td>
<td>8</td>
<td>A7</td>
<td>8</td>
<td>A8</td>
<td>8</td>
</tr>
</tbody>
</table>

Use this Directory as GRX-4000 Series Control Units are addressed and zones are assigned. Keep this Directory for job records and maintenance information.
Circuit Selector Functions

There is a Circuit Selector in every Lighting Control Panel. It is used to communicate with GRX-4000 Series Control Unit(s), G6000 controller, or DMX512 stageboards — and then to tell the dimmers their intensity levels.

It is also used to select Values for each Circuit:

- **Circuit Level** - allows a way to view the intensity being sent to the dimmer or manually take over control of the dimmer’s output. See description in the Troubleshooting Reference section.

- **Load Type** - to be changed to match the load to the Load Type value. Non-Dim Load Type 4-x must be used if the Load is not dimmable.

- **Control and Zone Assigned** - allows two ways of assigning a control and zone to a specific circuit.
  1. ‘w/ Circuit Schedule’ allows a Control and Zone (such as ‘A2’, ‘3’) to be directly entered into the Circuit Selector.
  2. ‘w/ Zone Capture™’ allows a Control and Zone to be ‘captured’ by the Circuit Selector by doing the following:
     A. Press and hold buttons 1 and 5 until the SELECT VALUE LED lights.
     B. Press button 5 repeatedly until the Zone Capture™ LED lights. The circuit will now flash.
     C. Use buttons 1 and 2 to choose the correct circuit to be assigned.
     D. Go to the GRX-4000 Series Control Unit to be assigned to this circuit.
     E. Select Scene 1.
     F. Identify the zone to be assigned to this circuit.
     G. Press the zone button until all zone LEDs are off.
     H. Press the zone button until the load starts tracking the zone intensity LEDs.
     I. Press the zone button until all zone LEDs are off. (Steps H. and I. must take less than 15 seconds or the Circuit Selector will not lock on the captured zone.)
     J. Go back to the Circuit Selector and the proper Control and Zone should be displayed. Repeat this process for any other Circuits.
     K. Press and hold buttons 1 and 5 until the VIEW VALUE LED lights.

- **Low and High End Trims** - allows the Circuit’s range limits to be adjusted.

‘Power OK’ indicates whether 24VAC is present from the Class 2 transformer.

‘Data OK’ LED(s) blink when the Circuit Selector is properly receiving data.

The Circuit Selector can also provide or receive a ‘sense’ line depending on the location of Switch 6 (SW6).
Assign Address to Circuit Selector

Address the Circuit Selector whenever it is to talk to a G6000 Controller or GRX-4500 Series Control Unit.

**Caution!** Assigning an improper address to the Circuit Selector can result in damage to the load.

A. To set or change the address, press and hold buttons 1 and 5 until the SELECT VALUE LED flashes once per second.

B. Press button 5 on circuit selector until “Ad” is displayed in the Circuit window.

   If the Value window displays an address other than ‘–’, the address has already been set (proceed to Step D).

C. Use button 3 or 4 to assign an address (1—512) to the Circuit Selector. This address should match the address in the job drawing.

D. Press and hold buttons 1 and 5 on the Circuit Selector until the VIEW VALUE LED lights.

**Notes:**
- The Value window will display the software revision level of the Circuit Selector 20 minutes after the last button press.
- Panel addressing must be completed prior to transferring data from LIAISON™ or the GRAFIK 6000 controller.
- Mark addresses on a Circuit Directory for future reference.
- If ‘LC’ is displayed in the Circuit window, the circuit selection is locked out. Contact the Lutron Field Service Department.

**Warning:** Each LP Panel must have a unique, specific address. See Lutron's Load Schedule, Cabinet Detail Report, or user setup software.
Assign Link Hierarchy *(2Link only)*

Link Hierarchy is only used when there are two control links. Each circuit can be assigned to a hierarchy listed below (see job prints if predetermined)

If you are not sure if you have a 2Link Circuit Selector, please call the Lutron Technical Assistance Hotline at 1-800-523-9466.

<table>
<thead>
<tr>
<th>Code</th>
<th>Definition</th>
<th>Primary Link</th>
<th>Secondary Link</th>
<th>Application Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Link A only.</td>
<td>A</td>
<td>None</td>
<td>Circuit to follow Link A (standard operation).</td>
</tr>
<tr>
<td>b</td>
<td>Link B only.</td>
<td>b</td>
<td>None</td>
<td>Panel is shared by two links to save on Panel costs.</td>
</tr>
<tr>
<td>A1</td>
<td>Link A unless Link B is present.</td>
<td>A</td>
<td>b</td>
<td>When the DMX-512 Stageboard is plugged in on Link B, listen to Link B. Return to Link A when the DMX-512 Stageboard is unplugged. Redundant system. If Link B fails, circuits follow Link A.</td>
</tr>
<tr>
<td>A2</td>
<td>Link A unless Link B is present and Zone X intensity on Link B is &gt;50%.</td>
<td>A</td>
<td>b</td>
<td>DMX-512 Stageboard is plugged in on Link B, but does not take control until the light intensity of Zone X on Link B is above 50%.</td>
</tr>
<tr>
<td>b1</td>
<td>Link B unless Link A is present.</td>
<td>b</td>
<td>A</td>
<td>Redundant system. If Link A fails, circuits follow Link B.</td>
</tr>
<tr>
<td>b2</td>
<td>Link B unless Link A is present and Zone X intensity on Link A is &gt;50%.</td>
<td>b</td>
<td>A</td>
<td>DMX-512 Stageboard plugged in on Link B, but is not given control until the light intensity of Zone X on Link A is below 50%.</td>
</tr>
<tr>
<td>Ab1</td>
<td>Highest intensity of the zone assignments of Link A and Link B.</td>
<td>A</td>
<td>b</td>
<td>Redundant system. If either Link A or Link B fails, the other will have higher intensities.</td>
</tr>
<tr>
<td>Ab2</td>
<td>Lowest intensity of the zone assignments of Link A and Link B.</td>
<td>A</td>
<td>b</td>
<td>Energy management.</td>
</tr>
</tbody>
</table>
Assign Link Hierarchy (continued)

A. To view or assign the Link Hierarchy, press and hold buttons 2 and 5 until SELECT VALUE LED flashes twice repeatedly.

B. Press button 5 until the Circuit Level LED lights.

C. Use buttons 1 and 2 to choose circuit number.

D. Use buttons 3 and 4 to assign the Link Hierarchy (see Table for options).
   - If Link Hierarchy A or b is selected, go to Step I.
   - If Link Hierarchy A2 or b2 is selected, go to Step E.
   - If Link Hierarchy A1, b1, Ab1, or Ab2 is selected, go to Step G.

E. Press button 5 until Load Type LED lights.

F. Select Zone X

4000 Series on Secondary Link: Press button 3 or 4 to select both Control Unit and zone assignment. Example - If the control desired is addressed to 'A2' and the zone desired is the 3rd from the left, use buttons 3 and 4 to get 'A23' as a value for the appropriate circuit.

6000 Series or DMX512: Press button 3 or 4 to select zone assignment (1—512).

G. Press button 5 until the Zone Assignment w/Circuit Schedule LED lights.

H. Select the Secondary zone assignment.

4000 Series on Secondary Link: Press button 3 or 4 to select both Control Unit and zone assignment. Example - If the control desired is addressed to 'A2' and the zone desired is the 3rd from the left, use buttons 3 and 4 to get 'A23' as a value for the appropriate circuit.

6000 Series or DMX512: Press button 3 or 4 to select zone assignment (1—512).

Note - Primary Zone assignment is done in Step 14 of this guide.

I. Repeat steps C and D for each and every circuit to be changed.

J. Press and hold buttons 1 and 5 until VIEW VALUE LED lights.
Look Inside an LP1—3

The LP Series Panel has 1 to 3 Remote Power Modules, an input breaker for each module, and a Circuit Selector to set up zone assignments and Load Types.

Remote Power Modules are being developed in a number of varieties:

- **4U** A 4 output module that dims or switches multiple load types. Each output is capable of 16A (10A max. for 230 V CE) of load while the combined loads of all 4 outputs is rated for 16A (13A 230V CE) maximum.

- **4E** A 4 output module that dims incandescent and reverse phase control electronic low voltage load types. Load type 5-1 **must** be selected at the Circuit Selector regardless of the load type. Each output is capable of 10A of load while the combined loads of all 4 outputs is rated for 16A maximum.

- **1U** A single output module that dims or switches multiple load types. The output is rated for 16A maximum.

- **LP Series Dimming Panels** are designed to mount between two studs that are on 16” (40.65cm) centers.
- All are in a NEMA Type 1 enclosure and provide protection of IP-20.
- 120V panels are UL listed under UL file E42071 and are CSA certified.
- The input breaker of Circuit 1 supplies current to Load Circuit 1 and to the Control Wiring (2A draw max.).
The LP Series Panel has 1 to 8 Remote Power Modules, an input breaker for each module, and a Circuit Selector to set up zone assignments and Load Types.

Remote Power Modules are being developed in a number of varieties:

4U A 4 output module that dims or switches multiple load types. Each output is capable of 16A (10A max. for 230V CE) of load while the combined loads of all 4 outputs is rated for 16A (13A 230V CE) maximum.

4E A 4 output module that dims incandescent and reverse phase control electronic low voltage load types. Load type 5-1 must be selected at the Circuit Selector regardless of the load type. Each output is capable of 10A of load while the combined loads of all 4 outputs is rated for 16A maximum.

1U A single output module that dims or switches multiple load types. The output is rated for 16A maximum.

TVM A 2 output module that dims 0-10V, PWM, and Tridonic DSI load types. These are the first circuits in the panel. The maximum low-voltage ballast control current is 50 mA per zone and 750 mA per panel. This module must be used in conjunction with a 4U module (which switches power to the load). Load type 2-3, 2-4, or 2-5 must be used.

LP Series Dimming Panels are designed to mount between two studs that are on 16" (40.65cm) centers.

All are in a NEMA Type 1 enclosure and provide protection of IP-20.

120V and panels are UL listed under UL file E42071 and are CSA certified.

The input breaker of Circuit 1 supplies current to Load Circuit 1 and to the Control Wiring (2A draw max.)
Notes:
- Ballasts must be located so that the maximum case temperature is less than 75 °C (167 °F) and the relative humidity is less than 90%, non-condensing.
- Avoid situations where strong air drafts blow directly on bare bulbs (minimum start temperature is 10 °C).
- Good metal-to-metal contact between lamp pins and lamp holder contacts is necessary for proper dimming performance. Knife-edge sockets are recommended.
- For those who purchased Start Up with their Lutron Dimming System - you may want to stop here and have the Lutron Field Engineer set-up the system. Please call for a Start Up visit at least 10 working days before your requested date.
- Compact Fluorescent lamps must be 4 pin.
- Ballast cases and fixtures must be earth grounded.
- Yellow and blue w/white trace leads, from the ballast should be kept as short as possible.
- Ballasts are not designed for remote mounting. Total length of wire from the ballast to the lamp socket is not to exceed 7 ft. (2.1 m) for T8, T12, and not to exceed 3 ft. (0.9 m) for T4, T5.
- 240V Ballasts have different wire colors-follow the label on each individual ballast.
## Check Installation

Use the following table to determine if the lamp sockets in the fixture need to be replaced. (Linear and 4-Tube lamps)

### Existing Ballast(s) Information

<table>
<thead>
<tr>
<th>Number of Lamps per ballast</th>
<th>Total number of wires coming out of the ballast</th>
<th>How to prepare the existing fixture for Lutron Dimming Ballasts.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5 or FEWER</td>
<td>Replace the lamp sockets with Rapid Start sockets.</td>
</tr>
<tr>
<td></td>
<td>6 or 6</td>
<td>Using the existing sockets, and the existing wires.</td>
</tr>
<tr>
<td>2</td>
<td>7 or FEWER</td>
<td>Replace the lamp sockets with Rapid Start sockets.</td>
</tr>
<tr>
<td></td>
<td>8 or 9</td>
<td>Using the existing sockets, and the existing wires.</td>
</tr>
<tr>
<td>3</td>
<td>9 or FEWER</td>
<td>Replace the lamp sockets with Rapid Start sockets.</td>
</tr>
<tr>
<td></td>
<td>10 or 11</td>
<td>Using the existing sockets, and the existing wires.</td>
</tr>
<tr>
<td>4</td>
<td>11 or FEWER</td>
<td>Replace the lamp sockets with Rapid Start sockets.</td>
</tr>
<tr>
<td></td>
<td>12 or 13</td>
<td>Note that 2 two-lamp Lutron ballasts will replace this ballast.</td>
</tr>
</tbody>
</table>

**Note:** When replacing sockets, use Rapid Start sockets. (A knife-edge variety, such as model #13053-UN by Leviton Mfg. Co., or a #660 Series by Triboro Mfg. Co., is recommended.)

Many fluorescent lamp sockets are available with mounting slots to vary the height of the lamp away from the grounded metal surface. Use these slots to get the outside edge of the lamp to be 1/2" (12.7 mm) ±1/4" (6 mm) away from the grounded metal surface.

Having a fluorescent lamp too close to the grounded metal will make the minimum intensity too low and will reduce lamp life.

Having a fluorescent lamp too far away from the grounded metal will make the lamp flicker or not turn ON at all.

A Rapid Start, one-lamp ballast will normally have 6 wires — (1) Hot, (1) Neutral, (4) lamp wires. A 7th wire, the Ground, may be present depending upon the manufacturer. New sockets are not required when this type of ballast is replaced with a Lutron ballast.

**Warning!** Operating Lutron Dimming Ballast(s) with the wrong sockets in place will damage the ballast(s) and void the warranty.

---

### Diagram

Lamp Socket (side view)

- Fluorescent Lamp
- 1/2" gap (+/- 1/4")
- Grounded Metal

---

**For More Information . . .**

Refer to Lutron publication P/N 366-606
Notes on Neon/Cold-Cathode Dimming

Overview
Successful dimming of neon and cold-cathode sources can be achieved through proper equipment selection and installation. The following installation suggestions and Luminous Tube Length Chart for Dimming Applications must be used for optimum performance.

1. If equipment is selected and installed as specified here, a dimming range of 95%-10% light should be possible.

2. The electrical properties of argon fill gas make it easier to dim than red neon fill gas; therefore, installations using argon fill gas will see a greater degree of success compared to neon installations.

3. In addition to the following guidelines, all installations must meet the NEC and local codes.

Lamps
1. Neon/cold-cathode lamps must be manufactured to proper lamp pressurization (standard lamp pressure) without impurities. If pressurization is not standard or impurities are present, poor performance will result.

2. Neon/cold-cathode tubing should be well supported to avoid rattling when dimmed.

3. Lutron recommends using only the transformer/tube combinations spelled out in the Luminous Tube Length Chart for Dimming Applications. Other combinations will result in poor performance and flicker. Note that there are few successful combinations for red neon tubes smaller than 11 mm.

4. Ends of tubes must be insulated to avoid arcing and subsequent lamp instability.

Transformers
1. Normal power factor transformers must be used; electronic transformers are not dimmable.

2. When choosing transformer secondary currents, it is important to note that the higher the transformer current rating, the brighter the light from the tube.

3. Transformers must be sized according to the chart. These modified charts must be used by neon/cold-cathode transformer suppliers to size the transformer for dimming applications. Standard luminous tube length charts must not be used to size transformers in dimming applications as poor performance will result.

4. Transformers must be thermally-protected or fused.

5. Power factor correction capacitors, if present must be disconnected. If power correction is required, contact the toll-free Lutron Hotline for details on power factor correction at the lighting controller.

6. Transformers should be sized to run as close as possible to full load footage as shown in the chart.

Wiring
1. Optimal dimming performance is achieved when the high voltage (GTO-15) cable connecting a transformer output terminal to a cold-cathode tube is enclosed in plastic conduit or run without conduit. If code requires metal conduit, aluminum is preferred.

2. The total length of all GTO-15 cable connecting a transformer to the cold-cathode tubes must be:
   Twenty feet or Less if enclosed in plastic or no conduit; 6 ft. or Less if enclosed in Metal Conduit

3. Braided or shielded GTO-15 cable must not be used for dimming applications.

4. Lutron recommends that only one GTO-15 cable be run per conduit.

5. All GTO-15 cables should be spaced a minimum of 4" from any other GTO-15 cable.

6. Make sure spacing from tube ends to ground (earth) and other tube ends is adequate to prevent arcing and subsequent lamp instability.
### Transformer Ratings

<table>
<thead>
<tr>
<th>Secondary Voltage (V)</th>
<th>Secondary Short Circuit Current (mA)</th>
<th>Input Volt-Amps with Secondary Short Circuit (VA)</th>
<th>Neon Fill (clear or fluorescent red)</th>
<th>Tube Size (millimeters)</th>
<th>Argon/Mercury Fill (colors other than neon red)</th>
<th>Tube Size (millimeters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15000</td>
<td>60</td>
<td>900</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
<tr>
<td>12000</td>
<td>60</td>
<td>720</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
<tr>
<td>10000</td>
<td>60</td>
<td>360</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
<tr>
<td>9000</td>
<td>60</td>
<td>225</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
<tr>
<td>7500</td>
<td>60</td>
<td>1080</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
<tr>
<td>6000</td>
<td>60</td>
<td>270</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
<tr>
<td>5000</td>
<td>60</td>
<td>180</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
<tr>
<td>4000</td>
<td>60</td>
<td>360</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
<tr>
<td>3000</td>
<td>60</td>
<td>225</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
<tr>
<td>2000</td>
<td>60</td>
<td>100</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
<td>X X X X X X</td>
<td>25 22 20 18 15 14 13 12 11 10 9</td>
</tr>
</tbody>
</table>

#### Notes:
- X denotes this combination cannot be successfully dimmed.
- Tube length is shown in feet. To convert to meters, 1 ft = 0.305 m.
- If using a center-tap on a center-tapped transformer, the secondary voltage will be reduced by half.

#### Warning!
This chart has been calculated for dimming purposes and must not be used for non-dimming installations.

#### Danger!
Potentially hazardous high voltage can be present. Testing, handling, and servicing should be done only by qualified personnel.

---

* Each pair of electrodes equals one foot of tube. Example application = 8 red neon, 4 foot long, 18 mm dia., 60 mA lamps

---

Total Lamp Length = (8 Lamps X 4 ft) + (8 Lamps X 1 ft for each pair of electrodes) = 40 ft.

A 12000V, 60mA, 720VA transformer should be used (Capable of dimming 41 ft.)
## Troubleshooting Guide

<table>
<thead>
<tr>
<th>Symptom</th>
<th>RPM LED</th>
<th>Power OK LED</th>
<th>Data OK LEDs</th>
<th>Circuit # Display</th>
<th>Possible Cause/Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Operation as Reference</td>
<td>&quot;Heartbeat&quot; (~1 per sec)</td>
<td>On</td>
<td>&quot;Heartbeat&quot; (~1 per sec)</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>All Dimmers controlled by 1st zone</td>
<td>&quot;Heartbeat&quot; (~1 per sec)</td>
<td>On</td>
<td>&quot;Heartbeat&quot; (~1 per sec)</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>All Dimmers on FULL or OFF only</td>
<td>&quot;Heartbeat&quot; (~1 per sec)</td>
<td>On</td>
<td>&quot;Heartbeat&quot; (~1 per sec)</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>No Dimming - Always Full</td>
<td>&quot;Flutter&quot;* (~5 per sec)</td>
<td>On</td>
<td>&quot;Heartbeat&quot; (~1 per sec)</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td>No dimming - Level Frozen</td>
<td>&quot;Light House&quot; (~1 per 7 sec)</td>
<td>On</td>
<td>&quot;Heartbeat&quot; (~1 per sec)</td>
<td>OK</td>
<td>OK</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Wiring of Terminals 3 and 4 flipped. GRX connector unplugged at Control Unit.</td>
</tr>
<tr>
<td>Controls Dead</td>
<td>&quot;Light House&quot; (~1 per 7 sec)</td>
<td>On</td>
<td>Off</td>
<td>OK</td>
<td>Off</td>
</tr>
<tr>
<td></td>
<td>On</td>
<td>Off</td>
<td>OK</td>
<td>Off</td>
<td>GRAFIK Eye Control Units not addressed. Miswire to control link wires 1, 2, 3, and 4</td>
</tr>
<tr>
<td></td>
<td>On</td>
<td>Off</td>
<td>OK</td>
<td>OK</td>
<td>No data on Control Link open wires 3 or 4</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>Off</td>
<td>OK</td>
<td>Off</td>
<td>Miswire shorting 24VFW (Terminal 2) to Common (Terminal 1) or ground</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>Off</td>
<td>Out</td>
<td>Off</td>
<td>Control Breaker Off</td>
</tr>
</tbody>
</table>

* An accurate "Flutter" rate requires that the circuit be cycled OFF, then ON to high end from the appropriate Control Unit.
Troubleshooting Guide (continued)

After checking LED diagnostics, use this chart:

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause/Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wallstations will not go into Set Up Mode</td>
<td>GRX-4000 Series Control Units are not addressed. Terminals 3 and 4 miswired.</td>
</tr>
<tr>
<td>Fluorescent Load Flickers</td>
<td>DIM HOT and SW HOT wires crossed. Low End set too low.</td>
</tr>
<tr>
<td>Panel is Warm</td>
<td>This is probably normal. Solid-state controls dissipate about 2% of the connected load as heat. Make sure panel has adequate venting. Areas above and below the panel allow air flow behind the panel to cool it.</td>
</tr>
<tr>
<td>Two Control Units have the same Address (usually A1)</td>
<td>One of the units has wires 3 and 4 crossed or open. Wire terminal 3 to terminal 3, 4 to 4.</td>
</tr>
</tbody>
</table>

**Note:** The following voltages should be present on the GRX wiring:
- Terminals 2 to 1 = 22VDC
- Terminals 3 to 4 = 3VDC
- Terminals 5 to 1 if Switch 6 set for Normal = 22VDC

**Other Troubleshooting tools:**

The Circuit Selector can be used to view the intensity information being sent to the dimmer. Use buttons 1 and 2 on the Circuit Selector to access the circuit Number desired. Press button 5 repeatedly until the **Circuit Level** LED lights. Value displayed is now the present intensity sent from either Link A or Link B (as indicated) that is controlling that circuit. Value = 0 is OFF, Value = 100 is ON full.

The Circuit Selector can also be used to manually change the intensity of the desired circuit. Press and hold buttons 1 and 5 until the **Select Value** LED lights. Use buttons 1 and 2 to access the circuit desired. Press button 5 repeatedly until the **Circuit Level** LED lights. Buttons 3 and 4 will now control the desired circuit.

Value = 0 is OFF, Value = 100 is ON full, Value = CF is Circuit Finder - load will blink for easy location.
**Maintenance**

**GRX-4000 Series Control Units and Wallstations**
Clean front surface of control with a soft towel moistened with a mild soap solution (non-ammonia-based). Clean approximately every six months.

⚠️ **Caution!** Do not spray cleaning solution onto control as it may reach internal components.

**LP Panels**
1. Clean any dirt from air vent openings with a vacuum and check for any obstructions which may block air flow. Keep 12” (30.5 cm) above and below panels unobstructed.
2. If any extra wiring is brought into the power panel, thoroughly remove all metal chips, wire strands, insulation and other debris before reapplying power.
3. In the unlikely event of damage to dimming equipment, turn off breakers, replace bypass jumpers and turn on breakers. This will apply full power to fixtures.

**Fluorescent Fixtures**
1. It is important that lamps are maintained properly to prevent what may appear as dimming equipment malfunctions. When lamps begin to fail on a circuit, *Lutron* recommends group relamping of the entire circuit.
2. **New fluorescent lamps must be “seasoned” for dimming applications by operating at full intensity for their first 100 hours.**

Leave the lamps at full intensity for 100 hours. Although this may be inconvenient, it is necessary for good dimming performance, and achieving normal lamp life.

⚠️ **Warning!** For proper dimming performance fluorescent lamps must be operated at full intensity for 100 hours prior to dimming.

---

**Why keep the lamps at full intensity for 100 hours?**

Lamp that **WAS** seasoned for 100 hours.

Lamp that **NOT** seasoned for 100 hours.

New fluorescent lamps have impurities in them which lamp manufacturers cannot eliminate completely. Lamps must be operated at full intensity for 100 hours **before dimming** to neutralize the harmful effects of these impurities. Without the 100 hours at full intensity, the impurities may cause the lamp to fail within a week (or failure may take months depending on usage and the amount of impurities).
**Glossary of Terms**

**2Link™** - an option feature on a Circuit Selector that allows a circuit within a Lighting Control Panel to be assigned to any zone on either Control Link A or Control Link B. The choice of Link Hierarchy determines which Link’s intensity level is sent to a specific circuit.

**Accessory Control** - former term for a Wallstation and Control Interface. These were separated to avoid confusion.

**Addressing** - a way for the controls on a link to identify each other. Wallstations are addressed, using switches 1 through 4 on the back of each control. Each control needs a unique address. GRX-4000 Series Control Units are addressed while in Set-Up Mode from the front panel’s buttons.

**Circuit Selector** - the interface between the Control Link(s) and the digital dimmers that reside in a LP panel. The Circuit Selector houses all Circuit Values including Load Type, Control and Zone assigned, and Low End and High End light levels. 2Link is available as an option or upgrade.

**Control Interface** - GRAFIK Eye control wired to a GRX-4000 (or GRX-3000) Series Control Unit to select scenes, raise and lower specific zones or other functions on an attached Control Unit. An external closure or a computer typically activates these functions.

**Control Link** - the daisy-chained link of controls wired to the Circuit selector. A Control Link can be a) GRX-3000/4000, b) G6000, or c) DMX-512.

**Dimmed Hot (DH)** - a variable output from each circuit. This output must be used for all Non-Dim Load Types to ensure full lifetime of the dimmer's relay closure. The output limits and characteristics are set by the Load Type.

**LP Panel** - Low Profile Series Panel - includes Remote Power Modules (RPMs) and/or TVMs that can be assigned to dim or non-dim multiple sources.

**Link Hierarchy** - a value that must be set when using the 2Link option on the Circuit Selector. This value determines when either Link A or Link B controls the output of any circuit within the Control Panel.

**LED (Light Emitting Diode)** - an illuminated indicator to help in setting up and diagnosing LP Panel and GRX-4000 Series Control Unit’s functions.

**Load Type** - a value in the Circuit Selector that defines the performance of the circuit to optimally control loads such as: Incandescent, Hi-lume FDB or Eco-10 Dimmable Fluorescent, Neon, Non-Dim, Electronic Low Voltage.

**Low End** - the light level when a circuit output is at its lowest intensity (just above OFF). The Low End can be trimmed to a brighter or dimmer level. Low End is usually set for aesthetics.

**Non-Dim Load** - a source that is not to be dimmed. Load Circuit wiring is to be connected to the Dimmed Hot (DH) terminal and Load Type for that circuit is to be set to a Non-Dim Load Type only.

**RPM (Remote Power Module)** - a group of up to 4 dimmers in a module that can dim or non-dim various load types.

**RTISS™** - Real Time Illumination Stability System used to filter noise out of the power feed to each digital dimmer, resulting in a more stable output.

**Scene** - (or Preset) - Predetermined light intensity for one or more lights, creating a lighting effect that can be recalled by pressing a single button. The GRX-4000 Series Control Unit has Scene 1-4 and OFF accessible on the front of the control. Some Wallstations and Interface Controls can be Set-Up to access Scenes 5-16.

**TVM** - a module capable of providing low-voltage control signals to various loads. Each module controls two consecutive circuits (1 and 2, 3 and 4, etc.). Control signals consist of 0-10V PWM conforming to IEC 929 and Tridonic DS1. Each circuit can sink or source up to 50 mA of control current (750 mA max. total per panel). The TVM module must be used in conjunction with a Power Module (GP dimmer or 4U module) that switches power to the load.

**Wallstation** - GRAFIK Eye control wired to a GRX-4000 (or GRX-3000) Series Control Unit to select scenes, raise and lower specific zones or other functions on an attached Control Unit. Buttons typically activate these functions.

**Zone** - a fixture or a group of fixtures controlled simultaneously. The GRX-4000 Series Control Unit controls multiple zones (e.g., a GRX-4x08 can control 8 zones). Each zone can be assigned to one Load Type.

**Zone Capture™** - a method of Assigning a Control and Zone to a circuit without knowing Control Addresses. See ‘Circuit Selector Functions’ in the Reference Section.
LIMITED WARRANTY

Lutron will, at its option, repair or replace any unit that is defective in materials or manufacture within one year after purchase. For warranty service, return unit to place of purchase or mail to Lutron at 7200 Suter Rd., Coopersburg, PA 18036-1299, postage pre-paid.

This warranty is in lieu of all other express warranties, and the implied warranty of merchantability is limited to one year from purchase. This warranty does not cover the cost of installation, removal, or reinstallation, or damage resulting from misuse, abuse, or improper or incorrect repair, or damage from improper wiring or installation. This warranty does not cover incidental or consequential damages. Lutron's liability on any claim for damages arising out of or in connection with the manufacture, sale, installation, delivery, or use of the unit shall never exceed the purchase price of the unit.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Lutron, GRAFIK Eye, and Hi-lume are registered trademarks; Eco-10, LIAISON, Designer, Tu-Wire, 2Link, and Zone Capture are trademarks of Lutron Electronics Co., Inc.

© 2000 Lutron Electronics Co., Inc.