





## Warranty & Start-Up Information

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Job Name:

Toll-Free 24/7 Technical Support Line: 1.800.523.9466

Job Number:

Field Service Scheduling 1.800.523.9466 ext.4439

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### Lutron Standard Limited Warranty

Applies to all Lutron Products that are not purchased with Lutron Services Co., Inc. start-up.

#### Limited Warranty

Lutron warrants each new unit to be free from defects in materials and workmanship and to perform under normal use and service.

Lutron will, at its option, repair or replace any unit that is defective in materials or manufacture within one year after purchase. For Lutron ballasts, Lutron will repair or replace any unit that is defective in materials or manufacture within three years after purchase.

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 APPLIES ONLY TO LUTRON HARDWARE AND DOES NOT INCLUDE LUTRON SOFTWARE, LUTRON PROVIDED SYSTEM SERVERS, LAPTOPS, PDAS, OR COMPUTERS PURCHASED WITH LUTRON CONTROL SYSTEMS. 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 SPECIAL DAMAGES. THE PURCHASER ASSUMES AND WILL HOLD HARMLESS LUTRON IN RESPECT OF ALL SUCH LOSS. 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.

For warranty service on returnable products (including Lutron ballasts), take the unit to the place of purchase or mail to:

Lutron  
7200 Suter Rd.  
Coopersburg, PA 18036-1299  
(send postage pre-paid for proper handling)

For warranty service on non-returnable products, contact Lutron Technical Support Center at **1-800-523-9466**

**Note** - Although every attempt is made to ensure that catalog information is accurate and up-to-date, please check with Lutron before specifying or purchasing this equipment to confirm availability, exact specifications, and suitability for your application.

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## Lutron Electronics Co., Inc. Commercial Systems Limited Warranty

### SCOPE

This limited warranty ("Warranty") covers Lutron (a) commercial lighting control system panels, controls, processor panels, wall box products, and other Lutron components (collectively, "Hardware"), (b) ballasts supplied directly by Lutron ("Ballasts"), (c) provided computer ("Supplied Computer"), and (d) commercial systems eLumen software ("Software" and, with the Hardware, Ballasts and Supplied Computer, the "System"). Customer acknowledges and agrees that use of (i) the System, or any part thereof, constitutes acceptance of all terms and conditions of this Warranty and (ii) the Software is subject to the terms and conditions of Lutron's Software License. Any subsequent addition to the System provided by Lutron will be governed by a separate warranty issued at the time of the purchase of the additional equipment.

The provisions of this Warranty applicable to the Supplied Computer and Software will not apply to Systems that do not include these components.

### LIMITED WARRANTY

Subject to the exclusions and restrictions and for the periods of time described in this Warranty, Lutron warrants that the System will be free from manufacturing defects. If any manufacturing defect exists in any Hardware or Ballast during the period of time identified below from the date of start-up completion by Lutron or a Lutron approved third party, or the date of shipment by Lutron if such component was not purchased with Lutron start-up, so long as Customer promptly notifies Lutron of the defect and, if requested by Lutron, upon the return of the defective part(s), Lutron will, at its option, either repair the defective part(s) or issue a credit to the Customer against the purchase price of comparable replacement part(s) purchased from Lutron as follows:

Number of Years from Date of Start-up or Shipment, as applicable	Percentage of Part Price Credited by Lutron			
	Hardware		Ballasts	
	With Start-up	No Start-up	With Start-up	No Start-up
Up to 1	100%	100%	100%	100%
More than 1 but not more than 2	100%	0%	100%	100%
More than 2 but not more than 3	50%	0%	100%	100%
More than 3 but not more than 5	50%	0%	100%	0%
More than 5 but not more than 8	25%	0%	0%	0%
More than 8	0%	0%	0%	0%

If any manufacturing defect exists in the Supplied Computer or Software during the one year period from the date of start-up by Lutron or a Lutron approved third party, or the date of shipment by Lutron if component was not purchased with Lutron start-up, so long as Customer promptly notifies Lutron of the defect, upon the return of the defective part(s) as to the Supplied Computer, if requested by Lutron, or Lutron determining that a defect exists as to the Software, Lutron will, at its option, either repair the defective part(s) or provide comparable replacement part(s).

Replacement parts for the System provided by Lutron or, at its sole discretion, an approved vendor may be new, used, repaired, reconditioned, and/or made by a different manufacturer.

### CUSTOMER OBLIGATIONS TO MAINTAIN LIMITED WARRANTY

This Warranty will be void, and Lutron will have no obligations under it unless Customer complies with all of the following:

1. The Supplied Computer must be installed and maintained in a secure location, within the

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temperature and relative humidity ranges specified in the documentation accompanying the Supplied Computer, and away from where it may be bumped, abused, or subjected to large amounts of dust or dirt.

2. The Supplied Computer must be connected to a reliable (and preferably generator or battery backed-up) power supply.
3. The Supplied Computer must be properly shutdown in the event of power loss to prevent damage to it or its data, either of which could prevent it from operating properly. Customer has sole responsibility to take all reasonable measures to prevent this from occurring.
4. No modification, alteration, adjustment or repair can be made to the Software except by, or at the express instruction of, Lutron.
5. The Software may not be used on any hardware except the Supplied Computer.
6. No third party software may be installed on the Supplied Computer.

Lutron does not warrant that the Software will operate in combination with any other software except as specified in the applicable Lutron documentation. Customer acknowledges that its use of the Software may not be uninterrupted or error-free.

To ensure optimal operating conditions for the System, Lutron recommends that the Supplied Computer (1) not be connected to a power source that is also supplying power to a motor or other load that causes significant conducted emissions; (2) be located to permit easy access to it; and (3) be placed on a dedicated circuit.

**EXCLUSIONS AND RESTRICTIONS**

This Warranty does not cover, and Lutron and its suppliers are not responsible for:

1. Damage, malfunction or inoperability diagnosed by Lutron or a Lutron approved third party as caused by normal wear and tear, abuse, misuse, incorrect installation, neglect, accident, interference or environmental factors, such as (a) use of incorrect

line voltages, fuses or circuit breakers; (b) failure to install, maintain and operate the System pursuant to the operating instructions provided by Lutron and the applicable provisions of the National Electrical Code and of the Safety Standards of Underwriter's Laboratories; (c) use of incompatible devices or accessories; (d) improper or insufficient ventilation; (e) unauthorized repairs or adjustments; (f) vandalism; (g) failure to comply with the Customer Obligations listed above; (h) an act of God, such as fire, lightning, flooding, tornado, earthquake, hurricane or other problems beyond Lutron's control; (i) moving the Supplied Computer to another geographic location; (j) a virus or computer hacker; or (k) failure to maintain equipment under specified ambient temperature.

2. On-site labor costs to diagnose issues with, and to remove, repair, replace, adjust, reinstall and/or reprogram the System or any of its components.
3. Components and equipment external to the System, such as, lamps; non-Lutron ballasts; OEM supplied Lutron ballasts, sockets, and fixtures; fixture wiring between ballasts and lamps; building wiring between the dimmer panels and lamps and between the controls and the control or dimmer panels; audio-visual equipment; and non-Lutron time clocks and motion detectors.
4. The cost of repairing or replacing other property that is damaged when the System does not work properly, even if the damage was caused by the System.
5. Any loss of software, including the Software, or data. Customer has sole responsibility to properly back up all data on the Supplied Computer's hard disk drive and on any other storage device(s) in the System.
6. Repairs required due to malfunctions caused by non-Lutron supplied software.

EXCEPT AS EXPRESSLY PROVIDED IN THIS WARRANTY, THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF ANY TYPE, INCLUDING ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

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LUTRON DOES NOT WARRANT THAT THE SYSTEM WILL OPERATE WITHOUT INTERRUPTION OR BE ERROR FREE.

NO LUTRON AGENT, EMPLOYEE OR REPRESENTATIVE HAS ANY AUTHORITY TO BIND LUTRON TO ANY AFFIRMATION, REPRESENTATION OR WARRANTY CONCERNING THE SYSTEM.

UNLESS AN AFFIRMATION, REPRESENTATION OR WARRANTY MADE BY AN AGENT, EMPLOYEE OR REPRESENTATIVE IS SPECIFICALLY INCLUDED HEREIN, OR IN STANDARD PRINTED MATERIALS PROVIDED BY LUTRON, IT DOES NOT FORM A PART OF THE BASIS OF ANY BARGAIN BETWEEN LUTRON AND CUSTOMER AND WILL NOT IN ANY WAY BE ENFORCEABLE BY CUSTOMER.

IN NO EVENT WILL LUTRON OR ANY OTHER PARTY BE LIABLE FOR EXEMPLARY, CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFITS, CONFIDENTIAL OR OTHER INFORMATION, OR PRIVACY; BUSINESS INTERRUPTION; PERSONAL INJURY; FAILURE TO MEET ANY DUTY, INCLUDING OF GOOD FAITH OR OF REASONABLE CARE; NEGLIGENCE, OR ANY OTHER PECUNIARY OR OTHER LOSS WHATSOEVER), NOR FOR ANY REPAIR WORK UNDERTAKEN WITHOUT LUTRON'S WRITTEN CONSENT ARISING OUT OF OR IN ANY WAY RELATED TO THE INSTALLATION, DEINSTALLATION, USE OF OR INABILITY TO USE THE SYSTEM OR OTHERWISE UNDER OR IN CONNECTION WITH ANY PROVISION OF THIS WARRANTY, OR ANY AGREEMENT INCORPORATING THIS WARRANTY, EVEN IN THE EVENT OF THE FAULT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, BREACH OF CONTRACT OR BREACH OF WARRANTY OF LUTRON OR ANY SUPPLIER, AND EVEN IF LUTRON OR ANY OTHER PARTY WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

NOTWITHSTANDING ANY DAMAGES THAT CUSTOMER MIGHT INCUR FOR ANY REASON WHATSOEVER (INCLUDING, WITHOUT LIMITATION, ALL DIRECT DAMAGES AND ALL DAMAGES LISTED

ABOVE), THE ENTIRE LIABILITY OF LUTRON AND OF ALL OTHER PARTIES UNDER THIS WARRANTY ON ANY CLAIM FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE MANUFACTURE, SALE, INSTALLATION, DELIVERY, USE, REPAIR, OR REPLACEMENT OF THE SYSTEM, OR ANY AGREEMENT INCORPORATING THIS WARRANTY, AND CUSTOMER'S SOLE REMEDY FOR THE FOREGOING, WILL BE LIMITED TO THE AMOUNT PAID TO LUTRON BY CUSTOMER FOR THE SYSTEM. THE FOREGOING LIMITATIONS, EXCLUSIONS AND DISCLAIMERS WILL APPLY TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW, EVEN IF ANY REMEDY FAILS ITS ESSENTIAL PURPOSE.

### TO MAKE A WARRANTY CLAIM

To make a warranty claim, promptly notify Lutron within the warranty periods described above by calling the Lutron Technical Support Center at 1-800-523-9466. Lutron, in its sole discretion, will determine what action, if any, is required under this Warranty. Most System problems can be corrected over the phone through close cooperation between Customer and a technician. To better enable Lutron to address a warranty claim, have the System's serial and model numbers, its current operating system version, and the brand names and models of any peripheral devices (such as a modem) used with the System available when making the call. Let the technician know what error message you get; when it occurs; what you were doing when the error occurred; and what steps you have already taken to solve the problem. Listen carefully to the technician and follow the technician's directions.

If Lutron, in its sole discretion, determines that an on-site visit or other remedial action is necessary, Lutron may send a Lutron Services Co. representative or coordinate the dispatch of a representative from a Lutron approved vendor, to Customer's site, and/or coordinate a warranty service call between Customer and a Lutron approved vendor. All on-site labor costs incurred to diagnose any problems with

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the System and to repair, replace or adjust (at Lutron's option) the System to restore it to normal operation will be paid by customer at the then current service price unless covered by a Lutron Services Co. Support and Maintenance Plan.

**REMOTE ACCESS**

A dedicated analog phone line should be installed for the Supplied Computer to allow Lutron to remotely administer, troubleshoot, and support the System. Lutron does not recommended plugging the Supplied Computer into the analog phone line until

asked to do so by Lutron support personnel. During such support calls, Customer should disconnect the Supplied Computer from Customer's local LAN. Lutron expressly disclaims all liability due to local LAN problems or if the phone line is connected to the Supplied Computer at any other time. Customer retains all responsibility for ensuring the security of the Supplied Computer from unauthorized access.

For more information, including preventative maintenance steps, see the Users Guide provided by the Lutron approved vendor of, and included with, the Supplied Computer.

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# 1-Visit Start-up

## Description

The 1-Visit Start-up package includes one on-site start-up visit and extends the limited warranty for your integrated lighting system.

Field Start-up – A Lutron Services Company Engineer will perform an on-site system inspection, start-up the system, and train facilities personnel on system operation and maintenance. This includes the cost of travel.

### Visit Summary:

- Installation verification
- Wiring verification – power and low voltage
- Energizing the low voltage and enabling dimming for the system
- Verification of lighting loads
- System programming
- Training

## Additional Information

Replaces the Standard Limited Warranty with the Lutron Electronics Co., Inc. Commercial Systems Limited Warranty. Also includes two consecutive 1-year Support and Maintenance Plans. Up to eight additional years of coverage can be purchased.

Extends limited warranty for Lutron ballasts from 3 years to 5 years, if start-up is purchased for the ballasts.

24-hour/7-days a week toll-free telephone support (1-800-523-9466).

Refer to the Lutron Electronics Co., Inc. Commercial Systems Limited Warranty pages for limitations, exclusions, and any other details pertaining to what is covered by this warranty.

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## Support and Maintenance Plan - Silver Level (INIT) (LSC-SILV-CS-IN-1, LSC-SILV-CS-IN-2)

### Description

- Includes 1-year Support and Maintenance Plan with system purchase and start-up, and commences on date of start-up completion.
- Covers on-site parts and labor, telephone technical support, and remote diagnostics
- Remote Access Support - Diagnostics and programming for systems with that capability (analog telephone line connection required, must be provided by system owner).
- 24-hour/7-days a week toll-free telephone support (1-800-523-9466).

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## Terms and Conditions of Lutron Services Co., Inc. Support and Maintenance Plans

This Agreement between Lutron Services Co., Inc. ("LSC") and Customer provides parts and labor coverage for the Lutron Electronics Co., Inc. ("Lutron") Integrated Lighting Control System ("ILCS") purchased on this Bill of Material. Parts and labor are covered at 100%, as further specified below.

### 1. The Silver Plan COVERS:

- The diagnosis of problems with the Lutron ILCS and the repairs and adjustments necessary to restore the ILCS to normal operation are subject to the limitations described below. Visits will occur during normal business hours Monday through Friday.
- Replacement parts, new or rebuilt, at LSC's option.
- Four (4) hours of remote programming annually, for systems with that capability.
- Remote diagnostics, for systems with that capability.
- Unlimited Lutron Technical Support (1-800-523-9466).

### 2. Additionally, the Gold & Platinum Plans COVER:

- An annual ILCS Checkup which can include:
  - a) an evaluation to verify that the ILCS is working properly
  - b) verification that panels have not been overloaded in the course of building relamping or renovation
  - c) training of users on operation and maintenance of the ILCS
- For Trouble Calls, LSC will use commercially reasonable efforts to be at the Customer's site within 24 hours (for Platinum customers) or 72 hours (for Gold customers) of receipt of the request.

### 3. Service Procedures

- To schedule a visit, call 610-282-3800 and request to be connected to Field Service Scheduling.
- LSC representatives will perform service in compliance with security and other instructions provided by the Customer.
- LSC will respect the Customer's need for confidentiality and will utilize job-specific information only as needed to complete the service visit.
- ILCS Checkups (for Gold and Platinum customers) will occur during normal business hours Monday through Friday. They must be scheduled at least two weeks in advance.
- Customer agrees to allow LSC prompt and sufficient access to Customer's facility and to provide reasonable information and assistance to the LSC representatives to expedite the performance of service.
- Customer agrees that all LSC service must be done in compliance with LSC's safety procedures, which may include temporarily disabling or de-energizing the ILCS and other equipment connected to the ILCS.
- LSC will provide a certificate of insurance upon request of Customer.

### 4. This plan DOES NOT COVER:

- Damage or malfunctions diagnosed by LSC as due to abuse, misuse, or accident, such as: use of incorrect line voltage, fuses or protection devices; failure to follow operating and maintenance instructions provided by Lutron or LSC; failure to comply with national or local electrical codes; unauthorized repairs/adjustments; vandalism or theft; fire, flood, "Acts of God", or other problems beyond LSC's control.
- Non-Lutron components and equipment such as: lamps; non-Lutron ballasts, sockets, and fixtures; fixture wiring between ballasts and lamps; building wiring between ILCS elements; audio-visual

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equipment; non-Lutron timeclocks and motion detectors; and Local Area Networks.

- Labor costs to remove and reinstall fixtures and/or ballasts.
- Desktop, Laptop, or Server hardware and software.
- Repairs or adjustments to Lutron ILCS required as a result of (i) malfunctions caused by non-Lutron supplied equipment, (ii) software that is connected to or used with the ILCS, or (iii) programming changes made by anyone other than LSC.

#### 5. Warranties

- LSC makes no warranty, either express or implied, including, but not limited to, any implied warranties of merchantability and fitness for a particular purpose
- For ILCS components that may be covered by product-specific warranties, LSC will coordinate the processing of any warranty claims.

#### 6. Limitation of Remedy

- CUSTOMER'S EXCLUSIVE REMEDY AND LSC'S ENTIRE, COLLECTIVE LIABILITY IN CONTRACT, TORT OR OTHERWISE, UNDER THIS AGREEMENT IS THE REPAIR OF THE DEFECTIVE ILCS IN ACCORDANCE WITH THIS AGREEMENT. IF LSC IS UNABLE TO MAKE SUCH REPAIR, CUSTOMER'S EXCLUSIVE REMEDY AND LSC'S ENTIRE LIABILITY WILL BE THE PAYMENT OF ACTUAL DAMAGES NOT TO EXCEED THE CHARGE PAID BY CUSTOMER FOR ONE YEAR OF SERVICE UNDER THIS AGREEMENT. UNDER NO CIRCUMSTANCES WILL LSC BE LIABLE TO CUSTOMER OR ANY OTHER PERSON FOR ANY DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY INDIRECT, INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES, EXPENSES, COSTS, PROFITS, LOST SAVINGS OR EARNINGS, LOST OR CORRUPTED DATA, OR OTHER LIABILITY ARISING OUT OF OR RELATED TO THIS AGREEMENT, OR OUT OF THE INSTALLATION, DEINSTALLATION, USE OF OR INABILITY TO USE THE SYSTEM.

- THIS AGREEMENT GIVES CUSTOMER SPECIFIC LEGAL RIGHTS AND CUSTOMER MAY HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF (i) INCIDENTAL OR CONSEQUENTIAL DAMAGES OR (ii) IMPLIED WARRANTIES, SO THE ABOVE MAY NOT APPLY.
- Customer shall not bring legal action related to the services being provided hereunder more than two years after the cause of action arose unless otherwise provided by local law without the possibility of contractual waiver or limitation.
- LSC shall not be responsible for any delay or failure to perform its responsibilities under this Agreement that results from problems outside the control of LSC such as: permit or visa requirements; strikes or work stoppage; fires, floods, "Acts of God", wars, or force majeure; and transportation disruptions.
- With regard to any services that are not within the coverage of this Agreement, please contact LSC for service pricing and availability.

#### 7. Taxes

- Customer agrees to pay all taxes (or reimburse LSC for all amounts paid or payable by LSC in discharge of these taxes) arising from this Agreement including state and local sales and use taxes, regardless of designation.

#### 8. Term; Termination

- The term of this Agreement shall commence on the date of start-up completion and shall continue for the number of one-year terms purchased on the Bill of Material.
- Default: LSC may terminate this Agreement if Customer remains in default of any material term or condition of this Agreement ten days after LSC gives Customer written notice of the default.
- Unnecessary Service Calls: If Customer requests service on more than two (2) occasions in any one year for problems that are diagnosed by LSC as non-covered problems, LSC may terminate this Agreement by providing Customer with 30 days notice of termination.

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9. Miscellaneous

- **Entire Agreement:** This Agreement is the complete agreement between Customer and LSC regarding the services provided hereunder, and replaces any prior oral or written communications between Customer and LSC regarding such services. None of LSC’s employees or agents may orally vary the terms and conditions of this Agreement. Any modification of this Agreement must be signed in writing by authorized representatives of Customer and LSC.
- **Additional Remedies:** This Agreement affords Customer specific legal rights. Customer may have additional legal rights that vary from state to state. This Agreement is not a warranty. The ILCS may come with a limited warranty from Lutron or third party manufacturers of products distributed by Lutron. Please consult those warranties for specific rights and remedies.

- **Severability:** If any part of this Agreement is held to be invalid or unenforceable, it will not affect the validity or enforceability of the rest of the Agreement. Without further action of the parties, that part will be reformed to the minimum extent necessary to make it valid and enforceable.
- **Waiver of Rights:** LSC’s failure to exercise, delay in exercising, or single or partial exercise of any right, power, or privilege under this Agreement shall not operate to waive or preclude LSC’s right to exercise such rights, power, or privileges.
- **Send Notices to:** Lutron Services Co., Inc., Attn: Director of Field Service, 7200 Suter Road, Coopersburg, PA 18036, cc: Legal Dept.

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## Lutron Contacts for all Warranties and Support and Maintenance Plans

Internet: [www.lutron.com](http://www.lutron.com)  
E-mail: [lscwarranty@lutron.com](mailto:lscwarranty@lutron.com)

### WORLD HEADQUARTERS USA

Lutron Electronics Co., Inc.  
7200 Suter Road, Coopersburg, PA 18036-1299  
TEL +1.610.282.3800  
FAX +1.610.282.1243  
Toll-Free 1.888.LUTRON1  
Technical Support 1.800.523.9466

North and South America Technical Hotlines  
USA, Canada, Caribbean: 1.800.523.9466  
Mexico: +1.888.235.2910  
Central/South America: +1.610.282.6701

### EUROPEAN HEADQUARTERS United Kingdom

Lutron EA Ltd.  
6 Sovereign Close, London,  
E1W 3JF United Kingdom  
TEL +44.(0)20.7702.0657  
FAX +44.(0)20.7480.6899  
FREEPHONE (UK) 0800.282.107  
Technical support +44.(0)20.7680.4481

### ASIAN HEADQUARTERS

#### Singapore

Lutron GL Ltd.  
15 Hoe Chiang Road,  
#07-03 Euro Asia Centre,  
Singapore 089316  
TEL +65.6220.4666  
FAX +65.6220.4333

#### Asia Technical Hotlines

Northern China: 10.800.712.1536  
Southern China: 10.800.120.1536  
Hong Kong: 800.901.849  
Indonesia: 001.803.011.3994  
Japan: +81.3.5575.8411  
Macau: 0800.401  
Singapore: 800.120.4491  
Taiwan: 00.801.137.737  
Thailand: 001.800.120.665853  
Other countries: +65.6220.4666

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## GRAFIK 3000/4000/QSG System On-Site System Start-up

### What Standard GRAFIK 3000/4000 Start-up includes:

- One visit to the job site during normal business hours. This is one visit between the hours of 7 AM and 5 PM on a Monday through Friday that is not a Lutron Holiday.
- This visit may require multiple days depending on the size of the system.
- Phased construction projects (requiring multiple visits) should verify this was included with the system provider.
- Visits can be made outside these hours for an additional charge.
- Lutron requires Ten (10) business days notice to schedule a start-up date. Shorter notices may incur expedite fees.
- All terminations will be done by the installing agency. A person from the installing agency needs to be present for the startup. This person should be familiar with the installation of the system.
- A Lutron factory certified technician performs all system start-up items.

### System start up includes:

- Verification that the system is installed according to Lutron specifications.
- Panels should be energized in by-pass fully lamped and tested prior to our arrival.
- Load circuits are checked for shorts and overloads and bypass jumpers are removed.
- Programming the dimming/switching panels to include:
  - Panel addressing
  - Proper load types as installed in field or as per approved submittal drawings. As installed conditions take precedence. This system may have modular components and if loads differ from design additional/different equipment may be required.
  - Circuit to zone assignment as per approved submittal drawings. If no zoning information exists prior to start-up, programming will be done according to written instructions from end user or end users representative, contractor, or will be set up based on the field engineers past experience in that order of priority.
  - Set light levels and fade times on controls as per approved submittal drawings. If no information is provided, test scenes will be set to 100%, 75%, 50% and 25% and default fade times will be set to 3 seconds.
  - Program emergency function per the installation guide for the system. This may not be applicable for every system.

### Programming the wall controls/interfaces to include:

- Control addressing
- Verify proper wiring and operation of control link
- Set up controls to function as per approved submittal drawings. If no control functionality is included, controls will be programmed according to written instructions from end user or end users representative, contractor, or will be set up based on the field engineers past experience in that order of priority.
- Test all buttons to assure proper operation
- Occupancy sensor
  - Verification of proper installation and operation.
  - Unless otherwise noted, a rough calibration will be performed at system start-up. Final calibration is the responsibility of the end user since it is very dependent on furniture placement, HVAC operation, and space usage.

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- Photocell
  - Verification of proper installation and operation.
  - Unless otherwise noted a rough calibration will be performed at system start-up. Final calibration is the responsibility of the end user since it is very dependent on furniture placement, window treatments, outside weather conditions and space usage.
- Time clock set up
  - Lutron will set up the system location, daylight savings, and time of day preparation for event programming.
  - Lutron will set up time clock events as per the approved submittal drawings or written instructions from end user or end users representative, contractor in that order of priority.
  - In lieu of instructions, the time clock will not be programmed.

**Items not included in standard on-site startup:**

- Lutron service technicians will not perform work on non-Lutron equipment. Lutron will work with other manufacturers on integration of equipment by others.
- Programming or any other changes that are requested to be performed counter to the approved submittal drawings must be approved in writing via the proper channels.
- Field wiring changes or corrections that delay the startup process such that additional time is required for Lutron to complete the startup in the allotted time will result in additional charges.
- Replacement of controls damaged due to miss-wires or incorrect installation or any other related issue not covered under the Lutron warranty is the responsibility of the installer.
- Reprogramming of any functions after initial programming and sign-off.

**End user training on overall system operation. Typical training agenda listed below:**

- This system is not typically sold with a separate visit for the training of the end user. Check with purchasing agent if this is required.
- It is the responsibility of the person scheduling the startup to ensure the appropriate end users are present for system training. Lutron typically does not have these contacts.
- Additional charges will apply if a separate visit is required for training the end user.
- Video media is not provided by Lutron for training sessions. This may be provided by “others” for turnover to the end user or job site documentation.
- System demonstration and sign-off by the end user.

**Additional items that are not included with standard startup, but may be purchased – check your quote to verify an item has been included with your quote. The quantity of the items listed below on the BOM will determine how many days are included with this item.**

- LSC-AF-VISIT. Aim and focus visit with design team or end user. This visit is typically coordinated by the construction team, that includes designers, Lutron, and end user to set up light levels and adjust fixtures.
- LSC-SYSOPT. System optimization visit with end user. This visit is coordinated by the EC or end user to optimize the system performance to specific project details.
- LSC-WALK. Start-up agent or design team walk-through visit. The construction team and the agent requiring the walk-through coordinate this visit. This visit is for any type of additional walk-through that is required for job completion.

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Toll Free 24/7 Tech Support Line 1.800.523.9466

Job Number:

Field Service Scheduling 1.800.523.9466 ext. 4439

- LSC-SILV/GOLD/PLAT-IW. These are extended warranty part numbers for the system per the specification. Warranty information is supplied within the submittal documentation.
- LSC-TRAINING. This visit is for additional time on the job for training the end user. The EC or the end user typically coordinates this visit.
- LSC-AH-SU. After hours start-up. If normal business hours are not acceptable for start-up, after hours start-up can be purchased.

**Additional items listed below may be charged for jobsites that are scheduled for start-up, but not ready when field service engineer arrives.**

- LSC-NS-TRAVEL. Non standard travel arrangements
- LSC-SITE-RDY-CHG. Site ready charge. Jobsite not ready.

Job Name: <input type="text"/>	Toll Free 24/7 Tech Support Line 1.800.523.9466
Job Number: <input type="text"/>	Field Service Scheduling 1.800.523.9466 ext. 4439

## GRAFIK Eye Family 3000/4000/QSG Series

GRAFIK Eye 4000 Family Series is an architectural preset lighting control product that creates functional spaces through various lighting combinations. It utilizes low voltage digital controls that communicate with high voltage dimming and switching panels. The digital nature of the product allows the user to quickly and easily select lighting scenes to align with the use of the space. These scenes can be reprogrammed as the needs of the space change.

GRAFIK Eye 3000 Family Series is an architectural preset lighting control product that creates functional spaces through various lighting combinations. It utilizes low voltage digital controls that communicate with high voltage digital controls. The digital nature of the product allows the user to quickly and easily select lighting scenes to align with the use of the space. These scenes can be reprogrammed as the needs of the space change.

### 4000 Training Visit – Typical Agenda (duration – approximately 1 hour):

- Review system with end-user (control location and function).
- Discuss system model numbers
- Discuss Lutron lexicon – what is a zone, scene, fade rate
- Review GRAFIK EYE main controller functions
  - How to set a scene
  - How to adjust fade rate
  - How to make a temporary scene
  - How to set light loads
  - How to change light levels
- Special save modes and when to use each
- Review all accessory controls functions
  - How to address accessory controls
  - Programming scenes from accessory controls
- Review dimmer panel(s) (for G4000 system, N/A for G3000 systems)
  - Bypassing a G4000
  - Spare dimmer cards
- Load schedule
- Troubleshooting the system
- Preventive maintenance
- Liaison software (if applicable)
- Timeclock options
  - Real Time
  - Astronomic

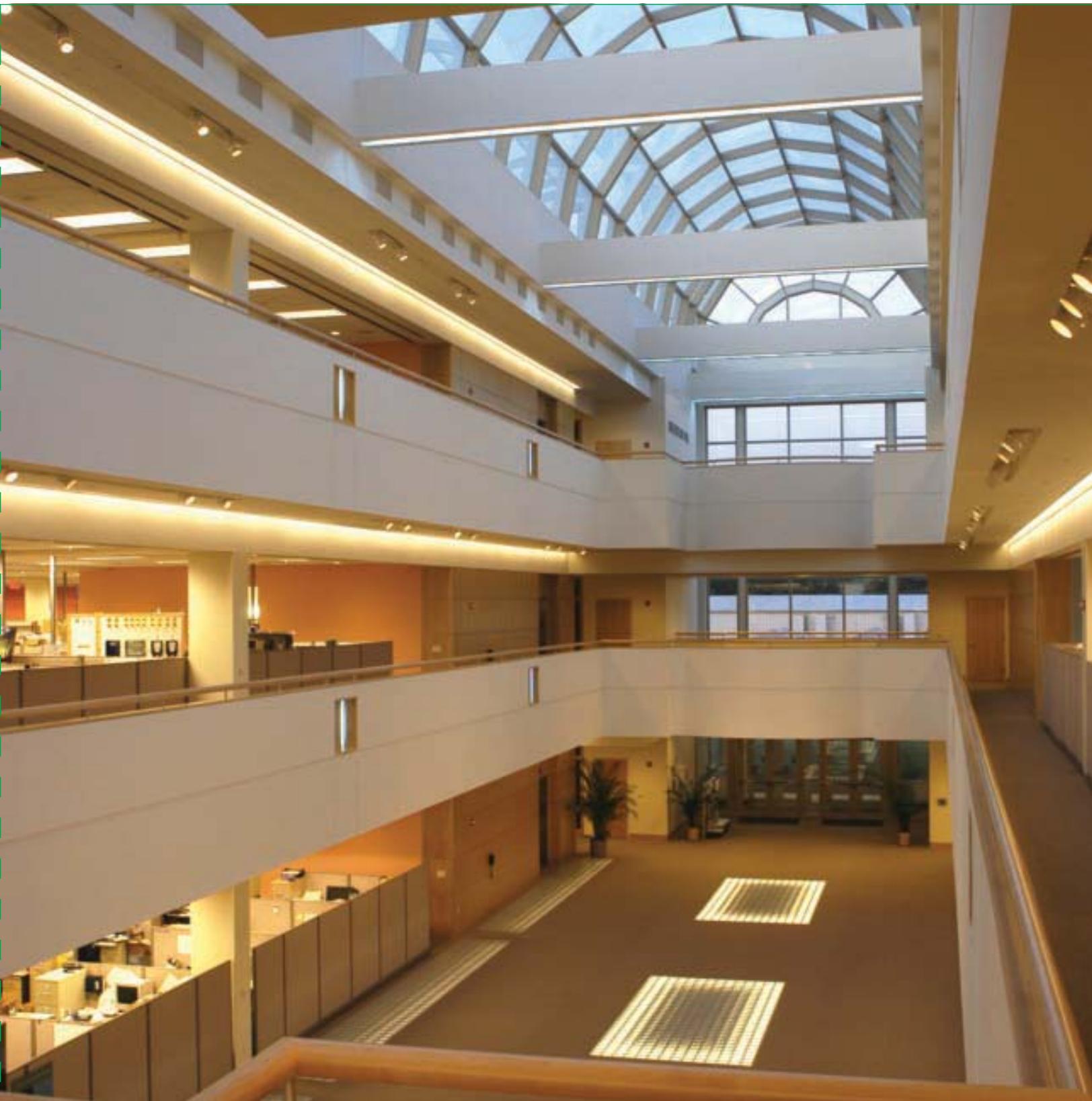
*NOTE:* All topics may not be relevant to every system

Job Name:

Toll Free 24/7 Tech Support Line 1.800.523.9466

Job Number:

Field Service Scheduling 1.800.523.9466 ext. 4439



service and support guide | lighting control system

# service record

**This information will help us assist you when you contact Lutron:**

Job Number (typically on the front cover of the panels)

Approximate date of initial installation

Job Name at time of installation

This pocket is provided for storage of service visit sign-off sheets and other important system documentation.

**Lutron controls the light at the following locations featured in this brochure:**

- Cover:** Lutron Electronics Headquarters, Coopersburg, Pennsylvania, U.S.A.  
**Page 1:** New York Times Building, New York, New York, U.S.A.  
**Page 2:** Bank of China Headquarters, Beijing, China  
**Pages 4–5:** Getty Museum, Los Angeles, California, U.S.A.  
JW Marriott Hotel Shanghai at Tomorrow Square, Shanghai, China  
Mandarin Oriental, Tokyo, Japan  
Louis Vuitton, Cannes, France  
Orange County Convention Center, Orlando, Florida, U.S.A.  
**Page 7:** Mandarin Oriental, New York, New York, U.S.A.  
**Page 8:** TAQA, Ann Arbor, Michigan, U.S.A.  
**Page 10:** The Westbury Mayfair Hotel, London, UK  
**Page 11:** Wynn Las Vegas, Las Vegas, Nevada, U.S.A.  
Mandarin Oriental, New York, New York, U.S.A.  
Georgian College, Ontario, Canada

Lutron, the sunburst logo, EcoSystem, GRAFIK Eye, GRAFIK 6000, and seeTouch are registered trademarks of Lutron Electronics Co., Inc. GRAFIK Eye 3000, GRAFIK Eye 4000, GRAFIK 5000, GRAFIK 7000, Quantum, and GRAFIK Eye QS are trademarks of Lutron Electronics Co., Inc.

# Thank you for purchasing a Lutron lighting control system.

This guide contains the information you will need to ensure your ownership experience is a good one. Please retain it for future reference. It contains important information on warranties, service, upgrades and more.

- 02** | who to call if you have problems
- 03** | what to do if your system needs service
- 04** | replacement parts
- 04** | spare parts packages
- 05** | training sessions
- 05** | optimize energy usage
- 06** | support & maintenance plans
- 07** | annual scheduled maintenance visits
- 08** | new and improved Lutron products
- 11** | modernize your lighting control system
- 11** | system expansions
- 12** | Lutron in your home



who to call if you have problems: 1.800.523.9466

**24-hour Technical Support at No Charge**

If you have questions about the operation of your system, or if you are not sure it is functioning properly, Lutron provides around-the-clock technical support. A knowledgeable support staff is ready to answer questions about the operation, programming, and maintenance of your system. They can also direct you to the technical information on our website that is specific to your Lutron products.

*From the U.S., call 1.800.523.9466. International customers can dial 1.610.282.3800 or visit [www.lutron.com](http://www.lutron.com) to get more information on our international offices.*

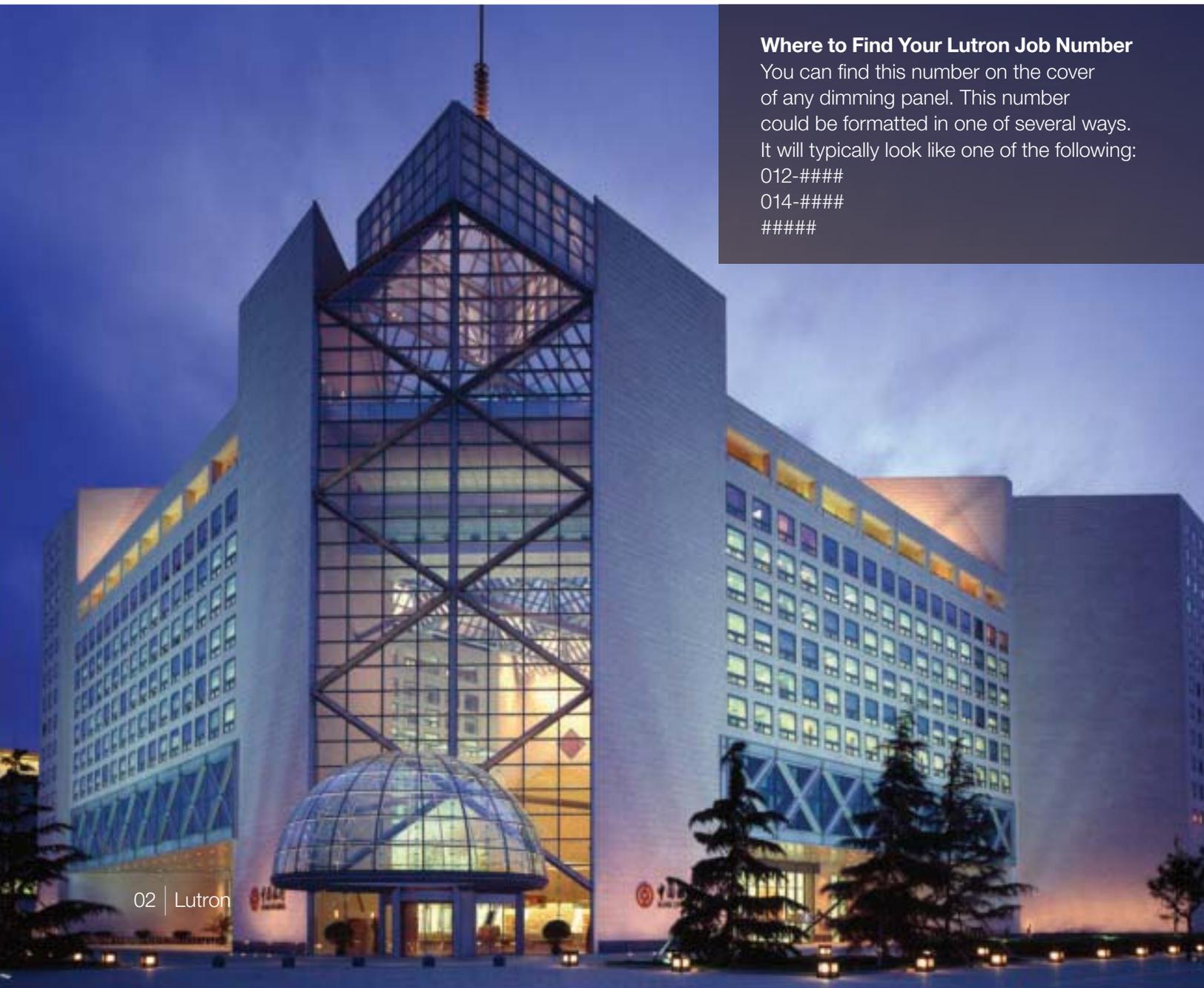
**Where to Find Your Lutron Job Number**

You can find this number on the cover of any dimming panel. This number could be formatted in one of several ways. It will typically look like one of the following:

012-####

014-####

#####



# what to do if your system needs service

If your staff is unable to solve a problem with the help of our Technical Support Representatives, do not worry. There are other ways to get your system up and running. Lutron also provides reprogramming and training services. Please read over the points listed below to ensure you get the best service for your situation.

*Lutron Scheduling Representatives:  
1.800.523.9466 and select  
option 4, then 1 or email  
LSCscheduling@lutron.com.*

- Determine your system coverage (see below).
- If you do not have a Support & Maintenance Plan or labor coverage, we recommend working with a local electrical contractor.
- If the electrical contractor was unable to solve the problem for you, please contact our Scheduling Representatives to set-up a Lutron field service visit.

## How to Determine Your System Coverage

Lutron systems that are purchased with start-up have an initial 2-year Support & Maintenance Plan and an 8-year Limited Parts Warranty. That initial plan provides full labor and parts coverage for two years for the majority of equipment. Details on labor and parts coverage can be found in the below charts. The documents from the installing contractor will indicate what coverage you have for your particular system. *If you are unable to find that information, call 1.800.523.9466 and select option 4, then 4 or email LSCwarranty@lutron.com.*

### With Lutron Start-up

System Component	Part Coverage	Labor Coverage
Lighting Control Equipment (excluding parts listed below)	100%, first 2 years 50%, year 3 through 5 25%, year 6 through 8	100%, 2 years
Ballasts	100%, 5 years	None
Computer/Laptop/PDA	100%, 1 year	100%, 1 year

To supplement or extend the initial coverage that comes with Lutron start-up, we offer Support & Maintenance Plans that provide up to 10 years of full labor and parts coverage (see pages 6 and 7 for more information).

### Without Lutron Start-up

System Component	Part Coverage	Labor Coverage
Lighting Control Equipment (excluding parts listed below)	100%, 1 year	None
Ballasts	100%, 3 years	None
Computer/Laptop/PDA	100%, 1 year	None

## replacement parts

If you are experiencing a problem with your system and need to order replacement parts, you can call one of our Parts Specialists. If possible, please have the part number of the failed item as well as the Lutron Job Number for your system. In many cases, we will have the parts in stock and will send them to you in as little as two days.

For custom products and older generation systems, it may take longer for us to provide replacement parts. In those cases, the components that we need to make the products may no longer be available from our suppliers. As a result, we may ask you to send the failed part back to us so we can try to repair it rather than replace it.

*To request more information, please call 1.800.523.9466 and select option 4, then 2 or email [LSCparts@lutron.com](mailto:LSCparts@lutron.com).*



## spare parts packages

Having a stock of parts at your facility can ensure that small problems will be resolved rapidly. Some components can be installed in minutes, and Lutron's 24-hour Technical Support Representatives are available to walk your maintenance team or local contractor through the process.

We can prepare a recommended spare parts list based upon the specific configuration of your system and any unique requirements you have.

*To request more information, please call 1.800.523.9466 and select option 4, then 2 or email [LSCparts@lutron.com](mailto:LSCparts@lutron.com).*

## training sessions

**On Our Site:** The software used with our GRAFIK™ 5000/6000/7000 and Quantum™ systems allows a facility manager to reprogram, control, and monitor the lighting control system. To maximize the benefits this software provides, Lutron offers Facility Manager Training at our headquarters in Coopersburg, PA. The cost of these classes is minimal, and the feedback from past attendees has indicated that the training is well worth the time investment.

*Go to [www.lutron.com/training](http://www.lutron.com/training) to see course dates and registration details.*

**On Your Site:** If staff turnover has left you without anyone who knows how to operate and maintain your system, you can purchase a day of personalized training. This could be an ideal time to make any timeclock or wall control programming changes.

*System specific training agendas are available on our website at [www.lutron.com/service](http://www.lutron.com/service).*



## optimize energy usage

Although your lights turn on and off, there are many features that go beyond those basic options. Lighting strategies that take advantage of those new features can lead to more productive environments, happier occupants, and reduced lighting electricity bills.

Studies show that office buildings expend 44% of electricity on lighting alone. You can reduce your lighting energy consumption with a Lutron System Optimization Visit. This type of visit will help you implement strategies that will result in better system performance and more efficient energy usage.

*To request more information, please call 1.800.523.9466 and select option 4, then 5 or email [rus@lutron.com](mailto:rus@lutron.com).*

# support & maintenance plans

The initial 2-year Silver Support & Maintenance Plan included with most systems can be extended for up to 10 years to ensure the lighting system will continue to satisfy the needs of the facility. With a Support & Maintenance Plan in place, a repair visit is just a phone call away. Annual payments are typical, but quarterly or monthly payments can be arranged to accommodate your budgeting needs.

The table below highlights the features of our three standard plans. If these plans do not fit your needs, please contact us and we can create a custom plan just for your facility.

	benefits	typical applications
 platinum	<ul style="list-style-type: none"><li>• 24-hour response time for service visits</li><li>• Annual Scheduled Maintenance Visit (see page 7 for details)</li><li>• 100% parts, 100% labor and any travel costs Lutron incurs</li><li>• Technical Support, toll-free, around the clock, 365 days per year</li><li>• Remote diagnostics and programming (for systems with that configuration/capability)</li></ul>	<ul style="list-style-type: none"><li>• Casinos</li><li>• Convention centers</li><li>• Luxury hotels/Resorts</li><li>• Research centers/Vivariums</li><li>• Hospitals</li></ul>
 gold	<ul style="list-style-type: none"><li>• 72-hour response time for service visits</li><li>• Annual Scheduled Maintenance Visit (see page 7 for details)</li><li>• 100% parts, 100% labor and any travel costs Lutron incurs</li><li>• Technical Support, toll-free, around the clock, 365 days per year</li><li>• Remote diagnostics and programming (for systems with that configuration/capability)</li></ul>	<ul style="list-style-type: none"><li>• Hotels</li><li>• Stadiums/Arenas</li><li>• Museums</li><li>• Office buildings</li><li>• High-end restaurants</li><li>• Boutique retail</li><li>• Large universities</li><li>• Estates</li></ul>
 silver	<ul style="list-style-type: none"><li>• 100% parts, 100% labor and any travel costs Lutron incurs</li><li>• Technical Support, toll-free, around the clock, 365 days per year</li><li>• Remote diagnostics and programming (for systems with that configuration/capability)</li></ul>	<ul style="list-style-type: none"><li>• Places of worship</li><li>• Residences</li><li>• Libraries</li><li>• Small offices</li><li>• Small schools</li></ul>

## annual scheduled maintenance visits

Our Gold and Platinum Support & Maintenance Plan customers automatically receive an Annual Scheduled Maintenance Visit, but any customer can purchase a day of this service. According to each site's requests and needs, the Lutron Field Service Engineer may complete the following tasks during this visit:

- Train facility staff
- Update staff on new features and capabilities
- Make minor programming changes
- Perform a system check and preventative maintenance
- Provide a system status report
- Compile a list of spare parts to consider for site



## new and improved Lutron products

### **Add Engraving to Existing Controls**

With proper labeling of the buttons on existing controls, your lighting system will be easier to use for you and anyone that enters the space. Nearly all Lutron wall controls can be engraved with labels for individual buttons or the entire control. Most engravings are custom to the project but standard options are also available. Engravings are available in a variety of colors and we can laser engrave in any language.

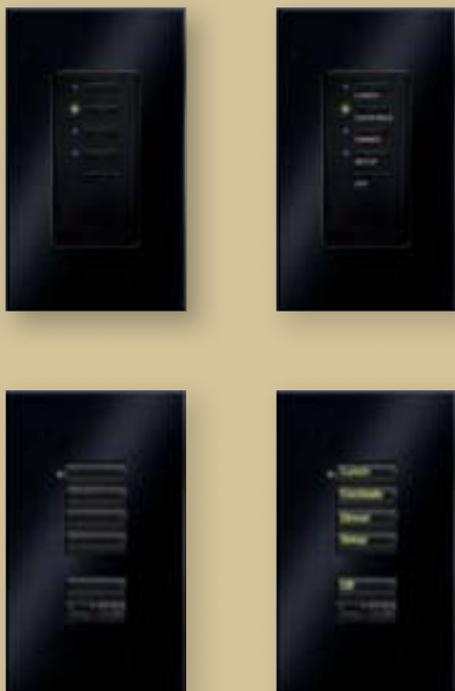
*Engraving sheets are available at [www.lutron.com/seeTouch](http://www.lutron.com/seeTouch).*



### Upgrade to seeTouch®

An engraved control is better than one that is not, but a control with engraving that can be read in the dark is the ultimate solution. Controls in Lutron's GRAFIK™ 3000/4000/5000/6000/7000 lighting control systems can be replaced to feature this intuitive and ergonomic wall control option.

*To upgrade your controls, please call 1.800.523.9466 and select option 4, then 5, or email [rus@lutron.com](mailto:rus@lutron.com).*



### seeTouch®

Discover the intuitive simplicity of Lutron's seeTouch controls. As you can see above, our wall controls have continued to evolve into more beautiful and user-friendly additions to your facility. Engraved buttons make them easy to use for newcomers to the space and the backlit buttons remove the need to search for wall controls in the dark.

*For more information, please visit [www.lutron.com/seeTouch](http://www.lutron.com/seeTouch).*

### Upgrade to GRAFIK Eye® QS

With the positive feedback from the experience our customers had with seeTouch controls, we updated our GRAFIK Eye product to include some of the same engraving and backlit features. An added bonus to the GRAFIK Eye QS is the opportunity to conveniently control shades and lighting from one control station.

*To upgrade your controls, please call 1.800.523.9466 and select option 4, then 5, or email [rus@lutron.com](mailto:rus@lutron.com).*



### GRAFIK Eye® QS

Set your lights and shades just right for any task or activity in any room of your building. Easily recall these settings with the touch of a button. The new GRAFIK Eye QS provides convenient control and enhancement of the visual environment for the people inside the space.

*For more information, please visit [www.lutron.com/GRAFIKEyeQS](http://www.lutron.com/GRAFIKEyeQS).*



## modernize your lighting control system

You originally purchased a Lutron lighting control system because you wanted the ultimate in reliability and performance. The pace of innovation in Lutron's products has been rapid—the systems of today have features that were beyond reach just five years ago. These features may be just what you are looking for as you modernize your facilities.

In addition to improved serviceability, a new system brings advanced control features and energy saving capabilities that will take your lighting control experience to the next level.

Regardless of your reasons for wanting to upgrade or replace your system, Lutron will integrate the best products and services to give you a solution that meets your needs.

*For more information on upgrading your system, please call 1.800.523.9466 and select option 4, then 5 or email [rus@lutron.com](mailto:rus@lutron.com).*



## system expansions

If you are expanding your building, or if existing areas of the building need to be incorporated into the system, we can provide a solution. Our systems are modular and expandable, allowing you to add capabilities or capacity as required.

Adding photo or occupancy sensors can help save energy. Using Lutron occupancy sensors can eliminate 20–30% of lighting energy costs.

Our Replacement Systems Specialists can review the equipment you have, work with you to determine what capabilities and features you want, and propose comprehensive solutions for your lighting needs.

*For more information, please call 1.800.523.9466 and select option 4, then 5 or email [rus@lutron.com](mailto:rus@lutron.com).*



## Lutron in your home

When it comes to controlling electric and natural light, Lutron has the best products for any application, including your home.

The same world-class quality and engineering in the lighting controls in Buckingham Palace and the White House can be found in the dimmer that you can purchase for your home. After all, we feel that everyone deserves the benefits of dimming such as increased bulb life, improved energy savings, and enhanced room settings.

*For assistance in locating Lutron products for your home, go to [www.lutron.com](http://www.lutron.com).*

### Save energy beautifully

dimming the lights about	saves electricity	extends bulb life*
10%	10%	2 times longer
25%	20%	4 times longer
50%	40%	20 times longer
75%	60%	20 times longer +

\* incandescent and halogen

[www.lutron.com](http://www.lutron.com)

save  
energy  
with  
Lutron™



 **LUTRON**® SERVICES CO., INC.

[www.lutron.com/service](http://www.lutron.com/service)

Lutron Services Co., Inc.  
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Coopersburg, PA 18036-1299

World Headquarters 1.610.282.3800  
Technical Support Center 1.800.523.9466

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# Install & Setup Guides

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Job Name:

Toll-Free 24/7 Technical Support Line: 1.800.523.9466

Job Number:

Field Service Scheduling 1.800.523.9466 ext.4439

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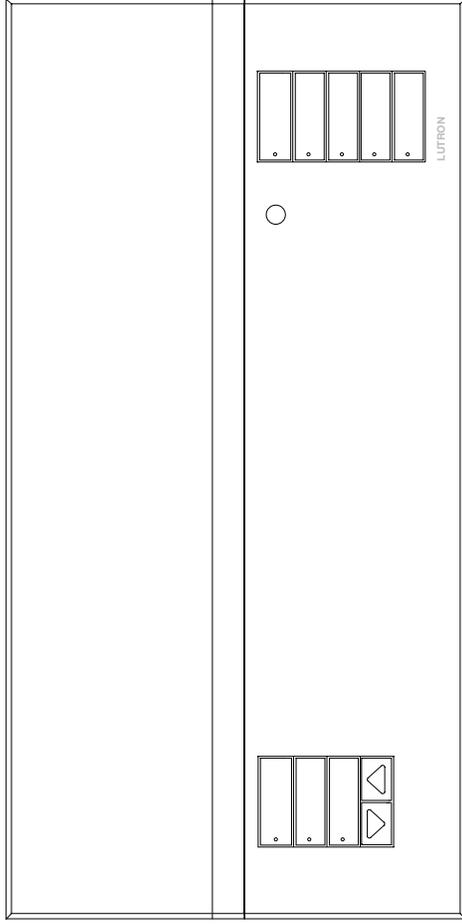


# GRAFIK Eye® QS System

**Please Read**

# Installation and Operation Guide

The GRAFIK Eye QS System allows for control of both lights and shades or window treatments using a single control unit. Features include pushbutton scene recall, info screen that displays energy savings and status, IR receiver, astronomic timeclock, occupant sensor connection, and backlit buttons that are easy to find and operate.



Model Number	Unit Capacity (watts)	Zone Capacity (watts)	Unit Dissipation (BTUs/hour)
QSG - 3P120	2000	800	61.5
QSG - 4P120	2000	800	61.5
QSG - 6P120	2000	800	61.5

(see page 8 for additional ratings)

All units: 120 V ~ 50/60 Hz

## Contents

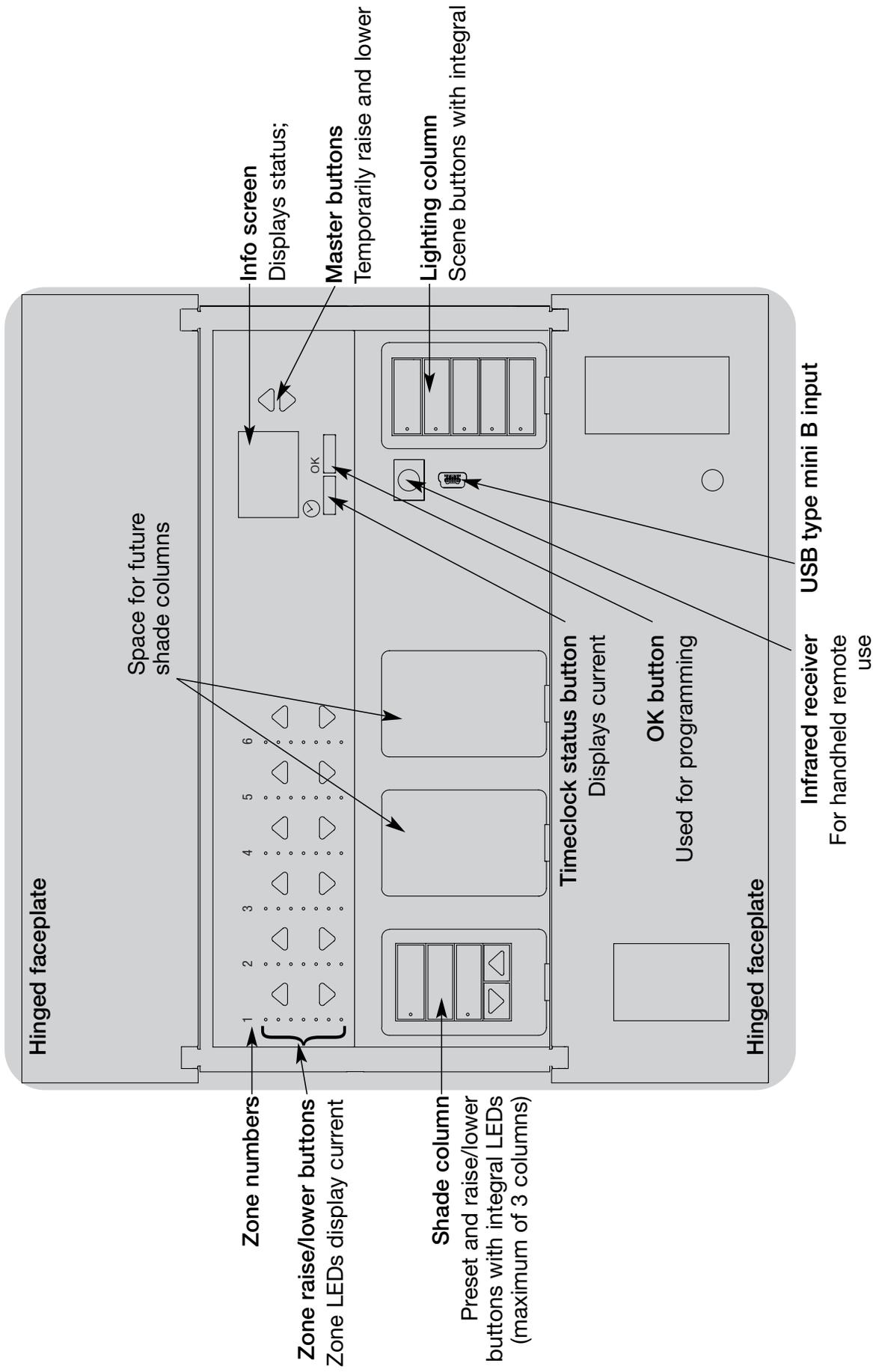
### Installation

- Features and Functions of the GRAFIK Eye QS System . . . . . 2
- Wiring the GRAFIK Eye QS System . . . . . 3
- Wiring the GRAFIK Eye QS System
  - PELV (Class 2: USA) Cable . . . . . 4
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### Operation

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# Features and Functions of the GRAFIK Eye® QS System



# Wiring the GRAFIK Eye® QS System

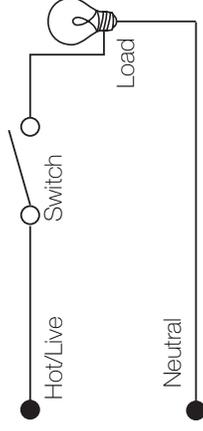
## Important Wiring Information

- Use properly certified cable for all line voltage/mains cables.
- Proper short-circuit and overload protection must be provided at the distribution panel. You can use up to a 20 A maximum circuit breaker/MCB for your installation.
- Install in accordance with all local and national electrical codes.
- PELV (Class 2: USA) terminals may be unplugged for ease of IR, occupant sensor, and control wiring.



**Caution!** Before connecting the loads to the control unit, test the loads for short-circuits.

1. Turn power OFF at the circuit breaker or fuse box.
2. Connect a standard light switch between the live lead and load wire to test the circuit.
3. Turn power ON and check for short or open circuits. If load does not operate, the circuit is open. If the breaker/MCB trips (fuse blows or opens), a load short may exist. Correct short or open circuits and test again.



**Danger!** GRAFIK Eye QS control units must be installed by a qualified electrician in accordance with all applicable regulations and building codes. Improper wiring can result in personal injury or damage to control units or other equipment. Always turn off circuit breaker or remove main fuse from power line before doing any work. To avoid overheating and possible damage to equipment, do not install dimming devices to dim receptacles, motor-operated appliances, or fluorescent lighting not equipped with Lutron Hi-lume®, Eco-10™, or Tu-Wire® electronic dimming ballasts, or devices approved for your location. In dimmed magnetic low-voltage circuits, you can prevent transformer overheating and failure by avoiding excessively high current flow: Do not operate control units with any lamps removed or burned out; replace any burned out lamps immediately; use only transformers that incorporate thermal protection or fused primary windings. Control units are designed for residential and commercial use, for indoor use only.

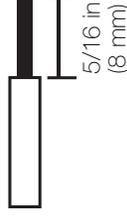


**Caution!** Do not connect line voltage/mains cable to PELV (Class 2: USA) terminals.

- Earth/ground terminal connection must be made as shown in wiring diagrams.
- Do not mix different load types on the same zone.
- Follow all local and national electrical codes when installing PELV (Class 2: USA) wiring with line voltage/mains wiring.
- Test for short-circuits on loads before wiring QS control unit.

**To connect the line voltage/mains cables to the control unit:**

1. Strip 5/16 in. (8 mm) of insulation off the line voltage/mains cables in the wallbox.



2. Connect the line voltage/mains, ground, and load wires to the appropriate terminals on the back of the control unit. The recommended installation torque is 5.0 in.-lbs. (0.6 N•m) for line voltage/mains connections and 5.0 in.-lbs. (0.6 N•m) for the earth/ground connection.

# Wiring the GRAFIK Eye® QS System PELV (Class 2: USA) Cable

## IR Wiring

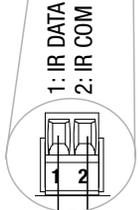
#18 AWG (1.0 mm<sup>2</sup>)

each terminal

From external

IR connection

(by others)



## Occupant Sensor Wiring

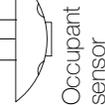
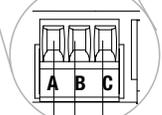
#18 AWG (1.0 mm<sup>2</sup>)

each terminal

A: OCC SIG

B: 24 V

C: OCC COM

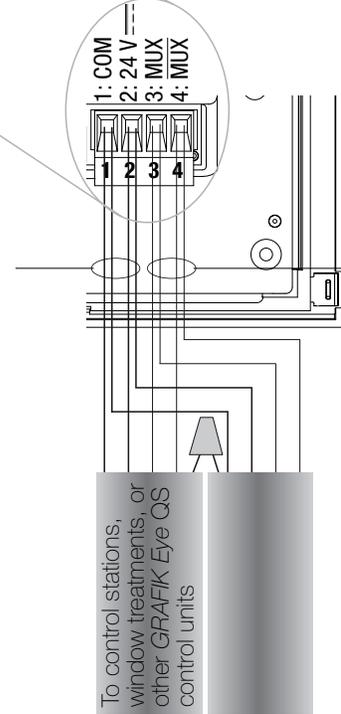


Occupant sensor

## Control Wiring

Common and power (terminals 1 and 2):

Two #18 AWG (1.0 mm<sup>2</sup>) each terminal



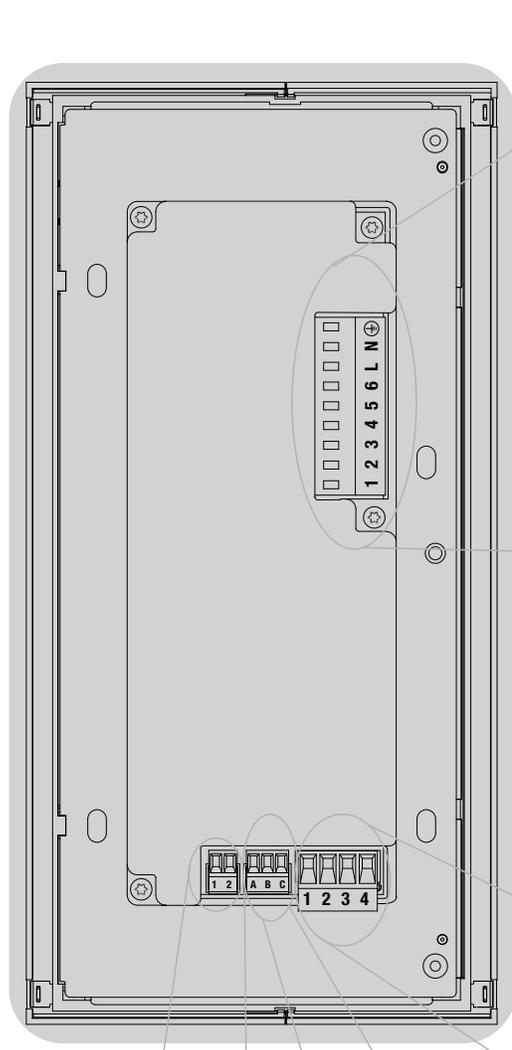
To control stations, window treatments, or other GRAFIK Eye QS control units

## Data (terminals 3 and 4):

Twisted, shielded pair #22 AWG (1.0 mm<sup>2</sup>)

each terminal

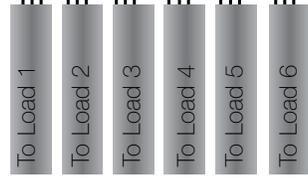
Note: Use appropriate wire connecting devices as specified by local codes.



## Line Voltage/Mains Cables and Load Wiring

#12 AWG (2.5 mm<sup>2</sup>)

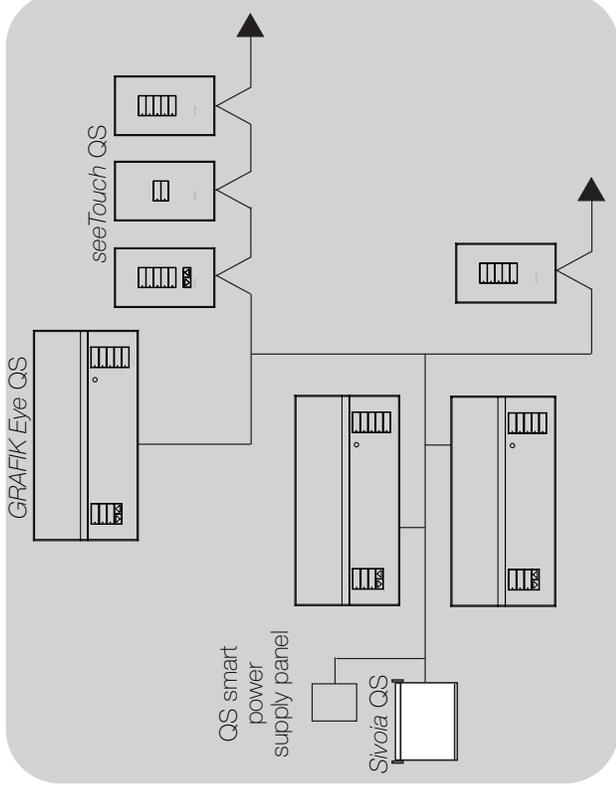
each terminal



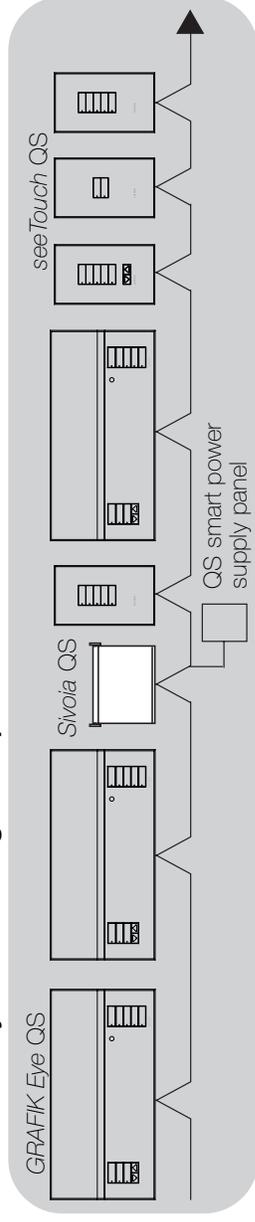
# QS System Low-Voltage Control Wiring

- System communication uses PELV (Class 2: USA) low-voltage wiring.
- Follow all local and national electrical codes when installing PELV (Class 2: USA) wiring with line voltage/mains wiring.
- Each terminal accepts up to two #18 AWG (1.0 mm<sup>2</sup>) wires.
- Total length of control link must not exceed 2,000 ft. (610 m).
- Make all connections in the control unit's wallbox.
- A QS system can have up to 100 zones and 100 devices (see table below).
- Wiring can be T-tapped or daisy-chained.
- Wire sizes:
  - Two #18 AWG (1.0 mm<sup>2</sup>) conductors for control power.
  - One twisted, shielded pair of #22 AWG (1.0 mm<sup>2</sup>) for data link.
  - Cable is available from Lutron:
    - GRX-CBL-S-500 (non-plenum)
    - GRX-CBLP-S-500 (plenum rated).
 Check compatibility in your area.

## T-Tap Wiring Example



## Daisy-Chain Wiring Example



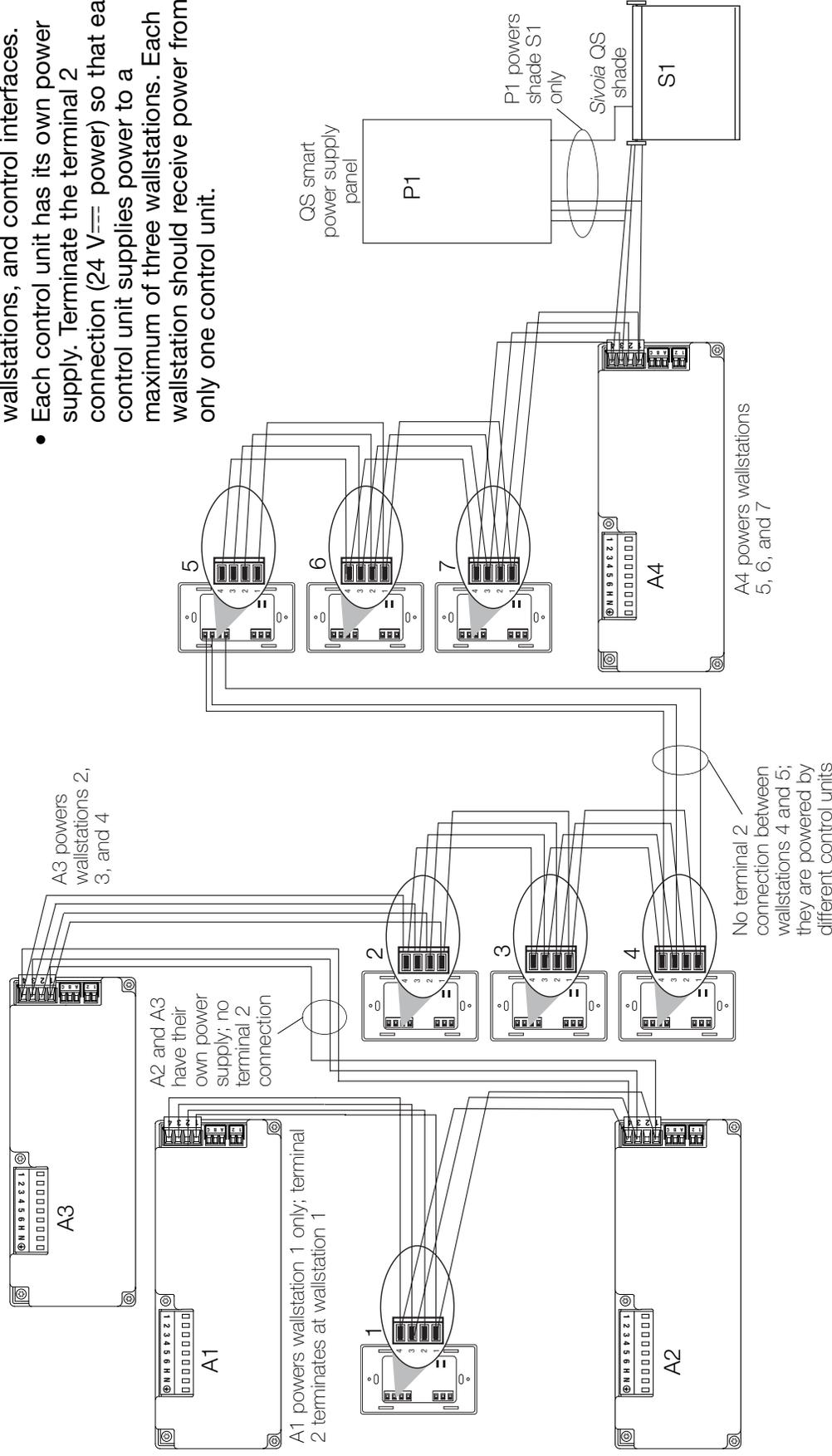
## System Limits

QS Device	Zone Count	Device Count
3-zone QS	3	1
4-zone QS	4	1
6-zone QS	6	1
<i>see Touch QS</i>	0	1
Sivoia QS	1	1
QS smart power supply panel	0	1

# QS System Low-Voltage Terminal Connections

Control units shown in rear view

- Connect the terminal 1, 3, and 4 connections to all control units, wallstations, and control interfaces.
- Each control unit has its own power supply. Terminate the terminal 2 connection (24 VDC power) so that each control unit supplies power to a maximum of three wallstations. Each wallstation should receive power from only one control unit.



## Installing the GRAFIK Eye® QS System

1. Mount a 3 1/2-in. (89 mm) deep 4-gang U.S. wallbox on a dry, flat indoor surface that is accessible and allows for system programming and operation. Allow at least 4 1/2 in. (110 mm) clearance above and below the faceplate to ensure proper heat dissipation. Allow 1 in. (25 mm) for faceplate overhang on all sides.

**Note:** 4-gang wallbox available from Lutron; P/N 241400.

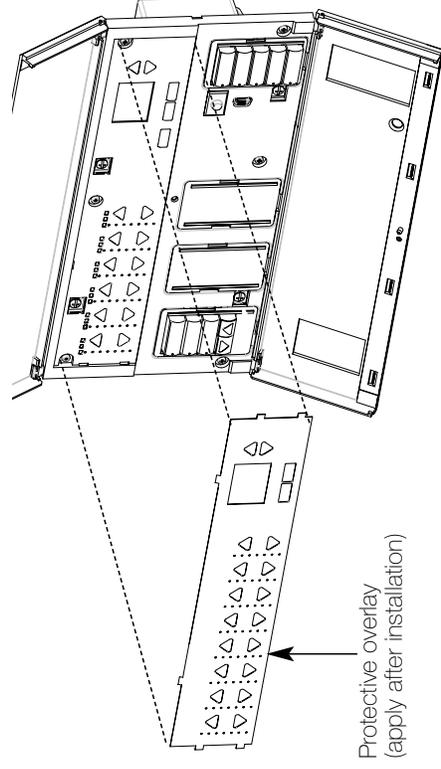
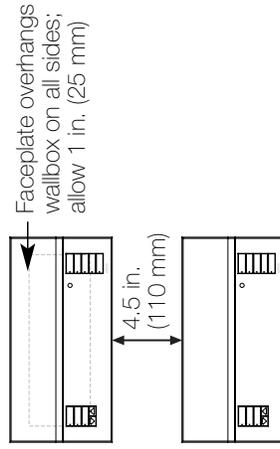
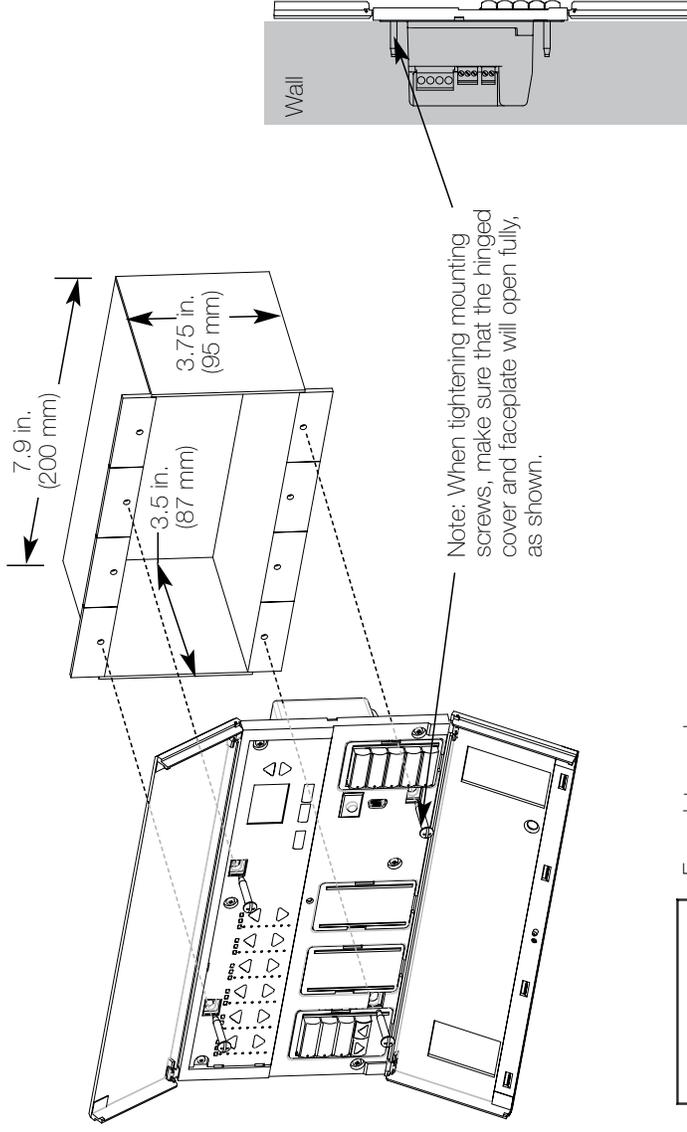
2. Mount the control unit in the wallbox as shown using the four screws provided.

**Note:** Follow all local and national electrical codes when installing PELV (Class 2: USA) wiring with line voltage/mains wiring.

3. Apply the protective overlay to the control unit. See page 14 for instructions for naming zones.

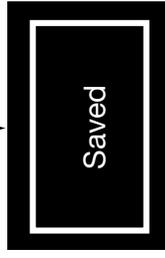
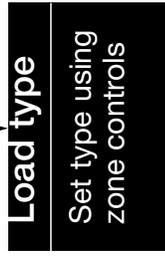
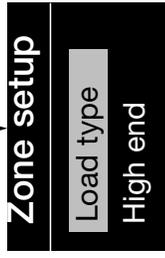
### Test the Wiring

1. Restore power.
2. Press the top button on the lighting keypad. The LED will light.
3. Press the zone raise or lower button. Make sure the control unit is dimming all connected loads.

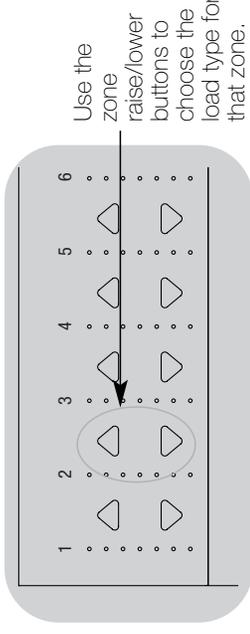
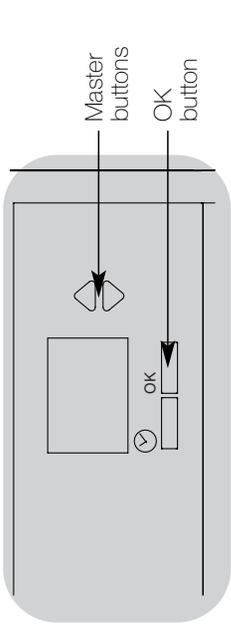


# Zone Setup

Assign Load Type



1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Zone setup” and press the OK button to accept.
3. Use the master buttons to highlight “Load type”. Press the OK button to accept.
4. Use the zone raise/lower buttons to choose the load type for that zone. See the list below for supported load types. Press the OK button to accept.
5. The info screen will display a confirmation screen that your load type has been saved.
6. Exit programming mode (see page 12).



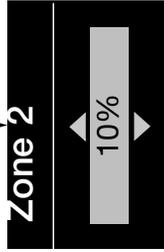
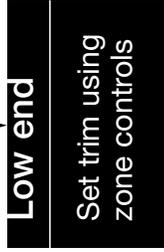
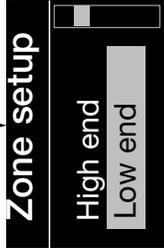
Setting Load Types	Choose this load type from the menu on the GRAFIK Eye QS:
Fixture load type ↓ Incandescent MLV (magnetic low-voltage) ELV (electronic low-voltage) <i>Hi-Lumel/Eco-10</i> Non-dim Neon/Cold cathode <i>Tu-Wire</i>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">                       Direct control via  <b>GRAFIK Eye QS</b> </div> <div style="text-align: center;">                       Control via                      power module                 </div> </div> Incandescent MLV -- -- Non-dim LOFO or Non-dim FOFO Neon, CC <i>Tu-Wire</i>
	Power module Power module Power module Fluorescent module Non-dim LOFO or Non-dim FOFO Neon, CC <i>Tu-Wire</i>

## Load Type Notes

- All electronic low-voltage (ELV) lighting used with an interface must be rated for reverse phase control dimming. Before installing an ELV light source, verify with the manufacturer that their transformer can be dimmed. When dimming, an ELV interface must be used with the control unit.
- Not all zones must be connected; however, connected zones must have a minimum load of 25 W.
- No zone may be loaded with more than 800 W.
- Maximum total lighting load per unit is 16 A.
- Maximum total lighting load for a magnetic low-voltage (MLV) load is 2000 VA or 1600 watts after transformer. Maximum load per MLV zone is 800 VA or 600 watts.

# Zone Setup

## Set High End or Low End

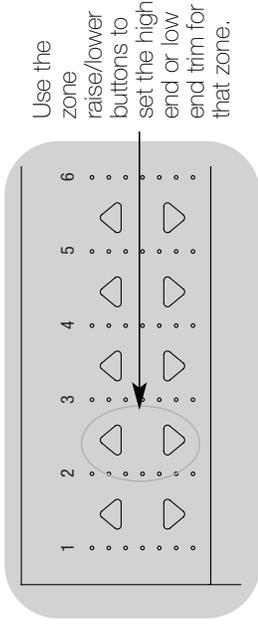
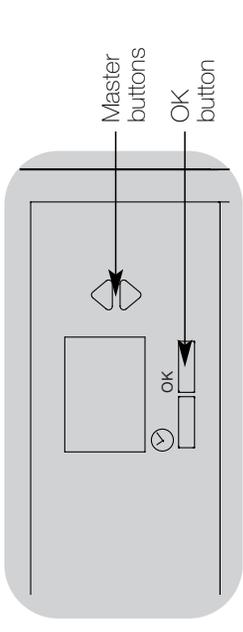


High and low end trim settings limit the maximum and minimum output of a dimming zone. Trim levels are set automatically when the load type is programmed. Change the high or low end trim for a zone only if the default setting needs to be adjusted.

1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Zone setup” and press the OK button to accept.
3. Use the master buttons to highlight “High end” or “Low end” (this example shows low end). Press the OK button to accept.
4. Use the zone raise/lower buttons to set the high end or low end trim for that zone.

The info screen will display each zone number and percentage as you adjust it. Press the OK button to accept.

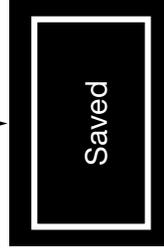
5. The info screen will display a confirmation screen that your setting has been saved.
6. Exit programming mode (see page 12).



## Set Minimum Level (optional)

Some local regulations specify a minimum lighting level for dimming zones in occupied buildings. If this pertains to you, follow these steps to set up your minimum lighting level.

1. Enter programming mode (see page 12) and select “Zone setup,” then “Min level”. Press the OK button to accept.
2. Use the master buttons to highlight “OFF” if you want your lights to go all the way off at their minimum light level, or “10%” if you want that to be the minimum light level. Press the OK button to accept.

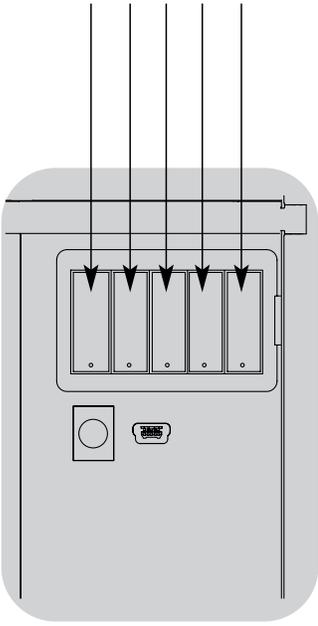


**Note:** Non-dim loads will turn off regardless of the minimum level setting.

3. The info screen will display a confirmation screen that your minimum level has been saved.
4. Exit programming mode (see page 12).

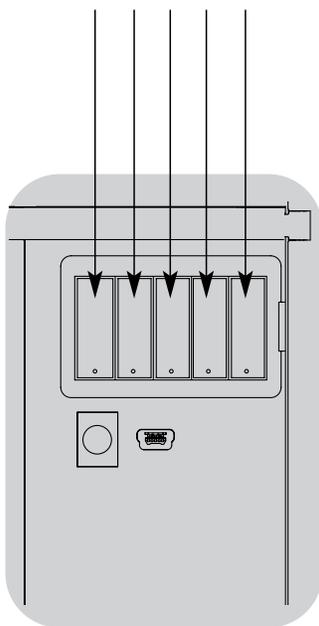
## Preprogrammed Button Functionality

The GRAFIK Eye QS System controls lights without special programming. The factory defaults for the lighting column buttons are shown below for both dimmable and non-dim zones. See pages 15 through 17 for methods for changing scene settings.



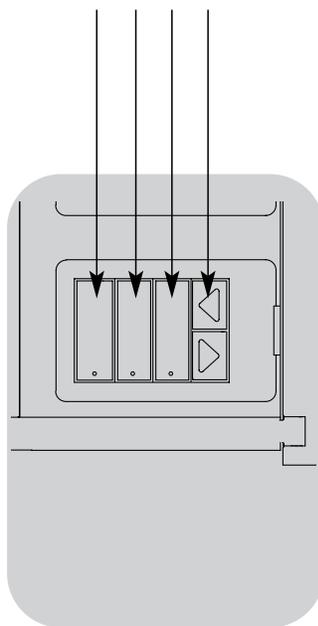
### Lighting Column Button Preprogramming (Factory Default: Dimmable Loads)

- Scene 1: All lights to 100%
- Scene 2: All lights to 75%
- Scene 3: All lights to 50%
- Scene 4: All lights to 25%



### Lighting Column Button Preprogramming (Factory Default: Non-Dim Loads)

- Scene 1: All lights On
- Scene 2: All lights On
- Scene 3: All lights On
- Scene 4: All lights On



### Shade Column Button Preprogramming (Factory Default: Sivoia QS shades)

- All shades fully open
- All shades to 50%
- All shades fully closed
- Lower/Raise all shades

# General Functionality

The info screen goes blank after 20 seconds if there is no button press or fading.

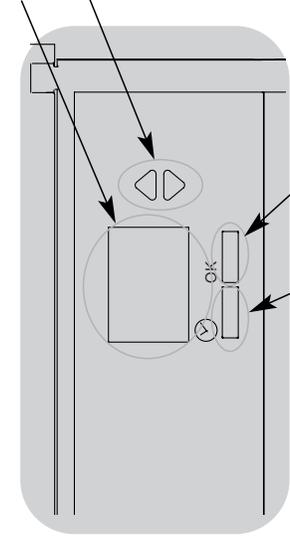
The master buttons also activate the info screen. These buttons temporarily raise or lower all dimmable lights (except those programmed as unaffected in the current scene). Adjustments are temporary and do not affect scene programming.



The OK button activates the info screen, which then shows the current scene and its fade time.



The timeclock button activates the info screen and displays the current time, the next event scheduled to occur, and what that next event is. Pressing a second time displays the location and the sunrise/sunset times.



Info screen: see example screens below

Master buttons temporarily raise or lower all lights (except unaffected, shades, and non-dim zones) on this GRAFIK Eye QS unit

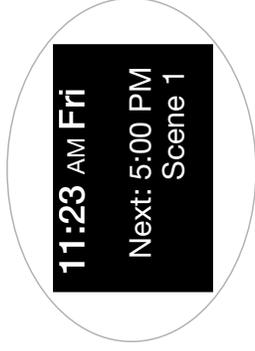


OK button activates the info screen, which shows the current scene's fade time. In Save Always mode, allows fade time adjustment. In



Save by OK mode, pressing a second time allows zone adjustment; pressing a third time allows fade adjustment.

Timeclock button displays the current time and the next scheduled event. Pressing when in Program mode functions as a "back" button.



# General Functionality: Programming Mode

## Entering and Exiting Programming Mode



To enter programming mode:

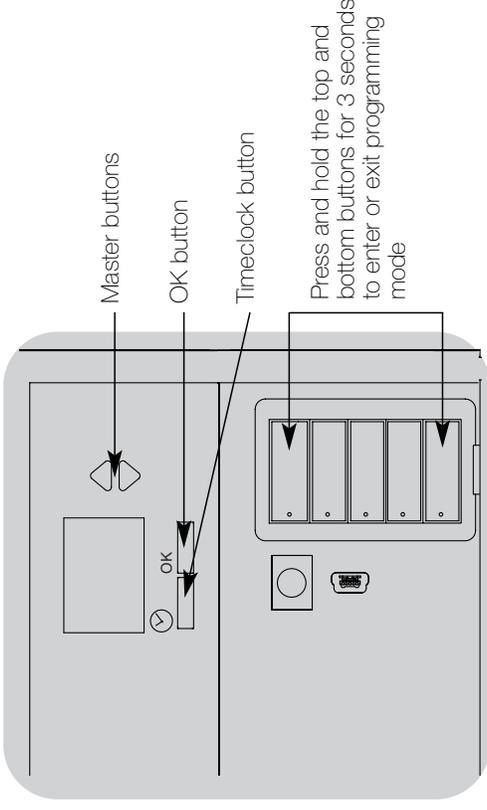
Press and hold simultaneously the top and bottom buttons on the lighting column for 3 seconds. The LEDs in the lighting buttons will scroll from top to bottom, confirming that you are in programming mode, and the info screen will display the main menu.



To exit programming mode:

Press and hold simultaneously the top and bottom buttons on the lighting column for 3 seconds. The info screen will go to Scene 1.

Info screen display when you exit programming mode



## Navigating Menus in Programming Mode

### Master Buttons

The master buttons allow you to move through the menu choices. The current choice is highlighted on the info screen.

### OK Button

The OK button chooses the current highlighted menu choice. This will either take you to the next menu or accept a setting you have selected.

### Timeclock Button

The timeclock button functions as a “back” button during programming mode. Pressing the timeclock button takes you back one step in the current menu. Pressing it repeatedly will eventually return you to the main menu, but will not exit programming mode.

## Zone Button Operation

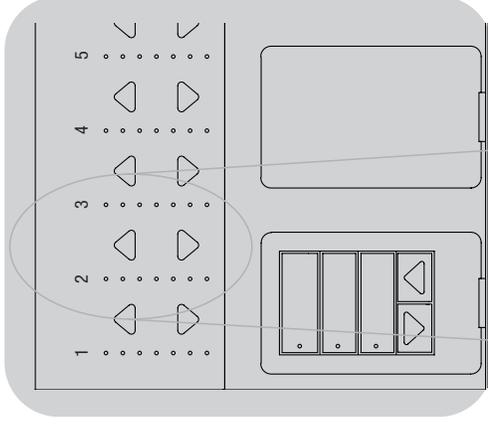
Each column of buttons represents one zone of lights. Pressing any button on a column turns on the info screen and displays the zone's current light level and current energy savings. Pressing the raise and lower buttons on a zone causes different actions depending on zone type (see below).

### Dimmable zones:

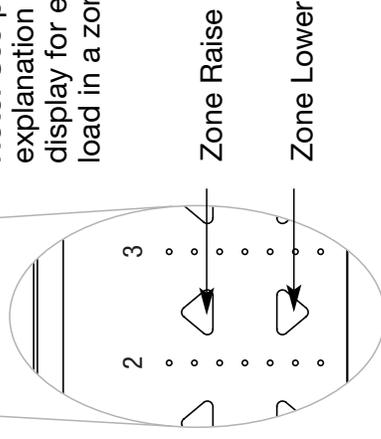
- Press and hold to raise/lower all lights in a zone; release to stop
- Press raise or lower to stop a zone that is fading
- Raising lights from off to full on or lowering from full on to off takes 5 seconds
- Press raise and lower simultaneously to toggle between full on and off

### Non-dim zones:

- Press raise to take light zones to full on
- Press lower to take light zones to off

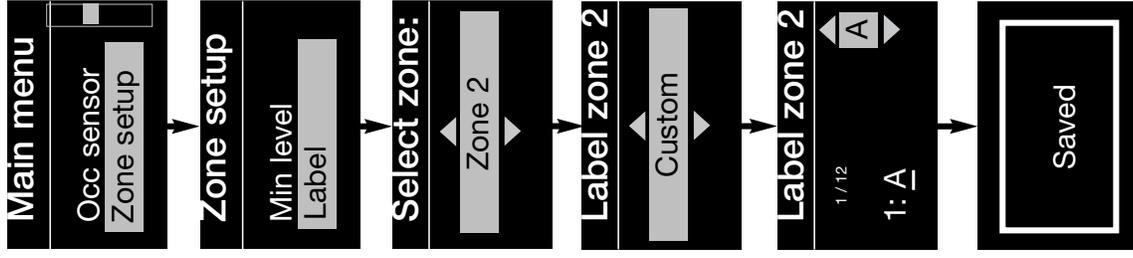


LEDs indicate light level  
**Note:** See page 18 for an explanation of the LED display for each type of load in a zone.

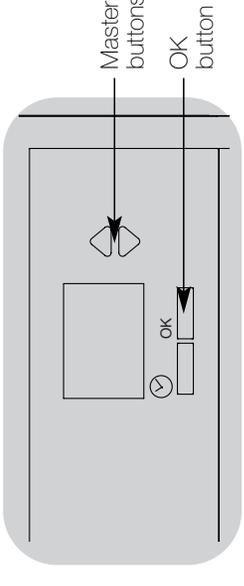


## Zone Button Operation

Name a Zone



1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Zone setup” and press the OK button to accept.
3. Use the master buttons to highlight “Label” and press the OK button to accept.
4. Use the master buttons to change the zone number to your desired zone. Custom zone labels will appear if previously set. Press the OK button to accept.
5. Use the master buttons to highlight “Custom” and press the OK button to accept. Or, highlight “Default” to return the zone label to the default (e.g., Zone 1).
6. Use the master buttons to scroll through the characters (lowercase and uppercase letters, plus numbers 0-9). The character you are currently changing will be underlined on the screen. Press OK to select the character you want, then repeat for all available characters. Choose a space (no character) and press OK for any remaining characters. Press the OK button to accept.  
**Note:** Custom zone labels will always begin with the zone number and a colon (e.g., 1:Uplights).
7. The info screen will display a confirmation screen that your name has been saved.
8. Exit programming mode (see page 12).



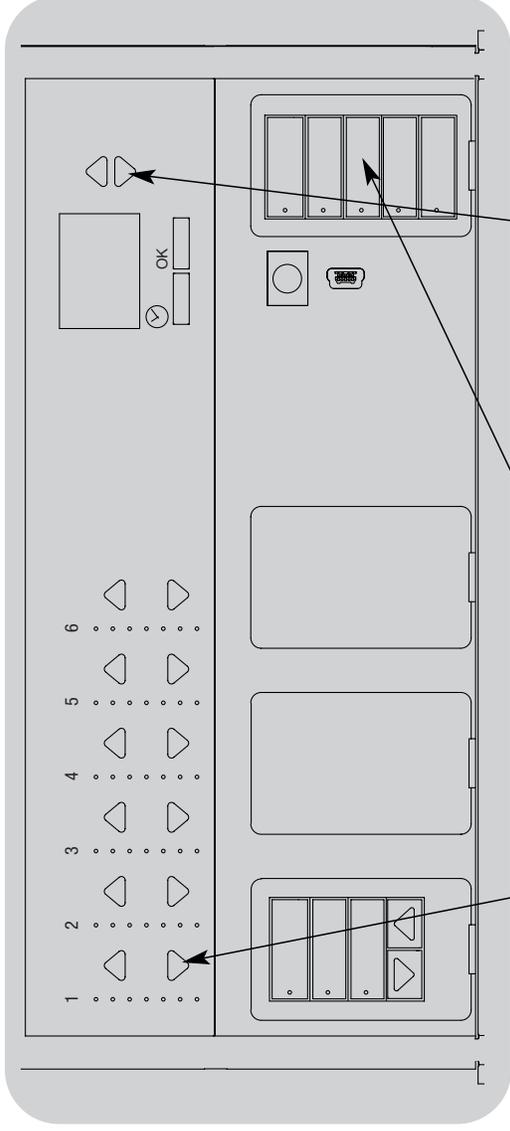
## Quick Scene Programming

### Save Always Mode

The default save mode (see page 28) is **Save Always**. This mode allows you to quickly set scenes on the lighting column without entering program mode.

1. Press the button for the scene you want to set; its LED will light and the lights will go to the current settings.
2. Use the zone raise/lower buttons to set all lights to the desired levels. Press the OK button.
3. To set the fade time for this scene, press the OK button, then use the master buttons to set the desired fade time. Press the OK button to save.

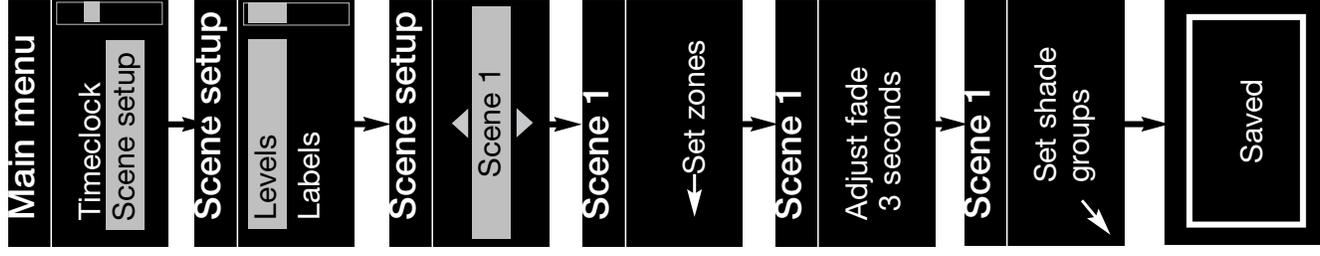
**Note:** Using the master buttons to raise or lower lighting settings is still temporary in **Save Always** mode.



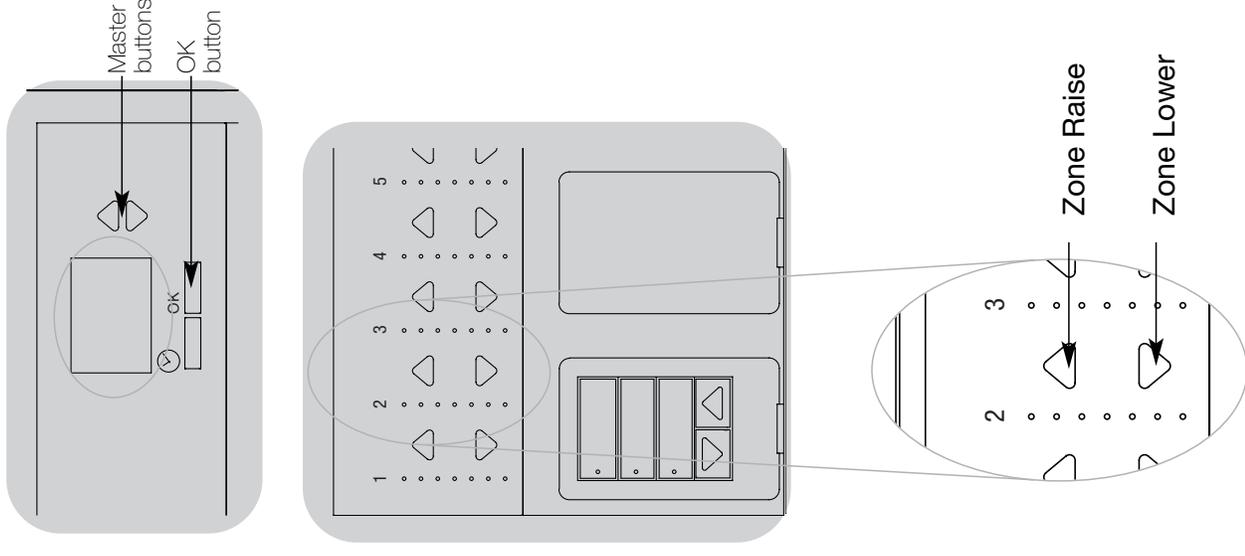
1. Press the lighting column scene button you wish to program.
2. Use the zone raise/lower buttons to set light levels.
3. Use the master buttons to set fade time.

# Scene Setup

Program a Scene

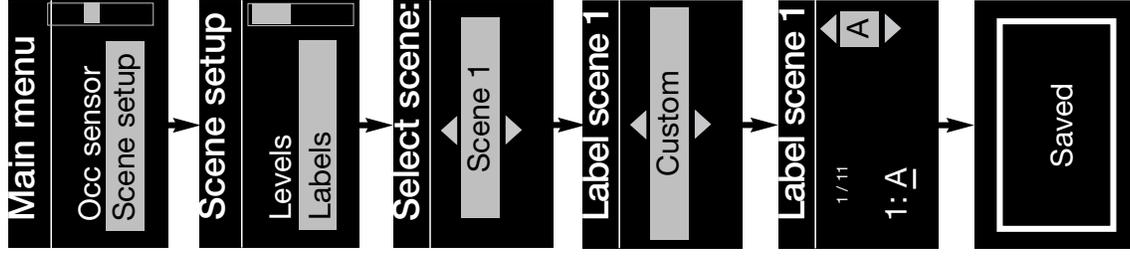


1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Scene setup” and press the OK button to accept.
3. Use the master buttons to select “Levels” to adjust lighting and/or window treatment levels. Press the OK button to accept. Use the master buttons to select the scene number of your desired scene. Press the OK button to accept.
4. Set each zone to the desired light level for this scene using the zone raise/lower buttons. The info screen will display the zone and percentage as you adjust it.  
To set a zone as unaffected, lower the light levels all the way to off, then hold the zone lower button for 3 seconds. When all zones are at the desired level, press the OK button to accept.
5. Use the master buttons to set the fade time for this scene. Press the OK button to accept.
6. Press the button on a shade column that will take the window treatments assigned to that shade column to the level you want for this scene. Repeat for any additional shade columns. Press the OK button to accept. Or, if you do not have or do not wish to set shade groups for this scene, press OK.
7. The info screen will display a confirmation screen that your scene has been saved.
8. Exit programming mode (see page 12).

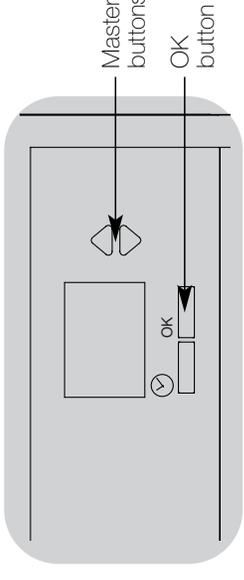


## Scene Setup

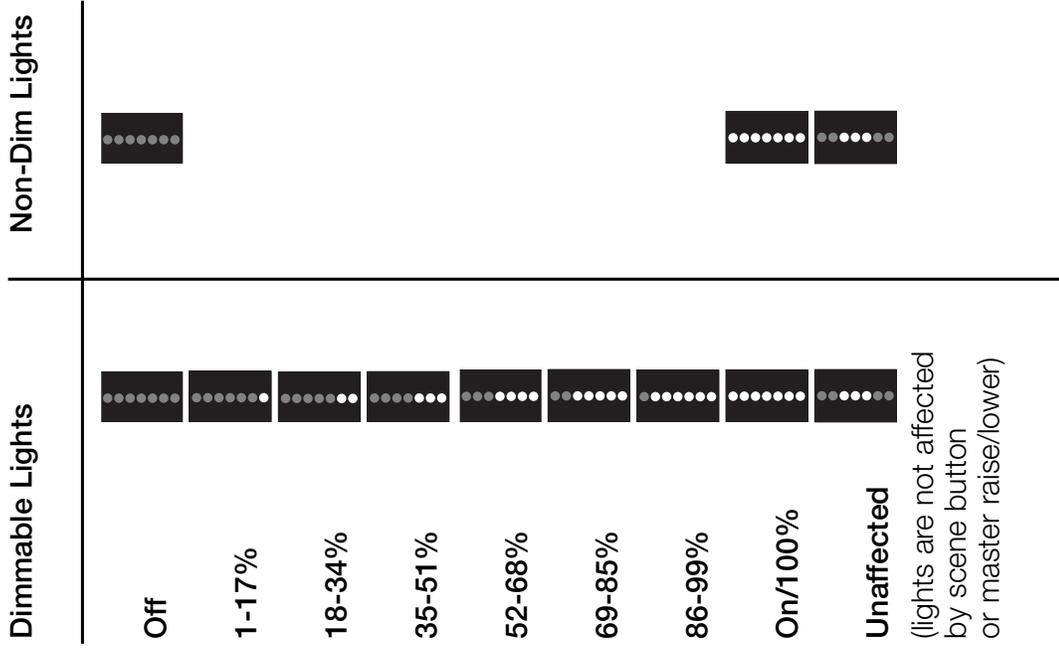
Name a Scene



1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Scene setup” and press the OK button to accept.
3. Use the master buttons to highlight “Labels” and press the OK button to accept.
4. Use the master buttons to change the scene number to your desired scene. Press the OK button to accept.
5. Use the master buttons to highlight “Custom” and press the OK button to accept.
6. Use the master buttons to scroll through the characters (lowercase and uppercase letters, plus numbers 0-9). The character you are currently changing will be underlined on the screen. Press OK to select the character you want, then repeat for all available characters. Choose a space (no character) and press OK for any remaining characters. Press the OK button to accept.
7. The info screen will display a confirmation screen that your name has been saved.
8. Exit programming mode (see page 12).



# LED Displays for Lighting Levels



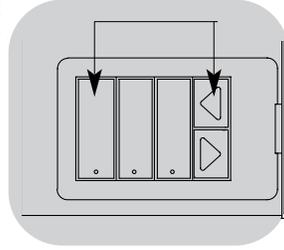
**Legend:**  
 LED lit  
 LED off

# Adjusting Window Treatment Settings

## Setting Limits



**Note:** Entering Limit Setup mode may cause window treatments to move approximately 8 inches up or down. Be sure that each window treatment is positioned so that the fabric can safely move 8 inches up or down before entering Limit Setup mode.



1. On any shade column, press and hold simultaneously the top and raise buttons. The LEDs next to the top and bottom buttons will cycle.

**Note:** At any time while in Limit Setup mode, you can move all window treatments together to their current open limit by double-tapping the top button, or to their current close limit by double-tapping the bottom button.

**Note:** Once EDUs (electronic drive units of the window treatment) have been assigned to shade columns, limits can be set for an EDU only using the shade column it is assigned to, and a shade column can set limits only for those EDUs assigned to it.

2. Select the EDU you want to adjust using the top button on the shade column. Each time you press and release the top button, a different EDU that is assigned to that shade column will open and close in an 8-inch range to indicate it is selected. Press the top button until the EDU for the window treatment you wish to adjust moves. (You can also use the bottom button, which moves through the assigned EDUs in the opposite order.)



3. Adjust the currently selected EDU to the desired level for the open limit (the maximum the window treatment is allowed to open) using the raise and lower buttons.

4. Press and hold the top button on the shade column for 5 seconds to store the current position as the open limit. The LED next to the top button will flash quickly for 2 seconds.

5. Adjust the currently selected EDU to the desired level for the close limit (the maximum the window treatment is allowed to close) using the raise and lower buttons.

6. Press and hold the bottom button on the shade column for 5 seconds to store the current position as the close limit. The LED next to the bottom button will flash quickly for 2 seconds.

7. Repeat steps 2 through 6 to set the open and close limits for each window treatment assigned to the shade column.

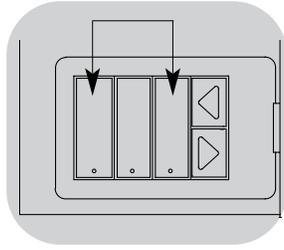
8. Press and hold simultaneously the top and raise buttons on the shade column to exit Limit Setup mode.

# Adjusting Window Treatment Settings

## Assigning EDUs to Shade Columns



**Note:** Entering Assignment mode will cause the window treatments to move between their open and close limits. **Be sure that the open and close limits have been set correctly.**

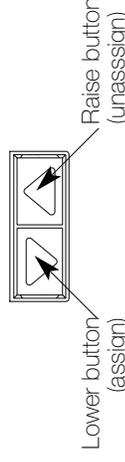


1. Press and hold simultaneously the top and bottom buttons on the shade column for 5 seconds to enter programming mode. The LEDs next to the buttons will flash once per second. EDUs (electronic drive units of the window treatments) assigned to that shade column will move to their close limit, and EDUs not assigned to that shade column will move to their open limit.

2. To assign an EDU to the shade column that is program mode, use one of the following methods:
  - Press and release the top button on the shade column that is in program mode. Each time you press and release the top button, a different EDU that is assigned to that shade column will open and close in an 8-inch range. Press the top button until the EDU you wish to assign to the shade column moves. (You can also use the bottom button, which moves through the EDUs in the opposite order.)

- Or, press and release any button on an EDU to toggle between unassignment and assignment for that EDU's window treatment to the shade column.

Assign or unassign the currently selected EDU to the shade column using the raise and lower buttons.



The lower button assigns the selected EDU.

The raise button unassigns the selected EDU.

3. Check window treatment assignments: EDUs for window treatments assigned to the shade column will be at their close limit, and EDUs for window treatments not assigned to the shade column will be at their open limit.

4. Press and hold simultaneously the top and bottom buttons on the shade column for 5 seconds to exit Assignment mode. The LEDs next to the buttons will stop flashing, and the EDUs assigned to the shade column will return to their levels before entering Assignment mode.

**Note:** Once you have assigned window treatments to a shade column, you will notice the following additional functionality:

- When some or all EDUs assigned to a shade column are moving, press and release the top, middle, or bottom button to immediately stop all assigned EDUs.
- The position that each EDU moves to when the middle button is pressed is now reprogrammable. See Preset Adjustment on page 21.
- No matter how or from where their movement is commanded, whenever all the assigned EDUs come to a stop and match their programmed positions for one of the buttons in the shade column, the LED next to that button will automatically light up.

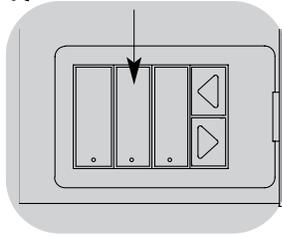
# Adjusting Window Treatment Settings

## Preset Adjustment: Simple Method

1. Use the raise and lower buttons on the shade column to set all EDUs (electronic drive units of the window treatments) to the desired preset levels.



2. Press and hold the middle button on the shade column for 5 seconds to save the EDU preset positions. The LED next to the button will flash and then light continuously, indicating the preset has been stored.



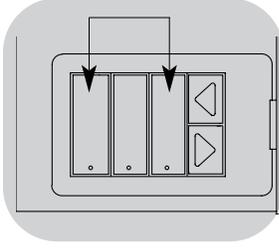
**Note:** Once EDU presets have been assigned to buttons on a shade column, those presets are accessible for an EDU only using the shade column it is assigned to, and a shade column can access preset levels only for those EDUs assigned to it.

## Preset Adjustment: Advanced Method

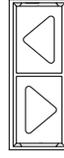
**Note:** The advanced method for adjusting presets is needed only if you wish to have the window treatments assigned to the shade column set at different positions in the preset. If, however, you wish all the window treatments in the group to be lined up with one another in the preset, you should use the Simple Method at left.

**Note:** Entering Assignment mode will cause the window treatments to move between their open and close limits. **Be sure that the open and close limits have been set correctly.**

1. On the shade column whose preset you wish to adjust, press and hold simultaneously the top and bottom buttons. The LEDs next to the buttons will flash. EDUs (electronic drive units) for the assigned window treatments will move to their closed limits, and EDUs for unassigned window treatments will move to their open limits.



2. Press and release the middle button on that shade column. The adjacent LED will blink rapidly. EDUs for assigned window treatments will automatically move to their current preset settings.



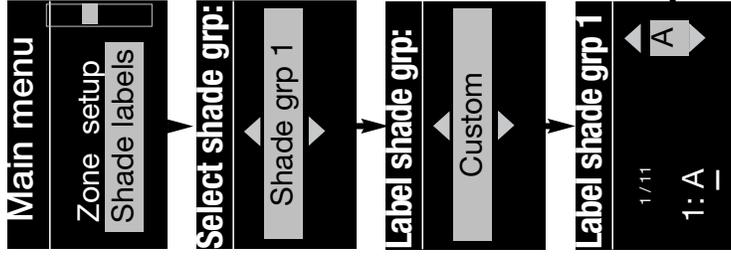
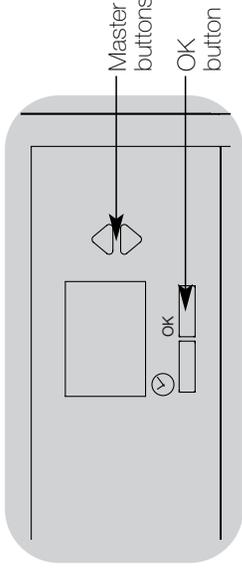
3. Use the raise and lower buttons to move all EDUs for assigned window treatments together to the desired preset setting.

4. To move an EDU individually to its desired preset setting, select the EDU using the top button on the shade column. Each time you press and release the top button, a different EDU that is assigned to that shade column will open and close in an 8-inch range. Press repeatedly until the EDU for the window treatment you wish to adjust moves. Adjust that EDU to the desired height using the raise and lower buttons. Repeat this step for all assigned EDUs.
5. Once you are satisfied that all the assigned EDUs are set to the positions you want to assign as the preset, press and hold the middle button on the shade column for 5 seconds. The preset will be saved.
6. Press and hold simultaneously the top and bottom buttons on the shade column for 5 seconds to exit to normal mode. The LEDs next to the buttons will stop flashing.

# Adjusting Window Treatment Settings

## Name a Group of Window Treatments

1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Shade labels” and press the OK button to accept.
3. Use the master buttons to select your desired shade group. Press the OK button to accept.
4. Use the master buttons to highlight “Custom” and press the OK button to accept.
5. Use the master buttons to scroll through the characters (lowercase and uppercase letters, plus numbers 0-9). The character you are currently changing will be underlined on the screen. Press OK to select the character you want, then repeat for all available characters. Choose a space (no character) and press OK for any remaining characters. Press the OK button to accept.
6. The info screen will display a confirmation screen that your name has been saved.
7. Exit programming mode (see page 12).



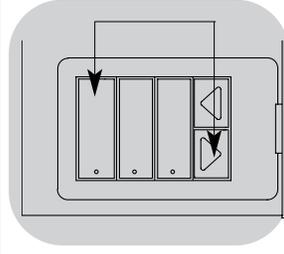
## Remotely Restore EDUs to Factory Defaults



**Warning!** Restoring an EDU (electronic drive unit for a window treatment) to its factory defaults will erase any previous programming or assignments you have made for that EDU.



**Note:** Entering this mode may cause window treatments to move approximately 8 inches up or down. Be sure that each window treatment is positioned so that the fabric can safely move 8 inches up or down before entering this mode.



1. On any shade column, press and hold simultaneously the top and lower buttons. The LED next to the top button will flash. Press and hold the top button for 5 seconds. All shade column LEDs will blink rapidly.
2. Select the EDU you want to restore to factory defaults using the top button on the shade column. Each time you press and release the top button, a different EDU in your system will open and close in an 8-inch range to indicate it is selected. Press the top button until the

EDU for the window treatment you wish to restore to factory defaults moves. (You can also use the bottom button, which moves through the assigned EDUs in the opposite order.)

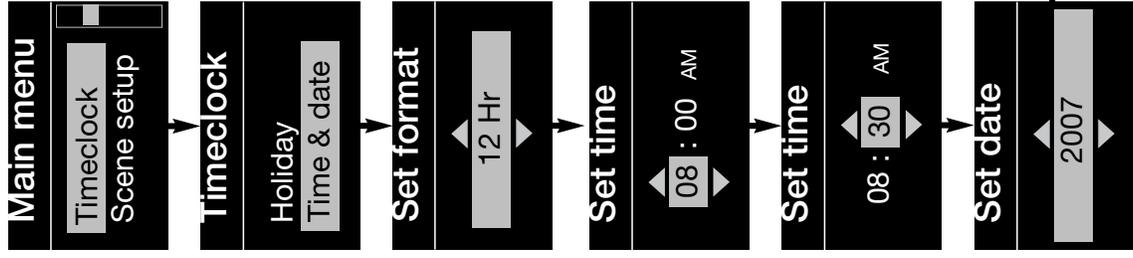
4. Press and hold simultaneously the raise and lower buttons for 5 seconds to restore the moving shade to factory defaults.



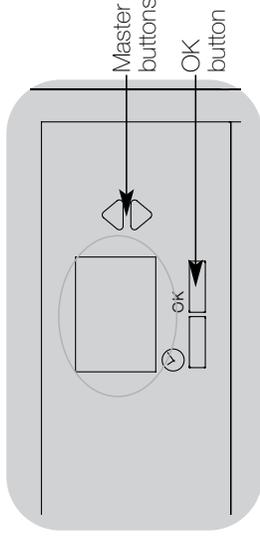
5. Repeat steps 3 and 4 to restore factory defaults to any other window treatments.
6. Press and hold simultaneously the top and lower buttons on the shade column to exit this mode.

# Timeclock Operation

## Set Time and Date

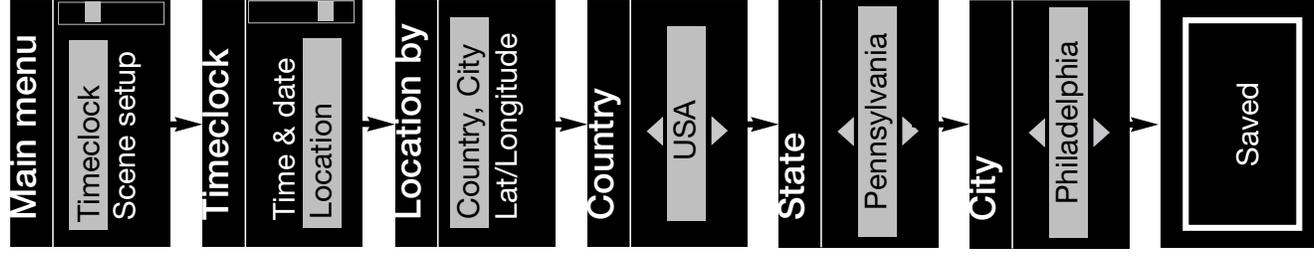


1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Timeclock” and press the OK button to accept.
3. Use the master buttons to highlight “Time & date” and press the OK button to accept.
4. Use the master buttons to select between “12 Hr” and “24 Hr” format for time display and press the OK button to accept.
5. Use the master buttons to select the current hour and press the OK button to accept. Repeat for the current minutes.
6. Use the master buttons to highlight the current year and press the OK button to accept. Repeat for the current month and date.
7. The info screen will display a confirmation screen that your time and date have been saved.
8. Exit programming mode (see page 12).

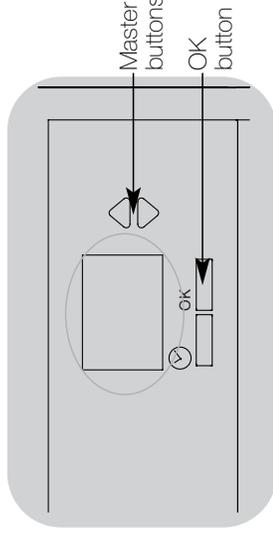


# Timeclock Operation

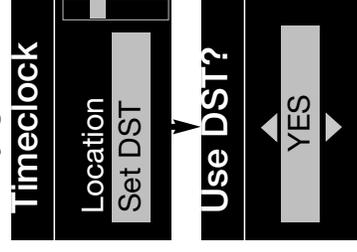
## Set Location



1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Timeclock” and press the OK button to accept.
3. Use the master buttons to highlight “Location” and press the OK button to accept.
4. Use the master buttons to choose to set your location by either country and city or latitude and longitude. Press the OK button to accept.
5. Use the master buttons to highlight the country and press the OK button to accept. Repeat for the state and closest city.
6. The info screen will display a confirmation screen that your time and date have been saved.
7. Exit programming mode (see page 12).



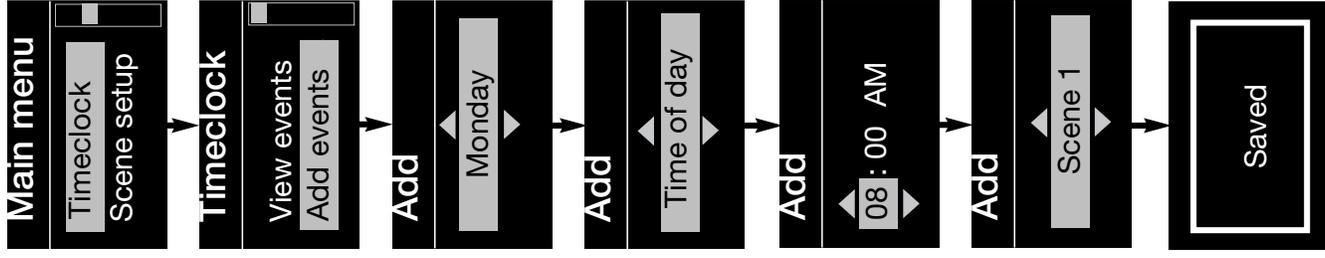
## Set Daylight Saving Time



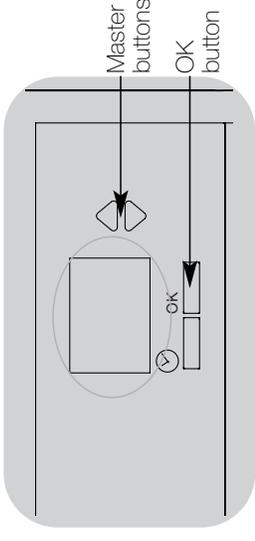
1. Enter programming mode (see page 12) and select “Timeclock”. Use the master buttons to highlight “Set DST” and press the OK button to accept.
2. Use the master buttons to highlight “YES” if your location observes daylight saving time, or “NO” if it does not. Press the OK button to accept.
3. If yes, use the master buttons to choose either “USA 2007” (the second Sunday in March to the first Sunday in November), or “Other.” For “Other,” follow the screens to set start and end dates and amount of time.
4. Press the OK button to accept. The info screen will display a confirmation screen that your time and date have been saved.
5. Exit programming mode (see page 12).

## Timeclock Operation

### Add an Event

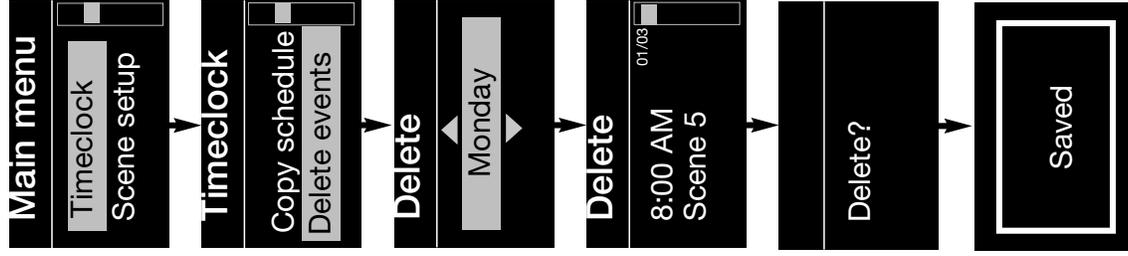


1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Timeclock” and press the OK button to accept.
3. Use the master buttons to highlight “Add events” and press the OK button to accept.
4. Use the master buttons to select the day of the week for this event; press the OK button to accept.
5. Use the master buttons to select the type of event (fixed time of day, or relative to sunrise or sunset); press the OK button to accept.
6. For a fixed-time event, use the master buttons to select the hour for your event to begin; press the OK button to accept. Repeat for the minutes. For a relative time event, use the master buttons and the OK button to set the hour, then the minutes relative to sunrise or sunset (maximum of 1 hour 59 minutes before or after sunrise or sunset).
7. Use the master buttons to select the scene you wish to activate for this event.  
For a timeclock event involving only shades, scroll through the scenes to find the group of shades and the action (1, 2, or 3; open, preset, or close) you want to add to the timeclock event.  
Or, press the button on the shade column that produces the action you want to add to this timeclock event.  
Press the OK button to accept.
8. The info screen will display a confirmation screen that your event has been saved.
9. Exit programming mode (see page 12).

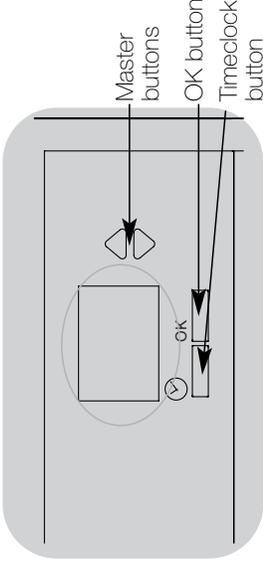


# Timeclock Operation

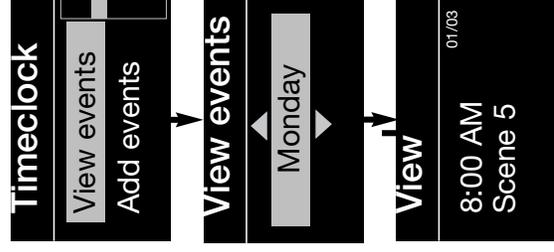
Delete an Event



1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Timeclock” and press the OK button to accept.
3. Use the master buttons to highlight “Delete events” and press the OK button to accept.
4. Use the master buttons to select the day of the week (or holiday) when the event occurs; press the OK button to accept.
5. Use the master buttons to select the event to delete; press the OK button to accept.
6. A screen will appear, verifying you wish to delete the event. Press the OK button to accept and delete; otherwise, press the timeclock button to go back.
7. The info screen will display a confirmation screen that your event has been deleted.
8. Exit programming mode (see page 12).



View an Event

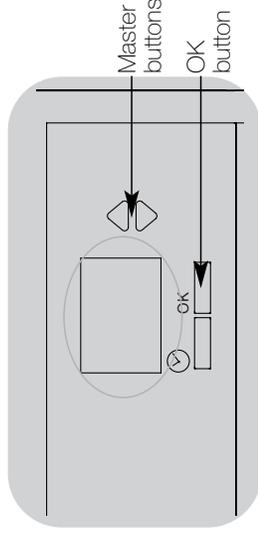
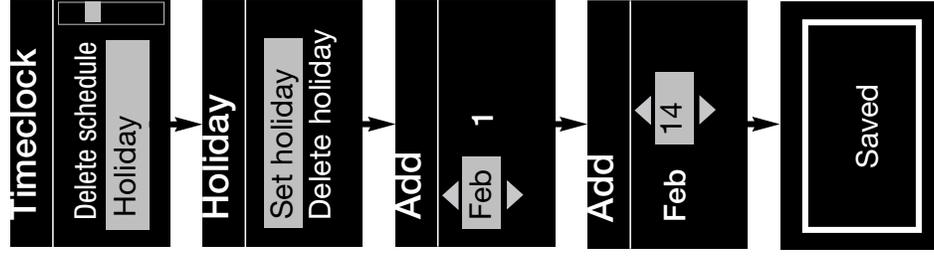


1. Enter programming mode (see page 12), select “Timeclock,” and select “View events”.
2. Use the master buttons to select the day of the week (or holiday) when the event occurs; press the OK button to accept.
3. Use the master buttons to select the event to view; press the OK button to accept.
4. Press the OK button to return to the Timeclock menu.
5. Exit programming mode (see page 12).

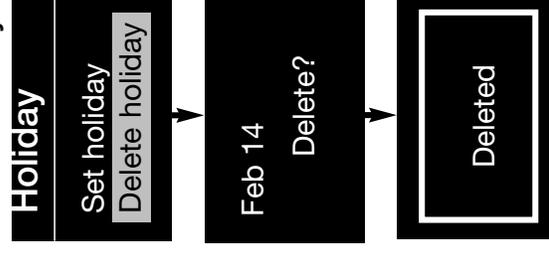
# Timeclock Operation

## Set a Holiday

1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Timeclock” and press the OK button to accept.
3. Use the master buttons to highlight “Holiday” and press the OK button to accept.
4. Use the master buttons to select “Set holiday” and press the OK button to accept.
5. Use the master buttons to set the month of the holiday and press the OK button to accept. Repeat for the date.
6. The info screen will display a confirmation screen that your holiday has been set.
7. Exit programming mode (see page 12).

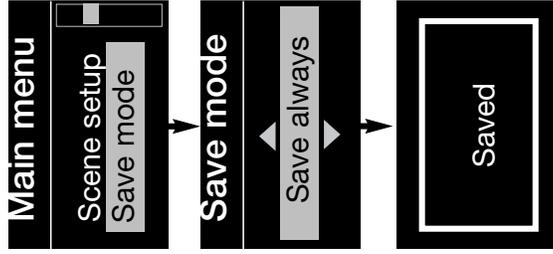


## Delete a Holiday

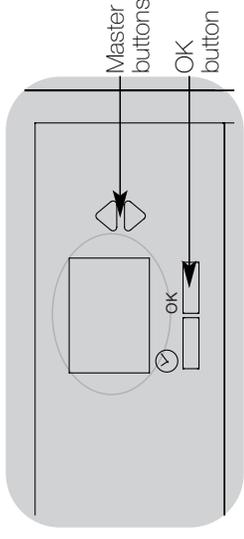


1. Enter programming mode (see page 12), select “Timeclock,” select “Holiday,” and select “Delete holiday”.
2. Use the master buttons to select the holiday you wish to delete and press the OK button to accept.
3. The info screen will display a confirmation screen that your event has been deleted.
4. Exit programming mode (see page 12).

## Set Save Mode



1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Save mode” and press the OK button to accept.
3. Use the master buttons to highlight the save mode you would like. The save modes are listed and explained below.
4. Press the OK button. The info screen will display a confirmation screen that your save mode has been saved.
5. Exit programming mode (see page 12).

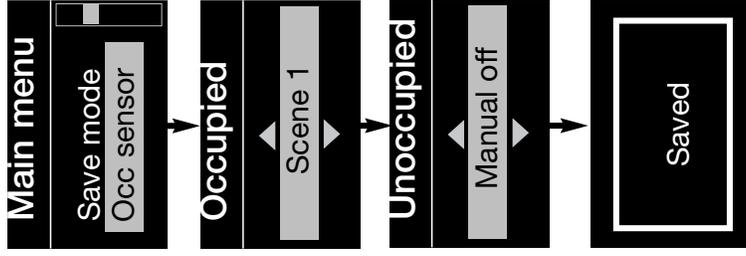


## Save Modes

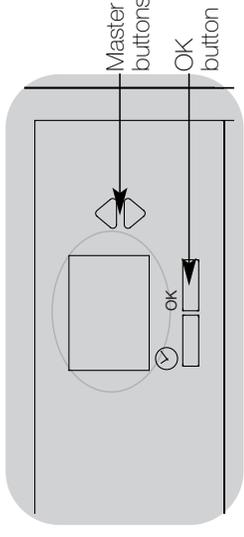
- Save always (default mode) . . . Quick scene programming mode; automatically save changes made to lighting levels or fade time (master raise/lower changes are temporary)
- Save by OK . . . . . Zone adjustments are temporary unless the OK button precedes them
- Save never . . . . . Do not save any temporary changes to lighting levels or fade time
- Four scenes . . . . . Zone raise/lower buttons are disabled (typically used for rented spaces)  
Master raise/lower buttons, wallstations, and IR receiver are still enabled for adjustment of light level, but these changes are not saved
- Button disable . . . . . Only the timeclock button, IR receiver, and wallstations can be used to make temporary changes (typically used in a public space)

**Note:** Off scene can be changed only through scene setup in program mode. Save modes will change only the fade time in Off scene settings.

## Set Up Occupant Sensor



1. Enter programming mode (see page 12).
2. Use the master buttons to highlight “Occ sensor” and press the OK button to accept.
3. Use the master buttons to select the scene you wish to activate when the room is occupied.  
For an occupant sensor setting involving only shades, scroll through the scenes to find the group of shades and the action (1, 2, or 3; open, preset, or close) you want to set.  
Or, press the button on the shade column that produces the action you want to add to this timeclock event.  
If your local lighting code requires it, you may also select “Manual on,” which means the occupant sensor will not automatically turn the lights on when someone enters a room. Instead, a button must be pressed manually.
4. Press OK to accept your choice.
5. Use the master buttons to select the scene you wish to activate when the room is unoccupied.  
For an occupant sensor setting involving only shades, scroll through the scenes to find the group of shades and the action (1, 2, or 3; open, preset, or close) you want to set.  
Or, press the button on the shade column that produces the action you want to add to this timeclock event.  
You may also select “Manual off,” which means the occupant sensor will not trigger an action when the room is unoccupied.
6. Press OK to accept your choice. The info screen will display a confirmation screen that your occupant sensor settings have been saved.
7. Exit programming mode (see page 12).



## Occupied and Unoccupied Modes

Occupied, contact closing . . . . . The occupied scene occurs when an occupant sensor or contact closure connected to the occupant sensor input closes.

Unoccupied, contact opening . . . The unoccupied scene occurs when an occupant sensor or contact closure connected to the occupant sensor input opens.

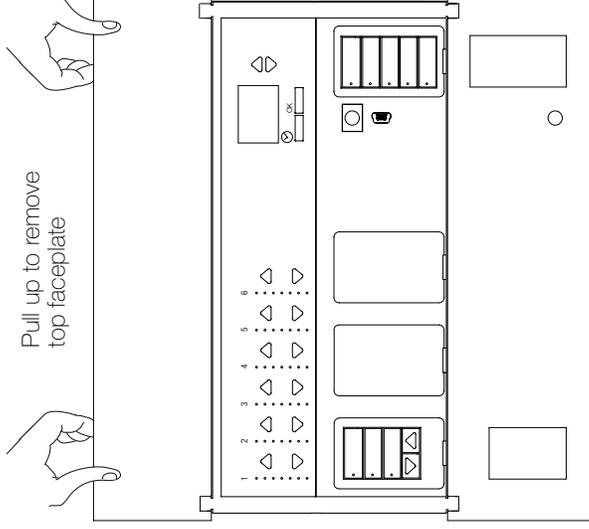
## Activate System Accessories

Once your control unit is programmed, you will need to activate any accessories or interfaces that are a part of the system. Refer to the instructions that accompanied those devices to set them up for proper communication with the GRAFIK Eye QS control unit.

## Faceplate Removal

The faceplates may need to be removed to change the color or to write in zone labels. To remove either faceplate, open it fully (flush to the wall), and pull up (for the top faceplate) or down (for the bottom faceplate) to pull the hinges out of their slots.

Replace by sliding the hinges back into their slots.



Pull down to remove bottom faceplate

# Troubleshooting

Symptom	Possible Causes	Remedy
Unit does not control loads Unit does not turn lights on LEDs on front of unit are not ON MCB/breaker is tripping	Breaker/MCB is off Long fade time Low zone settings Miswire System short circuit System overload	Switch breaker/MCB on Set fade time to 0 seconds Reprogram scenes to a higher intensity Check wiring Find and correct shorts Make sure unit is not overloaded (2000 W max)
Unit does not control load ZONE control does not work	Miswire Disconnected wire Burned-out lamps	Check wiring Connect zone wires to loads Replace bad lamps
1 or more zones are "full on" when any scene is on and zone intensity is not adjustable	Miswire Shorted triac	Make sure loads are connected to the right zones Replace control unit
A Zone control affects more than one zone	Miswire	Check for shorts between zone outputs
Keypad buttons are not working Keypad LEDs are not tracking	Miswire or loose connection on low- voltage link Wallstation programming is incorrect	Tighten loose connections at PELV terminals on all units and other devices in the system Check the keypad function and programming on the units
Faceplate is warm	Normal operation	Solid-state controls dissipate about 2% of the connected load as heat.

## Troubleshooting (continued)

Symptom	Possible Causes	Remedy
Unit does not allow scene change or zone adjustments	Unit in wrong save mode Keypad in system has locked the unit	Change to correct save mode Check programming and state of keypads
Screen is off	Normal operation	Screen turns off after 20 seconds
Occupant sensor input does not work	Miswire Incorrect programming Input closure/opening is not occurring Timeout on occupant sensor is set too long	Check wiring on contact closure input Re-program the occupied and unoccupied states of the input Check that the input device is opening and closing properly Set the occupant sensor timeout to a shorter time
Timeclock events do not occur Sunrise or sunset events do not occur at the correct time	Timeclock is disabled Time is not set correctly Date is not set correctly Location is not set correctly Holiday schedule is in effect	Enable the timeclock Set the time Set the date Set the latitude and longitude correctly Remove the holiday schedule from your programming

## Troubleshooting (continued) - Window Treatment Functions

Symptom	Possible Causes	Remedy
EDU (electronic drive unit of the window treatment) will not move	EDU is not powered Window treatment fabric is caught on something EDU is not assigned to a keypad	Check EDU power Check and unbind window treatment fabric Assign the EDU to a keypad
EDU (electronic drive unit of the window treatment) does not fully open or fully close	Presets have been set incorrectly Limits have been set incorrectly Window treatment fabric is caught on something	Try using raise/lower buttons on keypad Set limits correctly Check and unbind window treatment fabric
Window treatment moves in the opposite direction when raise/lower buttons are pushed	Open and close limits have been reversed	Set limits correctly
Keypad LEDs are off and keypad will not control any window treatment	No power is going to keypad	Check and wire power to keypad
Keypad LEDs are on but keypad will not control any window treatment	All presets are set to the same height Communications link is not wired to the EDU EDU has been unassigned from keypad	Try using raise/lower buttons on keypad Check and wire the EDU link Reassign the EDU to the keypad
Keypad does not operate all the window treatments it is assigned to	EDU has been unassigned from keypad All presets are set to the same height EDU is not wired correctly Keypad is not wired correctly	Reassign the EDU to the keypad Try using raise/lower buttons on keypad Check and rewire EDU Check and rewire keypad
Window treatments in a room move on their own	EDUs are assigned to a keypad in another room	Reassign the EDU to the correct keypad

## Menu Options

### Timeclock

- View events
  - See [page 26](#)
- Add events
  - Copy all timeclock events from one day to another
  - Copy schedule
  - Copy all timeclock events from one day to another
- Delete events
  - See [page 26](#)
- Delete schedule
  - Delete all timeclock events from a specified day
- Holiday
  - See [page 27](#)
- Time & date
  - See [page 23](#)
- Location
  - See [page 24](#)
- Set DST
  - See [page 24](#)
- Enable/Disable
  - Enable or disable timeclock events
- Scene setup
  - Levels
    - See [page 16](#)
  - Labels
    - See [page 17](#)
- Save mode
  - See [page 28](#)
- Occ sensor
  - See [page 29](#)

### Zone setup

- Load type
  - See [page 8](#)
- High end
  - See [page 9](#)
- Low end
  - See [page 9](#)
- Min level
  - See [page 9](#)
- Label
  - See [page 14](#)

### Shade labels

- See [page 22](#)

### IR

- Enabled
  - Enable control of the GRAFIK Eye by IR (remote control palm pilot, wired IR device, etc.)
- Disabled
  - Disable control of the GRAFIK Eye by IR (remote control palm pilot, wired IR device, etc.)

### Backlight

- Off
  - Turn off the green backlights on the scene and shade buttons
- On
  - Turn on the green backlights on the scene and shade buttons

### Diagnostics

**Diagnostics are for advanced use only. For help, contact Lutron Technical Support.**

#### Device serial

Displays the serial number of the GRAFIK Eye

#### Link details

Displays diagnostic information for all devices wired on the link

#### Code rev

Displays the software versions of the different components within the GRAFIK Eye

#### USB status

Displays diagnostic information for the GRAFIK Eye's USB

#### Reset USB

Resets the USB module on the GRAFIK Eye (used if it is having trouble communicating)

# Warranty

## Lutron Electronics Co., Inc. One Year Limited Warranty

For a period of one year from the date of purchase, and subject to the exclusions and restrictions described below, Lutron warrants each new unit to be free from manufacturing defects. Lutron will, at its option, either repair the defective unit or issue a credit equal to the purchase price of the defective unit to the Customer against the purchase price of comparable replacement part purchased from Lutron. Replacements for the unit provided by Lutron or, at its sole discretion, an approved vendor may be new, used, repaired, reconditioned, and/or made by a different manufacturer.

If the unit is commissioned by Lutron or a Lutron approved third party as part of a Lutron commissioned lighting control system, the term of this warranty will be extended, and any credits against the cost of replacement parts will be prorated, in accordance with the warranty issued with the commissioned system, except that the term of the unit's warranty term will be measured from the date of its commissioning.

### EXCLUSIONS AND RESTRICTIONS

This Warranty does not cover, and Lutron and its suppliers are not responsible for:

1. Damage, malfunction or inoperability diagnosed by Lutron or a Lutron approved third party as caused by normal wear and tear, abuse, misuse, incorrect installation, neglect, accident, interference or environmental factors, such as (a) use of incorrect line voltages, fuses or circuit breakers; (b) failure to install, maintain and operate the unit pursuant to the operating instructions provided by Lutron and the applicable provisions of the National Electrical Code and of the Safety Standards of Underwriter's Laboratories; (c) use of incompatible devices or accessories; (d) improper or insufficient ventilation; (e) unauthorized repairs or adjustments; (f) vandalism; or (g) an act of God, such as fire, lightning, flooding, tornado, earthquake, hurricane or other problems beyond Lutron's control.
2. On-site labor costs to diagnose issues with, and to remove, repair, replace, adjust, reinstall and/or reprogram the unit or any of its components.
3. Equipment and parts external to the unit, including those sold or supplied by Lutron (which may be covered by a separate warranty).
4. The cost of repairing or replacing other property that is damaged when the unit does not work properly, even if the damage was caused by the unit.

EXCEPT AS EXPRESSLY PROVIDED IN THIS WARRANTY, THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF ANY TYPE, INCLUDING ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. LUTRON DOES NOT WARRANT THAT THE UNIT WILL OPERATE WITHOUT INTERRUPTION OR BE ERROR FREE.

NO LUTRON AGENT, EMPLOYEE OR REPRESENTATIVE HAS ANY AUTHORITY TO BIND LUTRON TO ANY AFFIRMATION, REPRESENTATION OR WARRANTY CONCERNING THE UNIT. UNLESS AN AFFIRMATION, REPRESENTATION OR WARRANTY MADE BY AN AGENT, EMPLOYEE OR REPRESENTATIVE IS SPECIFICALLY INCLUDED HEREIN, OR IN STANDARD PRINTED MATERIALS PROVIDED BY LUTRON, IT DOES NOT FORM A PART OF THE BASIS OF ANY BARGAIN BETWEEN LUTRON AND CUSTOMER AND WILL NOT IN ANY WAY BE ENFORCEABLE BY CUSTOMER.

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NOTWITHSTANDING ANY DAMAGES THAT CUSTOMER MIGHT INCUR FOR ANY REASON WHATSOEVER (INCLUDING, WITHOUT LIMITATION, ALL DIRECT DAMAGES AND ALL DAMAGES LISTED ABOVE), THE ENTIRE LIABILITY OF LUTRON AND OF ALL OTHER PARTIES UNDER THIS WARRANTY ON ANY CLAIM FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE MANUFACTURE, SALE, INSTALLATION, DELIVERY, USE, REPAIR, OR REPLACEMENT OF THE UNIT, OR ANY AGREEMENT INCORPORATING THIS WARRANTY, AND CUSTOMER'S SOLE REMEDY FOR THE FOREGOING, WILL BE LIMITED TO THE AMOUNT PAID TO LUTRON BY CUSTOMER FOR THE UNIT. THE FOREGOING LIMITATIONS, EXCLUSIONS AND DISCLAIMERS WILL APPLY TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW, EVEN IF ANY REMEDY FAILS ITS ESSENTIAL PURPOSE.

## TO MAKE A WARRANTY CLAIM

To make a warranty claim, promptly notify Lutron within the warranty period described above by calling the Lutron Technical Support Center at (800) 523-9466. Lutron, in its sole discretion, will determine what action, if any, is required under this warranty, to better enable Lutron to address a warranty claim, have the unit's serial and model numbers available when making the call. If Lutron, in its sole discretion, determines that an on-site visit or other remedial action is necessary, Lutron may send a Lutron Services Co. representative or coordinate the dispatch of a representative from a Lutron approved vendor to Customer's site, and/or coordinate a warranty service call between Customer and a Lutron approved vendor.

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.

These products may be covered under one or more of the following U.S. patents: 4,797,599; 4,893,062; 4,924,151; 5,191,265; 5,430,356; 5,463,286; 5,949,200; 5,990,635; 6,091,205; 6,188,181; 6,380,692; and corresponding foreign patents. Other U.S. and foreign patents may be pending.

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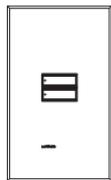
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Singapore: 800.120.4491  
Taiwan: 00.801.137.737  
Thailand: 001.800.120.665853  
Other countries: +65.6220.4666





# seeTouch® QS Wallstation Installation Guide

*Please Read*

Low-Voltage PELV (Class 2: USA)

24 V  $\overline{\text{---}}$  30 mA

- QSWS2-1B
- QSWS2-2B
- QSWS2-3B
- QSWS2-5B
- QSWS2-7B
- QSWS2-2BRL
- QSWS2-3BRL
- QSWS2-5BRL
- QSWS2-2BRLIR
- QSWS2-3BRLIR
- QSWS2-5BRLIR
- QSWS2-1RLD
- QSWS2-2RLD
- QSWS2-3BD

## Wiring Notes

- System Maximums
  - GRAFIK Eye<sup>®</sup> QS series control units can each power a maximum of 3 wallstations.
  - 2000 ft. (610 m) maximum wiring length
  - 32-104 °F (0-40 °C) operating temperature.
  - 100 devices per link (see Touch<sup>®</sup> QS, Sivoia<sup>®</sup> QS, power panel, and GRAFIK Eye QS each count as one device); 100 zones maximum per link
- Refer to the system installation guide and Lutron job drawings for power cable and data cable (control link) wiring restrictions and limitations.
- Control Link Wiring
  - Power: Two #18 AWG (1.0 mm<sup>2</sup>) PELV (Class 2: USA) wires. Connect to terminals 1 and 2.
  - Data: Two shielded #22 AWG (1.0 mm<sup>2</sup>) PELV (Class 2: USA) wires (twisted, shielded pair). Connect to terminals 3 and 4.  
Lutron offers a one-cable, non-plenum, low-voltage solution (P/N GRX-CBL-346S-500), and a one-cable, plenum, low-voltage solution (P/N GRX-PCBL-346S-500). Check availability outside the U.S.
- Sensor/Contact Closure Input Connector Wiring (optional):
  - Three #18 AWG (1.0 mm<sup>2</sup>) PELV (Class 2: USA) wires.
- Connect the wallstation to the control link inside the wallstation's wallbox or in a junction box (provided by others).
- Control link wiring must **not** be run in the same raceway as line voltage.
- Control link wiring is **not** to exceed 2000 ft. (610 m).
- The drain/shield wire must be maintained throughout the control link. Do **not** connect the shield to earth/ground or allow contact with the grounded wallbox.

Wallstation circuits are classified as Class 2 circuits (USA) and PELV circuits (IEC). As Class 2 circuits, they comply with the requirements of NFPA<sup>®</sup> 70, National Electrical Code<sup>®</sup> (NEC<sup>®</sup>). As PELV circuits, they comply with the requirements of IEC 60364-4-41, VDE 0100 Part 410, BS7671:1992, and other equivalent standards. When installing and wiring to these wallstations, follow all applicable national and/or local wiring regulations. External circuits connected to input, output, and other communication terminals of wallstations must be supplied from a listed Class 2 source or comply with the requirements for PELV circuits, as applicable in your country.

## CAUTION!

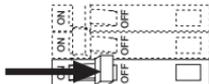
- Read all instructions carefully before starting installation.
- Lutron recommends that wallstations be installed by a qualified electrician.
- Do not connect high-voltage power to low-voltage terminals. Improper wiring can result in personal injury or damage to the control or to other equipment.
- Use only a cloth with warm water and mild soap to clean faceplates (no chemical cleaners).

# Installation

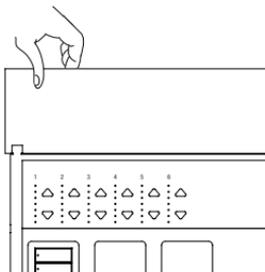


**Warning!** Always turn OFF the circuit breaker/MCB or remove the main fuse from the power line before doing any work. Failure to do so can result in serious personal injury.

1. **Turn Power OFF.** Turn power OFF at circuit breaker/MCB (or remove fuse).



2. **Mount Wallbox.** Mount standard U.S. 1-gang wallbox, 2.75 in. (70 mm) deep (available from Lutron; P/N 241-519). Check availability outside the U.S.
3. **Prepare Wallstations.** Remove the faceplate and set aside.



4. **Prepare wires.** Strip insulation from wires so that 3/8 in. (9.5 mm) of bare wire is exposed.

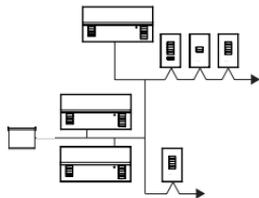


Each wallstation terminal accepts up to two #18 AWG (1.0 mm<sup>2</sup>) wires.

**Note:** Wiring may be done in a daisy-chain or T-tap configuration, as shown below.



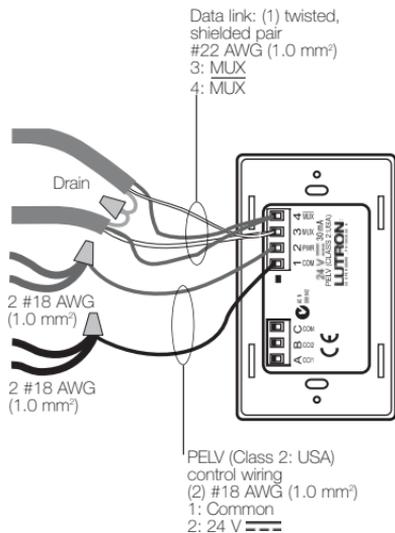
Daisy chain



T-Tap

### 5. Connect the Wallstation to the Control Link.

Connect two #22 (1.0 mm<sup>2</sup>) shielded, twisted pair wires to terminals 3 and 4 of the wallstation's control link connector. Shielding (drain) of the twisted pair wires must be connected together as shown, but do **not** connect the shielding to earth/ground or the wallstation or allow contact with the grounded wallbox.

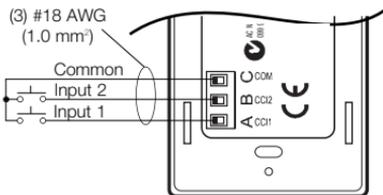


**Control Link Wiring**

**Note:** Use the wire connector required by local code (those shown are common in the US).

### 6. Connect the Wallstation to external contact closure inputs (optional).

If using one contact closure input, connect the input to terminal A of the wallstation sensor/contact closure input connector. If using two contact closure inputs, connect the inputs to terminals A and B. Connect the common side of the contact closure inputs to terminal C.



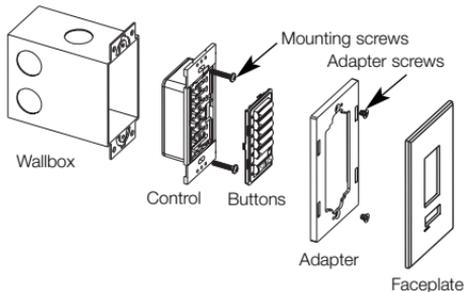
**Contact Closure Input Wiring**

### Notes for Contact Closure Inputs:

Verify compatibility of external contact closure input devices. The contact closure inputs can be used with either dry contact closures or ground-referenced solid-state outputs. The outputs must stay in the closed or open states for at least 40 msec in order to be recognized by the wallstation. If there is any question as to whether the device is compatible with these specifications, contact the manufacturer.

Contact closure input function is determined by the programming of the top and bottom buttons of the wallstation.

7. **Mount Wallstation.** Carefully mount and align the wallstation as shown. Screw top and bottom screw into the control and wallbox. Replace faceplate, adapter (for insert versions), and button assembly.



**Typical Mounting Diagram  
(Exploded View)**

8. **Turn Power ON.** Turn ON control breaker, or replace main fuse.

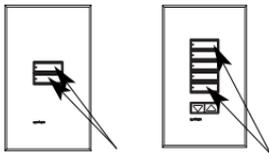
#### **Notes**

- Unprogrammed (out of the box) QS wallstations and control units will all work together until they are reprogrammed otherwise.
- LEDs on wallstation buttons light when the scene programmed to it is the last scene activated.

## System Communications

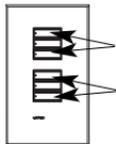
In order for wallstations to communicate with a control unit, each wallstation must be individually configured to "talk" to a "listening" control unit. In order for shade wallstations to control exclusively a given group of window treatments (as opposed to all window treatments in the system), each shade wallstation must be individually configured to "talk" to its respective window treatments. (Only one wallstation can be in setup mode at a time.)

1. **Enter Setup Mode.** Press and hold simultaneously for 3 seconds the top and bottom buttons (not including raise/lower buttons) on the wallstation. For 1-button wallstations, press and hold the single button for 10 seconds. (LEDs will flash periodically.)



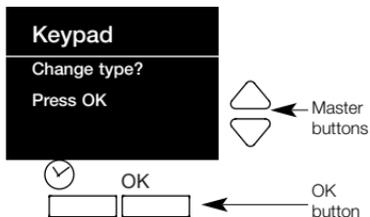
Press and hold the top and bottom buttons on your wallstation for 3 seconds to enter setup mode.

**Note:** For wallstations with two sets of buttons, you will program each set as if each were its own wallstation. For multigroup shade wallstations, first select the group, then program the wallstation for that group.

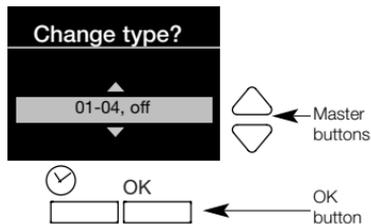


2. **Select wallstation function (optional).**

The info screen on the *GRAFIK Eye QS* control unit will display a prompt to change your wallstation's function (type).



Press the OK button on the QS control unit to display the current wallstation function/type. To change, use the master buttons to scroll through the available choices until the function you want displays on the info screen.

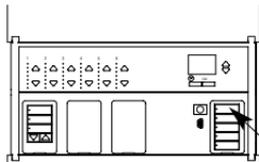


The keypad menu will display only functions that are available for the wallstation model that is "talking" to it. The example shown here is for a 5-button wallstation with raise/lower buttons. Press the OK button to accept and save your highlighted choice.

## Programming

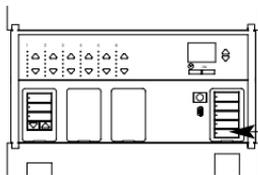
The next step is to configure your wallstation that **GRAFIK Eye QS control unit or window treatment “listens”** when the wallstation “talks”, depending on your wallstation’s function. You will perform only one of Steps 3a through 3e for each wallstation.

**3a. For wallstations with scene, panic, or sequence functions:** Press and hold the top button on the **GRAFIK Eye QS control unit lighting column** until its LEDs flash in unison. Repeat for each control unit you want to “listen” to the wallstation for the selected function.



Press and hold the top button on the lighting column for 3 seconds to make control unit “listen”.

**Note:** To stop a control unit from “listening” to a wallstation, put the wallstation in setup mode, and press and hold for 3 seconds the **bottom** button on the lighting keypad of the control unit you want to stop listening.



Press and hold for 3 seconds to make control unit stop “listening”.

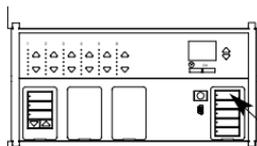
Proceed to Step 4.

## 3b. For wallstations with partition function:

2-button wallstations that control one partition:

The LEDs on the wallstation will alternately blink.

On each **GRAFIK Eye QS control unit** within the partitioned space, press and hold the top button on the lighting column until its LEDs flash in unison. The control units will then function together when the partition is open.



Press and hold the top button on the lighting column for 3 seconds to make control unit “listen”.

All other partition wallstations: On the wallstation, press the button you want to use to control partition function. Its LED will blink slowly. Then, on each **GRAFIK Eye QS control unit** that is related to that partitioned space, press and hold the top button on the lighting column until its LEDs flash in unison.

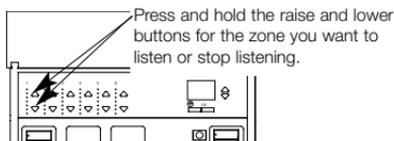
For multiple partitions, repeat for additional buttons on the partition wallstation, and the related control units.

**Note:** To stop a control unit from “listening” to a wallstation, put the wallstation in setup mode, then press and hold for 3 seconds the **bottom** button on the lighting keypad of the control unit you want to stop listening.

Proceed to Step 4.

**3c. For Wallstations with fine tune function:** On the *GRAFIK Eye QS* control unit, press simultaneously the raise and lower buttons for the zone you want the wallstation to fine tune. Repeat for each zone you wish to "listen" to the selected wallstation, or for zones on additional control units. When listening, zone LEDs flash. When unassigned (not "listening"), the 3 middle zone LEDs light.

**Note:** To stop a zone from listening to a wallstation, put the wallstation in setup mode, and press simultaneously the raise and lower buttons on the zone you want to stop listening.



Proceed to Step 4.

**3d. For wallstations with zone function:** On the wallstation, press the button you want to program to toggle (alternate between) zones. Its LED will blink slowly.

On the *GRAFIK Eye QS* control unit, for the zone you want to "listen" to the wallstation, use the raise and lower buttons to set the desired levels. The LEDs will indicate the level. Then, press simultaneously those raise and lower buttons to listen that zone to the wallstation. When listening, zone LEDs flash. When not listening (unassigned), the 3 middle zone LEDs light.

Repeat for each zone you wish to assign to the selected wallstation, or for zones on additional control units.

Finally, repeat to program the remaining buttons on the wallstation with their respective zones.

**Note:** To stop a zone from listening to a wallstation, put the wallstation in setup mode, and press simultaneously the raise and lower buttons on the zone you want to stop listening.

Proceed to Step 4.

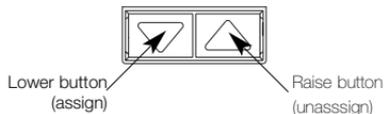
### 3e. For wallstations configured for shade function:

**Note:** Entering setup mode will cause the window treatments to move between their open and close limits. Be sure that the open and close limits have been set correctly (see page 12). Because your wallstation is configured for shade function, upon entering setup mode, EDUs (electronic drive units of window treatments) assigned to that wallstation will move to their close limit, and EDUs not assigned to it will move to their open limit.

To assign an EDU to the wallstation that is in setup mode, use one of the following methods:

**Either** - Press the top button on the wallstation. Each time you press the top button, a different EDU that is assigned to that wallstation will open and close in an 8-inch range. Press the top button until the EDU you wish to assign to the wallstation moves. (You can also use the bottom button, which moves through the EDUs in the opposite order.) Assign or unassign the currently selected EDU to the wallstation using the raise and lower buttons:

The lower button assigns the selected EDU.  
The raise button unassigns the selected EDU.



**Or** -Press any button on an EDU to toggle between unassignment and assignment for that EDU's window treatment to the wallstation.

Check window treatment assignments: EDUs for window treatments assigned to the wallstation will be at their close limit, and EDUs for window treatments not assigned to the wallstation will be at their open limit.

**Note:** Once you have assigned window treatments to a wallstation and exited setup mode, you will notice the following additional functionality:

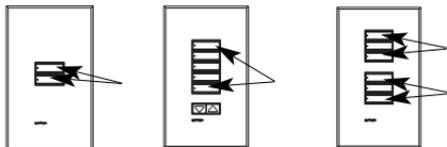
-When some or all EDUs assigned to a wallstation are moving, press any button on the wallstation to immediately stop all assigned EDUs.

-The position that each EDU moves to when any but the top or bottom button is pressed is now programmable (see page 13).

-No matter how or from where their movement is commanded, whenever all the assigned EDUs come to a stop and match their programmed positions for one of the buttons on the wallstation, the LED next to that button will automatically light.

Proceed to Step 4.

4. **Exit Setup Mode.** Press and hold the top and bottom buttons on the wallstation simultaneously for 3 seconds. For 1-button wallstations, press and hold the single button for 10 seconds. The LEDs will return to normal.



Press and hold the top and bottom buttons on your wallstation for 3 seconds to exit setup mode.

## SeeTouch® QS Wallstation

### Button Functions

The following functions are menu choices when the wallstation is in setup mode and the *GRAFIK Eye QS* is displaying the keypad menu. Each function choice is explained below. See the next page for a summary table of wallstations and their function choices.

**Scenes:** Choose from the list of preset groups of scenes to assign to the buttons on this wallstation. See the next page for a list of available scene groupings for each keypad.

**Zone:** Assigns control of one or more zones on one or more *GRAFIK Eye QS* control units to the selected wallstation button. Pressing a zone control button on a wallstation causes all assigned zones to go to the set level, with a fade time of 3 seconds (if all assigned zones are currently off). If any assigned zone is currently on (at any level), the LED for that zone will be lit, and pressing the wallstation button that controls that zone will cause all assigned zones to fade to off over 3 seconds. The 3-second fade time cannot be adjusted.

**Partition:** Used for rooms that can be divided by one or more partitions into smaller spaces. The LED on the assigned button indicates whether the partition should be considered open (LED is lit; control units work together as one) or closed (LED is off; control units work independently in separate spaces). A contact closure will open the partition; a contact opening will close the partition. Wallstations programmed for partitioning are only used for partitioning, and each button is configured to control different combinations of control units. When the partition between two *GRAFIK Eye QS* control units is open, the control units act together.

**2B Partition:** 2-button wallstations only. The top button indicates partition open, and the bottom button indicates partition closed.

**2B Fine Tune:** 2-button wallstations only. The buttons function as raise and lower buttons for the assigned zones. Zones are assigned by pressing the raise and lower buttons simultaneously; repeat to change assignments.

**2B Sequence:** 2-button wallstations only. This function scrolls through scenes 5 through 16 using their assigned fade rates, then repeats. For showroom-type applications. Program as you would for the Scene function.

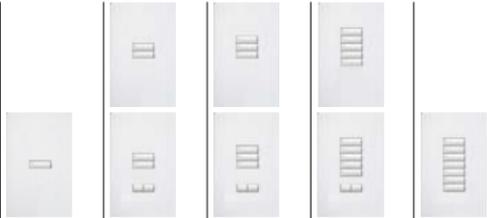
**2B Panic:** 2-button wallstations only. Pressing the button sends all assigned zones immediately to scene 16, and locks out all button presses on all connected wallstations and control units. Program as you would for the Scene function.

**Toggle:** 1-button wallstations only. The button toggles between scene 1 and off.

**Window treatments:** Assign control of a group of shades to a wallstation.

**Note:** If a control unit has devices connected to it through contact closure inputs, CCI1 follows the top button and CCI2 follows the bottom button. The contact closure is equivalent to a button press.  
Exception: On a 2-button wallstation, CCI1 closure action follows the top button and opening action follows the bottom button.

## SeeTouch® QS Wallstation Button Functions Summary

Keypad Function						
	1	2	3	5	7	
Zone	X	X	X	X	X	 Program as two 3-button keypads
Partition			X	X	X	
2B Partition		X				 Program as one 3-button keypad and one 2-button keypad
Clear				X		
Zone Lockout		X				 Program as two 2-button keypads
Fine Tune		X				
Sequence		X				
Panic		X				
Window Treatments		X	X	X		
Scene Options	1, Off (toggle)	1, Off 5, Off 9, Off 12, Off 1, 2 5, 6 9, 10 13, 14	1-3 5-7 9-11 13-15 1-2, Off 5-6, Off 9-10, Off 13-14, Off	1-4, Off 5-8, Off 9-12, Off 13-16, Off 1-5 5-9 9-13 13-16	1-7 9-15 1-6, Off 9-19, Off	

### Notes

See the previous page for full explanations of the standard functions.

Wallstations with dual keypads: Each keypad functions independently and is programmed separately.

Wallstations with Raise/Lower buttons: These buttons function only when the wallstation function is either zone control or control of scenes.

# Adjusting Window Treatment Settings

## Setting Limits

**Note:** Entering Limit Setup mode may cause window treatments to move approximately 8 inches up or down. Be sure that each window treatment is positioned so that the fabric can safely move 8 inches up or down before entering Limit Setup mode.

To be able to adjust window treatment limits, your wallstation must have raise and lower buttons. If your model does not have these, please contact Lutron Technical Support or refer to your window treatment documentation to use the buttons on your EDU to manually set limits.



1. On your shade keypad, press and hold the top and raise buttons simultaneously for 3 seconds. The LEDs next to the top and bottom buttons will cycle.

**Note:** At any time while in Limit Setup mode, you can move all window treatments together to their current open limit by slowly double-pressing the top button, or to their current close limit by slowly double-tapping the bottom button.

**Note:** Once EDUs (electronic drive units of the window treatment) have been assigned to shade keypads, limits can be set for an EDU only using the shade keypad it is assigned to, and a shade keypad can set limits only for those EDUs assigned to it.

2. Select the EDU you want to adjust using the top button on the shade keypad. Each time you press the top button, a different EDU that is assigned to that shade keypad will open and close in an 8-inch range to indicate it is selected. Press the top button until the EDU for the window treatment you wish to adjust moves. (You can also use the bottom button, which moves through the assigned EDUs in the opposite order.)



3. Adjust the currently selected EDU to the desired level for the open limit (the maximum the window treatment is allowed to open) using the raise and lower buttons.
4. Press and hold the top button on the shade keypad simultaneously for 3 seconds to store the current position as the open limit. The LED next to the top button will flash quickly for 2 seconds.
5. Adjust the currently selected EDU to the desired level for the close limit (the maximum the window treatment is allowed to close) using the raise and lower buttons.
6. Press and hold the bottom button on the shade keypad for 3 seconds to store the current position as the close limit. The LED next to the bottom button will flash quickly for 2 seconds.
7. Repeat steps 2 through 6 to set the open and close limits for each window treatment assigned to the shade keypad.
8. Press and hold the top and raise buttons on the shade keypad simultaneously for 3 seconds to exit Limit Setup mode.

## Preset Adjustment: Simple Method

**Note:** The top button will always open the shades fully, and the bottom button will always close the shades fully. Only the shade presets activated by the intermediate buttons can be reprogrammed.



1. Use the raise and lower buttons on the shade keypad to set all EDUs (electronic drive units of the window treatments) to the desired preset levels.



2. Press and hold the respective preset button on the shade keypad for 3 seconds to save the EDU preset positions. The LED next to the button will flash and then light continuously, indicating the preset has been stored.

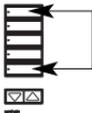
**Note:** Once EDU presets have been assigned to buttons on a shade keypad, those presets are accessible for an EDU only using the shade keypad it is assigned to, and a shade keypad can access preset levels only for those EDUs assigned to it.

## Preset Adjustment: Advanced Method

**Note:** The advanced method for adjusting presets is needed only if you wish to have the window treatments assigned to the shade keypad set at different positions in the preset. If, however, you wish all the window treatments in the group to be lined up with one another in the preset, you should use the Simple Method above.

**Note:** Entering Assignment mode will cause the window treatments to move between their open and close limits. Be sure that the open and close limits have been set correctly.

1. On the shade keypad whose preset you wish to adjust, press and hold the top and bottom buttons simultaneously for 3 seconds. The LEDs next to the buttons will flash. EDUs (electronic drive units) for the assigned window treatments will move to their closed limits, and EDUs for unassigned window treatments will move to their open limits.



2. Press the preset button you wish to adjust on that shade keypad. The adjacent LED will blink rapidly. EDUs for assigned window treatments will automatically move to their current preset settings.



3. Use the raise and lower buttons to move all EDUs for assigned window treatments together to the desired preset setting.
4. To move an EDU individually to its desired preset setting, select the EDU using the top button on the shade keypad. Each time you press the top button, a different EDU that is assigned to that shade keypad will open and close in an 8-inch range. Press repeatedly until the EDU for the window treatment you wish to adjust moves. Adjust that EDU to the desired height using the raise and lower buttons. Repeat this step for all assigned EDUs you wish to adjust.
5. Once you are satisfied that all the assigned EDUs are set to the positions you want to assign as the preset, press and hold the respective preset button on the shade keypad for 3 seconds. The preset will be saved.
6. Press and hold the top and bottom buttons on the shade keypad simultaneously for 3 seconds to exit to normal mode. The LEDs next to the buttons will stop flashing.

---

## Troubleshooting

### Symptom

### Possible Causes

---

No communication with *GRAFIK*  
*Eye* control unit.

- Miswire or loose connection at the control link data lines 3 and 4.
  - Wallstation has not been programmed or has been programmed incorrectly.
- 

Wallstation buttons do not work;  
LEDs do not track.

- Wallstation is miswired.
  - Wallstation is not powered.
  - Wallstation is not wired to the correct set of lights.
  - Wallstation is not programmed to the correct device.
- 

LEDs do not light.

- Miswire or loose connection at wallstation(s) or processor on the control link common and power connections 1 and 2.
  - Wallstation has been programmed incorrectly.
- 

Contact closure inputs or sensor  
input do not produce the desired  
result in the system.

- Miswire or loose connection at wallstation sensor/CCI connector.
  - Wallstation has not been programmed or has been programmed incorrectly.
- 

Wallstation buttons do not function  
as intended.

- Wallstation has not been programmed or has been programmed incorrectly.
-

## Troubleshooting: Window Treatment Functions

<u>Symptom</u>	<u>Possible Causes</u>	<u>Remedy</u>
EDU (electronic drive unit of the window treatment) will not move	EDU is not powered Window treatment fabric is caught on something EDU is not assigned to a keypad	Check EDU power Check and unbind window treatment fabric Assign the EDU to a keypad
EDU (electronic drive unit of the window treatment) does not fully open or fully close	Presets have been set incorrectly Limits have been set incorrectly Window treatment fabric is caught on something	Try using raise/lower buttons on keypad Set limits correctly Check and unbind window treatment fabric
Window treatment moves in the opposite direction when raise/lower buttons are pushed	Open and close limits have been reversed	Set limits correctly
Keypad LEDs are off and keypad will not control any window treatment	No power is going to keypad	Check and wire power to keypad
Keypad LEDs are on but keypad will not control any window treatment	All presets are set to the same height Communications link is not wired to the EDU EDU has been unassigned from keypad Open and close limits are the same	Try using raise/lower buttons on keypad Check and wire the EDU link Reassign the EDU to the keypad Set limits correctly
Keypad does not operate all the window treatments it is assigned to	EDU has been unassigned from keypad All presets are set to the same height EDU is not wired correctly Keypad is not wired correctly	Reassign the EDU to the keypad Try using raise/lower buttons on keypad Check and rewire EDU Check and rewire keypad
Window treatments in a room move on their own	EDUs are assigned to a keypad in another room	Reassign the EDU to the correct keypad

## Warranty

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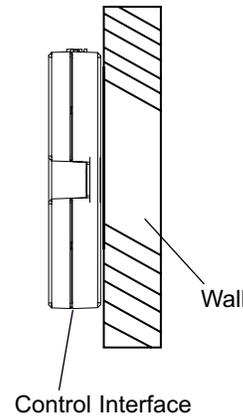
Please refer to the enclosed CD for the product Specification Sheets and Operation Manuals, Ethernet Device IP program, and RS232 Protocol information.

**PELV (Class 2: USA) Devices 12 - 24 V<sub>DC</sub> 200 mA**

## Mounting

1. Mount the Control Interface directly on a wall, as shown in the Mounting Diagram, using screws (not included). When mounting, provide sufficient space for connecting cables. The unit can also be placed in the LUT-19AV-1U AV rack using the screws provided with the unit. The LUT-19AV-1U will hold up to four units. If conduit is desired for wiring, the LUT-5x10-ENC can be used to mount one unit.
2. Strip 3/8 in. (10 mm) of insulation from wires. Each Data Link terminal will accept up to two #18 AWG (1.0 mm<sup>2</sup>) wires.
3. Connect wiring as shown in the Wiring Diagram (next page). LED 1 lights continuously (Power) and LED 7 blinks rapidly (Data Link RX) when the Class 2 (PELV) Data Link is installed correctly.

## Mounting Diagram

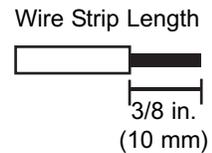
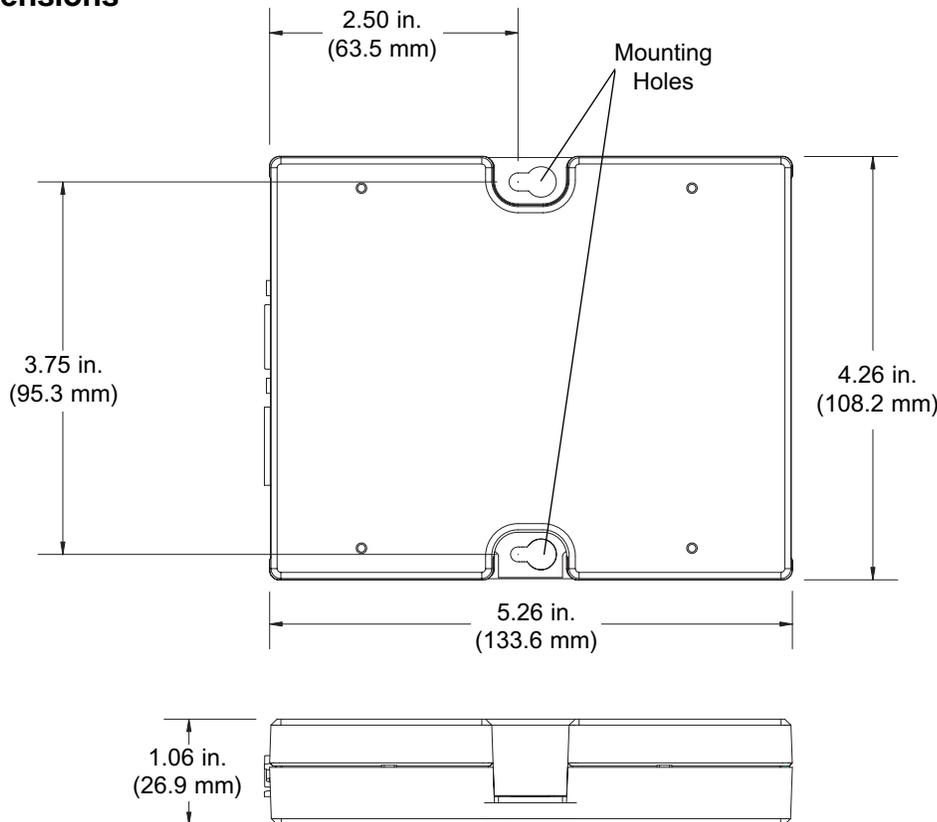


LUT-19AV-1U



LUT-5x10-ENC

## Dimensions

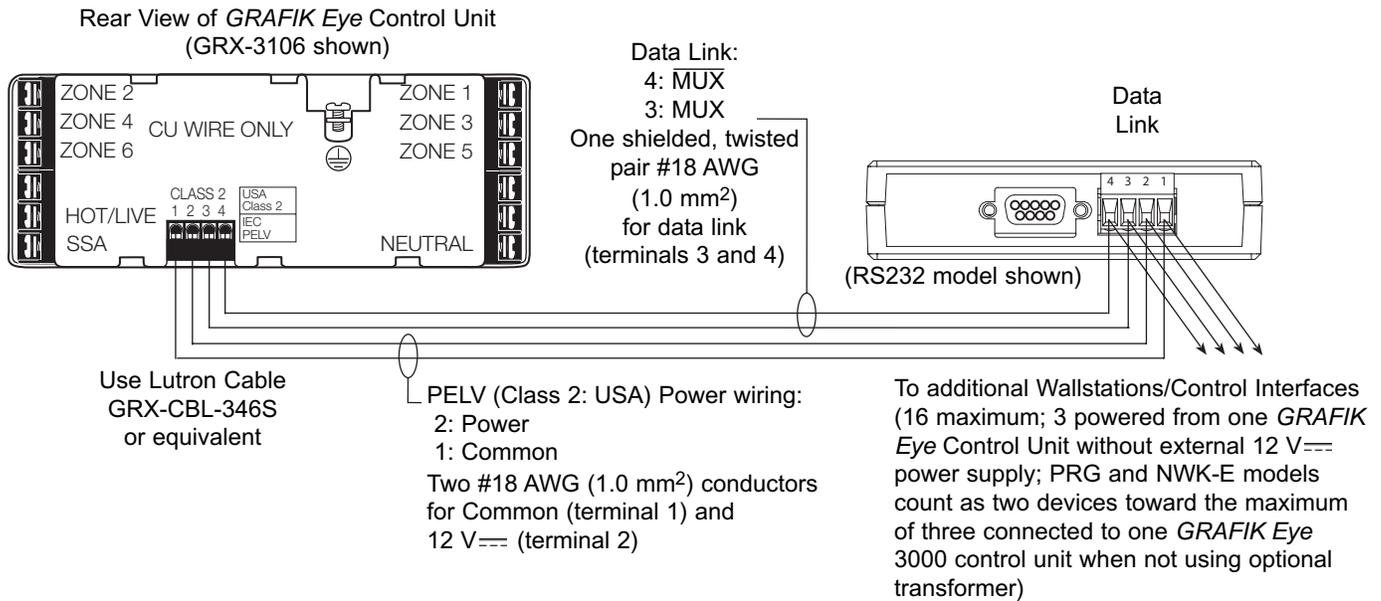


# Low-Voltage PELV (Class 2: USA) Wiring

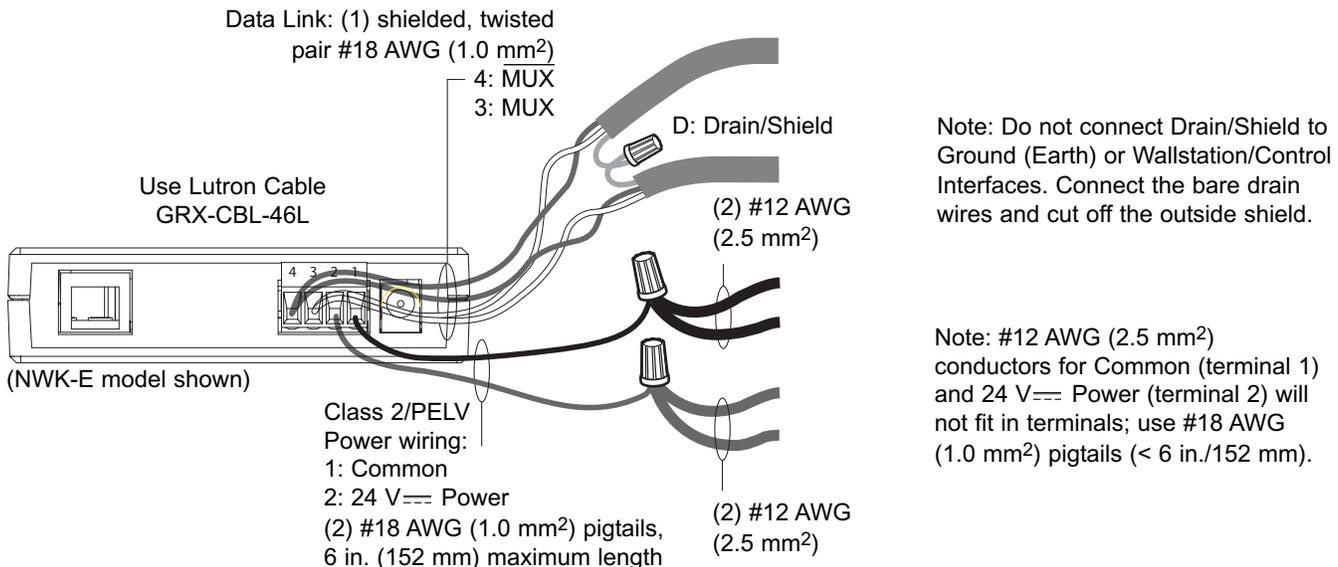
## Important Notes

- Install in accordance with all applicable regulations.
- **CAUTION:** Do **not** connect line voltage/mains power to device. Improper wiring can result in personal injury or damage to the device or to other equipment.
- This control can use PELV (Class 2: USA) wiring methods. Check with your local electrical inspector for compliance with national and local codes and wiring practices.
- Make daisy-chain connections to the low-voltage PELV (Class 2: USA) Data Link terminals on the end of the Control Interface.
- Do not use T-taps. Run all wires in and out of the terminal block.
- Each terminal accepts up to two #18 AWG (1.0 mm<sup>2</sup>) wires.

## Control Interface Wiring: GRX-3000 Control Unit

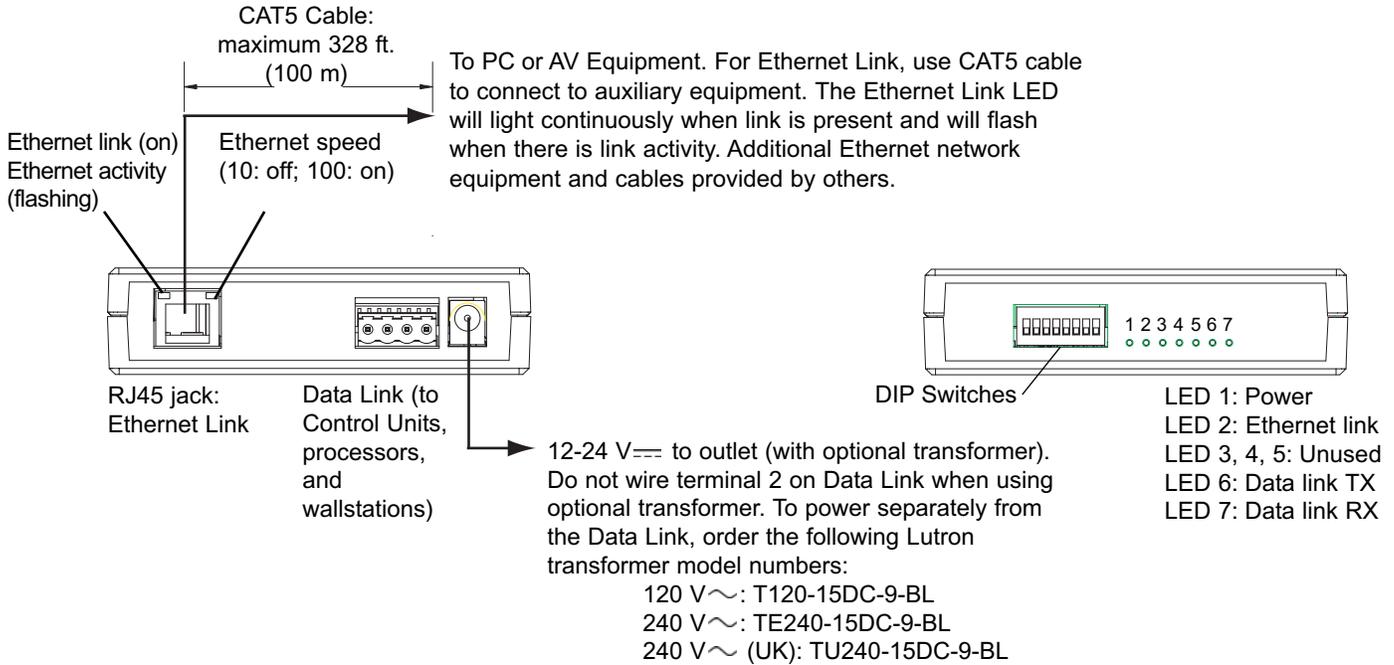


## Control Interface Wiring: GRX-4000 Control Unit, OMX Control Station Device Link, or QS Link (Data Link connection shown)

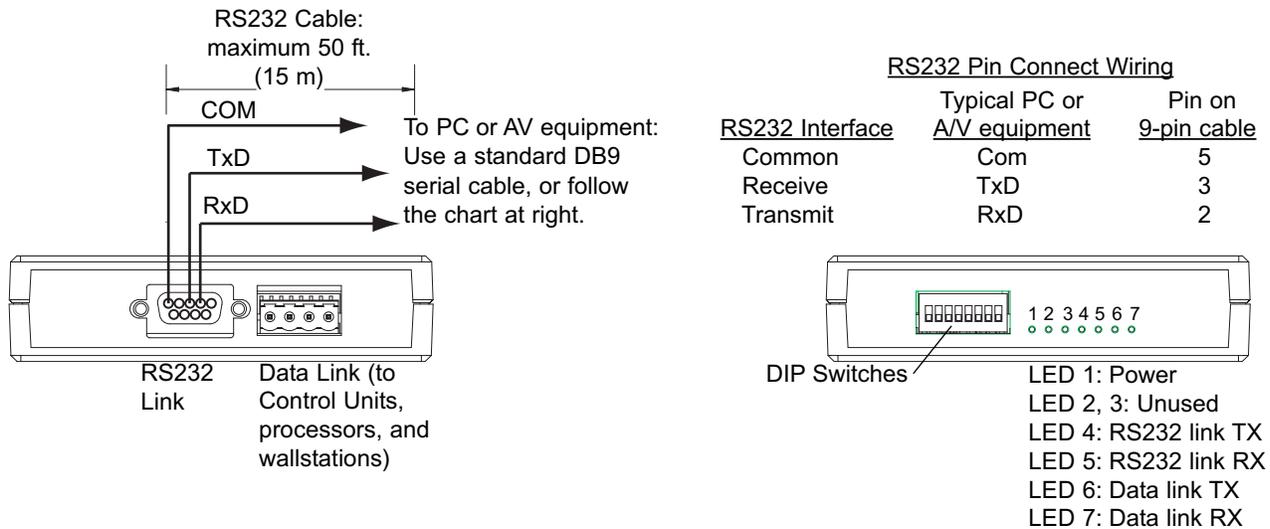


## A/V Connections and Signal/Link Information

### GRX-CI-NWK-E, GRX-IA-CI-NWK-E, OMX-CI-NWK-E



### GRX-CI-RS232, GRX-IA-CI-RS232, OMX-CI-RS232



### GRX-CI-PRG, GRX-IA-CI-PRG, QSE-CI-NWK-E



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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P/N 040-242 Rev. A



# **Lutron**

**integration protocol**

**revision AC 14 November 2019**

# Lutron integration protocol

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## Updates new to this release of the Lutron Integration Protocol

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### Revision Update: AC

#### Integration Access Points

- Added new bullet about passphrases . . . . . 18

#### System Commands

- Added new page for #PASSWD command. . . . . 20

## Revisions to previous releases of the Lutron Integration Protocol

---

### Revision Update: AB

#### Integration Access Points

- Changed “Login” bullet to “Logins: Defined in the RadioRA 2 software application” . . . . . 29

### Revision Update: AA

#### myRoom Plus System Overview

- Remove Sivoia QS Venetian Blind and Sivoia QS Wireless Venetian Blind from myRoom plus System Device Compatability Index . . . . . 60

### Revision Update: Z

#### Wireless Temperature Sensor

- Remove parameters for “Get (?) battery status” action . . . . . 149
- Add “Battery status response (~)” line to Action Numbers and Parameters table . . . . . 149
- In “Example DEVICE Messages” table, replace “Temperatre Sensor’s Battery is Low” line with “Status Report” line. . . . . 149

### Revision Update: Y

#### About Integration

- Added “Integration Best Practices” section. . . . . 3

#### Integrator’s Reference

- Added two rows to the table and added footnotes 9, 10, and 11 . . . . . 6
- Updated the “Parameters” for “Action #3” and added footnote 7. . . . . 10
- Changed “Venetian Tilt” to “Device Lock State Monitoring” and added footnotes 5, 6, and 7. . . 12

#### Temperature Controls

- Updated the “Parameters” for “Action #3” and added footnote 10. Also rearranged the footnotes in numerical order and made foot note 7 into a general note . . . . . 142
- Rearranged the footnotes in numerical order and made foot note 6 into a general note . . . . 143

#### Palladiom Thermostat

- Updated the “DEVICE Command Format” . . . . . 147

#### Wireless Temperature Sensor

- Changes the Parameter value under “Action numbers and Parameters,” removed the other two rows under “Action numbers and Parameters” as well as the corresponding footnotes. . . . . 149

#### Customer Assistance

- Added Europe and Asia contact numbers . . . . . 157

Continued on next page...

# Lutron integration protocol

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## Revision Update: X

### Global Changes

- Changed “multi-tap” to “double-tap”
- Added a footnote to every page where “Set (#) Current Temperature” is mentioned

### Table of Contents

- Corrected page numbers

### Integrator’s Reference

- Added a row for “Photo Sensor Monitoring” and “Occupancy Group Monitoring” . . . . . 12

### RadioRA 2

- Changed Parameter in first row to “Mode Index Number” under “Action Numbers and Parameters” chart and rewrote footnote . . . . . 33

### HomeWorks QS

- Changed “monitoring of sensors” to “Monitor sensors states with Monitoring command” under “Integration Capabilities” . . . . . 48

### myRoom Plus

- Changed “monitoring of sensors” to “Monitor sensors states with Monitoring command” under “Integration Capabilities” . . . . . 62

## Revision Update: W (this revision was never published)

### Global Changes

- Made section headers and model number lists more consistent throughout document

### HomeWorks QS

- Added “monitoring of sensors” under “Integration Capabilities”. . . . . 48

### myRoom Plus

- Added “monitoring of sensors” under “Integration Capabilities”. . . . . 62

### Devices

- Moved “DEVICE Command” section before “OUTPUT Command” section for Hybrid Keypad to match sequence of other device sections . . . . . 132
- Added “DEVICE...” bullet under “Supported Command Types”. . . . . 141
- Made changes in the “Component Numbers” chart, the “Action Numbers and Parameters” chart and added two footnotes. . . . . 149
- Moved “DEVICE Command” section before “OUTPUT Command” section for Maestro Dimmer and Plug-In Module to match sequence of other device sections. . . . . 152
- Added Palladiom Thermostat Device Commands . . . . . 163

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# Lutron integration protocol

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## About Integration

### Integration Operations

The Lutron integration protocol will allow third-party equipment, such as touch-screens, universal remote controls, and software applications, to control and monitor devices in a Lutron lighting control system.

The protocol supports three basic types of integration operations:

- Execute an action in the Lutron system
- Query the status of the Lutron system and Lutron devices
- Monitor responses from the Lutron system

### Operation Characters

To help create and manage the different integration operations, three distinct operation characters have been selected to begin each command. All protocol messages will start with one of the following operation characters:

- # Execute an action (e.g., turn a dimmer on/off)
- ? Query system information (e.g., determine on/off status of a dimmer)
- ~ Monitor responses from the system when requested or after a change has occurred (e.g., if someone turns on a dimmer locally, a response command is sent out to indicate the change)

**Note to Integrator:** *Operation characters are not used in any other location in the protocol command string. Therefore, the driver can search for these characters to determine the start of a new command string.*

### Command Types

Operation characters will be followed by command types. The two most common commands are: OUTPUT and DEVICE. Other command types are available; see the Integrator's Reference for a summary.

- OUTPUT allows control and monitoring of device outputs such as dimmers and contact closure outputs.
- DEVICE allows control and monitoring of device inputs such as button presses, releases, and contact closure inputs.

### Command Structure

The protocol command structure is made up of three parts:

Command	Integration ID	Command-specific fields
---------	----------------	-------------------------

1. The **Command** is made up of the operation character (#, ?, or ~) and the command type.
2. The **Integration ID** is assigned to each device in the system during system setup, providing a unique user-assigned address for each system device.
3. The **Command-specific fields** contain additional information relevant to the type of command. Details about what command-specific field data is supported can be found in the appropriate device specific section of this integration protocol guide.

### Command Termination

Each command is made up of fields, separated by commas, and terminated with a carriage return (ASCII dec 13/hex 0D) and a line feed (ASCII dec 10/hex 0A). Throughout this document, carriage return is shown as **<CR>** and line feed is shown as **<LF>**.

# Lutron integration protocol

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## About Integration *(continued)*

### Command and Control Examples

- 1) This command sets a dimmer (1) level to 75% with a 1 minute and 30 second fade time.

**#OUTPUT,1,1,75,01:30<CR><LF>**

Command	Integration ID	Command-specific fields		
		Action Number	Level	Fade Time
#OUTPUT	1	1	75	01:30

- 2) This command presses button number 1 of a keypad (2).

**#DEVICE,2,4,3<CR><LF>**

Command	Integration ID	Command-specific fields	
		Component Number	Action Number
#DEVICE	2	4	3

### Query Examples

- 3) This command requests the output level for a dimmer (3).

**?OUTPUT,3,1<CR><LF>**

Command	Integration ID	Command-specific fields	
		Action	
?OUTPUT	3	1	

### Monitoring Examples

- 4) When a user makes a change to a dimmer locally, the following command response would be sent out from the system or when requested by the command in Example 3 above. This command response example shows the local dimmer (3) level was changed to 90%.

**~OUTPUT,3,1,90.00<CR><LF>**

Command	Integration ID	Command-specific fields	
		Action	Level
~OUTPUT	3	1	90.00

# Lutron integration protocol

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## About Integration *(continued)*

### Integration Access Points

- Integration Access Points communicate with external systems using RS232, Ethernet or both. The Lutron integration protocol will allow third-party equipment, such as touch-screens, keypads, and software applications, to control and monitor devices in the Lutron lighting control system through an Integration Access Point. For more information, check the page specific to the Integration Access Point being used. An example of an Integration Access Point is the QS Network Interface (QSE-CI-NWK-E). For a listing of all the available Integration Access Points supported by a particular system, see the Integration Access Points section for that system in the table of contents.

### Command Rules and Formatting

- All commands are in ASCII characters
- Each command is made up of fields, separated by commas, and terminated with a carriage return (<CR>, ASCII 13) and a new line (<LF>, ASCII 10)
- Letter case is ignored
- Spaces are ignored
- Leading zeros are ignored

### Inter-Message Delays

Inbound and outbound messages with the Integration Protocol will experience system delays during normal operation. The following shows the minimum delays expected:

Command Type	Minimum Inter-Message Delay
<b>Command</b> and <b>Control</b> : These commands start with “#”	100 ms
<b>Query</b> : These commands start with “?” <sup>1</sup>	1500 ms

#### NOTE

1. Integration systems should be designed to utilize Monitoring commands to maintain an up-to-date view of the current system state.

### Integration Best Practices

- Be sure to use the #MONITORING command to enable only the monitoring you require for your application. On large systems, unnecessary monitoring information may lead to extra traffic that causes delay or malfunctioning of the third party integration systems.
- When creating a scene involving several lights, it is better to create the scene in the Lutron system and activate that scene via a single #DEVICE command rather than several #OUTPUT commands for each light.
- Create separate logins for each third party device which will be integrating to the Lutron system.

## Integrator's Reference Compatibility Matrix

### Integration Access Point Compatibility Matrix

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
QS Network Interface	✓	✓			
RadioRA 2 Main Repeater			✓		
HomeWorks QS Processor				✓	
myRoom (GCU-HOSP) Processor					✓

### Device Compatibility Matrix

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
GRAFIK Eye QS	✓	✓	✓	✓	✓
Energi Savr Node QS/DALI®	✓	✓		✓	✓
Energi Savr Node QS/ EcoSystem	✓	✓			
Energi Savr Node QS/ EcoSystem (Int'l)	✓	✓		✓	✓
Energi Savr Node QS/0-10 V/ Softswitch (Int'l)	✓	✓		✓	✓
Energi Savr Node QS/ Phase-Adaptive (Int'l)	✓	✓		✓	✓
Energi Savr Node QS/0-10 V/ Softswitch	✓	✓			
Energi Savr Node QS/ Motor Module (Int'l)	✓			✓	✓
Remote Power Module		✓		✓	
Low-Capacity Switching DIN Power Module (1A/output)				✓	✓
Low-Capacity Phase-Adaptive DIN Power Module (1A/output)				✓	✓
Palladiom Keypad		✓		✓	✓
Palladiom Thermostat					✓
Architrave Keypad	✓	✓		✓	✓
Signature Series Keypad	✓	✓		✓	✓
seeTouch Keypad	✓	✓	✓	✓	✓
seeTouch QS Keypad (Int'l)	✓	✓		✓	✓
Tabletop seeTouch Keypad			✓	✓	✓
Pico Wireless Control	✓	✓	✓	✓	✓
Hybrid Keypad			✓	✓	✓
Dynamic Keypad				✓	✓
Wallbox Input Closure Interface	✓	✓		✓	✓
Sivoia QS Shade	✓	✓	✓	✓	✓
Sivoia QS Wireless Shade					✓
Sivoia QS Venetian Blind	✓		✓	✓	✓
Sivoia QS Wireless Venetian Blind				✓	✓
Maestro Dimmer and Plug-In Module			✓	✓	✓
Maestro Fan Speed Control			✓	✓	✓
Visor Control Receiver			✓	✓	✓
Radio Powr Savr Sensor			✓	✓	✓
HVAC Controller			✓	✓	✓
Wireless Temperature Sensor			✓	✓	
QS Input/Output Control Interface	✓	✓		✓	✓
QS Sensor Module	✓			✓	✓

# Lutron integration protocol

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## Integrator's Reference *(continued)*

### DEVICE: Command Summary

Device integration commands allow the user to access components of the system such as a physical device. The user can activate programming via button presses, releases, etc., as well as monitor those same events as they occur in the system.

#### DEVICE Command Formats

---

*Operation*      *Integration ID (example)*  
#DEVICE, 5, Component Number, Action Number, Parameters  
*Command*      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

---

##### Component Numbers:

Refer to device specific tables for lists of Component Numbers.

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Enable <sup>1</sup>	1	None
Set (#) Disable <sup>1</sup>	2	None
Set (#) Press, Close, or Occupied	3	None
Set (#) Release, Open, or Unoccupied	4	None
Set (#) Hold <sup>2</sup>	5	None
Set (#) Double-tap <sup>2</sup>	6	None
Set (#) or Get (?) Current Scene <sup>1,2</sup>	7	Scene
Set (#) or Get (?) LED State	9	0 = Off 1 = On 2 = Normal Flash <sup>2</sup> 3 = Rapid Flash <sup>2</sup>
Set (#) or Get (?) Light Level <sup>3</sup>	14	0–100 or 0.00–100.00 SS.ss, SS, MM:SS, or HH:MM:SS SS.ss, SS, MM:SS, or HH:MM:SS

#### NOTES

---

1. Quantum 2.7 and higher.
2. Not supported in RadioRA 2.
3. Not supported by Quantum.

Continued on next page...

# Lutron integration protocol

## Integrator's Reference *(continued)*

### DEVICE: Command Summary *(continued)*

#### DEVICE Command-specific fields *(continued)*

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Lock <sup>1,2,3</sup>	15	0 = Off 1 = On
Set (#) or Get (?) Scene Lock <sup>1,2,3</sup>	16	0 = Off 1 = On
Set (#) or Get (?) Sequence State <sup>1,2,3</sup>	17	0 = Off 1 = Scenes 1–4 2 = Scenes 5–16
Set (#) Start Raising <sup>3,4,5</sup>	18	None
Set (#) Start Lowering <sup>3,4,5</sup>	19	None
Set (#) Stop Raising or Lowering <sup>3,4,5</sup>	20	None
Get (?) battery status	22	1 = Normal, 2 = Low
Set (#) a custom lift and tilt level of venetian blinds programmed to the phantom button <sup>4,6</sup>	23	Lift level % Tilt level %
Set (#) a custom lift level only of venetian blinds programmed to the phantom button <sup>4,6</sup>	24	Lift level %
Set (#) a custom tilt level only of venetian blinds programmed to the phantom button <sup>4,6</sup>	25	Tilt level %
Set (#) Hold or Release <sup>2</sup>	32	None
Set (#) GRAFIK Eye QS Timeclock state	34	0 = Disabled 1 = Enabled
Get (?) Query CCI state <sup>8</sup>	35	None
Set (#) or Get (?) Active LED Level <sup>7</sup>	36	0–100%
Set (#) or Get (?) Inactive LED Level <sup>7</sup>	37	0–100%
Get (?) Sensor Temperature (°F) <sup>9,10,11</sup>	41	None
Get (?) Sensor Temperature (°C) <sup>9,10,11</sup>	42	None

#### NOTES

1. Not supported in HomeWorks QS.
2. Not supported in RadioRA 2.
3. Not supported by Quantum.
4. Use OUTPUT command with equivalent action number in RadioRA 2.
5. Use OUTPUT command with equivalent action number in HomeWorks QS.
6. Use SHADEGRP command with equivalent action number in HomeWorks QS.
7. Applies only to Palladiom keypads.
8. Requires NWK firmware 8.47 or newer for QS Standalone systems.
9. Supported by Palladiom Thermostat only.
10. This function reports "UNKNOWN" if the value is not known.
11. When issuing this command, use the integration ID and component number of the temperature sensor, not the HVAC zone.

Continued on next page...

# Lutron integration protocol

## Integrator's Reference *(continued)*

### DEVICE: Command Summary *(continued)*

#### HomeWorks/myRoom plus QS Button Types and Integration Requirements:

Refer to Lutron Designer software for setting up programming options.

Programming Options				Required Integration Action Numbers				
Button Type	Double Tap	Hold	Cycle Dim	Press (3)	Release (4)	Double-Tap (6)	Hold (5)	Hold Release (32)
Single-Action and Toggle Buttons	–	–	–	✓	–	–	–	–
	✓	–	–	✓	–	✓	–	–
	–	✓	–	–	✓	–	✓	–
	✓	✓	–	–	✓	✓	✓	–
	–	–	✓	✓	✓	–	✓	✓
	✓	–	✓	✓	✓	✓	✓	✓
Dual Action Buttons	–	–	–	✓	✓	–	–	–
	✓	–	–	✓	✓	✓	–	–
Master and Single Scene Raise/Lower Buttons	–	–	–	✓	✓	–	–	–
Open/Stop/Close/Stop Buttons	–	–	–	✓	–	–	–	–

#### RadioRA 2 Button Types and Integration Requirements:

Refer to RadioRA 2 Essentials/Inclusive software for setting up programming options.

Programming Options		Required Integration Action Numbers				
Button Type	Scene Save Enabled	Press (3)	Release (4)	Double-Tap (6)	Hold (5)	Hold Release (32)
Single-Action and Toggle Buttons	–	✓	–	–	–	–
	✓	✓	–	–	✓	–
Master and Single Scene Raise/Lower Buttons	–	✓	✓	–	–	–
Shade Toggle Buttons	–	✓	–	–	–	–

# Lutron integration protocol

## Integrator's Reference *(continued)*

### OUTPUT: Command Summary

Outputs are dimmers, CCOs, or other devices in a system that have a controllable output. All of these devices will accept levels from 0% to 100% and 0.00% to 100.00% with a given fade and delay time. These same commands can be monitored as they occur in the system.

#### OUTPUT Command Format

*Operation*      *Integration ID (example)*  
#OUTPUT, 6, Action Number, Parameters  
*Command*      Use "OUTPUT Command-specific fields" tables  
to complete these command fields.

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	0–100 or 0.00–100.00 SS.ss <sup>1</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) Start Flashing <sup>2</sup>	5	SS.ss <sup>1</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Pulse Time	6	SS.ss <sup>1</sup> , SS, MM:SS, or HH:MM:SS
Set (#) or Get (?) tilt level <sup>3,4</sup>	9	Tilt Level <sup>5</sup> =0–100 <sup>6</sup> or 0.00–100.00 <sup>5,6</sup> Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>3</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) or Get (?) lift & tilt level <sup>4</sup>	10	Lift Level <sup>5</sup> =0–100 or 0.00–100.00 <sup>5</sup> Tilt Level <sup>5</sup> =0–100 <sup>6</sup> or 0.00–100.00 <sup>5,6</sup> Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>3</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising Tilt <sup>4</sup>	11	None
Set (#) Start Lowering Tilt <sup>4</sup>	12	None
Set (#) Stop Raising or Lowering Tilt <sup>4</sup>	13	None
Set (#) Start Raising Lift <sup>4</sup>	14	None
Set (#) Start Lowering Lift <sup>4</sup>	15	None
Set (#) Stop Raising or Lowering Lift <sup>4</sup>	16	None
Set (#) DMX Color or Level Settings <sup>7,8</sup>	17	Color/level index: 0–255/0.00–100.00
Set (#) Motor Jog Raise <sup>7,9</sup>	18	None
Set (#) Motor Jog Lower <sup>7,9</sup>	19	None
Set (#) Motor 4-Stage Jog Raise <sup>7,9</sup>	20	None
Set (#) Motor 4-Stage Jog Lower <sup>7,9</sup>	21	None

#### NOTES

1. Fractions are rounded **up** to the closest 1/4 second.
2. To stop a dimmer from flashing, send it to a valid level (action 1).
3. The Delay time is optional. When not used, the system will use a zero-second delay. The minimum delay time is 0 seconds. The maximum delay time is 4 hours.
4. Not supported in Quantum.
5. For switched outputs, any non-zero level results in on or closed, 0 results in off or open.
6. 50 for Horizontal Sheer Blinds.
7. Not supported in RadioRA 2.
8. Supported in Quantum version 2.2 and higher.
9. Supported in Quantum version 2.5 and higher.

# Lutron integration protocol

---

## Integrator's Reference *(continued)*

### GROUP<sup>1</sup>: Command Summary

The GROUP command is used to report the status of a group of occupancy sensors.

#### GROUP Command Format

---

*Operation*      *Integration ID (example)*  
?GROUP, 6, Action Number  
*Command*      *Use "GROUP Command-specific fields" tables to complete these command fields.*

#### NOTE

1. Not supported in QS Standalone.

#### GROUP Command-specific fields

---

##### Occupancy States:

Description	Value
Occupied	3
Unoccupied	4
Unknown	255

##### Action Numbers:

Action	Action Number
Get (?) Occupancy Group State	3

#### Example GROUP Messages

---

Operation	Command String
<b>Query:</b> ?GROUP, Integration ID, Action Number	
What is Occ GROUP 1's status?	?GROUP,1,3<CR><LF>
<b>Response:</b> ~ GROUP, Integration ID, Action Number, Parameters	
Occ group 1 is occupied	~GROUP,1,3,3<CR><LF>
Occ group 1 is unknown	~GROUP,1,3,255<CR><LF>

Continued on next page...

## Integrator's Reference *(continued)*

### HVAC: Command Summary

HVAC Integration commands allow the user to access the features and components of HVAC controllers in the system. The user can modify HVAC parameters like the operating mode, fan mode etc., as well as monitor the changes to these parameters as they occur in the system.

#### HVAC Command Format

*Operation* | *Integration ID (example)*  
**#HVAC,21, Action Number, Parameters**  
*Command* | *Use "HVAC Command-specific fields" tables to complete these command fields.*

#### HVAC Command-specific fields

##### Action Numbers and Parameters:<sup>1</sup>

Action	Action Number	Parameters
Set (#) or Get (?) Current Temperature (°F) <sup>5,6</sup>	1	Temperature=32–212 °F
Set (#) or Get (?) Heat and Cool Setpoints (°F) <sup>2, 4, 5</sup>	2	Setpoint Heat (SPH)=32–212 °F Setpoint Cool (SPC)=32–212 °F
Set (#) or Get (?) Operating Mode	3	Mode (1 = Off/Protect, 2 = Heat, 3 = Cool, 4 = Auto, 5 = Em.Heat, 6 <sup>7</sup> = Locked out, 7= Fan, 8 = Dry)
Set (#) or Get (?) Fan Mode	4	Mode (1 = Auto, 2 = On, 3 = Cyclor, 4 = No Fan, 5 = High, 6 = Medium, 7 = Low, 8 = Top)
Set (#) or Get (?) Eco (Setback) Mode	5	Mode (1 = Off, 2 = On)
Get (?) Eco Offset	6	Eco Offset = 1–11 °F
Set (#) or Get (?) Schedule Status <sup>3</sup>	7	0 = Schedule Unavailable (Get "?" Only) 1 = Following Schedule (Set "#" or Get "?") 2 = Permanent Hold (Set "#" or Get "?") 3 = Temporary Hold (Get "?" only)
Get (?) Temperature Sensor Connection Status	8	1 = All Sensors are Active 2 = Missing Sensor 3 = Wired Sensor Only 4 = No Sensor
Get (?) Schedule Event	9	Schedule # (1–7), Event # (1–4), HH,MM, SPH, SPC
Get (?) Schedule Day Assignment	10	Schedule#(1–7), DD(Bitmap:Sunday(Bit 0)–Saturday(Bit 6) 1–active day, 0–inactive day)
Get (?) System Mode	11	1 = Normal 2 = Away 3 = Green
Get (?) Heat and Cool Setpoints (°F) without Eco Offset if applied <sup>5</sup>	12	Setpoint Heat (SPH)=32–212 °F Setpoint Cool (SPC)=32–212 °F
Get (?) Emergency Heat Available	13	1 = Not Available 2 = Available

#### NOTES

- These commands are supported only for HomeWorks QS, RadioRA 2, myRoom Plus.
- Changing the setpoint will turn Eco Mode off if it is currently on.
- Schedule Unavailable → Schedule not programmed or device needs date/time.  
Following Schedule → Running programmed schedule; set points from schedule.  
Permanent Hold → Schedule is not running; set points as adjusted.  
Temporary Hold → Running schedule; set points as adjusted. Returns to following schedule at next schedule event.
- To leave a parameter unchanged, use "255" as the value for that parameter when ending the command.
- Allow for reported temperature values to be zero padded, with up to 3 digits before the decimal point, and 2 digits after.  
– Possible reported values of 5 °C: "005", "05", "5", "005.", "005.", "5.", "005.0", "05.0", "5.0", "005.00", "05.00", "5.00"  
– Possible reported values of 5.5 °C: "005.5", "05.5", "5.5", "005.50", "05.50", "5.50"  
– Possible reported values of 21 °C: "021", "21", "021.0", "21.0", "021.00", "21.00"  
– Possible reported values of 21.5 °C: "021.5", "21.5", "021.50", "21.50"
- Setting of current temperature is only possible if the HVAC zone is connected to a 3rd party HVAC controller.
- RCS HVAC controller locked out due to missing wired sensor. This parameter can only be read.

Continued on next page...

# Lutron integration protocol

## Integrator's Reference *(continued)*

### HVAC: Command Summary *(continued)*

#### HVAC Command-specific fields *(continued)*

##### Action Numbers and Parameters *(continued)*:

Action	Action Number	Parameters
Set (#) or Get (?) Call Status	14	0= None, Last was Heat 1= Heat Stage 1 2= Heat Stage 1 and 2 3= Heat Stage 1, 2, and 3 4= Heat Stage 3 5= None, Last was Cool 6= Cool Stage 1 7= Cool Stage 1 and 2 8= Off 9= Emergency Heat 10= Dry
Set (#) or Get (?) Current Temperature (°C) <sup>1,4,5</sup>	15	Temperature=0–100 °C
Set (#) or Get (?) Heat and Cool Setpoints (°C) <sup>2,3,4</sup>	16	Setpoint Heat (SPH)=0–100 °C Setpoint Cool (SPC)=0–100 °C
Get (?) Heat and Cool Setpoints (°C) without Eco Offset if applied <sup>2,4</sup>	17	Setpoint Heat (SPH)=0–100 °C Setpoint Cool (SPC)=0–100 °C
Set (#) or Get (?) Single Setpoint (°F) and Drifts <sup>3,4</sup>	18	Single Setpoint = 32–212 °F Negative Drift = 0–15 °F Positive Drift = 0–15 °F
Set (#) or Get (?) Single Setpoint (°C) and Drifts <sup>3,4</sup>	19	Single Setpoint = 0–100 °C Negative Drift = 0–8 °C Positive Drift = 0–8 °C

#### NOTES

1. HomeWorks QS software version 4.1 and higher.
2. Changing the setpoint will turn Eco Mode off if it is currently on.
3. To leave a parameter unchanged, use "255" as the value for that parameter when ending the command.
4. Allow for reported temperature values to be zero padded, with up to 3 digits before the decimal point, and 2 digits after.
  - Possible reported values of 5 °C: "005", "05", "5", "005.", "005.", "5.", "005.0", "05.0", "5.0", "005.00", "05.00", "5.00"
  - Possible reported values of 5.5 °C: "005.5", "05.5", "5.5", "005.50", "05.50", "5.50"
  - Possible reported values of 21 °C: "021", "21", "021.0", "21.0", "021.00", "21.00"
  - Possible reported values of 21.5 °C: "021.5", "21.5", "021.50", "21.50"
5. Setting of current temperature is only possible if the HVAC zone is connected to a 3rd party HVAC controller.

# Lutron integration protocol

## Integrator's Reference *(continued)*

### MONITORING: Command Summary

Monitoring allows the user to configure what types of messages the system will report.

**Note to Integrator:** *The default values of these are set in the programming database and restored whenever the integration port is logged in. The user can temporarily change those settings to hide or show information as desired.*

#### MONITORING Command Formats

Operation  
#MONITORING, Monitoring Type, Action Number  
Command Use "MONITORING Command-specific fields" tables to complete these command fields.

#### MONITORING Command-specific fields

##### Monitoring Type:

Description	Monitoring Type
Set (#) or Get (?) Diagnostic Monitoring	1
Set (#) or Get (?) Event Monitoring	2
Set (#) or Get (?) Button Monitoring <sup>1</sup>	3
Set (#) or Get (?) LED Monitoring <sup>1,2</sup>	4
Set (#) or Get (?) Zone Monitoring <sup>1</sup>	5
Set (#) or Get (?) Occupancy <sup>1</sup>	6
Set (#) or Get (?) Photo Sensor Monitoring	7
Set (#) or Get (?) Scene # <sup>1</sup>	8
Set (#) or Get (?) System Variable	10
Set (#) or Get (?) Reply State (if disabled, all messages FROM the integration access point will cease) <sup>1,3</sup>	11
Set (#) or Get (?) Prompt State (if disabled, the prompt will not be printed to the terminal) <sup>1,3</sup>	12
Set (#) or Get (?) Occupancy Group Monitoring	13
Set (#) or Get (?) Device Lock State Monitoring	14
Set (#) or Get (?) Sequence Monitoring <sup>2</sup>	16
Set (#) or Get (?) HVAC Monitoring <sup>1,2,4</sup>	17
Set (#) or Get (?) Mode Monitoring <sup>1,2,4</sup>	18
Set (#) or Get (?) Shade Group Monitoring <sup>1,5</sup>	23
Set (#) or Get (?) Partition Wall <sup>5,6</sup>	24
Set (#) or Get (?) Temperature Sensor Monitoring <sup>1,7</sup>	27
Set (#) or Get (?) State of All Monitoring (except Reply and Prompt)	255

#### NOTES

1. The following monitoring types are enabled by default, for user-level telnet login: 3-Button, 4-LED, 5-Zone, 6-Occupancy, 8-Scene, 11-Reply, 12-Prompt, 17-HVAC, 18-Mode, 23-Shade.
2. Not supported in QS Standalone.
3. The following monitoring types are enabled by default, for admin-level telnet login: 11-Reply, 12-Prompt.
4. Not compatible with Quantum.
5. Not supported in RadioRA 2 and HomeWorks QS.
6. Not supported via QSE-CI-NWK-E in Quantum.
7. Supported by Palladiom Thermostat only.

#### Action Numbers:

Action	Action Number
Enable	1
Disable	2

# Lutron integration protocol

## Integrator's Reference *(continued)*

### ERROR: Command Summary

Integration Access Points will respond with an error if an invalid command is received. See the table below for explanations of different errors.

#### ERROR Command Formats

*Operation*  
|  
~ERROR, Error Number  
|  
*Command* Refer to "ERROR Command-specific fields" table

#### ERROR Command-specific fields

##### Error Numbers:

Description	Error Number
Report (~) Parameter count mismatch	1
Report (~) Object does not exist	2
Report (~) Invalid action number	3
Report (~) Parameter data out of range	4
Report (~) Parameter data malformed	5
Report (~) Unsupported Command	6

#### Example ERROR Messages

Operation	Command String
<b>Parameter count mismatch:</b> Too many or too few parameters for the specified action	
Too many parameters when activating scene	#AREA,2,6,1,1,1,1,1<CR><LF>
Parameter count mismatch.	~ERROR,1<CR><LF>
<b>Object does not exist:</b> The Integration ID or serial number entered does not map to a known part of the system	
Send command to an ID that is not valid	#OUTPUT,1234,1,100.00<CR><LF>
Object does not exist	~ERROR,2<CR><LF>
<b>Invalid Action:</b> The action does not exist for this command	
Send invalid action (4321) to Area 2	#AREA,2,4321<CR><LF>
Invalid action number	~ERROR,3<CR><LF>
<b>Parameter data out of range:</b> The parameter data is out of range for this action	
Send Output 11 to 120%	#OUTPUT,11,1,120.00<CR><LF>
Parameter data out of range	~ERROR,4<CR><LF>
<b>Parameter data malformed:</b> The parameter data given was not formatted properly	
Set Time to 12:23:24:25	#SYSTEM,1,12:23:24:25<CR><LF>
Invalid action number	~ERROR,5<CR><LF>

# Lutron integration protocol

## Integrator's Reference *(continued)*

### HELP<sup>1</sup>: Command Summary

HELP Command for a specific Command Name provides command-name specific usage information.

#### HELP Command Formats

*Operation*  
 |  
 ?HELP, Command Name<sup>2</sup>, Action Number<sup>3</sup>  
 |  
*Command*

#### NOTES

1. HELP not supported in QS Standalone.
2. The "Command Name" parameter is optional. If not entered, a list of all the supported Integration Commands will be printed. If a supported command name is entered, the corresponding actions will be listed.
3. The "Action" parameter is optional. When a valid action number is entered (i.e. it is supported by the corresponding "Command Name"), the help information for that particular action will be displayed.

#### Example HELP Messages

Operation	Command String
<b>Query:</b> ?HELP, Command Name, Action Number	
What are all the supported Integration Commands?	?HELP<CR><LF>
What actions are available for #OUTPUT?	?HELP,#OUTPUT<CR><LF>
How is "Raise" used for #OUTPUT?	?HELP,#OUTPUT,2<CR><LF>
<b>Response:</b> ~HELP, Help Information	
The list of all Integration Commands.	#OUTPUT,?OUTPUT,#DEVICE,?DEVICE,#AREA,?AREA,#TIMECLOCK,?TIMECLOCK,#SYSTEM,?SYSTEM,#MONITORING,?MONITORING,<CR><LF>
The help information for the #OUTPUT command.	~HELP, #OUTPUT requires action<1-6><CR><LF> 1 = Set Level/Position 2 = Start Raising 3 = Start Lowering 4 = Stop Raising/Lowering 6 = Pulse USAGE: #OUTPUT, <ID>, <action>,<CR><LF>
The help information for the "Raise" action (#OUTPUT).	~HELP, #OUTPUT, <action=2> start raising output level<CR><LF> USAGE: #OUTPUT, <ID>, <action=2><CR><LF>

# Lutron integration protocol

## Integrator's Reference *(continued)*

### SYSTEM<sup>1</sup>: Command Summary

SYSTEM Command provides support for location, device and system specific information (e.g., Date, Time, Software Version Numbers).

#### SYSTEM Command Formats

*Operation*  
#SYSTEM, Action Number, Parameters  
*Command* Use "SYSTEM Command-specific fields" tables to complete these command fields.

#### NOTE

1. Not supported in QS Standalone.

#### SYSTEM Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Time <sup>1</sup>	1	Time in: SS.ss, SS, MM:SS, or HH:MM:SS
Set (#) or Get (?) Date	2	Date in MM/DD/YYYY
Set (#) or Get (?) Latitude and Longitude	4	Latitude = -90.00 to +90.00 degrees Longitude = -180.00 to +180.00 degrees
Set (#) or Get (?) Time Zone <sup>2</sup>	5	Hours = -12 to 12 Minutes = 0 to 59
Get (?) Sunset	6	None
Get (?) Sunrise	7	None
Get (?) OS Rev	8	None
Set (#) Load Shed <sup>3</sup>	11	0 = Disabled 1 = Enabled

#### NOTES

1. The system time must be entered in 24 hour format.
2. The Time Zone is referenced to GMT.
3. Load Shed commands available only on Quantum version 2.0 and higher.

#### Example SYSTEM Messages

Operation	Command String
<b>Execute:</b> #SYSTEM, Action Number, Parameters	
Set time to 5:45 PM.	#SYSTEM,1,17:45<CR><LF>
Set date to June 1, 2009.	#SYSTEM,2,06/01/2009<CR><LF>
<b>Query:</b> ?SYSTEM, Action Number	
What is the system time?	?SYSTEM,1<CR><LF>
What is the system date?	?SYSTEM,2<CR><LF>
<b>Response:</b> ~SYSTEM, Action Number, Parameters	
The system time is 11:05 AM.	~SYSTEM,1,11:05:00<CR><LF>
The system date is July 3, 2009.	~SYSTEM,2,07/03/2009<CR><LF>

# Lutron integration protocol

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## QS Standalone

### System Overview

The QS family of products delivers scalable lighting and shading solutions for residential and commercial applications. At the center of the QS system are the GRAFIK Eye QS control units, Energi Savr Node control units, and Sivoia QS shades and drapes, providing direct control of electric and natural light. QS system devices communicate over the highly flexible QS link; the link allows for daisy-chain or t-tap wiring configurations. All QS system devices communicate without the need for interfaces, and addressing is automatic, eliminating the need to set DIP switches. In addition, QS keypads are configurable in the field to control lights, shades, lights + shades, or third-party devices. The QS system can be easily integrated with other systems through contact-closure input/output, DMX output, or Ethernet/RS232.

### QS System Device Compatibility Index

	QS Standalone
GRAFIK Eye QS	✓
Energi Savr Node QS/DALI®	✓
Energi Savr Node QS/EcoSystem	✓
Energi Savr Node QS/EcoSystem (Int'l)	✓
Energi Savr Node QS/0–10 V/Softswitch (Int'l)	✓
Energi Savr Node QS/Phase-Adaptive (Int'l)	✓
Energi Savr Node QS/0–10 V/Softswitch	✓
Energi Savr Node QS/Motor Module (Int'l)	✓
Architrave Keypad	✓
Signature Series Keypad	✓
seeTouch Keypad	✓
seeTouch QS Keypad (Int'l)	✓
Pico Wireless Control	✓
Wallbox Input Closure Interface	✓
Sivoia QS Shade	✓
Sivoia QS Wireless Shade	
Sivoia QS Venetian Blind	✓
Sivoia QS Wireless Venetian Blind	
QS Input/Output Control Interface	✓
QS Sensor Module	✓

# Lutron integration protocol

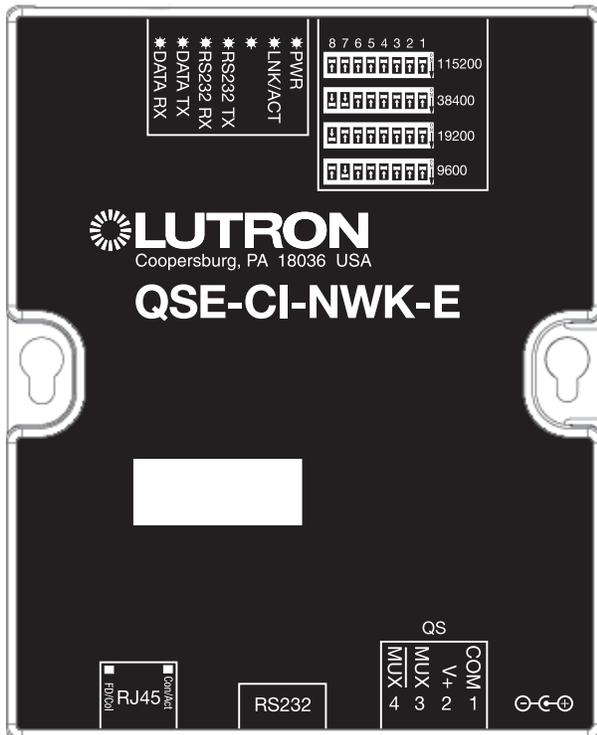
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## QS Standalone *(continued)*

### Integration Access Points

#### Network Interface

Model: QSE-CI-NWK-E



#### Why Integrate with a QSE-CI-NWK-E?

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- Integrates a QS lighting control system with a PC or other digital equipment that supports RS232 or Ethernet TCP/IP connection.
- Allows monitor and control of system devices. For example, the QSE-CI-NWK-E can be used to simulate button presses, report button presses, control light levels, and monitor light levels.

#### Supported Commands

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- **MONITORING** specifies what type of messages the system will report
- **ETHERNET** modifies the Ethernet configurations of the QSE-CI-NWK-E
- **RESET** restarts the QSE-CI-NWK-E or restores it to factory defaults
- **INTEGRATION ID** assigns IDs to devices, so that they may be referred to in a more logical fashion
- **DETAILS** returns information about a QS device
- **ERROR** reports syntax errors in an integration string command or query
- **PROGRAMMING** allows user to program Phantom Buttons on the NWK supported in version 8.0 or higher
- **DEVICE** used to activate Phantom Buttons on the NWK
- **OUTPUT** used to control outputs of a Device
- “Programming” and “Device” commands require version 8.0 or higher of the NWK software

Continued on next page...

# Lutron integration protocol

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## QS Standalone *(continued)*

### Integration Access Points *(continued)*

#### Connection Information

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Provides an RS232 and Ethernet connection to communicate with external equipment. Communication is through either RS232 or Ethernet, but not both simultaneously.

##### RS232

The RS232 connection has the following communication settings:

- Baud Rate 9600/19200/38400/115200 (set via dipswitch on unit)
- 8 data bits
- No parity bit
- 1 stop bit
- No flow control

##### Ethernet

Configuring the control interface to communicate over a network takes not only knowledge of the QS system, but of networking as well. Installers with limited networking knowledge are advised to contact a networking professional before attempting to connect a QSE-CI-NWK-E through a network. The information below will help an installer communicate the QSE-CI-NWK-E configurations to a network professional.

The installer will make any necessary changes to the control interface using the Lutron DeviceIP or PC software tool and the network professional can make any necessary changes to the networking equipment.

##### Single Ethernet Port

- IEEE® 802.3 Auto-Sensing 10BaseT/100BaseTX
- Supports MDI/MDIX auto-crossover (no crossover cable needed).
- Female 8P8C “Computer RJ-45” socket
- Green “Connect” LED, Amber “Activity” LED
- Use Cat 5 cabling or better

##### TCP/IP Settings

- IP Address: <static default = 192.168.250.1>
- Subnet Mask: <static default = 255.255.255.0>
- Gateway: <static default = 0.0.0.0>

##### Protocols Used for Integration

- TELNET

##### Telnet Server

- Used by third party equipment (i.e. touch screen)
- Limited to transferring ASCII characters
- Telnet Port number is 23
- Login #1: nwk
- Login #2: nwk2
- Logins can be configured to require a passphrase.



## QS Standalone *(continued)*

### System Commands

#### ETHERNET Commands

##### ETHERNET Command Formats

*Operation*  
**#ETHERNET, Configuration Number, Parameters**  
*Command*      Use "ETHERNET Command-specific fields" tables  
                          to complete these command fields.

##### ETHERNET Command-specific fields

###### Configuration Numbers:

Description	Configuration Number	Parameters
Set (#) or Get (?) IP Address	0	Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Gateway Address	1	Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Subnet Mask	2	Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Login Info	3	User (0=All users; 1=User 1; 2=User 2), Old Login, New Login

##### Example ETHERNET Commands

Operation	Command String
<b>Execute:</b> #ETHERNET, Configuration Number, Parameters	
Set IP Address to 192.168.250.1	#ETHERNET,0,192.168.250.1<CR><LF>
Set Gateway Address to 10.2.4.1	#ETHERNET,1,10.2.4.1<CR><LF>
<b>Query:</b> ?ETHERNET, Configuration Number, Parameters	
What is the IP Address?	?ETHERNET,0<CR><LF>
What is the Login Information for user 1?	?ETHERNET,3,1<CR><LF>
What is the Login Information for ALL users? ( <b>Note:</b> 0=ALL)	?ETHERNET,3,0<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Configuration Number, Parameters	
The IP Address is 192.168.250.1	~ETHERNET,0=,192.168.250.1<CR><LF>

# Lutron integration protocol



## QS Standalone *(continued)*

### System Commands *(continued)*

#### PASSWD Commands

##### PASSWD Command Formats

*Operation*  
|  
#PASSWD<sup>1</sup>  
|  
*Command*

##### Example PASSWD Commands

Operation
<b>Execute:</b> #PASSWD
If passphrase feature is enabled: QSE>#passwd Changing passphrase for nwk. Enter current passphrase: currentPassphrase Enter new passphrase: newPassphrase Confirm new passphrase: newPassphrase Passphrase changed successfully QSE>
If passphrase feature is disabled: QSE>#passwd Enable Passphrase (recommended)? (yes no):

##### Reset a Forgotten Passphrase

Operation
<ol style="list-style-type: none"><li>1. Open a new Telnet session to the device</li><li>2. Login using the username <code>reset</code></li><li>3. Follow the directions on screen. This requires physical access to the device to change a dip switch.</li></ol>

##### NOTES

1. The #PASSWD command only works in a Telnet session.

# Lutron integration protocol



## QS Standalone *(continued)*

### System Commands *(continued)*

#### INTEGRATION ID Commands

#### INTEGRATION ID Command Formats

*Operation*

#INTEGRATIONID, Action Number, Parameters

*Command*

Use "INTEGRATIONID Command-specific fields" tables to complete these command fields.

#### INTEGRATION ID Command-specific fields

##### Action Numbers and Parameters:

Description	Action Number	Parameters
Set (#) or Get (?) Integration ID for a Serial Number	1	Serial Number = 8 character HEX serial number of the device Integration ID = The integration ID to be assigned.
Set (#) Change Integration ID	2	Current Integration ID, New Integration ID <b>Note:</b> An error will be reported if the new Integration ID is the same as an existing Integration ID in the system.
Get (?) Info from ID	3	Integration ID <b>Note:</b> If this field is left blank, all integration IDs will be printed.
Set (#) or Get (?) Output Integration ID	4	Serial Number, Component Number, Integration ID

#### Example INTEGRATION ID Commands

Operation	Command String
<b>Execute:</b> #INTEGRATIONID, Action Number, Parameters	
Set the Integration ID for a serial number	#INTEGRATIONID,1,1234ABCD,kitchen dimmer<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Set the Integration ID for a serial number	~INTEGRATIONID,1,1234ABCD,kitchen dimmer<CR><LF>
<b>Execute:</b> ?INTEGRATIONID, Action Number, Parameters	
Get the Integration ID for a serial number	?INTEGRATIONID,1,5678EFEF<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Get the Integration ID for a serial number	~INTEGRATIONID,1,5678EFEF,living room keypad<CR><LF>
<b>Execute:</b> #INTEGRATIONID, Action Number, Parameters	
Change the Integration ID	#INTEGRATIONID,2,diningroomlights1,diningroomaccents<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Change the Integration ID	~INTEGRATIONID,2,diningroomlights1,diningroomaccents<CR><LF>
<b>Execute:</b> ?INTEGRATIONID, Action Number, Parameters	
Get information about an Integration ID command	?INTEGRATIONID,3,livingroomkeypad<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Get information about an Integration ID command	~INTEGRATIONID,3,livingroomkeypad,DEVICE,5678EFEF<CR><LF>



## QS Standalone *(continued)*

### System Commands *(continued)*

DETAILS String

#### DETAILS Command Formats

*Operation*  
 |  
 ?DETAILS, ID<sup>1</sup>  
 |  
*Command*

#### NOTE

1. Device ID may be entered as the serial ID number or the Integration ID. Use ALL\_DEVICES or FFFFFFFF to query all devices on the link.

#### Example DETAILS String

Operation	Command String
<b>Query:</b> ?DETAILS, ID	
Get details of the device with serial ID number 00AC123D	?DETAILS,00AC123D<CR><LF>
<b>Response:</b> ~DETAILS, Serial Number, Name, Family, Model, Software Rev., Boot Software Rev.	
The device with serial ID number 00AC123D has the following information: Name=GRAFIK Eye 1 Product Family=GRAFIK Eye Product Model=QSG Software Revision=1.70 Boot Code Software Revision=2	~DETAILS,SN:00AC123D,IntegrationID:GRAFIKEye1,Family:GRAFIK_Eye(2),Product:QSG(1),CODE:1.70,Boot:2.1,HW:1.1<CR><LF>

Continued on next page...

# Lutron integration protocol



## QS Standalone *(continued)*

### System Commands *(continued)*

#### RESET Commands

##### RESET Command Formats

Operation  
#RESET, Action Number  
Command Use "RESET Command-specific fields" tables to complete these command fields.

##### RESET Command-specific fields

###### Action Numbers:

Action	Action Number
Set (#) restart the device	0
Set (#) restore to factory defaults	1
Set (#) restore to factory defaults (does not affect the IP address, Gateway address, subnet mask settings)	2

##### Example RESET Commands

Operation	Command String
<b>Execute:</b> #RESET, Action Number	
Restart the NWK	#RESET,0<CR><LF>
Restore NWK to factory defaults	#RESET,1<CR><LF>



## QS Standalone *(continued)*

### System Commands *(continued)*

#### PROGRAMMING Commands

#### PROGRAMMING Command Formats

*Operation* | *Integration ID or Serial # of the QSE-CI-NWK being used*  
**#PROGRAMMING, 1, Button Number, Action Number, Parameters**  
*Command* | *Phantom Button Number (can be 1-100)* | *Use "PROGRAMMING Command-specific fields" tables to complete these command fields.*

#### PROGRAMMING Command-specific fields

##### Action Numbers and Parameters:

Description	Action Number	Parameters
Set (#) add programming to a phantom button	1	a) Integration ID – The Integration ID of the device b) Component Number – Always '0' for Shade c) Level – The level to which the shade being programmed will go on activation of this button d) Fade – The time the zone takes to reach the level specified (maximum 4 hours) <sup>1</sup> e) Delay – The time until the Shade/Zone begins to change (maximum 4 hours)
Set (#) add scene programming to a phantom button	2	a) Integration ID b) Component Number (GRAFIK Eye QS Scene controller, Energi Savr Node area <sup>2</sup> ) c) Scene Number
Set (#) clear programming from a phantom button <sup>3</sup>	3	None
Set (#) configure Stop-If-Moving functionality <sup>4</sup>	4	0 = Stop-If-Moving Off 1 = Stop-If-Moving On
Set (#) add programming to a phantom button (Venetian blind, lift and tilt levels)	5	a) Venetian Integration ID b) Component Number (always 0) c) Lift level d) Tilt level
Set (#) add programming to a phantom button (Venetian blind, tilt only)	6	a) Venetian Integration ID b) Component Number (always 0) c) Tilt level
Set (#) add programming to a phantom button (Venetian blind, lift only)	7	a) Venetian Integration ID b) Component Number (always 0) c) Lift level

#### NOTES

A maximum of 500 programming assignments can be made in the QSE-CI-NWK-E.

1. Not available for Shades.
2. If a device's Zone is already assigned to the button, you cannot program a Scene for that button. If a Scene is already programmed for this button for a device, you cannot program another Zone for this button.
3. Use button number 0 to clear programming from all buttons.
4. Use button number 0 to configure Stop-If-Moving functionality on all buttons.

Continued on next page...

# Lutron integration protocol



## QS Standalone (continued)

### System Commands (continued)

#### PROGRAMMING Commands (continued)

#### Example PROGRAMMING Commands

For a system of one shade (Integration ID “living room sheer”), one Venetian blind (“kitchen venetian”), and one QSE-CI-NWK (Integration ID “1”), the following examples show how programming can be done.

Operation	Command String
Add shade at 100% to phantom button 1	#PROGRAMMING,1,1,1,living room sheer,0,100<CR><LF>
Response Received	~PROGRAMMING,1,1,1,living room sheer,0,100<CR><LF>
Add Venetian blind at 0% lift and 50% tilt to phantom button 2	#PROGRAMMING,1,2,5,kitchen venetian,0,0,50<CR><LF>
Response Received	~PROGRAMMING,1,2,5,kitchen venetian,0,0,50<CR><LF>
Add Venetian blind at 75% tilt to phantom button 3	#PROGRAMMING,1,3,6,kitchen venetian,0,75<CR><LF>
Response Received	~PROGRAMMING,1,3,6,kitchen venetian,0,75<CR><LF>
Add Venetian blind at 15% lift to phantom button 4	#PROGRAMMING,1,4,7,kitchen venetian,0,15<CR><LF>
Response Received	~PROGRAMMING,1,4,7,kitchen venetian,0,15<CR><LF>
Add shade at 50% to phantom button 2	#PROGRAMMING,1,2,1,dining room blackout,0,50<CR><LF>
Response Received	~PROGRAMMING,1,2,1,dining room blackout,0,50<CR><LF>
Turn On Stop-If-Moving for phantom button 5	#PROGRAMMING,1,5,4,1<CR><LF>
Response Received	~PROGRAMMING,1,5,4,1<CR><LF>
Clear programming from all the phantom buttons	#PROGRAMMING,1,0,3<CR><LF>
Response Received	Repeat command to clear all phantom button programming
Repeat command to clear all phantom button programming	#PROGRAMMING,1,0,3<CR><LF>
Response Received	~PROGRAMMING,1,0,3<CR><LF>
Clear programming from phantom button 6	#PROGRAMMING,1,6,3<CR><LF>
Response Received	~PROGRAMMING,1,6,3<CR><LF>



## QS Standalone *(continued)*

### System Commands *(continued)*

#### PROGRAMMING Commands *(continued)*

#### PROGRAMMING Command Formats

$\begin{matrix} \text{Operation} & & \text{Integration ID or Serial \# of} \\ & & \text{the QSE-CI-NWK being used} \\ \text{?PROGRAMMING, 1, Button Number, Action Number} \\ \text{Command} & \text{Phantom Button Number} & \text{Use "PROGRAMMING Command-specific fields" tables} \\ & \text{(can be 1-100)} & \text{to complete these command fields.} \end{matrix}$

#### PROGRAMMING Command-specific fields

##### Action Numbers and Parameters:

Description	Action Number	Parameters
Get (?) display programming of a specific phantom button <sup>1</sup>	None	None
Get (?) display Stop-If-Moving configuration of a specific phantom button <sup>2</sup>	4	None

#### Example PROGRAMMING Commands

The following examples show how to verify the programming of the phantom buttons of a QSE-CI-NWK-E with an Integration ID of "1."

Operation	Command String
Display programming of phantom button 1	?PROGRAMMING,1,1<CR><LF>
Display programming of all phantom buttons	?PROGRAMMING,1<CR><LF>
Display Stop-If-Moving configuration of phantom button 5	?PROGRAMMING,1,5,4<CR><LF>
Display Stop-If-Moving configuration of all phantom buttons	?PROGRAMMING,1,0,4<CR><LF>

#### NOTES

1. To display programming of all phantom buttons, leave the button number field blank.
2. To display Stop-If-Moving configuration of all phantom buttons, use button number 0.

Continued on next page...



## QS Standalone *(continued)*

### System Commands *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Integration ID or Serial # of the QSE-CI-NWK being used*  
 Operation      **#DEVICE, 1, Button Number, Action Number, Parameters**  
*Command*      *Phantom Button Number (can be 1–100)*      *Use “DEVICE Command-specific fields” tables to complete these command fields.*

#### DEVICE Command-specific fields

##### Action Numbers and Parameters:

Description	Action Number	Parameters
Set (#) activate the phantom button preset	3	None
Set (#) a custom level of the shades, lighting zones programmed to the phantom button <sup>1</sup>	14	Level: The level the shades will go to <sup>1</sup>
Set (#) Start Raising Shades <sup>2</sup>	18	None
Set (#) Start Lowering Shades <sup>2</sup>	19	None
Set (#) Stop Raising or Lowering Shades	20	None
Set (#) a custom lift and tilt level of venetian blinds programmed to the phantom button <sup>1</sup>	23	Lift level % Tilt level %
Set (#) a custom lift level only of venetian blinds programmed to the phantom button <sup>1</sup>	24	Lift level %
Set (#) a custom tilt level only of venetian blinds programmed to the phantom button <sup>1</sup>	25	Tilt level %

#### NOTES

1. Specifying a custom level above will not affect the preset level programmed for the phantom button.
2. For Venetian blinds, the Raise & Lower Actions will affect either the lift or the tilt based on how the phantom button was programmed. If #PROGRAMMING Action 5 is used (affecting both lift and tilt levels), then the Raise & Lower Actions will affect the tilt.

#### Example DEVICE Commands

The following examples show how we can activate phantom buttons on a link with a QSE-CI-NWK-E whose Integration ID is “1.”

Operation	Command String
Activate Preset on phantom button 1	#DEVICE,1,1,3<CR> <LF>
Set the level of all shades programmed to phantom button 2 to 50%	#DEVICE,1,2,14,50<CR><LF>
Set all venetian blinds programmed to phantom button 3 to a lift level of 50% and tilt level of 25%	#DEVICE,1,3,23,50,25<CR><LF>
Set all venetian blinds programmed to phantom button 4 to a lift level of 50%	#DEVICE,1,4,24,50<CR><LF>
Set all venetian blinds programmed to phantom button 5 to a tilt level of 25%	#DEVICE,1,5,25,25<CR><LF>
Raise the shades and venetian blinds programmed to phantom button 6	#DEVICE,1,6,18<CR><LF>
Lower shades and venetian blinds programmed to phantom button 7	#DEVICE,1,7,19<CR><LF>
Stop shades and venetian blinds programmed to phantom button 8	#DEVICE,1,8,20<CR><LF>

## RadioRA 2

### System Overview

RadioRA 2 is a wireless multi-room control system for lights and shades. The system is made up of repeaters, dimmers, keypads, and other devices. The Lutron proven, patented RF technology ensures reliable performance. With the RadioRA 2 system, you can: create the right ambience for varied activities, easily monitor and control your lights, reduce energy usage, and increase safety in and around your home.

### RadioRA 2 System Device Compatibility Index

	RadioRA 2
GRAFIK Eye QS	✓
seeTouch Keypad	✓
Tabletop seeTouch Keypad	✓
Pico Wireless Control	✓
Hybrid Keypad	✓
Sivoia QS Shade	✓
Sivoia QS WirelessShade	✓
Sivoia QS Venetian Blind	✓
Sivoia QS Wireless Venetian Blind	✓
Maestro Dimmer and Plug-In Module	✓
Maestro Fan Speed Control	✓
Visor Control Receiver	✓
Radio Powr Savr Sensor	✓
HVAC Controller	✓
Wireless Temperature Sensor	✓

# Lutron integration protocol

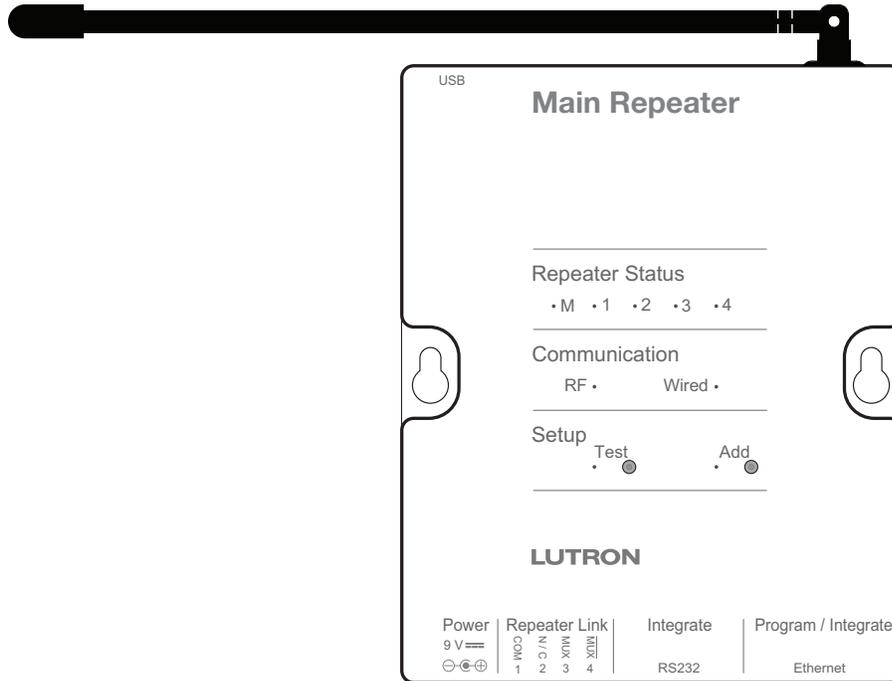
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## RadioRA 2 *(continued)*

### Integration Access Points

#### Main Repeater

Model: RR-MAIN-REP-WH, RRK-MAIN-REP-WH



#### Why Integrate with a RadioRA 2 Main Repeater?

---

- Integrates a RadioRA 2 lighting control system with a PC or other digital equipment that supports RS232 or Ethernet TCP/IP communication.
- Allows monitoring and control of system devices. For example, the Main Repeater can be used to simulate button presses, report button presses, monitor LEDs, and control light levels of dimmers.

#### Integration Capabilities

---

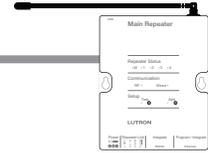
- 100 “virtual” programmable buttons with LEDs (use DEVICE command)
- Monitoring of changes to other system devices (use MONITORING command)

#### Additional Commands

---

- **MONITORING** commands are used to program what types of messages the system will report

Continued on next page...



## RadioRA 2 *(continued)*

### Integration Access Points *(continued)*

#### Connection Information

---

Provides an RS232 and Ethernet connection to communicate with external equipment.

##### RS232

The RS232 connection has the following communication settings:

- Baud Rate 9600
- 8 data bits
- No parity bit
- 1 stop bit
- No flow control

##### Ethernet

Configuring the control interface to communicate over a network takes not only knowledge of the RadioRA 2 system, but of networking as well. Installers with limited networking knowledge are advised to contact a networking professional before attempting to connect a control interface through a network. The information below will help an installer communicate the control interface configurations to a network professional.

The installer will make any necessary changes to the control interface using the Lutron DeviceIP or RadioRA 2 PC software tool and the network professional can make any necessary changes to the networking equipment.

##### Single Ethernet Port

- IEEE® 802.3 Auto-Sensing 10BaseT/100BaseTX
- Supports MDI/MDIX auto-crossover (no crossover cable needed).
- Female 8P8C “Computer RJ-45” socket
- Green “Connect” LED, Amber “Activity” LED
- Use Cat 5 cabling or better

##### TCP/IP Settings

- DHCP (dynamic) or static configuration <factory default = DHCP>
- IP Address: <static default = 192.168.1.50 or dynamic configuration>
- Subnet Mask: <static default = 255.255.255.0 or dynamic configuration>
- Gateway: <static default = 0.0.0.0 or dynamic configuration>

##### Protocols Used for Integration

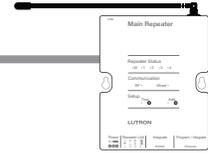
- TELNET

##### Telnet Server

- Inclusive Software will allow up to a total of 10 additional logins
- Used by software and/or third party equipment (e.g., touch screen)
- Limited to transferring ASCII characters
- Logins: Defined in the RadioRA 2 software application

##### UDP Multicast Messaging

- Used by the RadioRA 2 PC software during device configuration and system programming
- There are no user modifiable settings for UDP messaging



## RadioRA 2 (continued)

### System Commands

#### DEVICE Commands

#### DEVICE Command Formats

<sup>Operation</sup>      <sup>Integration ID (example)</sup>  
**#DEVICE, 1, Component Number, Action Number, Parameters**  
<sub>Command</sub>      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Button 1–100	1–100	Press, Release
LED 1–100	101–200	Set or Get LED state

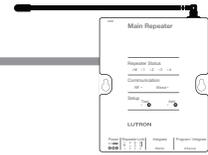
##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press	3	None
Set (#) Release	4	None
Set (#) or Get (?) LED State	9	0 = Off 1 = On

#### Example DEVICE Commands

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1.	#DEVICE,4,1,3<CR><LF>
Release Button 1	#DEVICE,4,1,4<CR><LF>
Turn On LED 1.	#DEVICE,4,101,9<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 1?	?DEVICE,4,101,9<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,4,101,9,1<CR><LF>





## RadioRA 2 *(continued)*

### System Commands *(continued)*

#### MONITORING Commands

#### MONITORING Command Formats

*Operation*  
**#MONITORING, Monitoring Type, Action Number**  
*Command*

Use "MONITORING Command-specific fields" tables to complete these command fields.

#### MONITORING Command-specific fields

##### Monitoring Type:

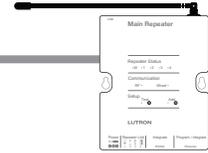
Description	Monitoring Type
Set (#) or Get (?) Diagnostic Monitoring	1
Set (#) or Get (?) Button Monitoring (if enabled, button actions will be reported)	3
Set (#) or Get (?) LED Monitoring (if enabled, LED states will be reported)	4
Set (#) or Get (?) Zone Monitoring (if enabled, zone levels will be reported, i.e. dimmer, shade, contact closure output level)	5
Set (#) or Get (?) Reply State (if disabled, all messages FROM the integration access point will cease)	11
Set (#) or Get (?) Prompt State (if disabled, the prompt will not be printed to the terminal)	12
Set (#) or Get (?) Temperature Sensor Monitoring	27
Set (#) or Get (?) State of All Monitoring (except Reply and Prompt)	255

##### Action Numbers:

Action	Action Number
Enable	1
Disable	2

#### Example MONITORING Commands

Operation	Command String
<b>Execute:</b> #MONITORING, Monitoring Type, Action Number	
Disable Diagnostic Monitoring.	#MONITORING,1,2<CR><LF>
Enable Event Monitoring.	#MONITORING,2,1<CR><LF>
<b>Query:</b> ?MONITORING, Monitoring Type	
Is Diagnostic Monitoring disabled?	?MONITORING,1<CR><LF>
<b>Response:</b> ~MONITORING, Monitoring Type, Action Number	
Diagnostic Monitoring is disabled.	~MONITORING,1,2<CR><LF>



## RadioRA 2 (continued)

### System Commands (continued)

#### TIMECLOCK Commands

##### TIMECLOCK Command Formats

*Operation* | *Integration ID (example)*  
**#TIMECLOCK, 4, Action Number, Parameters**  
*Command* | Use "TIMECLOCK Command-specific fields" tables to complete these command fields.

##### TIMECLOCK Command-specific fields

###### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Current Timeclock Mode <sup>1</sup>	1	Mode Index Number
Get (?) Current Timeclock Mode <sup>1</sup>	1	None
Get (?) Sunrise Time	2	None
Get (?) Sunset Time	3	None
Get (?) Day's Schedule	4	None
Set (#) Execute Indexed Event	5	Index of the event to test. The index number of the first event is 1; the second event is 2, and so on.
Set (#) Indexed Event as Enabled or Disabled	6	Event Index, Enable State (1 = Enable, 2 = Disable)

###### NOTE

- In order to set the Timeclock Mode, the "Mode Index" must be determined using the (?) help, (#) timeclock,1 command. Mode Indexes are project dependent and may change with each new project.

##### Example TIMECLOCK Messages

Operation	Command String
<b>Execute:</b> #TIMECLOCK, Integration ID, Action Number, Parameters	
Execute the 3rd event of the time clock.	#TIMECLOCK,4,5,3<CR><LF>
<b>Query:</b> ?TIMECLOCK, Integration ID, Action Number	
What is the sunrise time?	?TIMECLOCK,4,2<CR><LF>
<b>Response:</b> ~TIMECLOCK, Integration ID, Action Number, Parameters	
The time the sun rises.	~TIMECLOCK,4,2,05:32<CR><LF>

# Lutron integration protocol

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## Quantum

### System Overview

The Quantum system is the Lutron premier commercial lighting control system. It allows the control and monitoring of individual devices and outputs as well as allowing control of entire areas, shade groups or other portions of the system. The Quantum system includes QS devices such as the GRAFIK Eye QS and Sivoia QS shades as well as Lutron EcoSystem ballasts and GRAFIK dimming panels. When integrating with a Quantum system the integrator gets additional access to portions of a the system not available when using products in stand-alone mode, particularly the ability to activate scenes on an area-by-area basis and to control the position of and activate presets on entire groups of shades at once.

#### Quantum System Device Compatibility Index

	Quantum
GRAFIK Eye QS	✓
Energi Savr Node QS/DALI®	✓
Energi Savr Node QS/EcoSystem	✓
Energi Savr Node QS/EcoSystem (Int'l)	✓
Energi Savr Node QS/0–10 V/Softswitch (Int'l)	✓
Energi Savr Node QS/Phase-Adaptive (Int'l)	✓
Energi Savr Node QS/0–10 V/Softswitch	✓
Remote Power Module	✓
Palladiom Keypad	✓
Architrave Keypad	✓
Signature Series Keypad	✓
seeTouch Keypad	✓
seeTouch QS Keypad (Int'l)	✓
Pico Wireless Control	✓
Wallbox Input Closure Interface	✓
Sivoia QS Shade	✓
Sivoia QS Wireless Shade	
QS Input/Output Control Interface	✓

#### Why Integrate with a Quantum System

---

- Compatible with Quantum system version 1.7 or higher
- Gain access to system-only information
- Activate System Area scenes
- Set levels for System Outputs
- Activate System Shade Group presets
- View and modify parameters of a Quantum system, such as time, date, time zone, etc.

#### Command Types

---

Operation characters will be followed by command types:

- **AREA** allows control of an area in the Quantum system. Scenes can be activated, occupancy monitored etc.
  - **SHADEGRP** allows control of shade groups in the Quantum system. Shade Groups are collections of shades that operate in unison
  - **OUTPUT** allows control and monitoring of a Quantum system output group such as a lighting zone or closure output.
  - **SYSTEM** allows setting and controlling system parameters and variables\*
  - **HELP** displays usage information for the supported commands and their corresponding actions
  - **INTEGRATION ID** allows querying integration IDs of devices in the system
- \* Load Shed commands available only on Quantum version 2.0 and higher.

# Lutron integration protocol

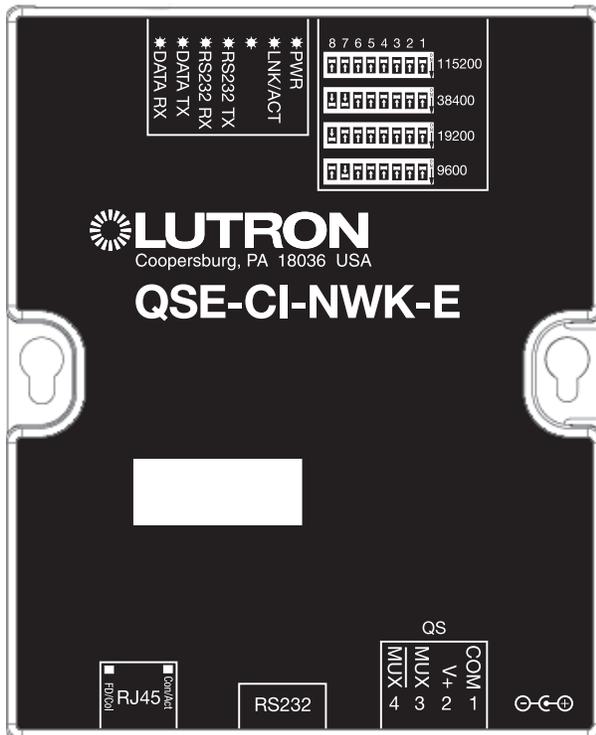
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## Quantum *(continued)*

### Integration Access Points

#### Network Interface

Model: QSE-CI-NWK-E



#### Why Integrate with a QSE-CI-NWK-E?

- Integrates a QS lighting control system with a PC or other digital equipment that supports RS232 or Ethernet TCP/IP connection.
- Allows monitor and control of system devices. For example, the QSE-CI-NWK-E can be used to simulate button presses, report button presses, monitor LEDs, and control light levels.

#### Additional Commands

- **MONITORING** specifies what type of messages the system will report
- **ETHERNET** modifies the Ethernet configurations of the QSE-CI-NWK-E
- **RESET** restarts the QSE-CI-NWK-E or restores it to factory defaults
- **INTEGRATION ID** assigns IDs to devices, so that they may be referred to in a more logical fashion
- **DETAILS** returns information about a QS device
- **ERROR** reports syntax errors in an integration string command or query

Continued on next page...

# Lutron integration protocol

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## Quantum *(continued)*

### Integration Access Points *(continued)*

#### Connection Information

---

Provides an RS232 and Ethernet connection to communicate with external equipment.

##### RS232

The RS232 connection has the following communication settings:

- Baud Rate 9600/19200/38400/115200 (set via dipswitch on unit)
- 8 data bits
- No parity bit
- 1 stop bit
- No flow control

##### Ethernet

Configuring the control interface to communicate over a network takes not only knowledge of the Quantum system, but of networking as well. Installers with limited networking knowledge are advised to contact a networking professional before attempting to connect a QSE-CI-NWK-E through a network. The information below will help an installer communicate the QSE-CI-NWK-E configurations to a network professional.

The installer will make any necessary changes to the control interface using the Lutron DeviceIP or Quantum PC software tool and the network professional can make any necessary changes to the networking equipment.

##### Single Ethernet Port

- IEEE® 802.3 Auto-Sensing 10BaseT / 100BaseTX
- Supports MDI/MDIX auto-crossover (no crossover cable needed).
- Female 8P8C “Computer RJ-45” socket
- Green “Connect” LED, Amber “Activity” LED
- Use Cat 5 cabling or better

##### TCP/IP Settings

- IP Address: <static default = 192.168.250.1>
- Subnet Mask: <static default = 255.255.255.0>
- Gateway: <static default = 0.0.0.0>

##### Protocols Used for Integration

- TELNET

##### Telnet Server

- Used by third party equipment (e.g., touch screen)
- Limited to transferring ASCII characters
- Telnet Port number is 23
- Login #1: nwk
- Login #2: nwk2

# Lutron integration protocol



## Quantum *(continued)*

### System Commands

#### ETHERNET Commands

##### ETHERNET Command Formats

*Operation*  
**#ETHERNET, Configuration Number, Parameters**  
*Command*

Use "ETHERNET Command-specific fields" tables to complete these command fields.

##### ETHERNET Command-specific fields

###### Configuration Numbers:

Description	Configuration Number	Parameters
Set (#) or Get (?) IP Address	0	IP Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Gateway Address	1	IP Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Subnet Mask	2	IP Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Login Info	3	User (1 or 2), Old Login, New Login

###### Example ETHERNET Commands

Operation	Command String
<b>Execute:</b> #ETHERNET, Configuration Number, Parameters	
Set IP Address to 192.168.250.1	#ETHERNET,0,192.168.250.1<CR><LF>
Set Gateway Address to 10.2.4.1	#ETHERNET,1,10.2.4.1<CR><LF>
<b>Query:</b> ?ETHERNET, Configuration Number, Parameters	
What is the IP Address?	?ETHERNET,0<CR><LF>
What is the Login Information for user 1?	?ETHERNET,3,1<CR><LF>
What is the Login Information for ALL users?	?ETHERNET,3,0<CR><LF> <b>(Note: 0=ALL)</b>
<b>Response:</b> ~ETHERNET, Integration ID, Configuration Number, Parameters	
The IP Address is 192.168.250.1	~ETHERNET,0,192.168.250.1<CR><LF>

# Lutron integration protocol



## Quantum *(continued)*

### System Commands *(continued)*

#### INTEGRATION ID Commands

#### INTEGRATION ID Command Formats

*Operation*

?INTEGRATIONID, Action Number, Parameters

*Command*

Use "INTEGRATIONID Command-specific fields" tables to complete these command fields.

#### INTEGRATION ID Command-specific fields

##### Action Numbers and Parameters:

Description	Action Number	Parameters
Get (?) Integration ID for a Serial Number	1	Serial Number: 8 character HEX serial number of the device; Integration ID: The integration ID to be assigned.
Get (?) Info from ID	3	Integration ID= The Integration ID that information is desired for. <b>Note:</b> If this field is left blank, all integration IDs will be printed.

#### Example INTEGRATION ID Commands

Operation	Command String
<b>Execute:</b> ?INTEGRATIONID, Action Number, Parameters	
Get the Integration ID for a serial number	?INTEGRATIONID,1,5678EFFF<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Get the Integration ID for a serial number	~INTEGRATIONID,1,5678EFFF,1<CR><LF>
<b>Execute:</b> ?INTEGRATIONID, Action Number, Parameters	
Get information about an Integration ID command	?INTEGRATIONID,3,1<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Get information about an Integration ID command	~INTEGRATIONID,3,1,DEVICE,5678EFFF<CR><LF>

# Lutron integration protocol



## Quantum *(continued)*

### System Commands *(continued)*

#### RESET Commands

##### RESET Command Formats

*Operation*

#RESET, Action Number

*Command*

Use "RESET Command-specific fields" tables to complete these command fields.

##### RESET Command-specific fields

###### Action Numbers:

Action	Action Number
Set (#) restart the device	0
Set (#) restore to factory defaults	1

##### Example RESET Commands

Operation	Command String
<b>Execute:</b> #RESET, Action Number	
Restart the NWK	#RESET,0<CR><LF>
Restore NWK to factory defaults	#RESET,1<CR><LF>



## Quantum *(continued)*

### System Commands *(continued)*

#### AREA Commands

#### AREA Command Formats

*Operation*      *Integration ID (example)*  
**#AREA** <sup>1,2</sup>, **2**, **Action Number**, **Parameters**  
*Command*      *Use "AREA Command-specific fields" tables to complete these command fields.*

#### NOTES

1. AREA can be used to control only those areas of a Quantum system that have been assigned to a particular integration access point. Please refer to the Q-Design software (Integration Tab) or Quantum Integration Report for details of what areas are available for control and monitoring.
2. AREA commands cannot be sent to areas that contain other areas, such as a floor or an entire building.

#### AREA Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Area Level	1	Level <sup>1</sup> = 0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising <sup>4</sup>	2	None
Set (#) Start Lowering <sup>4</sup>	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) or Get (?) Current Scene	6	Scene Number <sup>5</sup> = 0–32 <sup>6</sup>
Set (#) or Get (?) Daylighting Mode	7	1 = Active 2 = Inactive
Get (?) Occupancy State	8	1 = Unknown 2 = Inactive 3 = Occupied 4 = Unoccupied
Set (#) or Get (?) Occupancy Mode	9	1 = Occupancy and Vacancy <sup>7</sup> 2 = Vacancy <sup>7</sup> 3 = Not Applicable <sup>8</sup> 4 = Inactive
Set (#) or Get (?) Occupied Level or Scene	12	Level = 0–100; 200–232 for Scene Number = 0–32
Set (#) or Get (?) Unoccupied Level or Scene	13	Level = 0–100; 200–232 for Scene Number = 0–32
Set (#) or Get (?) Hyperion Shadow Sensor Override State <sup>9</sup>	26	0 = Disable 1 = Enable 2 = Mixed (Get Only)
Set (#) or Get (?) Hyperion Brightness Sensor Override State <sup>9</sup>	27	0 = Disable 1 = Enable 2 = Mixed (Get Only)

#### NOTES

1. The Level is accepted as a percentage.
2. The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours.
3. Fractional seconds "SS.ss" will be rounded down to the nearest quarter-second. For example, if a fade time is specified as 1.45 seconds a value of 1.25 seconds will be used.
4. When a Raise/Lower command is issued, the area's level will continue to go towards high end/low end until a Stop command is received.
5. Scene 0 is the Off Scene.
6. Scenes 17–32 available only on Slider.
7. If After Hours is used in an area, setting the area's Occupancy Mode to "Occupancy and Vacancy" or "Vacancy" will activate After Hours.
8. The area will report "Not Applicable" as its Occupancy Mode if the area does not have occupancy sensors and if After Hours is not used.
9. Quantum 2.7 and higher.

Continued on next page...

# Lutron integration protocol



## Quantum *(continued)*

### System Commands *(continued)*

#### AREA Commands *(continued)*

#### Example AREA Messages

Operation	Command String
<b>Execute:</b> #AREA, Integration ID, Action Number, Parameters	
Set area level to 75% (Fade = 4 sec, Delay = 2 sec)	#AREA,2,1,70,4,2<CR><LF>
Lower Area	#AREA,2,3<CR><LF>
<b>Query:</b> ?AREA, Integration ID, Action Number	
Is the area occupied?	?AREA,2,8<CR><LF>
What is the current active scene?	?AREA,2,6<CR><LF>
<b>Response:</b> ~AREA, Integration ID, Action Number, Parameters	
The area is currently occupied	~AREA,2,8,3<CR><LF>
Area Scene 2 is currently active	~AREA,2,6,2<CR><LF>



## Quantum *(continued)*

### System Commands *(continued)*

#### SHADEGRP Commands

#### SHADEGRP Command Formats

*Operation*                      *Integration ID (example)*  
**#SHADEGRP** <sup>1</sup>, <sup>2</sup> **Action Number, Parameters**  
*Command*                      *Use "SHADEGRP Command-specific fields" tables to complete these command fields.*

#### NOTE

- SHADEGRP can be used to control only those shade groups of a Quantum system that have been assigned to a particular integration access point. Please refer to the Q-Design software (Integration Tab) or Quantum Integration Report for details of what shade groups are available for control and monitoring.

#### SHADEGRP Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Shade Group Level	1	Level <sup>1</sup> =0–100 or 0.00–100.00 Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising <sup>4</sup>	2	None
Set (#) Start Lowering <sup>4</sup>	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) or Get (?) Current Preset	6	Preset Number <sup>5</sup> =0–30

#### NOTES

- The Level is accepted as a percentage, where 100% is fully open and 0% is fully closed.
- The Delay time is optional. When not used, the system will use a zero-second delay. The minimum delay time is 0 seconds. The maximum delay time is 4 hours.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a delay time is specified as 1.45 seconds a value of 1.25 seconds will be used.
- When a Raise/Lower command is issued, the shade group's level will continue to go towards open/close until a Stop command is received.
- Preset 0 is the Open Preset and Preset 30 is the Closed Preset.

#### Example SHADEGRP Messages

Operation	Command String
<b>Execute:</b> #SHADEGRP, Integration ID, Action Number, Parameters	
Set shade group to 70% (Delay = 2 sec)	#SHADEGRP,2,1,70,2<CR><LF>
Lower shade group.	#SHADEGRP,2,3<CR><LF>
<b>Query:</b> ?SHADEGRP, Integration ID, Action Number	
What is the current active preset?	?SHADEGRP,2,6<CR><LF>
<b>Response:</b> ~SHADEGRP, Integration ID, Action Number, Parameters	
Shade group Preset 2 is currently active.	~SHADEGRP,2,6,2<CR><LF>



## Quantum *(continued)*

### System Commands *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

*Operation*                      *Integration ID (example)*  
**#OUTPUT**<sup>1</sup>, **2**, **Action Number**, **Parameters**  
*Command*                      *Use "OUTPUT Command-specific fields" tables to complete these command fields.*

#### NOTE

- OUTPUT commands can be used to control system lighting zones, contact closure outputs, and AC Motor Loads.

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Output Level	1	Level <sup>1</sup> = 0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising <sup>4</sup>	2	None
Set (#) Start Lowering <sup>4</sup>	3	None
Set (#) Stop Raising or Lowering <sup>4</sup>	4	None
Set (#) Pulse Time	6	Pulse <sup>5</sup> time in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS, or Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) DMX Color or Level Settings <sup>6</sup>	17	Color/level index: 0–255 0.00–100.00 <sup>5</sup>
Set (#) Motor Jog Raise <sup>6, 7</sup>	18	None
Set (#) Motor Jog Lower <sup>6, 7</sup>	19	None
Set (#) Motor 4-Stage Jog Raise <sup>6, 7</sup>	20	None
Set (#) Motor 4-Stage Jog Lower <sup>6, 7</sup>	21	None

#### NOTES

- The Level is taken as a percentage.
- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours. For shade outputs, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.45 seconds a value of 1.25 seconds will be used.
- When a Raise/Lower command is issued, the output's level will continue to go towards high end/low end until a Stop command is received.
- The default time is one second.
- Not supported in RadioRA 2.
- Quantum 2.5 and up.

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# Lutron integration protocol



## Quantum *(continued)*

### System Commands *(continued)*

#### OUTPUT Commands *(continued)*

#### Example OUTPUT Messages

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set output level to 70% (Fade=4 sec, Delay=2 sec)	#OUTPUT,2,1,70,4,2<CR><LF>
Raise Output	#OUTPUT,2,2<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID	
What is the current output level?	?OUTPUT,2<CR><LF>
<b>Response:</b> ~OUTPUT, Integration ID, Action Number, Parameters <sup>1</sup>	
Output level is set to 48%.	~OUTPUT,2,1,48<CR><LF>

#### NOTE

1. The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours. For shade outputs, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay.



## Quantum *(continued)*

### System Commands *(continued)*

#### SYSVAR Commands <sup>1</sup>

#### SYSVAR Command Formats

*Operation*

#SYSVAR,2,Action Number, Parameters

*Command*

Use "SYSVAR Command-specific fields" tables to complete these command fields.

#### NOTE

1. SYSVAR Commands available only on Quantum version 2.5 or higher.

#### SYSVAR Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) the state of a given variable	1	State number

#### Example SYSVAR Messages

Operation	Command String
<b>Execute:</b> #SYSVAR, Integration ID, Action Number, Parameters	
Set the variable state to the third state	#SYSVAR,2,1,3<CR><LF>
<b>Query:</b> ?SYSVAR, Integration ID, Action Number	
What is the state of the variable?	?SYSVAR,2,1<CR><LF>
<b>Response:</b> ~SYSVAR, Integration ID, Action Number, Parameters	
The variable is in the third state.	~SYSVAR,2,1,3<CR><LF>

# Lutron integration protocol

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## HomeWorks QS

### System Overview

The HomeWorks QS system is Lutron's premier total home control system. It allows control and monitoring of lights, shades, HVAC, sensors, and appliances. The HomeWorks QS system includes QS devices, RF devices, and power panels that provide solutions for new construction and retrofit projects of any size.

#### HomeWorks QS System Device Compatibility Index

	HomeWorks QS
GRAFIK Eye QS	✓
HomeWorks QS/DALI®	✓
HomeWorks QS/EcoSystem	✓
HomeWorks QS/0–10 V/Softswitch	✓
HomeWorks QS/Phase-Adaptive	✓
HomeWorks QS/Motor Module	✓
Remote Power Module	✓
Low-Capacity Switching DIN Power Module (1A/output)	✓
Low-Capacity Phase-Adaptive DIN Power Module (1A/output)	✓
Palladiom Keypad	✓
Architrave Keypad	✓
Signature Series Keypad	✓
seeTouch Keypad	✓
seeTouch QS Keypad (Int'l)	✓
Tabletop seeTouch Keypad	✓
Pico Wireless Control	✓
Hybrid Keypad	✓
Dynamic Keypad	✓
Wallbox Input Closure Interface	✓
Sivoia QS Shade	✓
Sivoia QS Wireless Shade	✓
Sivoia QS Venetian Blind	✓
Sivoia QS Wireless Venetian Blind	✓
Maestro Dimmer and Plug-In Module	✓
Maestro Fan Speed Control	✓
Visor Control Receiver	✓
Radio Powr Savr Sensor	✓
HVAC Controller	✓
Wireless Temperature Sensor	✓
QS Input/Output Control Interface	✓

Continued on next page...

## HomeWorks QS *(continued)*

### System Overview *(continued)*

#### Command Types

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The following is a list of supported command types. Details on certain device-specific types (e.g., DEVICE, HVAC) are located in the individual device section of this manual.

Operation characters will be followed by command types.

- **DEVICE** allows control and monitoring of device inputs such as button presses and contact closure inputs
- **OUTPUT** allows control and monitoring of device outputs such as dimmers and contact closure outputs
- **SHADEGRP** allows control of shades in the HomeWorks QS system. Shade groups are collections of shades that operate in unison
- **MONITORING** specifies the type of messages that the system will report
- **HVAC** allows control and monitoring of Lutron HVAC equipment
- **TIMECLOCK** allows control (enable/disable) and monitoring of system timeclocks
- **SYSVAR** allows control and monitoring of system variables
- **AREA** allows control and monitoring of an area (e.g., activating area Scenes, monitoring occupancy)
- **ERROR** displays responses to invalid commands
- **HELP** displays usage information for the supported commands and their corresponding actions
- **SYSTEM** allows setting and controlling system parameters and variables
- **ETHERNET** modifies the Ethernet configuration of the HomeWorks QS processor
- **INTEGRATIONID** gets information of the integration id or serial number of a device
- **RESET** resets the HomeWorks QS processor

# Lutron integration protocol

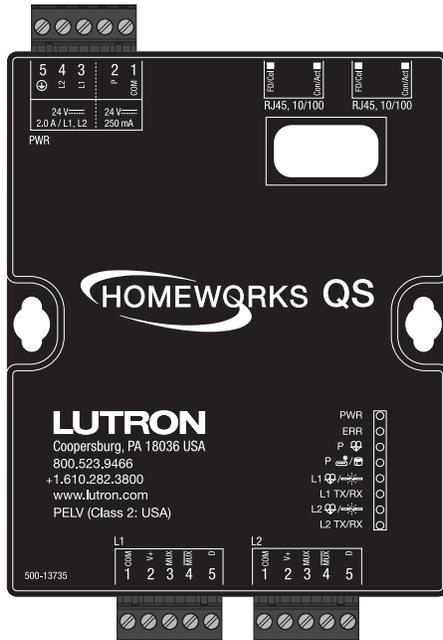
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## HomeWorks QS *(continued)*

### Integration Access Points

#### HomeWorks QS Processor

Model: HQP6-2



#### Why Integrate with a HomeWorks QS Processor?

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- Integrating with a HomeWorks QS Processor provides integration over Ethernet without the need for additional equipment or interfaces.
- RS-232 integration can also be accomplished using third party Ethernet to RS-232 adapters.
- Integrating directly with the HomeWorks QS Processor also provides the greatest bandwidth port into the HomeWorks QS system.
- Integration IDs are automatically generated by the HomeWorks QS software application (e.g., for devices, outputs, shadegroups, timeclocks). Integration IDs can be removed to reduce processing and traffic of unwanted messages.
- Phantom Keypads allow for integration functionality to be organized on various virtual keypads that have unlimited buttons and do not count towards link device count limits.

#### Integration Capabilities

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- Control and monitoring of output devices such as dimmers, the GRAFIK Eye, shades and contact closure outputs
- Control and monitoring of physical or phantom keypad buttons and button status LEDs
- Control and monitoring of Lutron HVAC equipment
- Control and monitoring of individual timeclocks
- Control and monitoring of state variables
- Monitor sensors states with Monitoring command
- Control and monitoring of areas to activate scenes and monitor occupancy

Continued on next page...



## HomeWorks QS *(continued)*

### Integration Access Points *(continued)*

#### Connection Information

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##### Ethernet

Configuring the HomeWorks QS processor to communicate over a network takes not only knowledge of the HomeWorks QS system, but of networking as well. Installers with limited networking knowledge are advised to contact a networking professional before attempting to connect a HomeWorks QS processor through a network.

The installer will make any necessary configuration changes to the HomeWorks QS processor using the HomeWorks QS Design Software Application and the network professional can make any necessary changes to the networking equipment.

##### Dual Ethernet Port

- IEEE® 802.3 Auto-Sensing 10BaseT/100BaseTX
- Supports MDI/MDIX auto-crossover (no crossover cable needed).
- Female 8P8C “Computer RJ-45” socket
- Green “Connect” LED, Amber “Activity” LED
- Use Cat 5 cabling or better
- 2 Port 10/100 Ethernet Switch

##### TCP/IP Settings

- IP Address: Address at which the processor can be reached for integration. In most instances when integrating to a processor, DHCP should be disabled and a static IP address should be assigned to prevent the processor from changing IP addresses.
- Subnet Mask: In conjunction with the IP address, it defines the subnet on which the processor communicates. Processors will be able to integrate only with devices on the same subnet.
- Gateway: Used in instances where the processor needs to communicate to the internet. Should be set to the IP address of the device on the network connected directly to the internet—typically, the home router.

##### Protocols Used for Integration

- TELNET

##### Telnet Server

- Used by third party equipment (e.g., touch screen)
- Used by Lutron mobile devices (e.g., *iPad* and *iPhone*)
- Limited to transferring ASCII characters
- Telnet Port number is 23
- Logins: Defined in the HomeWorks QS software application

##### RS232

The HomeWorks QS Processor does not have native support for RS232. An Ethernet to RS232 adapter can be used and configured to provide RS232 integration directly from the Processor if needed.



## HomeWorks QS *(continued)*

### System Commands

#### OUTPUT Commands

#### OUTPUT Command Format

*Operation*                      *Integration ID (example)*  
**#OUTPUT**<sup>1</sup>, **2**, **Action Number**, **Parameters**  
*Command*                      *Use "OUTPUT Command-specific fields" tables to complete these command fields.*

#### NOTE

- OUTPUT commands can be used to control system lighting zones, individual shades, and contact closed outputs.

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Output Level	1	Level <sup>1</sup> = 0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising <sup>4</sup>	2	None
Set (#) Start Lowering <sup>4</sup>	3	None
Set (#) Stop Raising or Lowering <sup>4</sup>	4	None
Set (#) or Get (?) Flash Frequency	5	Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Pulse Time	6	Pulse <sup>5</sup> time in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS, or Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Tilt Level	9	Tilt level in % = 0.00–100 <sup>6</sup> Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Lift and Tilt Levels	10	Lift <sup>1</sup> = 0–100 or 0.00–100.00 Tilt <sup>1</sup> = 0–100 <sup>6</sup> or 0.00–100.00 <sup>6</sup> Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising Tilt	11	None
Set (#) Start Lowering Tilt	12	None
Set (#) Stop Raising or Lowering Tilt	13	None
Set (#) Start Raising Lift	14	None
Set (#) Start Lowering Lift	15	None
Set (#) Stop Raising or Lowering Lift	16	None
Get (?) Horizontal Sheer Shade Region	28	Regions: 0 = Lift, 1 = Tilt

#### NOTES

- The Level/Lift/Tilt is taken as a percentage.
- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours. For shade outputs, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.45 seconds a value of 1.25 seconds will be used.
- When a Raise/Lower command is issued, the output's level will continue to go towards high end/low end until a Stop command is received.
- The default time is one second.
- 50 for Horizontal Sheer Blinds.

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## HomeWorks QS *(continued)*

### System Commands *(continued)*

#### OUTPUT Commands *(continued)*

#### Example OUTPUT Messages

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set output level to 70% (Fade=4 sec, Delay=2 sec)	#OUTPUT,2,1,70,4,2<CR><LF>
Raise Output	#OUTPUT,2,2<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID	
What is the current output level?	?OUTPUT,2<CR><LF>
<b>Response 1:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 48%.	~OUTPUT,2,1,48<CR><LF>

#### NOTE

1. The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours. For shade outputs, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay.



## HomeWorks QS *(continued)*

### System Commands *(continued)*

#### SHADEGRP Commands

#### SHADEGRP Command Formats

*Operation*                      *Integration ID (example)*  
**#SHADEGRP, 2, Action Number, Parameters**  
*Command*                      *Use "SHADEGRP Command-specific fields" tables to complete these command fields.*

#### SHADEGRP Command-specific fields

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Shade Group Level	1	Level <sup>1</sup> =0–100 or 0.00–100.00 Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising <sup>3</sup>	2	None
Set (#) Start Lowering <sup>3</sup>	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) or Get (?) Current Preset	6	Preset Number <sup>4</sup> =0–30
Set (#) Tilt Level	14	Level <sup>5</sup> =0–100 <sup>6</sup> or 0.00–100.00 <sup>6</sup> Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Lift and Tilt Levels	15	Lift <sup>5</sup> =0–100 or 0.00–100.00 Tilt <sup>5</sup> =0–100 <sup>6</sup> or 0.00–100.00 <sup>6</sup> Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising Tilt <sup>3</sup>	16	None
Set (#) Start Lowering Tilt <sup>3</sup>	17	None
Set (#) Stop Raising or Lowering Tilt <sup>3</sup>	18	None
Set (#) Start Raising Lift <sup>3</sup>	19	None
Set (#) Start Lowering Lift <sup>3</sup>	20	None
Set (#) Stop Raising or Lowering Lift <sup>3</sup>	21	None
Get (?) Horizontal Sheer Shade Region	28	Lift=0 Tilt=1

#### NOTES

- The Fade and Delay time are optional. For shades, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay. When not used, the system will use a zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a delay time is specified as 1.45 seconds, a value of 1.25 seconds will be used.
- When a Raise/Lower command is issued, the shade group's level will continue to go towards open/close until a Stop command is received.
- Preset 0 is the Open Preset and Preset 30 is the Closed Preset.
- The Level is accepted as a percentage, where 100% is fully open and 0% is fully closed.
- 50 for Horizontal Sheer Blinds.

Continued on next page...

# Lutron integration protocol



## HomeWorks QS *(continued)*

### System Commands *(continued)*

#### SHADEGRP Commands *(continued)*

#### Example SHADEGRP Messages

Operation	Command String
<b>Execute:</b> #SHADEGRP, Integration ID, Action Number, Parameters	
Set shade group to 70% (Delay=2 sec).	#SHADEGRP,2,1,70,2<CR><LF>
Lower shade group.	#SHADEGRP,2,3<CR><LF>
<b>Query:</b> ?SHADEGRP, Integration ID, Action Number	
What is the current active preset?	?SHADEGRP,2,6<CR><LF>
<b>Response:</b> ~SHADEGRP, Integration ID, Action Number, Parameters	
Shade group Preset 2 is currently active.	~SHADEGRP,2,6,2<CR><LF>



## HomeWorks QS *(continued)*

### System Commands *(continued)*

#### TIMECLOCK Commands

#### TIMECLOCK Command Formats

*Operation*

#TIMECLOCK,2,Action Number, Parameters

*Command*

Use "TIMECLOCK Command-specific fields" tables to complete these command fields.

#### TIMECLOCK Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Get (?) Sunrise Time	2	None
Get (?) Sunset Time	3	None
Get (?) Day's Schedule	4	None
Set (#) Execute Indexed Event	5	Index of the event to execute. The index number of the first event is 1; the second event is 2, and so on.
Set (#) Indexed Event as Enabled or Disabled	6	Event Index, Enable State (1 = Enable, 2 = Disable)

#### Example TIMECLOCK Messages

Operation	Command String
<b>Execute:</b> #TIMECLOCK, Integration ID, Action Number, Parameters	
Execute the 3rd event of the timeclock.	#TIMECLOCK,2,5,3<CR><LF>
<b>Query:</b> ?TIMECLOCK, Integration ID, Action Number	
What is the sunrise time?	?TIMECLOCK,2,2<CR><LF>
<b>Response:</b> ~TIMECLOCK, Integration ID, Action Number, Parameters	
The time the sun rises.	~TIMECLOCK,2,2,05:32<CR><LF>



## HomeWorks QS *(continued)*

### System Commands *(continued)*

#### SYSVAR Commands

#### SYSVAR Command Formats

*Operation*

#SYSVAR,2,Action Number, Parameters

*Command*

Use "SYSVAR Command-specific fields" tables to complete these command fields.

#### SYSVAR Command-specific fields

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) the state of a given variable	1	State number

#### Example SYSVAR Messages

Operation	Command String
<b>Execute:</b> #SYSVAR, Integration ID, Action Number, Parameters	
Set the variable state to the third state.	#SYSVAR,2,1,3<CR><LF>
<b>Query:</b> ?SYSVAR, Integration ID, Action Number	
What is the state of the variable?	?SYSVAR,2,1<CR><LF>
<b>Response:</b> ~SYSVAR, Integration ID, Action Number, Parameters	
The variable is in the third state.	~SYSVAR,2,1,3<CR><LF>



## HomeWorks QS *(continued)*

### System Commands *(continued)*

#### AREA Commands

#### AREA Command Formats

*Operation*    *Integration ID (example)*  
 ?AREA 1, 2, Action Number, Parameters  
*Command*    Use "AREA Command-specific fields" tables  
                  to complete these command fields.

#### NOTE

1. AREA commands cannot be sent to areas that contain other areas, such as a floor or an entire building.

#### AREA Command-specific fields

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Get (?) Occupancy State	8	3 = Occupied 4 = Unoccupied

#### Example AREA Messages

Operation	Command String
<b>Execute:</b> #AREA, Integration ID, Action Number, Parameters	
Set area level to 75% (Fade = 4 sec, Delay = 2 sec)	#AREA,2,1,70,4,2<CR><LF>
Lower Area.	#AREA,2,3<CR><LF>
<b>Query:</b> ?AREA, Integration ID, Action Number	
Is the area occupied?	?AREA,2,8<CR><LF>
What is the current active scene?	?AREA,2,6<CR><LF>
<b>Response:</b> ~AREA, Integration ID, Action Number, Parameters	
The area is currently occupied.	~AREA,2,8,3<CR><LF>
Area Scene 2 is currently active.	~AREA,2,6,2<CR><LF>



## HomeWorks QS *(continued)*

### System Commands *(continued)*

#### ETHERNET Commands

#### ETHERNET Command Formats

*Operation*

#ETHERNET, Configuration Number, Parameters

*Command*

Use "ETHERNET Command-specific fields" tables to complete these command fields.

#### ETHERNET Command-specific fields

##### Configuration Number and Parameters:

Description	Configuration Number	Parameters
Set (#) or Get (?) IP Address	0	IP Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Gateway Address	1	IP Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Subnet Mask	2	IP Address (XXX.XXX.XXX.XXX)
Get (?) DHCP	4	None
Set (#) or Get (?) Multicast Address	5	IP Address (XXX.XXX.XXX.XXX)

#### Example ETHERNET Commands

Operation	Command String
<b>Execute:</b> #ETHERNET, Configuration Number, Parameters	
Set IP Address to 192.168.250.1	#ETHERNET,0,192.168.250.1<CR><LF>
Set Gateway Address to 10.2.4.1	#ETHERNET,1,10.2.4.1<CR><LF>
<b>Query:</b> ?ETHERNET, Configuration Number, Parameters	
What is the IP Address?	?ETHERNET,0<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Configuration Number, Parameters	
The IP Address is 192.168.250.1	~ETHERNET,0=,192.168.250.1<CR><LF>



## HomeWorks QS *(continued)*

### System Commands *(continued)*

#### INTEGRATION ID Commands

#### INTEGRATION ID Command Formats

*Operation*

?INTEGRATIONID, Action Number, Parameters

*Command*

Use "INTEGRATIONID Command-specific fields" tables to complete these command fields.

#### INTEGRATION ID Command-specific fields

##### Action Numbers and Parameters:

Description	Action Number	Parameters
Get (?) Integration ID for a Serial Number <sup>1</sup>	1	Serial Number = 8 character HEX serial number of the device
Get (?) Info from ID <sup>1</sup>	3	Integration ID <b>Note:</b> If this field is left blank, all integration IDs will be printed.

#### NOTE

1. Refer to the integration report generated by the Lutron Designer Tool to identify the integration IDs for devices.

#### Example INTEGRATION ID Commands

Operation	Command String
<b>Query:</b> ?INTEGRATIONID, Action Number, Parameters	
Get the Integration ID for a serial number	?INTEGRATIONID,1,5678EFEF<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Get the Integration ID for a serial number	~INTEGRATIONID,1,5678EFEF,1<CR><LF>
<b>Query:</b> ?INTEGRATIONID, Action Number, Parameters	
Get information about an Integration ID command	?INTEGRATIONID,3,1<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Get information about an Integration ID command	~INTEGRATIONID,3,1,DEVICE,5678EFEF<CR><LF>



## HomeWorks QS *(continued)*

### System Commands *(continued)*

#### RESET Commands

##### RESET Command Formats

Operation

#RESET, Action Number

Command

Use "RESET Command-specific fields" tables to complete these command fields.

##### RESET Command-specific fields

###### Action Numbers:

Action	Action Number
Set (#) reset the HomeWorks QS processor	0

##### Example RESET Commands

Operation	Command String
<b>Execute:</b> #RESET, Action Number	
Reset the HomeWorks QS processor	#RESET,0<CR><LF>

# Lutron integration protocol

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## myRoom plus

### System Overview

The myRoom plus system is a guestroom management system for light, temperature, and shade control that integrates with property management systems (PMS) and building management systems (BMS). The myRoom plus system provides increased energy savings through automatic lighting and HVAC adjustments and enhanced by shade control. The myRoom plus system uses occupied/unoccupied and sold/unsold information for guest presence detection and additional HVAC setbacks. It offers hotel guests privacy or a view; a single button press closes or opens shades and integrates with BMS to control and monitor.

### myRoom plus System Device Compatibility Index

	myRoom plus
HomeWorks QS/DALI®	✓
HomeWorks QS/EcoSystem	✓
HomeWorks QS/0–10 V/Softswitch	✓
HomeWorks QS/Phase-Adaptive	✓
HomeWorks QS/Motor Module	✓
Low-Capacity Switching DIN Power Module (1A/output)	✓
Low-Capacity Phase-Adaptive DIN Power Module (1A/output)	✓
Palladiom Keypad	✓
Palladiom Thermostat	✓
Architrave Keypad	✓
Signature Series Keypad	✓
seeTouch Keypad	✓
seeTouch QS Keypad (Int'l)	✓
Tabletop seeTouch Keypad	✓
Pico Wireless Control	✓
Hybrid Keypad	✓
Dynamic Keypad	✓
Wallbox Input Closure Interface	✓
Sivoia QS Shade	✓
Sivoia QS Wireless Shade	✓
Maestro Dimmer and Plug-In Module	✓
Maestro Fan Speed Control	✓
Visor Control Receiver	✓
Radio Powr Savr Sensor	✓
HVAC Controller	✓
QS Input/Output Control Interface	✓
QS Sensor Module	✓

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# Lutron integration protocol

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## myRoom plus *(continued)*

### System Overview *(continued)*

#### Command Types

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The following is a list of supported command types. Details on certain device-specific types (e.g., DEVICE, HVAC) are located in the individual device section of this manual.

Operation characters will be followed by command types.

- **DEVICE** allows control and monitoring of device inputs such as button presses and contact closure inputs
- **OUTPUT** allows control and monitoring of device outputs such as dimmers and contact closure outputs
- **SHADEGRP** allows control of shades in the myRoom plus system. Shade groups are collections of shades that operate in unison
- **MONITORING** specifies the type of messages that the system will report
- **HVAC** allows control and monitoring of Lutron HVAC equipment
- **TIMECLOCK** allows control (enable/disable) and monitoring of system timeclocks
- **SYSVAR** allows control and monitoring of system variables
- **AREA** allows control and monitoring of an area (e.g., activating area Scenes, monitoring occupancy)
- **ERROR** displays responses to invalid commands
- **HELP** displays usage information for the supported commands and their corresponding actions
- **SYSTEM** allows setting and controlling system parameters and variables
- **ETHERNET** modifies the Ethernet configuration of the myRoom plus processor
- **INTEGRATIONID** gets information of the integration id or serial number of a device
- **RESET** resets the myRoom plus processor

# Lutron integration protocol

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## myRoom plus *(continued)*

### Integration Access Points

#### myRoom Processor

Model: GCU-HOSP



#### Why Integrate with a myRoom Processor?

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- Integrating with a myRoom Processor provides integration over Ethernet without the need for additional equipment or interfaces.
- RS-232 integration can also be accomplished using third party Ethernet to RS-232 adapters.
- Integrating directly with the myRoom Processor also provides the greatest bandwidth port into the myRoom plus system.
- Integration IDs are automatically generated by the myRoom plus software application (e.g., for devices, outputs, shadegroups, timeclocks). Integration IDs can be removed to reduce processing and traffic of unwanted messages.
- Phantom Keypads allow for integration functionality to be organized on various virtual keypads that have unlimited buttons and do not count towards link device count limits.

#### Integration Capabilities

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- Control and monitoring of output devices such as dimmers, the GRAFIK Eye, shades and contact closure outputs
- Control and monitoring of physical or phantom keypad buttons and button status LEDs
- Control and monitoring of Lutron HVAC equipment
- Control and monitoring of individual timeclocks
- Control and monitoring of state variables
- Monitor sensors states with Monitoring command
- Control and monitoring of areas to activate scenes and monitor occupancy

Continued on next page...

# Lutron integration protocol

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## myRoom plus *(continued)*

### Integration Access Points *(continued)*

#### Connection Information

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##### Ethernet

Configuring the myRoom processor to communicate over a network takes not only knowledge of the myRoom plus system, but of networking as well. Installers with limited networking knowledge are advised to contact a networking professional before attempting to connect a myRoom processor through a network.

The installer will make any necessary configuration changes to the myRoom processor using the myRoom plus Design Software Application and the network professional can make any necessary changes to the networking equipment.

##### Dual Ethernet Port

- IEEE® 802.3 Auto-Sensing 10BaseT/100BaseTX
- Supports MDI/MDIX auto-crossover (no crossover cable needed).
- Female 8P8C “Computer RJ-45” socket
- Green “Connect” LED, Amber “Activity” LED
- Use Cat 5 cabling or better
- 2 Port 10/100 Ethernet Switch

##### TCP/IP Settings

- IP Address: Address at which the processor can be reached for integration. In most instances when integrating to a processor, DHCP should be disabled and a static IP address should be assigned to prevent the processor from changing IP addresses.
- Subnet Mask: In conjunction with the IP address, it defines the subnet on which the processor communicates. Processors will be able to integrate only with devices on the same subnet.
- Gateway: Used in instances where the processor needs to communicate to the internet. Should be set to the IP address of the device on the network connected directly to the internet.

##### Protocols Used for Integration

- TELNET

##### Telnet Server

- Used by third party equipment (e.g., touch screen)
- Used by Lutron mobile devices (e.g., iPad and iPhone)
- Limited to transferring ASCII characters
- Telnet Port number is 23
- Logins: Defined in the myRoom plus software application

##### RS232

The myRoom Processor does not have native support for RS232. An Ethernet to RS232 adapter can be used and configured to provide RS232 integration directly from the Processor if needed.



## myRoom plus (continued)

### System Commands

#### OUTPUT Commands

#### OUTPUT Command Format

*Operation*                      *Integration ID (example)*  
**#OUTPUT**<sup>1</sup>, **2**, **Action Number**, **Parameters**  
*Command*                      *Use "OUTPUT Command-specific fields" tables to complete these command fields.*

#### NOTE

- OUTPUT commands can be used to control system lighting zones, individual shades, and contact closure outputs.

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Output Level	1	Level <sup>1</sup> = 0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising <sup>4</sup>	2	None
Set (#) Start Lowering <sup>4</sup>	3	None
Set (#) Stop Raising or Lowering <sup>4</sup>	4	None
Set (#) or Get (?) Flash Frequency	5	Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) CCO Pulse Time	6	Pulse <sup>5</sup> time in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS, or Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Tilt Level	9	Tilt level in % = 0.00–100 <sup>6</sup> Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Lift and Tilt Levels	10	Lift <sup>1</sup> = 0–100 or 0.00–100.00 Tilt <sup>1</sup> = 0–100 <sup>6</sup> or 0.00–100.00 <sup>6</sup> Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising Tilt	11	None
Set (#) Start Lowering Tilt	12	None
Set (#) Stop Raising or Lowering Tilt	13	None
Set (#) Start Raising Lift	14	None
Set (#) Start Lowering Lift	15	None
Set (#) Stop Raising or Lowring Lift	16	None
Get (?) Horizontal Sheer Shade Region	28	Regions: 0 = Lift, 1 = Tilt

#### NOTES

- The Level/Lift/Tilt is taken as a percentage.
- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours. For shade outputs, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.45 seconds a value of 1.25 seconds will be used.
- When a Raise/Lower command is issued, the output's level will continue to go towards high end/low end until a Stop command is received.
- The default time is one second.
- 50 for Horizontal Sheer Blinds.

Continued on next page...

# Lutron integration protocol



## myRoom plus *(continued)*

### System Commands *(continued)*

#### OUTPUT Commands *(continued)*

#### Example OUTPUT Messages

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set output level to 70% (Fade=4 sec, Delay=2 sec)	#OUTPUT,2,1,70,4,2<CR><LF>
Raise Output	#OUTPUT,2,2<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID	
What is the current output level?	?OUTPUT,2<CR><LF>
<b>Response 1:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 48%.	~OUTPUT,2,1,48<CR><LF>

#### NOTE

1. The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours. For shade outputs, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay.

# Lutron integration protocol



## myRoom plus (continued)

### System Commands (continued)

#### SHADEGRP Commands

#### SHADEGRP Command Formats

*Operation*                      *Integration ID (example)*  
**#SHADEGRP, 2, Action Number, Parameters**  
*Command*                      *Use "SHADEGRP Command-specific fields" tables to complete these command fields.*

#### SHADEGRP Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Shade Group Level	1	Level <sup>1</sup> =0–100 or 0.00–100.00 Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising <sup>3</sup>	2	None
Set (#) Start Lowering <sup>3</sup>	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) or Get (?) Current Preset	6	Preset Number <sup>4</sup> =0–30
Set (#) Tilt Level	14	Level <sup>5</sup> =0–100 <sup>6</sup> or 0.00–100.00 <sup>6</sup> Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Lift and Tilt Levels	15	Lift <sup>5</sup> =0–100 or 0.00–100.00 Tilt <sup>5</sup> =0–100 <sup>6</sup> or 0.00–100.00 <sup>6</sup> Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising Tilt <sup>3</sup>	16	None
Set (#) Start Lowering Tilt <sup>3</sup>	17	None
Set (#) Stop Raising or Lowering Tilt <sup>3</sup>	18	None
Set (#) Start Raising Lift <sup>3</sup>	19	None
Set (#) Start Lowering Lift <sup>3</sup>	20	None
Set (#) Stop Raising or Lowering Lift <sup>3</sup>	21	None
Get (?) Horizontal Sheer Shade Region	28	Lift=0 Tilt=1

#### NOTES

1. The Fade and Delay time are optional. For shades, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay. When not used, the system will use a zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours.
2. Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a delay time is specified as 1.45 seconds, a value of 1.25 seconds will be used.
3. When a Raise/Lower command is issued, the shade group's level will continue to go towards open/close until a Stop command is received.
4. Preset 0 is the Open Preset and Preset 30 is the Closed Preset.
5. The Level is accepted as a percentage, where 100% is fully open and 0% is fully closed.
6. 50 for Horizontal Sheer Blinds.

Continued on next page...

# Lutron integration protocol



## myRoom plus *(continued)*

### System Commands *(continued)*

#### SHADEGRP Commands *(continued)*

#### Example SHADEGRP Messages

Operation	Command String
<b>Execute:</b> #SHADEGRP, Integration ID, Action Number, Parameters	
Set shade group to 70% (Delay=2 sec).	#SHADEGRP,2,1,70,2<CR><LF>
Lower shade group.	#SHADEGRP,2,3<CR><LF>
<b>Query:</b> ?SHADEGRP, Integration ID, Action Number	
What is the current active preset?	?SHADEGRP,2,6<CR><LF>
<b>Response:</b> ~SHADEGRP, Integration ID, Action Number, Parameters	
Shade group Preset 2 is currently active.	~SHADEGRP,2,6,2<CR><LF>

# Lutron integration protocol



## myRoom plus (continued)

### System Commands (continued)

#### TIMECLOCK Commands

#### TIMECLOCK Command Formats

*Operation*                      *Integration ID (example)*  
**#TIMECLOCK, 2, Action Number, Parameters**  
*Command*                      *Use "TIMECLOCK Command-specific fields" tables to complete these command fields.*

#### TIMECLOCK Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Get (?) Sunrise Time	2	None
Get (?) Sunset Time	3	None
Get (?) Day's Schedule	4	None
Set (#) Execute Indexed Event	5	Index of the event to test. The index number of the first event is 1; the second event is 2, and so on.
Set (#) Indexed Event as Enabled or Disabled	6	Event Index, Enable State (1 = Enable, 2 = Disable)

#### Example TIMECLOCK Messages

Operation	Command String
<b>Execute:</b> #TIMECLOCK, Integration ID, Action Number, Parameters	
Execute the 3rd event of the timeclock.	#TIMECLOCK,2,5,3<CR><LF>
<b>Query:</b> ?TIMECLOCK, Integration ID, Action Number	
What is the sunrise time?	?TIMECLOCK,2,2<CR><LF>
<b>Response:</b> ~TIMECLOCK, Integration ID, Action Number, Parameters	
The time the sun rises.	~TIMECLOCK,2,2,05:32<CR><LF>



## myRoom plus *(continued)*

### System Commands *(continued)*

#### SYSVAR Commands

#### SYSVAR Command Formats

*Operation*            *Integration ID (example)*  
**#SYSVAR, 2, Action Number, Parameters**  
*Command*            *Use "SYSVAR Command-specific fields" tables to complete these command fields.*

#### SYSVAR Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) the state of a given variable	1	State number

#### Example SYSVAR Messages

Operation	Command String
<b>Execute:</b> #SYSVAR, Integration ID, Action Number, Parameters	
Set the variable state to the third state.	#SYSVAR,2,1,3<CR><LF>
<b>Query:</b> ?SYSVAR, Integration ID, Action Number	
What is the state of the variable?	?SYSVAR,2,1<CR><LF>
<b>Response:</b> ~SYSVAR, Integration ID, Action Number, Parameters	
The variable is in the third state.	~SYSVAR,2,1,3<CR><LF>



## myRoom plus *(continued)*

### System Commands *(continued)*

#### AREA Commands

#### AREA Command Formats

*Operation*    *Integration ID (example)*  
**?AREA** <sup>1</sup>, <sup>2</sup>, **Action Number, Parameters**  
*Command*    Use "AREA Command-specific fields" tables  
                  to complete these command fields.

#### NOTE

1. AREA commands cannot be sent to areas that contain other areas, such as a room that has multiple areas within it (e.g., bedroom, bathroom).

#### AREA Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Get (?) Occupancy State <sup>1</sup>	8	3 = Occupied 4 = Unoccupied

#### NOTE

1. This is not for Guest Presence Detection of the room.

#### Example AREA Messages

Operation	Command String
<b>Execute:</b> #AREA, Integration ID, Action Number, Parameters	
Set area level to 75% (Fade=4 sec, Delay=2 sec)	#AREA,2,1,70,4,2<CR><LF>
Lower Area.	#AREA,2,3<CR><LF>
<b>Query:</b> ?AREA, Integration ID, Action Number	
Is the area occupied?	?AREA,2,8<CR><LF>
What is the current active scene?	?AREA,2,6<CR><LF>
<b>Response:</b> ~AREA, Integration ID, Action Number, Parameters	
The area is currently occupied.	~AREA,2,8,3<CR><LF>
Area Scene 2 is currently active.	~AREA,2,6,2<CR><LF>

# Lutron integration protocol



## myRoom plus (continued)

### System Commands (continued)

#### ETHERNET Commands

##### ETHERNET Command Formats

Operation

#ETHERNET, Configuration Number, Parameters

Command

Use "ETHERNET Command-specific fields" tables to complete these command fields.

##### ETHERNET Command-specific fields

###### Configuration Number and Parameters:

Description	Configuration Number	Parameters
Set (#) or Get (?) IP Address	0	IP Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Gateway Address	1	IP Address (XXX.XXX.XXX.XXX)
Set (#) or Get (?) Subnet Mask	2	IP Address (XXX.XXX.XXX.XXX)
Get (?) DHCP	4	None
Set (#) or Get (?) Multicast Address	5	IP Address (XXX.XXX.XXX.XXX)

##### Example ETHERNET Commands

Operation	Command String
<b>Execute:</b> #ETHERNET, Configuration Number, Parameters	
Set IP Address to 192.168.250.1	#ETHERNET,0,192.168.250.1<CR><LF>
Set Gateway Address to 10.2.4.1	#ETHERNET,1,10.2.4.1<CR><LF>
<b>Query:</b> ?ETHERNET, Configuration Number, Parameters	
What is the IP Address?	?ETHERNET,0<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Configuration Number, Parameters	
The IP Address is 192.168.250.1	~ETHERNET,0=,192.168.250.1<CR><LF>

# Lutron integration protocol



## myRoom plus (continued)

### System Commands (continued)

#### INTEGRATION ID Commands

#### INTEGRATION ID Command Formats

Operation

?INTEGRATIONID, Action Number, Parameters

Command

Use "INTEGRATIONID Command-specific fields" tables to complete these command fields.

#### INTEGRATION ID Command-specific fields

##### Action Numbers and Parameters:

Description	Action Number	Parameters
Get (?) Integration ID for a Serial Number <sup>1</sup>	1	Serial Number = 8 character HEX serial number of the device
Get (?) Info from ID <sup>1</sup>	3	Integration ID <b>Note:</b> If this field is left blank, all integration IDs will be printed.

#### NOTE

1. Refer to the integration report generated by the Lutron Designer Tool to identify the integration IDs for devices.

#### Example INTEGRATION ID Commands

Operation	Command String
<b>Query:</b> ?INTEGRATIONID, Action Number, Parameters	
Get the Integration ID for a serial number	?INTEGRATIONID,1,5678EFEF<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Get the Integration ID for a serial number	~INTEGRATIONID,1,5678EFEF,1<CR><LF>
<b>Query:</b> ?INTEGRATIONID, Action Number, Parameters	
Get information about an Integration ID command	?INTEGRATIONID,3,1<CR><LF>
<b>Response:</b> ~INTEGRATIONID, Action Number, Parameters	
Get information about an Integration ID command	~INTEGRATIONID,3,1,DEVICE,5678EFEF<CR><LF>

Continued on next page...



## myRoom plus (continued)

### System Commands (continued)

#### RESET Commands

##### RESET Command Formats

Operation

#RESET, Action Number

Command

Use "RESET Command-specific fields" tables to complete these command fields.

##### RESET Command-specific fields

###### Action Numbers:

Action	Action Number
Set (#) Resets the GCU-HOSP	0

##### Example RESET Commands

Operation	Command String
<b>Execute:</b> #RESET, Action Number	
Reset the GCU-HOSP	#RESET,0<CR><LF>

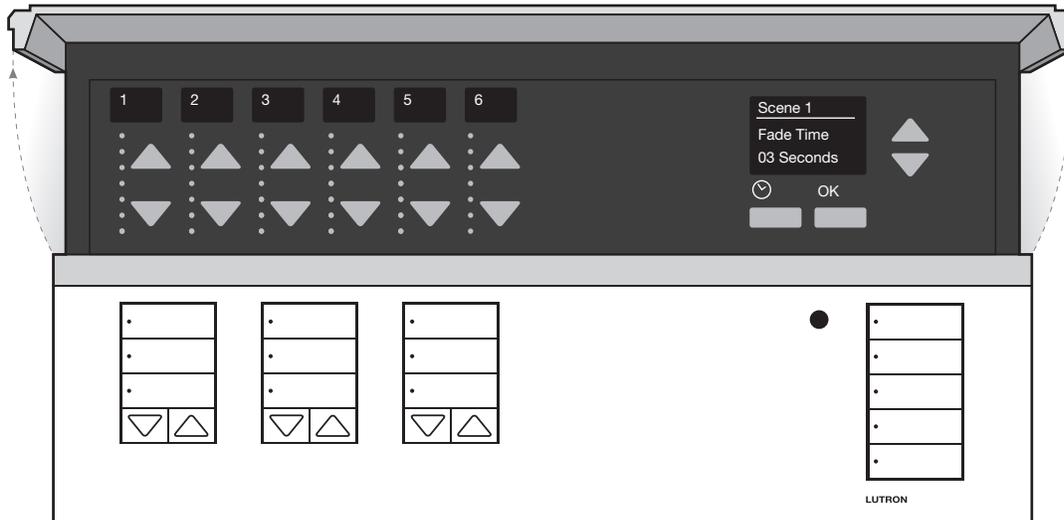
# Lutron integration protocol

## Devices

### GRAFIK Eye QS

Main Unit

Models: QSGR-, QSGRJ-, QSGRK-, QSGRM-, QSGRN-, QSGRQ-



#### Why Integrate with a GRAFIK Eye QS unit?

- Control individual lights and scenes
- Query current scene and light levels
- Control LEDs of unprogrammed buttons

#### Integration Capabilities

- 16 scenes and up to 24 controllable outputs (output count depends on model)

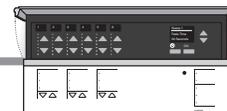
#### Supported Command Types

- **DEVICE** allows control and monitoring of buttons, LEDs and scenes
- **OUTPUT** allows control and monitoring of the dimmer device output

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
GRAFIK Eye QS Main Unit	✓	✓	✓	✓	✓

Continued on next page...



## Devices *(continued)*

### GRAFIK Eye QS *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 5, Component Number, Action Number, Parameters**  
*Command*      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

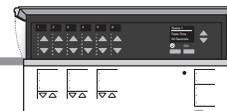
##### Component Numbers:

Component	Component Number	Available Actions
Zone 1 Controller – Zone 24 Controller	1–24	Raise, Lower, Stop, Set Light Level
Scene 1 Button	70	Press, Release (Scenes Activate on "Press")
Scene 2 Button	71	Press, Release (Scenes Activate on "Press")
Scene 3 Button	76	Press, Release (Scenes Activate on "Press")
Scene 4 Button	77	Press, Release (Scenes Activate on "Press")
Scene Off Button	83	Press, Release
Shade Column 1 Open	38	Press, Release (Shades React on "Release")
Shade Column 1 Preset 1	39	Press, Release (Shades React on "Release")
Shade Column 1 Close	40	Press, Release (Shades React on "Release")
Shade Column 1 Lower	41	Press, Release (Shades React on "Release")
Shade Column 1 Raise	47	Press, Release (Shades React on "Release")
Shade Column 2 Open	44	Press, Release (Shades React on "Release")
Shade Column 2 Preset 1	45	Press, Release (Shades React on "Release")
Shade Column 2 Close	46	Press, Release (Shades React on "Release")
Shade Column 2 Lower	52	Press, Release (Shades React on "Release")
Shade Column 2 Raise	53	Press, Release (Shades React on "Release")
Shade Column 3 Open	50	Press, Release (Shades React on "Release")
Shade Column 3 Preset 1	51	Press, Release (Shades React on "Release")
Shade Column 3 Close	56	Press, Release (Shades React on "Release")
Shade Column 3 Lower	57	Press, Release (Shades React on "Release")
Shade Column 3 Raise	58	Press, Release (Shades React on "Release")
Scene Controller	141	Set Current Scene, Set Zone Lock, Set Scene Lock, Set Sequence State, Raise, Lower, Stop, Scene Save
Scene 1 LED <sup>1</sup>	201	Get (?) LED state
Scene 2 LED <sup>1</sup>	210	Get (?) LED state
Scene 3 LED <sup>1</sup>	219	Get (?) LED state
Scene 4 LED <sup>1</sup>	228	Get (?) LED state
Scene Off LED <sup>1</sup>	237	Get (?) LED state
Local CCI	163	Report (~) Occupied, Report (~) Unoccupied
Timeclock Controller	166	Enable/Disable, Query Status
Wireless Occupancy Sensor 1–30	500–529	Report (~) Occupied, Report (~) Unoccupied
EcoSystem Ballast Occupancy Sensor 1–64	700–763	Report (~) Occupied, Report (~) Unoccupied

#### NOTE

1. Not supported in QS Standalone.

Continued on next page...



## Devices *(continued)*

### GRAFIK Eye QS *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Component Numbers *(continued)*:

Component	Component Number	Available Actions
Shade Column 1 Open LED <sup>1</sup>	174	Get (?) LED state
Shade Column 1 Preset 1 LED <sup>1</sup>	175	Get (?) LED state
Shade Column 1 Close LED <sup>1</sup>	211	Get (?) LED state
Shade Column 2 Open LED <sup>1</sup>	183	Get (?) LED state
Shade Column 2 Preset 1 LED <sup>1</sup>	184	Get (?) LED state
Shade Column 2 Close LED <sup>1</sup>	220	Get (?) LED state
Shade Column 3 Open LED <sup>1</sup>	192	Get (?) LED state
Shade Column 3 Preset 1 LED <sup>1</sup>	193	Get (?) LED state
Shade Column 3 Close LED <sup>1</sup>	229	Get (?) LED state

#### NOTE

1. Not supported in QS Standalone.

#### Action Numbers and Parameters:

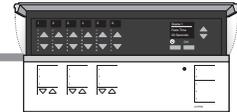
Action	Action Number	Parameters
Set (#) Press or Occupied	3	None
Set (#) Release or Unoccupied	4	None
Set (#) Current Scene <sup>1,2</sup>	7	Scene
Set (#) or Get (?) LED State <sup>3</sup>	9	0=Off 1=On 2=Normal-Flash: 1 flash every second <sup>2</sup> 3=Rapid-Flash: 10 flashes every second <sup>2</sup>
Set (#) Scene Save	12	Scene
Set (#) or Get (?) Light Level <sup>4,5</sup>	14	Level=0–100 or 0.00–100.00 Fade <sup>6</sup> in: SS.ss <sup>7</sup> , SS, MM:SS, or HH:MM:SSJ79 (QS Standalone fade: maximum 4 hours) Delay <sup>6</sup> in: SS.ss <sup>7</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone delay: maximum 4 hours)
Set (#) Zone Lock <sup>8</sup>	15	0=Off; 1=On
Set (#) Scene Lock <sup>8</sup>	16	0=Off; 1=On
Set (#) Sequence State <sup>8</sup>	17	0=Off 1=Sequence through Scenes 1–4 2=Sequence through Scenes 5–16
Set (#) Start Raising <sup>4,5</sup>	18	None
Set (#) Start Lowering <sup>4,5</sup>	19	None
Set (#) Stop Raising or Lowering <sup>4,5</sup>	20	None
Set (#) or Get (?) Timeclock State	34	0=Disabled 1=Enabled

#### NOTES

The number of zone controllers available matches the number of zones a particular model supports.

1. Not supported in HomeWorks QS/myRoom plus.
2. Not supported in RadioRA 2.
3. Quantum or HomeWorks only. “Set” is for unprogrammed buttons and buttons with LED logic ‘Defined by Integration.’
4. Use OUTPUT command with equivalent command in RadioRA 2.
5. Use OUTPUT command with equivalent command in HomeWorks QS/myRoom plus.
6. The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
7. Fractional seconds “SS.ss” will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.31 seconds a value of 1.25 seconds will be used.
8. QS Standalone only.

Continued on next page...



## Devices *(continued)*

### GRAFIK Eye QS *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

*Operation*      *Integration ID (example)*  
**#OUTPUT, 1, Action Number, Parameters**  
*Command*      Use "OUTPUT Command-specific fields" tables  
                          to complete these command fields.

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	Level = 0–100 or 0.00–100.00 Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone fade: maximum 4 hours) Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone delay: maximum 4 hours)
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None

#### NOTES

- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter sec. For example, if a fade time is specified as 1.31 seconds a value of 1.25 seconds will be used.

#### Example OUTPUT Commands

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set dimmer to 75% with a 1 min 30 sec fade.	#OUTPUT,1,1,75,01:30<CR><LF>
Start Raising zone level.	#OUTPUT,1,2<CR><LF>
Stop Raising/Lowering zone level.	#OUTPUT,1,4<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,1,1<CR><LF>
<b>Response<sup>1</sup>:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 90%.	~OUTPUT,1,1,90.00<CR><LF>

#### NOTE

- The system will report the target level of a dimmer while it is fading from one level to another. The actual level is not transmitted while dimming between levels.  
Example: If the "Over Sink" (Integration ID-1) dimmer is at 20% and is then commanded to go to 100% by sending #OUTPUT,1,1,100, the response from the system will be ~OUTPUT,1,1,100.00

# Lutron integration protocol

## Devices *(continued)*

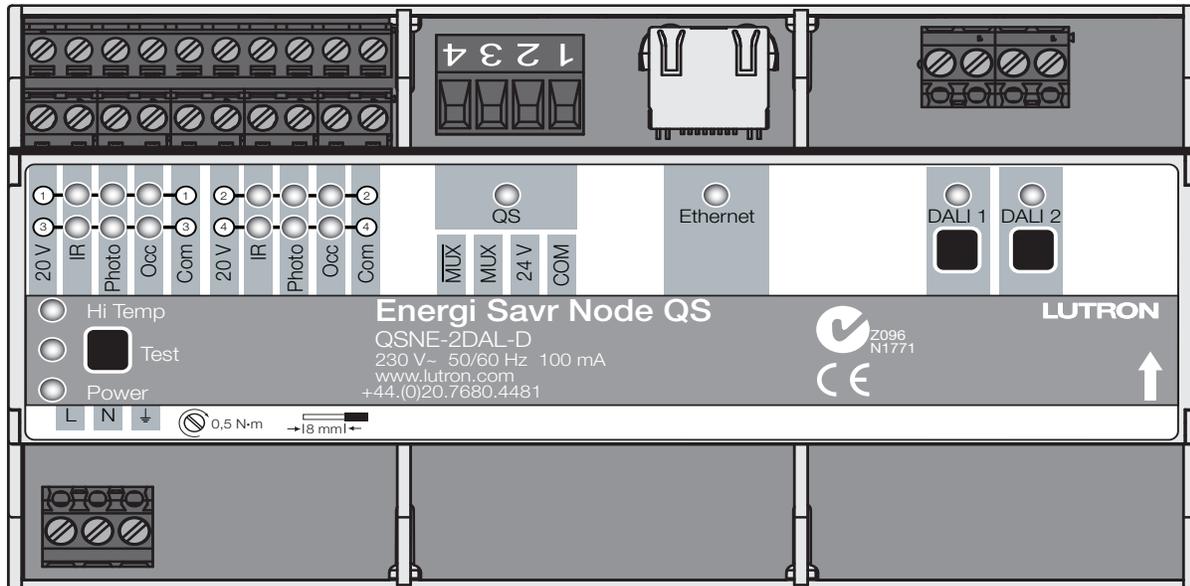
### Energi Savr Node QS for DALI®

Model: QSNE-2DAL-D

### HomeWorks QS/myRoom Power Module for DALI®

Model: LQSE-2DAL-D

QSNE-2DAL-D



#### Why Integrate with an Energi Savr Node (ESN) unit?

- Control individual zones and scenes in an area
- Query current scene and light levels

#### Integration Capabilities

- Up to 32 areas with 16 scenes per area. Up to 32 zones across the two DALI® buses

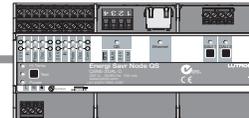
#### Supported Command Types

- **DEVICE** allows control and monitoring of zone levels and area scenes
- **OUTPUT** allows control and monitoring of the dimmer device output

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Energi Savr Node QS/DALI®	✓	✓			
HomeWorks QS/myRoom Power Module/DALI®				✓	✓

Continued on next page...



## Devices *(continued)*

### Energi Savr Node QS for DALI®

### HomeWorks QS/myRoom Power Module for DALI® *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 5, Component Number, Action Number, Parameters**  
*Command*      Use "DEVICE Command-specific fields" tables  
                          to complete these command fields.

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Zone 1–Zone 32 <sup>1,2,3</sup>	301–332	Set or Get Light Level, Raise, Lower, Stop
Area 1–Area 32 <sup>1,3</sup>	401–432	Set or Get Scene, Set Light Level, Raise, Lower, Stop
Occupancy Sensors 1–4	151–154	Report (~) Occupied Report (~) Unoccupied

#### NOTES

- Zones and areas are created and configured using the Lutron ESN Configuration Tool on an *iPhone* or *iPod Touch* mobile device, the Quantum Q-Design Tool, the HomeWorks QS Lutron Designer, or the myRoom Lutron Designer. Only those areas and zones that have been configured using one of these tools are accessible through integration.
- Assigned zones can be given an individual Integration ID and controlled using the *#OUTPUT* command. For more details on setting the output Integration ID of a zone component, see the Integration Access Point section of the system that contains the ESN.
- When the ESN is part of a Quantum system, then the *#AREA* and *#OUTPUT* commands found in the Quantum "System Commands" section of this integration document should be used.

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Report (~) Occupied	3	None
Report (~) Unoccupied	4	None
Set (#) or Get (?) Current Scene	7	Scene
Set (#) Scene Save <sup>1</sup>	12	Scene
Set (#) or Get (?) Light Level	14	Level=0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone fade: maximum 90 seconds) Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone delay: maximum 4 hours)
Set (#) Scene Lock <sup>4</sup>	16	0=Off; 1=On
Set (#) Sequence State <sup>4</sup>	17	0=Off; 1=Sequence through Scenes 1–4; 2=Sequence through Scenes 5–16
Set (#) Start Raising	18	None
Set (#) Start Lowering	19	None
Set (#) Stop Raising or Lowering	20	None

#### NOTES

- Available only with Energi Savr Node firmware >6.x.
- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter-second. For example, if a fade time is specified as 1.31 seconds, a value of 1.25 seconds will be used.
- QS Standalone only.

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Continued on next page...

# Lutron integration protocol



## Devices *(continued)*

### Energi Savr Node QS for DALI®

### HomeWorks QS/myRoom Power Module for DALI® *(continued)*

#### OUTPUT Commands

##### OUTPUT Command Format

$\begin{matrix} \text{Operation} & \text{Integration ID (example)} \\ \# \text{OUTPUT}, 1, & \text{Action Number, Parameters} \\ \text{Command} & \text{Use "OUTPUT Command-specific fields" tables} \\ & \text{to complete these command fields.} \end{matrix}$

##### OUTPUT Command-specific fields

###### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	Level=0–100 or 0.00–100.00 Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone fade: maximum 90 seconds) Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone delay: maximum 4 hours)
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None

###### NOTES

- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.31 seconds a value of 1.25 seconds will be used.

##### Example OUTPUT Commands

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set dimmer to 75% with a 1 min 30 sec fade.	#OUTPUT,1,1,75,01:30<CR><LF>
Start Raising zone level.	#OUTPUT,1,2<CR><LF>
Stop Raising/Lowering zone level.	#OUTPUT,1,4<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,1,1<CR><LF>
<b>Response<sup>1</sup>:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 90%.	~OUTPUT,1,1,90.00<CR><LF>

###### NOTE

- The system will report the target level of a dimmer while it is fading from one level to another. The actual level is not transmitted while dimming between levels.  
Example: If the "Over Sink" (Integration ID -1) dimmer is at 20% and is then commanded to go to 100% by sending #OUTPUT,1,1,100, the response from the system will be ~OUTPUT,1,1,100.00

# Lutron integration protocol

## Devices *(continued)*

### Energi Savr Node QS with EcoSystem

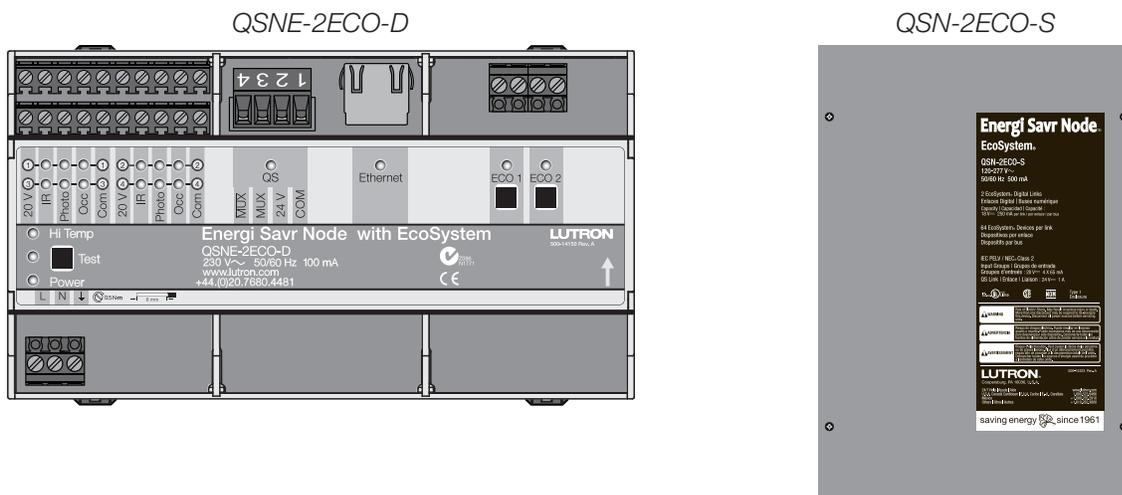
Model: QSN-2ECO-S

### Energi Savr Node QS with EcoSystem (International)

Model: QSNE-2ECO-D

### HomeWorks QS/myRoom Power Module with EcoSystem

Model: LQSE-2ECO-D



#### Why Integrate with an Energi Savr Node unit?

- Control individual zones and scenes in an area
- Query current scene and light levels

#### Integration Capabilities

- Up to 100 areas with 16 scenes per area. Up to 100 zones across the two EcoSystem loops

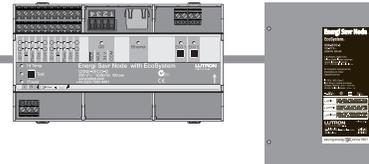
#### Supported Command Types

- **DEVICE** allows control and monitoring of zone levels and area scenes
- **OUTPUT** allows control and monitoring of the dimmer device output

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Energi Savr Node QS/ EcoSystem	✓	✓			
Energi Savr Node QS/ EcoSystem (Int'l)	✓	✓			
HomeWorks QS/myRoom Power Module/EcoSystem				✓	✓

Continued on next page...



## Devices *(continued)*

### Energi Savr Node QS with EcoSystem

### HomeWorks QS/myRoom Power Module with EcoSystem

*(continued)*

#### DEVICE Commands<sup>1</sup>

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 5, Component Number, Action Number, Parameters**  
*Command*      Use "DEVICE Command-specific fields" tables  
                          to complete these command fields.

#### NOTE

1. Not Supported in HomeWorks QS/myRoom plus.

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Occupancy Sensors 1–4	136–139	Report (~) Occupied, Report (~) Unoccupied
Loop 1 Ballast Occupancy Sensors	140–203	Report (~) Occupied, Report (~) Unoccupied
Loop 2 Ballast Occupancy Sensors	204–267	Report (~) Occupied, Report (~) Unoccupied
Zone 1–Zone 100 <sup>1,2,3</sup>	1001–1100	Set or Get Light Level, Raise, Lower, Stop
Area 1–Area 100 <sup>1,3</sup>	1201–1300	Set or Get Scene, Set Light Level, Raise, Lower, Stop

#### NOTES

1. Zones and areas are created and configured using the Lutron ESN Configuration Tool on an *iPhone* or *iPod Touch* mobile device, the Quantum Q-Design Tool, the HomeWorks QS Lutron Designer, or the myRoom Lutron Designer. Only those areas and zones that have been configured using one of these tools are accessible through integration.
2. Assigned zones can be given an individual Integration ID and controlled using the **#OUTPUT** command. For more details on setting the output Integration ID of a zone component, see the Integration Access Point section of the system that contains the ESN.
3. When the ESN is part of a Quantum, HomeWorks QS or myRoom plus system, the **#AREA** and **#OUTPUT** commands found in the Quantum "System Commands" section of this integration document should be used.

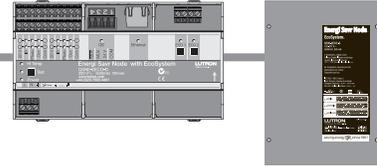
##### Action Numbers and Parameters:

Action	Action Number	Parameters
Report (~) Occupied	3	None
Report (~) Unoccupied	4	None
Set (#) or Get (?) Current Scene	7	Scene
Set (#) Scene Save <sup>1</sup>	12	Scene
Set (#) or Get (?) Light Level	14	Level=0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Scene Lock <sup>4</sup>	16	0=Off; 1=On
Set (#) Sequence State <sup>4</sup>	17	0=Off; 1=Sequence through Scenes 1–4; 2=Sequence through Scenes 5–16
Set (#) Start Raising	18	None
Set (#) Start Lowering	19	None
Set (#) Stop Raising or Lowering	20	None

#### NOTES

1. Available only with Energi Savr Node Firmware >6.x.
2. The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
3. Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.31 seconds, a value of 1.25 seconds will be used.
4. QS Standalone only.

Continued on next page...



## Devices *(continued)*

### Energi Savr Node QS with EcoSystem

### HomeWorks QS/myRoom Power Module with EcoSystem

*(continued)*

#### OUTPUT Commands

##### OUTPUT Command Format

*Operation*            *Integration ID (example)*  
**#OUTPUT, 1, Action Number, Parameters**  
*Command*            *Use "OUTPUT Command-specific fields" tables to complete these command fields.*

##### OUTPUT Command-specific fields

###### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	Level=0–100 or 0.00–100.00 Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone fade: maximum 2 hours) Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone delay: maximum 4 hours)
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None

##### NOTES

- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.31 seconds a value of 1.25 seconds will be used.

##### Example OUTPUT Commands

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set dimmer to 75% with a 1 min 30 sec fade.	#OUTPUT,1,1,75,01:30<CR><LF>
Start Raising zone level.	#OUTPUT,1,2<CR><LF>
Stop Raising/Lowering zone level.	#OUTPUT,1,4<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,1,1<CR><LF>
<b>Response<sup>1</sup>:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 90%.	~OUTPUT,1,1,90.00<CR><LF>

##### NOTE

- The system will report the target level of a dimmer while it is fading from one level to another. The actual level is not transmitted while dimming between levels.  
Example: If the "Over Sink" (Integration ID-1) dimmer is at 20% and is then commanded to go to 100% by sending #OUTPUT,1,1,100, the response from the system will be ~OUTPUT,1,1,100.00

# Lutron integration protocol

## Devices *(continued)*

### Energi Savr Node QS for 0–10 V/Softswitch (International)

Models (QSNE-): 4T10-D, 4S10-D

### Energi Savr Node QS for Phase Adaptive (International)

Model: QSNE-4A-D

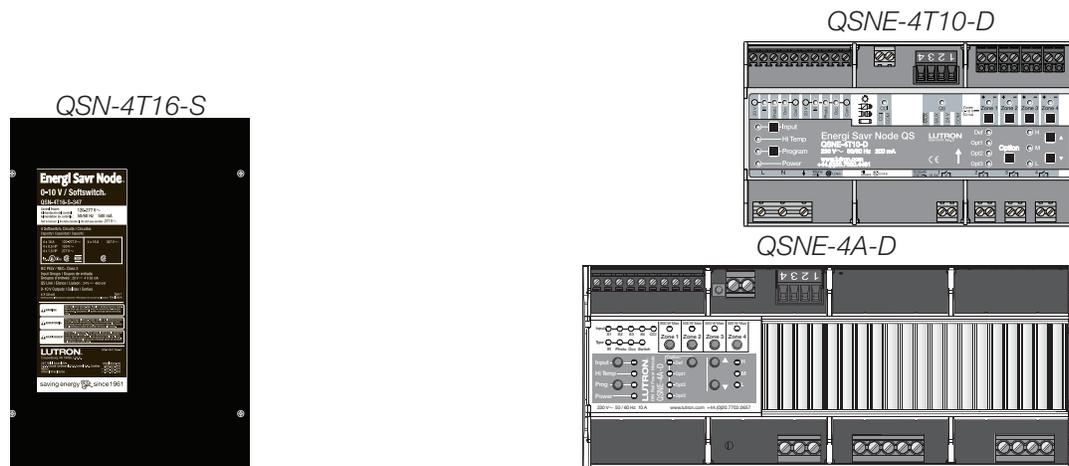
### Energi Savr Node QS for 0–10 V/Softswitch

Models (QSN-): 4T16-S, 4S16-S

### HomeWorks QS/myRoom Power Module for 0–10 V/ Softswitch/Phase Adaptive

0-10 V/Switching Models (LQSE-): 4T10-D, 4S10-D

Phase Adaptive Model: LQSE-4A-D



#### Why Integrate with an Energi Savr Node unit?

- Control individual zones and scenes in an area
- Query current scene and light levels

#### Integration Capabilities

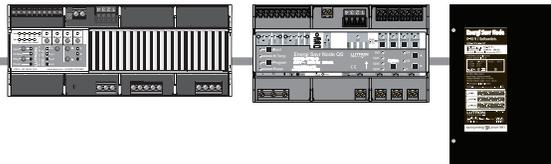
- Four areas with 16 scenes per area. Four zones on four independent outputs

#### Supported Command Types

- **DEVICE** allows control and monitoring of zone levels and area scenes
- **OUTPUT** allows control and monitoring of the dimmer device output

Compatibility	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Energi Savr Node QS/0–10 V/ Softswitch (Int'l)	✓	✓			
Energi Savr Node QS/ Phase-Adaptive (Int'l)	✓	✓			
Energi Savr Node QS/0–10 V/ Softswitch	✓	✓			
HomeWorks QS Power Module/0–10 V/Softswitch/Phase Adaptive				✓	✓

Continued on next page...



## Devices *(continued)*

### Energi Savr Node QS for 0–10 V/Softswitch/Phase Adaptive HomeWorks QS/myRoom Power Module for 0–10 V/ Softswitch/Phase Adaptive *(continued)*

#### DEVICE Commands<sup>1</sup>

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 5, Component Number, Action Number, Parameters**  
*Command*      *Use “DEVICE Command-specific fields” tables  
 to complete these command fields.*

#### NOTE

- Not Supported in HomeWorks QS/myRoom plus.

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Zone 1–Zone 4 <sup>1,2,3</sup>	5–8	Set or Get Light Level, Raise, Lower, Stop
Area 1–Area 4 <sup>1,3</sup>	10–13	Set or Get Scene, Set Light Level, Raise, Lower, Stop
Occupancy Sensor 1–4	34–37	Report (-) Occupied, Report (-) Unoccupied
Occupancy Sensor 1–2	34–35	Report (-) Occupied, Report (-) Unoccupied

#### NOTES

- Zones and areas are created and configured using the Lutron ESN Configuration Tool on an *iPhone* or *iPod Touch* mobile device, the Quantum Q-Design Tool, the HomeWorks QS Lutron Designer, or the myRoom Lutron Designer. Only those areas and zones that have been configured using one of these tools are accessible through integration.
- Assigned zones can be given an individual Integration ID and controlled using the **#OUTPUT** command. For more details on setting the output Integration ID of a zone component, see the Integration Access Point section of the system that contains the ESN.
- When the ESN is part of a Quantum, HomeWorks QS or myRoom plus system, the **#AREA** and **#OUTPUT** commands found in the Quantum “System Commands” section of this integration document should be used.

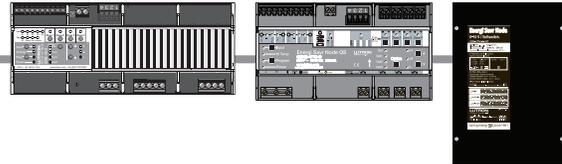
##### Action Numbers and Parameters:

Action	Action Number	Parameters
Report (-) Occupied	3	None
Report (-) Unoccupied	4	None
Set (#) or Get (?) Current Scene <sup>1</sup>	7	Scene
Set (#) Scene Save <sup>2</sup>	12	Scene
Set (#) or Get (?) Light Level	14	Level = 0–100 or 0.00–100.00 Fade <sup>3</sup> in: SS.ss <sup>4</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>3</sup> in: SS.ss <sup>4</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Scene Lock <sup>1</sup>	16	0 = Off; 1 = On
Set (#) Sequence State <sup>1</sup>	17	0 = Off; 1 = Sequence through Scenes 1–4; 2 = Sequence through Scenes 5–16
Set (#) Start Raising	18	None
Set (#) Start Lowering	19	None
Set (#) Stop Raising or Lowering	20	None

#### NOTES

- QS Standalone only.
- Available only with Energi Savr Node Firmware > 6.x.
- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
- Fractional seconds “SS.ss” will be rounded down to the nearest quarter-second. For example, if a fade time is specified as 1.31 seconds, a value of 1.25 seconds will be used.

Continued on next page...



## Devices *(continued)*

### Energi Savr Node QS for 0–10 V/Softswitch/Phase Adaptive HomeWorks QS/myRoom Power Module for 0–10 V/ Softswitch/Phase Adaptive *(continued)*

#### OUTPUT Commands

##### OUTPUT Command Format

*Operation*            *Integration ID (example)*  
**#OUTPUT, 1, Action Number, Parameters**  
*Command*            *Use "OUTPUT Command-specific fields" tables*  
                                  *to complete these command fields.*

##### OUTPUT Command-specific fields

###### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	Level=0–100 or 0.00–100.00 Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone fade: maximum 4 hours) Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS (QS Standalone delay: maximum 4 hours)
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None

##### NOTES

- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.31 seconds a value of 1.25 seconds will be used.

##### Example OUTPUT Commands

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set dimmer to 75% with a 1 min 30 sec fade.	#OUTPUT,1,1,75,01:30<CR><LF>
Start Raising zone level.	#OUTPUT,1,2<CR><LF>
Stop Raising/Lowering zone level.	#OUTPUT,1,4<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,1,1<CR><LF>
<b>Response<sup>1</sup>:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 90%.	~OUTPUT,1,1,90.00<CR><LF>

##### NOTE

- The system will report the target level of a dimmer while it is fading from one level to another. The actual level is not transmitted while dimming between levels.  
Example: If the "Over Sink" (Integration ID-1) dimmer is at 20% and is then commanded to go to 100% by sending #OUTPUT,1,1,100, the response from the system will be ~OUTPUT,1,1,100.00

# Lutron integration protocol

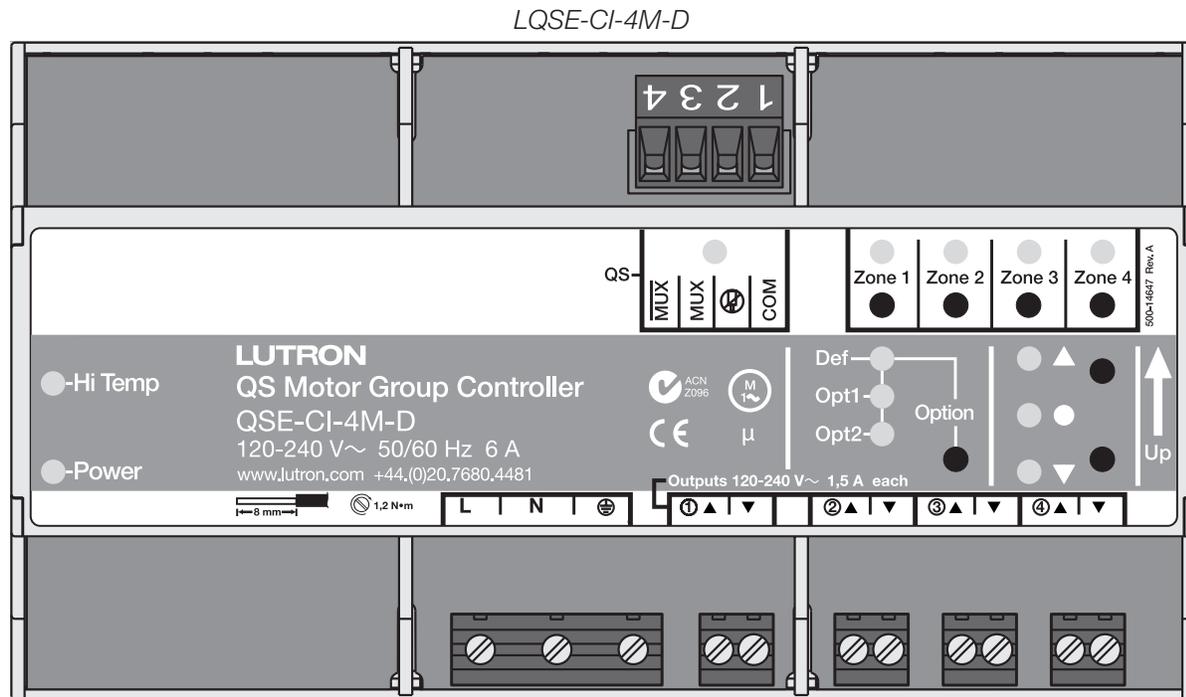
## Devices *(continued)*

### Energi Savr Node QS for Motor Module (International)

Model: QSE-CI-4M-D

### HomeWorks QS/myRoom Power Module for Motor Module

Model: LQSE-4M-D



#### Why Integrate with an Energi Savr Node?

- Allows control and monitoring of the direction and remaining travel time of the four high-voltage outputs.

#### Integration Capabilities

- Up to 4 zones

#### Supported Command Types

- **DEVICE** allows control and monitoring of zone levels
- **OUTPUT** allows control and monitoring of the device outputs

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Energi Savr Node QS/ Motor Module (Int'l)	✓	✓			
HomeWorks QS/myRoom Power Module for Motor Module				✓	✓

Continued on next page...



## Devices *(continued)*

### Energi Savr Node QS for Motor Module

### HomeWorks QS/myRoom Power Module for Motor Module

*(continued)*

#### DEVICE Commands

##### DEVICE Command Format

*Operation*      *Integration ID (example)*  
**#DEVICE, 5, Component Number, Action Number, Parameters**  
*Command*              *Use "DEVICE Command-specific fields" tables to complete these command fields.*

##### DEVICE Command-specific fields

###### Component Numbers:

Component	Component Number	Available Actions
Zone 1 – Zone 4 <sup>1,2</sup>	1 – 4	Set or Get Light Level, Raise, Lower, Stop

###### NOTES

- Assigned zones can be given an individual Integration ID and controlled using the **#OUTPUT** command. For more details on setting the output Integration ID of a zone component, see the Integration Access Point section of the system that contains the QS Motor Module.
- When the QS Motor Module is part of a Quantum system, then the commands found in the Quantum “System Commands” section of this integration document should be used.

###### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Light Level	14	Level=0–100 or 0.00–100.00 <sup>1</sup> Fade <sup>2</sup> in: Always use 0 Delay <sup>3</sup> in: SS.ss <sup>4</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising	18	None
Set (#) Start Lowering	19	None
Set (#) Stop Raising or Lowering	20	None

###### NOTES

- Setting the level to 0% will cause the output to travel in the Closed direction; setting the level to 100% will cause the output to travel in the Open direction; setting any level from 1–99% will be ignored by the output. Querying its level will report 0 or 100%, based on the last direction it moved.
- Fade is not available for Motor Loads because they move at a constant rate. The parameter must be entered, but is ignored.
- The delay time is optional. When not used, the system will use a zero-second delay.
- Fractional seconds “SS.ss” will be rounded down to the nearest quarter-second. For example, if a fade time is specified as 1.31 seconds, a value of 1.25 seconds will be used.

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## Devices *(continued)*

### Energi Savr Node QS for Motor Module

### HomeWorks QS/myRoom Power Module for Motor Module

*(continued)*

#### OUTPUT Commands

##### OUTPUT Command Format

*Operation*            *Integration ID (example)*  
 #OUTPUT, 3, Action Number, Parameters  
*Command*            Use "OUTPUT Command-specific fields" tables  
                                  to complete these command fields.

##### OUTPUT Command-specific fields

###### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	Level=0 or 100.00 <sup>1</sup> Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>4</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None
Report (~) Travel Time Remaining <sup>5</sup>	17	Travel time in seconds: 0– 255
Set (#) Motor Jog Raise <sup>6</sup>	18	None
Set (#) Motor Jog Lower <sup>6</sup>	19	None
Set (#) Motor 4-Stage Jog Raise <sup>6</sup>	20	None
Set (#) Motor 4-Stage Jog Lower <sup>6</sup>	21	None

###### NOTES

- Setting the level to 0% will cause the output to travel in the Closed direction; setting the level to 100% will cause the output to travel in the Open direction; setting any level from 1–99% will be ignored by the output. Querying its level will report 0 or 100%, based on the last direction it moved.
- Fade is not available for Shades because they move at a constant rate. The parameter must be entered, but is ignored.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter-second. For example, if a delay time is specified as 1.45 seconds, a value of 1.25 seconds will be used.
- The delay time is optional. When not used, the system will use a zero-second delay. The minimum delay time is 0.25 seconds; the maximum delay time is 4 hours.
- If the travel time of a motor is greater than 255 seconds, the unit will report 255 until the travel time drops below that value.
- Not supported in QS Standalone.

# Lutron integration protocol

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## Devices *(continued)*

### Remote Power Module

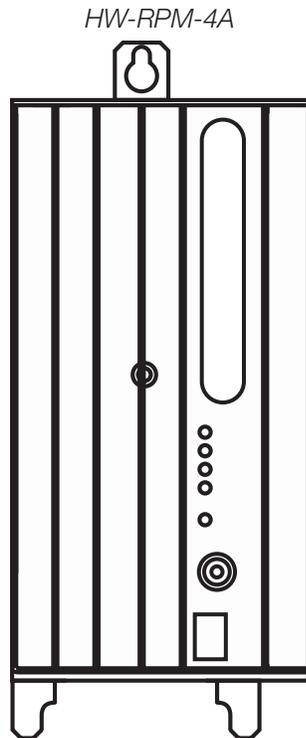
Adaptive Phase Control Model: HW-RPM-4A

Phase Control Model: HW-RPM-4U

Quiet Fan Speed Control Model: HW-RPM-4FSQ

3-Wire Motor Control Model: HW-RPM-4M

Relay Switching Model: HW-RPM-4R



#### Why Integrate with a Remote Power Module?

---

- Control individual zones and scenes in an area
- Query current scene and light levels

#### Integration Capabilities

---

- Up to four zones on each remote power module

#### Supported Command Types

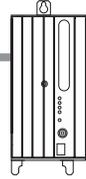
---

- **OUTPUT** allows control and monitoring of the control zone output

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Remote Power Module		✓		✓	

Continued on next page...



## Devices *(continued)*

### Remote Power Module *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

*Operation*      *Integration ID (example)*  
**#OUTPUT, 6, Action Number, Parameters**  
*Command*      *Use "OUTPUT Command-specific fields" tables to complete these command fields.*

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	0–100 or 0.00–100.00
		SS.ss <sup>1</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising	2	None
Set (#) Stop Lowering	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) Flashing <sup>2</sup>	5	SS.ss <sup>1</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Pulse Time	6	SS.ss <sup>1</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Motor Jog Raise	18	None
Set (#) Motor Jog Lower	19	None
Set (#) Motor 4-Stage Jog Raise	20	None
Set (#) Motor 4-Stage Jog Lower	21	None

#### NOTES

1. Fractions are rounded **up** to the closest ¼ second.
2. To stop a dimmer from flashing, send it to a valid level (action 1).

# Lutron integration protocol

## Devices *(continued)*

### Low-Capacity Switching DIN Power Module (1 A/output)

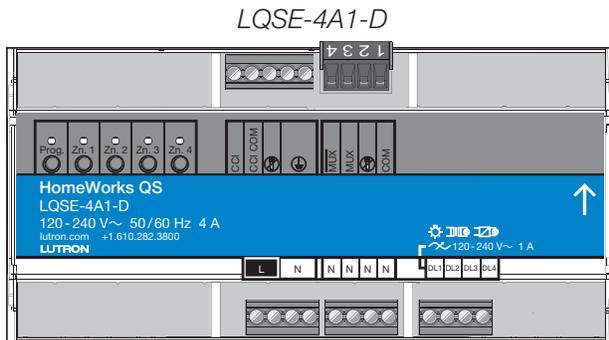
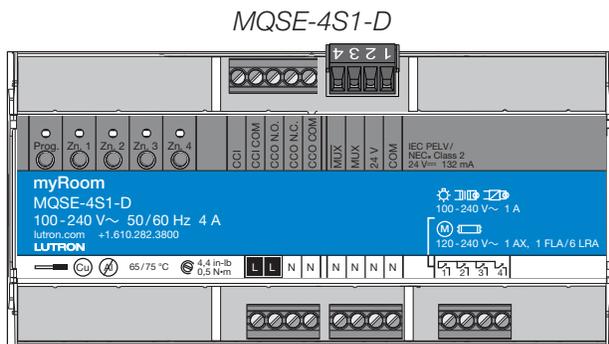
myRoom plus Model: MQSE-4S1-D

HomeWorks QS Model: LQSE-4S1-D

### Low-Capacity Phase Adaptive DIN Power Module (1 A/output)

myRoom plus Model: MQSE-4A1-D

HomeWorks QS Model: LQSE-4A1-D



### Why Integrate with a Low Capacity DIN Power Module?

- Control individual zones and scenes in an area
- Query current scene and light levels

### Integration Capabilities

- Four areas with 16 scenes per area. Four zones on four independent outputs

### Supported Command Types

- **DEVICE** allows control and monitoring of zone levels and area scenes
- **OUTPUT** allows control and monitoring of the dimmer device output

### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Low-Capacity Switching DIN Power Module (1A/output)				✓	✓
Low-Capacity Phase-Adaptive DIN Power Module (1A/output)				✓	✓

Continued on next page...



## Devices *(continued)*

### Low-Capacity Switching/Phase-Adaptive DIN Power Module (1 A/output) *(continued)*

DEVICE Commands<sup>1</sup>

#### DEVICE Command Formats

<sup>Operation</sup>  
<sup>Integration ID (example)</sup>  
**#DEVICE, 5, Component Number, Action Number, Parameters**  
<sup>Command</sup>      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### NOTE

1. Not Supported in HomeWorks QS/myRoom plus.

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Zone 1 – Zone 4 <sup>1,2,3</sup>	5 – 8	Set or Get Light Level, Raise, Lower, Stop
Area 1 – Area 4 <sup>2,3</sup>	10 – 13	Set or Get Scene, Set Light Level, Raise, Lower, Stop
Contact Closure Input	26	Report Open, Report Closed

#### NOTES

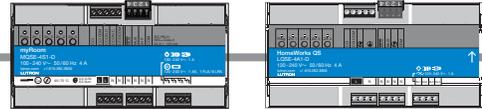
1. Zones and areas are created and configured using the HomeWorks QS Lutron Designer, or the myRoom Lutron Designer. Only those areas and zones that have been configured using one of these tools are accessible through integration.
2. Assigned zones can be given an individual Integration ID and controlled using the **#OUTPUT** command. For more details on setting the output Integration ID of a zone component, see the Integration Access Point section of the system that contains the ESN.
3. When the ESN is part of a HomeWorks or myRoom system, then the **#AREA** and **#OUTPUT** commands found in the Quantum "System Commands" section of this integration document should be used.

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Report (~) Occupied or Closed <sup>1</sup>	3	None
Report (~) Unoccupied or Open <sup>1</sup>	4	None
Set (#) or Get (?) Current Scene	7	Scene
Set (#) or Get (?) Light Level	14	Level = 0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising	18	None
Set (#) Start Lowering	19	None
Set (#) Stop Raising or Lowering	20	None

#### NOTES

1. MQSE-4S1-D only
2. The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
3. Fractional seconds "SS.ss" will be rounded down to the nearest quarter-second. For example, if a fade time is specified as 1.31 seconds, a value of 1.25 seconds will be used.



## Devices *(continued)*

### Low-Capacity Switching/Phase-Adaptive DIN Power Module (1 A/output) *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

$\begin{array}{l} \text{Operation} \\ \# \end{array}$ 
 $\begin{array}{l} \text{Integration ID (example)} \\ \text{OUTPUT}, 1, \end{array}$ 
 $\begin{array}{l} \text{Action Number,} \\ \text{Parameters} \end{array}$

$\begin{array}{l} \text{Command} \\ \text{Use "OUTPUT Command-specific fields" tables} \\ \text{to complete these command fields.} \end{array}$

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level Set (#) or Get (?) CCO State <sup>1</sup>	1	Level=0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS maximum 4 hours Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS maximum 4 hours
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) Pulse CCO <sup>1</sup>	6	None

#### NOTES

- Low-capacity switching only.
- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.31 seconds a value of 1.25 seconds will be used.

#### Example OUTPUT Commands

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set dimmer to 75% with a 1 min 30 sec fade.	#OUTPUT,1,1,75,01:30<CR><LF>
Start Raising zone level.	#OUTPUT,1,2<CR><LF>
Stop Raising/Lowering zone level.	#OUTPUT,1,4<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,1,1<CR><LF>
<b>Response<sup>1</sup>:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 90%.	~OUTPUT,1,1,90.00<CR><LF>

#### NOTE

- The system will report the target level of a dimmer while it is fading from one level to another. The actual level is not transmitted while dimming between levels.  
Example: If the "Over Sink" (Integration ID-1) dimmer is at 20% and is then commanded to go to 100% by sending #OUTPUT,1,1,100, the response from the system will be ~OUTPUT,1,1,100.00

# Lutron integration protocol

## Devices *(continued)*

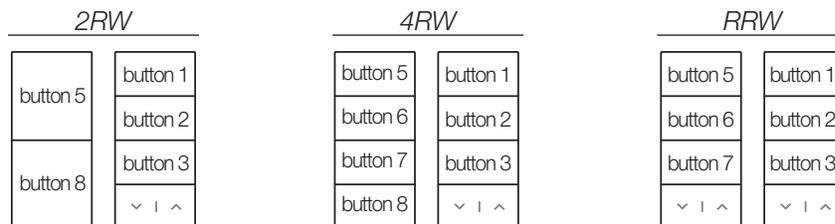
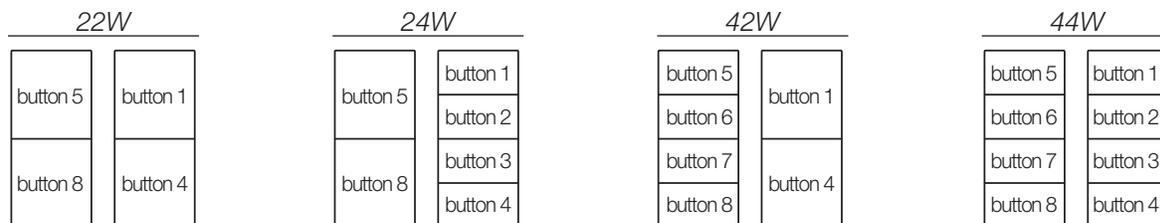
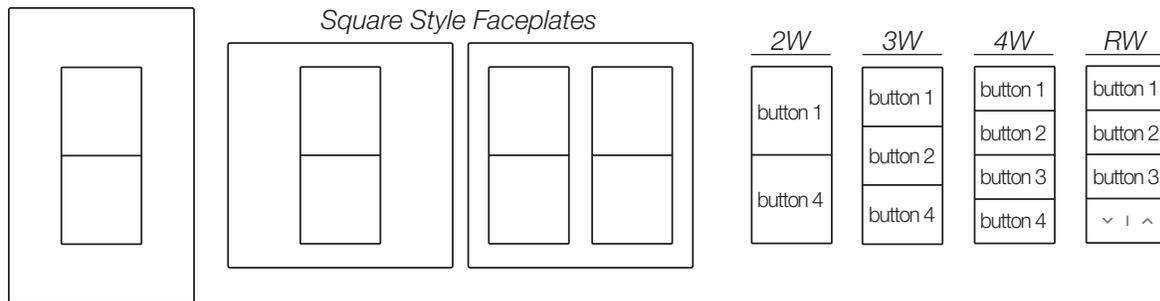
### Palladiom Keypad

QS Models (QWP-): U-2W, U-3W, U-4W, U-RW,  
S-2W, S-3W, S-4W, S-RW, S-22W, S-24W, S-42W, S-44W, S-2RW, S-4RW, S-RRW,  
B-2W, B-3W, B-4W, B-RW, B-22W, B-24W, B-42W, B-44W, B-2RW, B-4RW, B-RRW.

HomeWorks QS Models (HQWT-): U-P2W, U-P3W, U-P4W, U-PRW,  
S-P2W, S-P3W, S-P4W, S-PRW, S-P22W, S-P24W, S-P42W, S-P44W, S-P2RW, S-P4RW, S-PRRW,  
B-P2W, B-P3W, B-P4W, B-PRW, B-P22W, B-P24W, B-P42W, B-P44W, B-P2RW, B-P4RW, B-PRRW.

myRoom Models (MWP-): U-2W, U-3W, U-4W, U-RW,  
S-2W, S-3W, S-4W, S-RW, S-22W, S-24W, S-42W, S-44W, S-2RW, S-4RW, S-RRW,  
B-2W, B-3W, B-4W, B-RW, B-22W, B-24W, B-42W, B-44W, B-2RW, B-4RW, B-RRW.

#### U.S. Style Faceplate



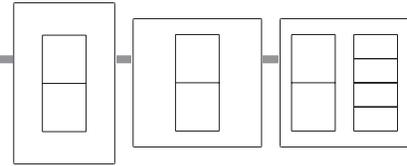
#### Why Integrate with a Palladiom Keypad?

- Simulate a button press
- Control LEDs of unprogrammed buttons

#### Compatibility

Palladiom Keypads	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
QS Model		✓			
HomeWorks QS Model				✓	
myRoom Model					✓

Continued on next page...



## Devices *(continued)*

### Palladiom Keypad *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 2, Component Number, Action Number, Parameters**  
*Command*      Use "DEVICE Command-specific fields" tables  
                          to complete these command fields.

#### DEVICE Command-specific fields

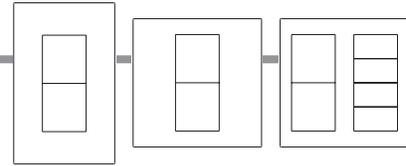
##### Component Numbers:

Component	Component Number	Available Actions
Column 1, Button 1	1	Press, Release
Column 1, Button 2	2	Press, Release
Column 1, Button 3	3	Press, Release
Column 1, Button 4	4	Press, Release
Column 2, Button 1	5	Press, Release
Column 2, Button 2	6	Press, Release
Column 2, Button 3	7	Press, Release
Column 2, Button 4	8	Press, Release
Column 1, Lower	16	Press, Release
Column 1, Raise	17	Press, Release
Column 2, Lower	18	Press, Release
Column 2, Raise	19	Press, Release
Column 1, LED 1	81	Set or Get LED state
Column 1, LED 2	82	Set or Get LED state
Column 1, LED 3	83	Set or Get LED state
Column 1, LED 4	84	Set or Get LED state
Column 2, LED 1	85	Set or Get LED state
Column 2, LED 2	86	Set or Get LED state
Column 2, LED 3	87	Set or Get LED state
Column 2, LED 4	88	Set or Get LED state
Active LED Intensity <sup>1</sup>	89	Set or Get LED state
Inactive LED Intensity <sup>1</sup>	113	Set or Get LED state

#### NOTE

- LED intensity can be set only when the DBM sensor is disabled.

Continued on next page...



## Devices *(continued)*

### Palladiom Keypad *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press	3	None
Set (#) Release	4	None
Set (#) Hold	5	None
Set (#) Double-tap	6	None
Set (#) or Get (?) LED State <sup>1</sup>	9	0 = Off 1 = On 2 = Normal-Flash: 1 flash every second <sup>1</sup> 3 = Rapid-Flash: 10 flashes every second <sup>1</sup>
Set (#) or Get (?) Active LED Level <sup>1,2</sup>	36	0-100
Set (#) or Get (?) Inactive LED Level <sup>1,2</sup>	37	0-100

#### NOTES

1. "Set" is for unprogrammed buttons and buttons with LED logic 'Defined by Integration.'
2. LED intensity can be set only when the DBM sensor is disabled.

#### Example DEVICE Commands

Examples presume keypad has been assigned Integration ID 2.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Set Active LED to 50	#DEVICE,2,89,36,50<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the Inactive LED Level?	?DEVICE,2,113,37<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
Inactive LED Level is 75%	~DEVICE,2,113,37,75<CR><LF>

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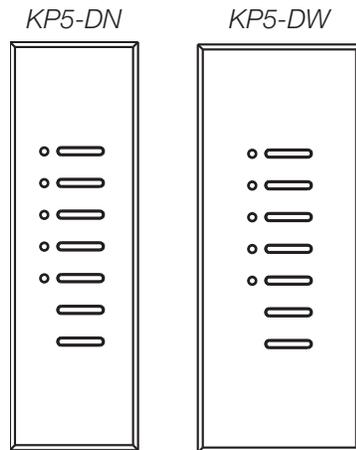
# Lutron integration protocol

## Devices *(continued)*

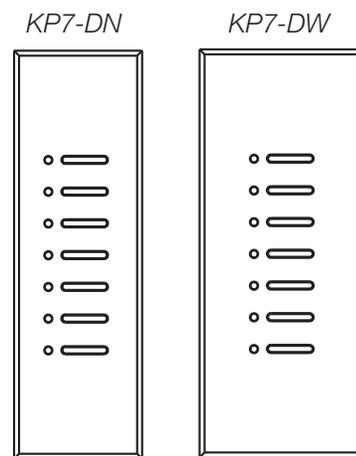
### Architrave Keypad

QS Models (QSWAS-) with Faceplate/Button Kit Models (KP5-, KP7-): DN, KP7

HomeWorks QS/myRoom Models (HQWA-) with Faceplate/Button Kit Models (KP5-, KP7-): DN, KP7



QS	HomeWorks QS
Button 1	Button 1
Button 2	Button 2
Button 3	Button 3
Button 4	Button 4
Button 5	Button 5
Raise	Button 6
Lower	Button 7



QS	HomeWorks QS
Button 1	Button 1
Button 2	Button 2
Button 3	Button 3
Button 4	Button 4
Button 5	Button 5
Button 6	Button 6
Button 7	Button 7

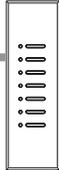
### Why Integrate with an Architrave Keypad?

- Simulate a button press
- Control LEDs of unprogrammed buttons

### Compatibility

Architrave Keypads	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
QS Model	✓	✓			
HomeWorks QS / myRoom Model				✓	✓

Continued on next page...



## Devices *(continued)*

### Architrave Keypad *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 2, Component Number, Action Number, Parameters**  
*Command*      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

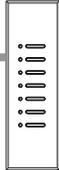
##### Component Numbers:

Component	Component Number	Available Actions
Button 1	1	Press, Release, Double-tap, Hold, Hold Release
Button 2	2	Press, Release, Double-tap, Hold, Hold Release
Button 3	3	Press, Release, Double-tap, Hold, Hold Release
Button 4	4	Press, Release, Double-tap, Hold, Hold Release
Button 5	5	Press, Release, Double-tap, Hold, Hold Release
Button 6	6	Press, Release, Double-tap, Hold, Hold Release
Button 7	7	Press, Release, Double-tap, Hold, Hold Release
Lower	18	Press, Release, Double-tap, Hold, Hold Release
Raise	19	Press, Release, Double-tap, Hold, Hold Release
CCI 1	25	Press, Release
CCI 2	26	Press, Release
LED 1 <sup>1</sup>	81	Set or Get LED state
LED 2 <sup>1</sup>	82	Set or Get LED state
LED 3 <sup>1</sup>	83	Set or Get LED state
LED 4 <sup>1</sup>	84	Set or Get LED state
LED 5 <sup>1</sup>	85	Set or Get LED state
LED 6 <sup>1</sup>	86	Set or Get LED state
LED 7 <sup>1</sup>	87	Set or Get LED state

#### NOTE

1. Available only on units in a Quantum, HomeWorks, or myRoom Plus systems.

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## Devices *(continued)*

### Architrave Keypad *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press or CCI Close	3	None
Set (#) Release or CCI Open	4	None
Set (#) Hold	5	None
Set (#) Double-tap	6	None
Set (#) or Get (?) LED State <sup>1</sup>	9	0 = Off 1 = On 2 = Normal-Flash: 1 flash every second <sup>2</sup> 3 = Rapid-Flash: 10 flashes every second <sup>2</sup>
Set (#) Hold Release <sup>2</sup>	32	None

#### NOTES

1. Quantum, HomeWorks or myRoom plus only. "Set" is for unprogrammed buttons and buttons with LED logic 'Defined by Integration.'
2. Available only on units in a Quantum or HomeWorks system.

#### Example DEVICE Commands

Examples presume keypad has been assigned Integration ID 2.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1.	#DEVICE,2,1,3<CR><LF>
Turn On LED 5.	#DEVICE,2,85,9,1<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 1?	?DEVICE,2,81,9<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,2,81,9,1<CR><LF>

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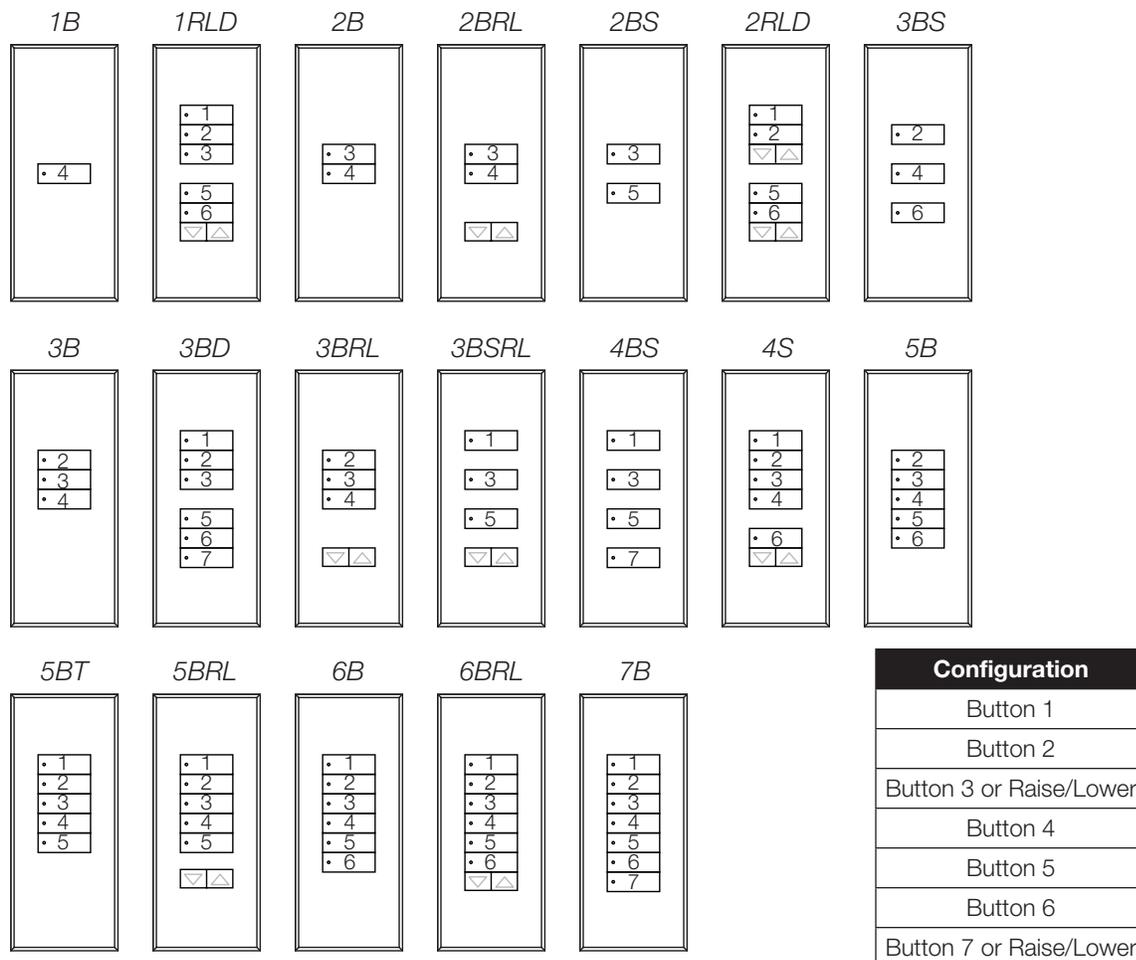
# Lutron integration protocol

## Devices *(continued)*

### Signature Series Keypad

QS Models (QSWAS-): 1B, 1RLD, 2B, 2BRL, 2RLD, 3B, 3BD, 3BRL, 5B, 5BRL, 7B

HomeWorks QS/myRoom Models (HQWAS-B, HQWAS-G) with Faceplate/Button Kit Models (LFS-W): 1B, 1RLD, 2BS, 2RLD, 3BS, 3BD, 3BSRL, 4BS, 4S, 5B, 5BRL, 6B, 6BRL, 7B



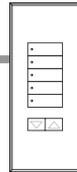
### Why Integrate with a Signature Series Keypad?

- Simulate a button press
- Control LEDs of unprogrammed buttons

### Compatibility

Signature Series Keypads	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
QS Model	✓	✓			
HomeWorks QS/ myRoom Model				✓	✓

Continued on next page...



## Devices *(continued)*

### Signature Series Keypad *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 2, Component Number, Action Number, Parameters**  
*Command*      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Button 1	1	Press, Release, Double-tap, Hold, Hold Release
Button 2	2	Press, Release, Double-tap, Hold, Hold Release
Button 3	3	Press, Release, Double-tap, Hold, Hold Release
Button 4	4	Press, Release, Double-tap, Hold, Hold Release
Button 5	5	Press, Release, Double-tap, Hold, Hold Release
Button 6	6	Press, Release, Double-tap, Hold, Hold Release
Button 7	7	Press, Release, Double-tap, Hold, Hold Release
Button Top Lower	16	Press, Release, Double-tap, Hold, Hold Release
Button Top Raise	17	Press, Release, Double-tap, Hold, Hold Release
Button Bottom Lower	18	Press, Release, Double-tap, Hold, Hold Release
Button Bottom Raise	19	Press, Release, Double-tap, Hold, Hold Release
CCI 1	25	Press, Release
CCI 2	26	Press, Release
LED 1 <sup>1</sup>	81	Set or Get LED state
LED 2 <sup>1</sup>	82	Set or Get LED state
LED 3 <sup>1</sup>	83	Set or Get LED state
LED 4 <sup>1</sup>	84	Set or Get LED state
LED 5 <sup>1</sup>	85	Set or Get LED state
LED 6 <sup>1</sup>	86	Set or Get LED state
LED 7 <sup>1</sup>	87	Set or Get LED state

#### NOTE

1. Available only on units in a Quantum, HomeWorks, or myRoom systems.

Continued on next page...



## Devices *(continued)*

### Signature Series Keypad *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press	3	None
Set (#) Release	4	None
Set (#) Hold	5	None
Set (#) Double-tap	6	None
Set (#) or Get (?) LED State <sup>1</sup>	9	0 = Off 1 = On 2 = Normal-Flash: 1 flash every second 3 = Rapid-Flash: 10 flashes every second
Set (#) Hold Release <sup>2</sup>	32	None

#### NOTES

1. Quantum, HomeWorks or myRoom plus only. "Set" is for unprogrammed buttons and buttons with LED logic 'Defined by Integration.'
2. Available only on units in a Quantum or HomeWorks system.

#### Example DEVICE Commands

Examples presume keypad has been assigned Integration ID 2.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1.	#DEVICE,2,1,3<CR><LF>
Turn On LED 5.	#DEVICE,2,85,9,1<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 1?	?DEVICE,2,81,9<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,2,81,9,1<CR><LF>

Continued on next page...

# Lutron integration protocol

## Devices *(continued)*

### seeTouch Keypad

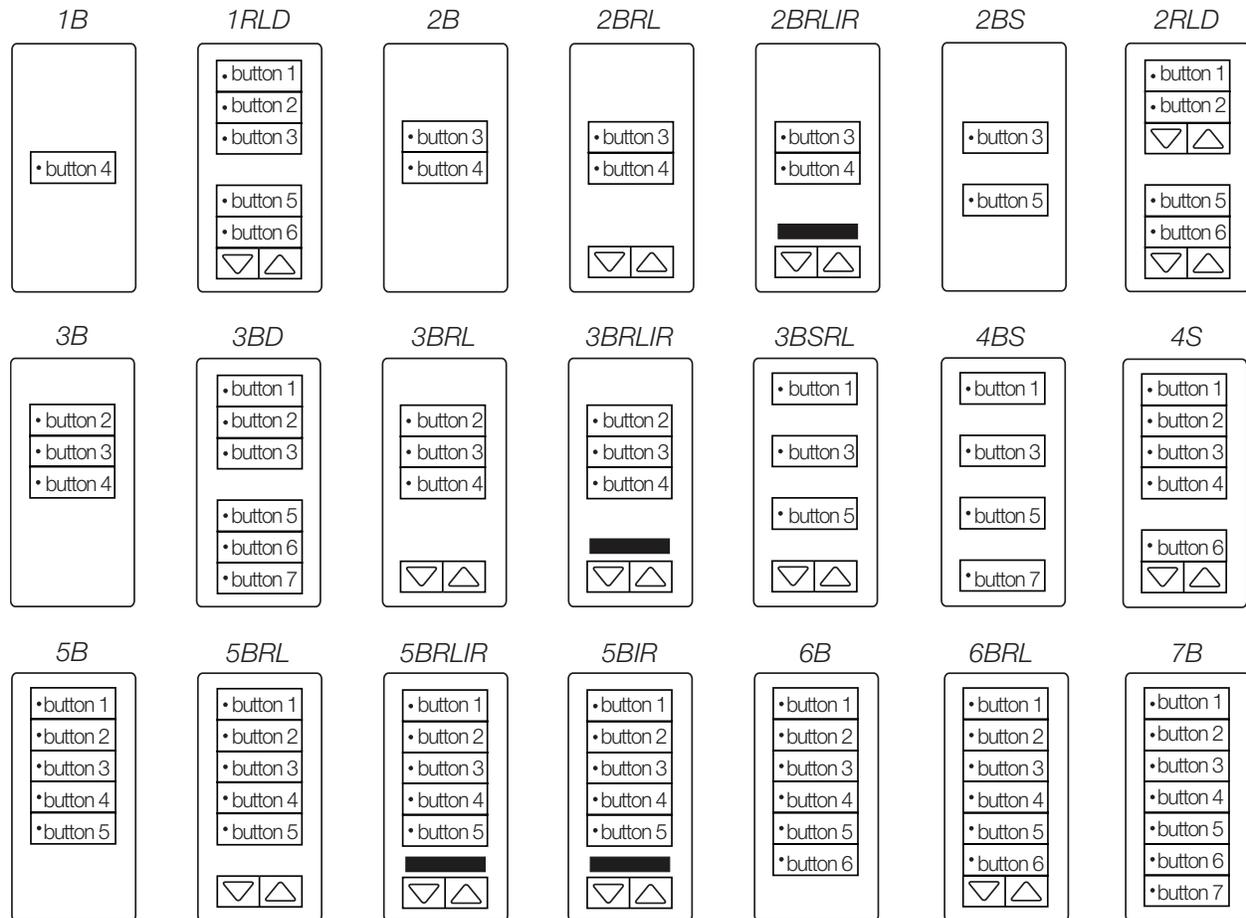
QS Models (QSW2-): 1B, 1RLD, 2B, 2BRL, 2BRLIR, 2RLD, 3B, 3BD, 3BRL, 3BRLIR, 5B, 5BRL, 5BRLIR, 7B

RadioRA 2 Models (RRD-W): 1RLD, 2RLD, 3BD, 3BRL, 3BSRL, 4S, 5BRL, 5BRLIR, 6BRL, 7B

HomeWorks QS/myRoom Models (HQRD-W, HQWD-W, HQWA-W, HQRA-W, HQWAS-W):

1B, 1RLD, 2BS, 2RLD, 3BS, 3BD, 3BSRL, 4BS, 4S, 5B, 5BRL, 5BIR, 6B, 6BRL, 7B

Clear Connect Device Models (CCD-W): 6BRL



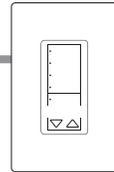
### Why Integrate with a seeTouch Keypad?

- Simulate a button press
- Control LEDs of unprogrammed buttons

### Compatibility

seeTouch Keypads	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
QS Model	✓	✓			
RadioRA 2 Model			✓		
HomeWorks QS / myRoom Model				✓	✓
Clear Connect Device Model					

Continued on next page...



## Devices *(continued)*

### see Touch Keypad *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 2, Component Number, Action Number, Parameters**  
*Command*      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

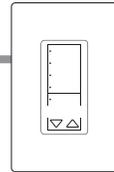
##### Component Numbers:

Component	Component Number	Available Actions
Button 1	1	Press, Release
Button 2	2	Press, Release
Button 3	3	Press, Release
Button 4	4	Press, Release
Button 5	5	Press, Release
Button 6	6	Press, Release
Button 7	7	Press, Release
Button Top Lower	16	Press, Release
Button Top Raise	17	Press, Release
Button Bottom Lower	18	Press, Release
Button Bottom Raise	19	Press, Release
CCI 1	25	Press, Release
CCI 2	26	Press, Release
LED 1 <sup>1</sup>	81	Set or Get LED state
LED 2 <sup>1</sup>	82	Set or Get LED state
LED 3 <sup>1</sup>	83	Set or Get LED state
LED 4 <sup>1</sup>	84	Set or Get LED state
LED 5 <sup>1</sup>	85	Set or Get LED state
LED 6 <sup>1</sup>	86	Set or Get LED state
LED 7 <sup>1</sup>	87	Set or Get LED state

#### NOTE

1. Available only on units in a Quantum, HomeWorks, or myRoom plus system.

Continued on next page...



## Devices *(continued)*

### see Touch Keypad *(continued)*

### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press or CCI Close	3	None
Set (#) Release or CCI Open	4	None
Set (#) Hold	5	None
Set (#) Double-tap	6	None
Set (#) or Get (?) LED State <sup>1,2</sup>	9	0 = Off 1 = On 2 = Normal-Flash: 1 flash every second <sup>1</sup> 3 = Rapid-Flash: 10 flashes every second <sup>1</sup>

#### NOTES

1. Available only on units in a Quantum, HomeWorks, or myRoom plus system.
2. Quantum, HomeWorks, or myRoom only. "Set" is for unprogrammed buttons and buttons with LED logic 'Defined by Integration.'

#### Example DEVICE Commands

Examples presume keypad has been assigned Integration ID 2.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1.	#DEVICE,2,1,3<CR><LF>
Turn On LED 5.	#DEVICE,2,85,9,1<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 1?	?DEVICE,2,81,9<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,2,81,9,1<CR><LF>

Continued on next page...

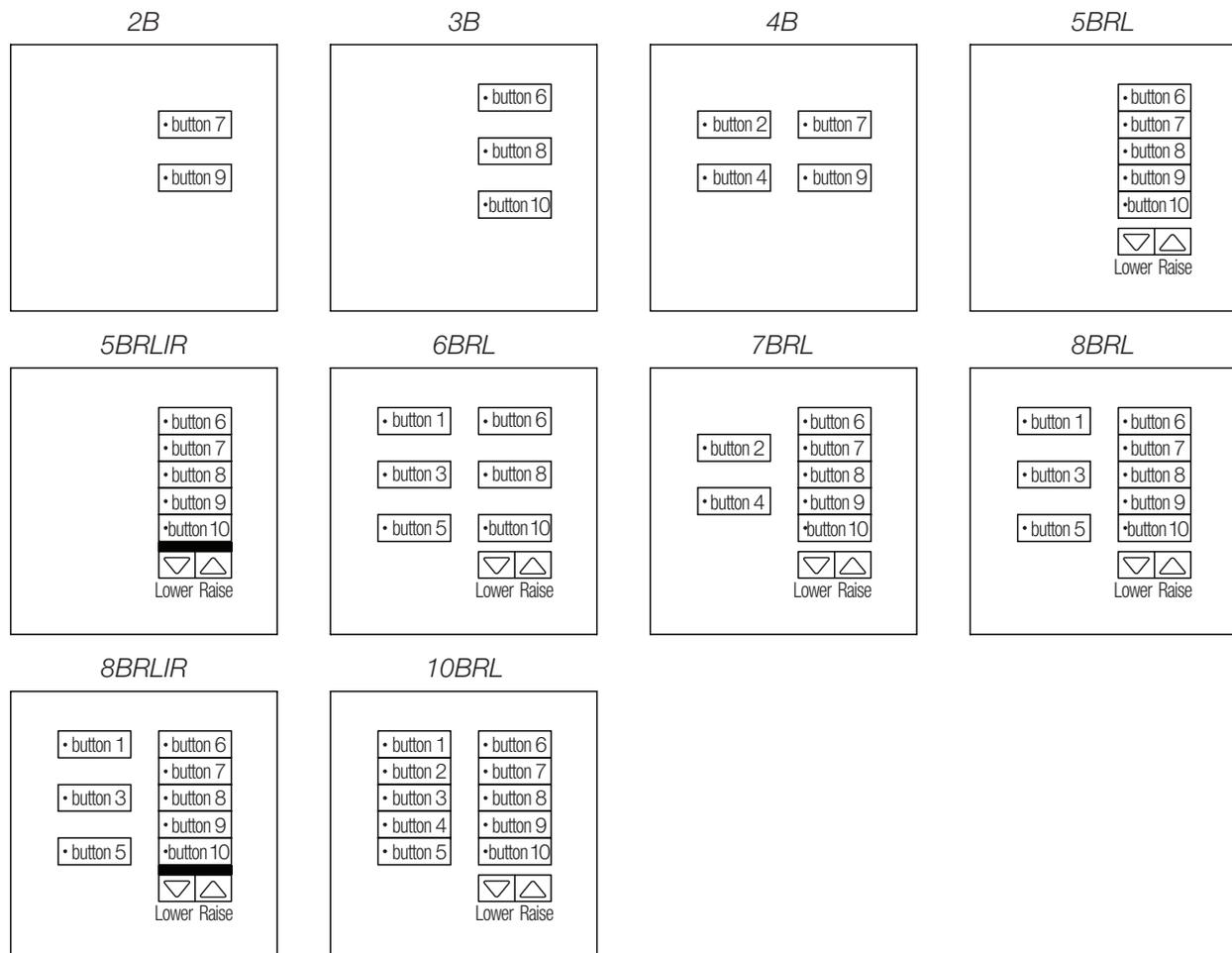
# Lutron integration protocol

## Devices *(continued)*

### seeTouch QS Keypad (International)

QS Models (QSWE-): 2B, 3B, 4B, 5BRL, 5BRLIR, 6BRL, 7BRL, 8BRL, 8BRLIR, 10BRL

HomeWorks QS/myRoom Models (HWQIS-NB-NONE) with Faceplate/Button Kit Models (LFS-W): 2B, 3B, 4B, 5BRL, 5BRLIR, 6BRL, 7BRL, 8BRL, 8BRLIR, 10BRL



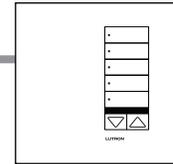
### Why Integrate with a seeTouch QS Keypad?

- Simulate a button press
- Control LEDs of unprogrammed buttons

### Compatibility

seeTouch QS Keypads (Int'l)	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
QS Model	✓	✓			
HomeWorks QS/ myRoom Model				✓	✓

Continued on next page...



## Devices *(continued)*

### see Touch QS Keypad (International) *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 2, Component Number, Action Number, Parameters**  
*Command*      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

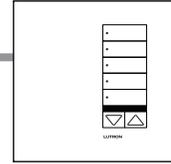
##### Component Numbers:

Component	Component Number	Available Actions
Button 1	1	Press, Release, Double-tap, Hold, Hold Release
Button 2	2	Press, Release, Double-tap, Hold, Hold Release
Button 3	3	Press, Release, Double-tap, Hold, Hold Release
Button 4	4	Press, Release, Double-tap, Hold, Hold Release
Button 5	5	Press, Release, Double-tap, Hold, Hold Release
Button 6	6	Press, Release, Double-tap, Hold, Hold Release
Button 7	7	Press, Release, Double-tap, Hold, Hold Release
Button 8	8	Press, Release, Double-tap, Hold, Hold Release
Button 9	9	Press, Release, Double-tap, Hold, Hold Release
Button 10	10	Press, Release, Double-tap, Hold, Hold Release
Lower	18	Press, Release, Double-tap, Hold, Hold Release
Raise	19	Press, Release, Double-tap, Hold, Hold Release
CCI 1	25	Press, Release
CCI 2	26	Press, Release
LED 1 <sup>1</sup>	81	Set or Get LED state
LED 2 <sup>1</sup>	82	Set or Get LED state
LED 3 <sup>1</sup>	83	Set or Get LED state
LED 4 <sup>1</sup>	84	Set or Get LED state
LED 5 <sup>1</sup>	85	Set or Get LED state
LED 6 <sup>1</sup>	86	Set or Get LED state
LED 7 <sup>1</sup>	87	Set or Get LED state
LED 8 <sup>1</sup>	88	Set or Get LED state
LED 9 <sup>1</sup>	89	Set or Get LED state
LED 10 <sup>1</sup>	90	Set or Get LED state

#### NOTE

1. Not supported in QS Standalone.

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## Devices *(continued)*

### seeTouch QS Keypad (International) *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press or CCI Close	3	None
Set (#) Release or CCI Open	4	None
Set (#) Hold	5	None
Set (#) Double-tap	6	None
Set (#) or Get (?) LED State <sup>1</sup>	9	0 = Off 1 = On 2 = Normal-Flash: 1 flash every sec 3 = Rapid-Flash: 10 flashes every sec
Set (#) Hold Release <sup>2</sup>	32	None

#### NOTES

1. "Set" is for unprogrammed buttons and buttons with LED logic 'Defined by Integration.'
2. Not supported in QS Standalone.

#### Example DEVICE Commands

Examples presume keypad has been assigned Integration ID 2.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1.	#DEVICE,2,1,3<CR><LF>
Turn On LED 5.	#DEVICE,2,85,9,1<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 1?	?DEVICE,2,81,9<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,2,81,9,1<CR><LF>

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# Lutron integration protocol

## Devices *(continued)*

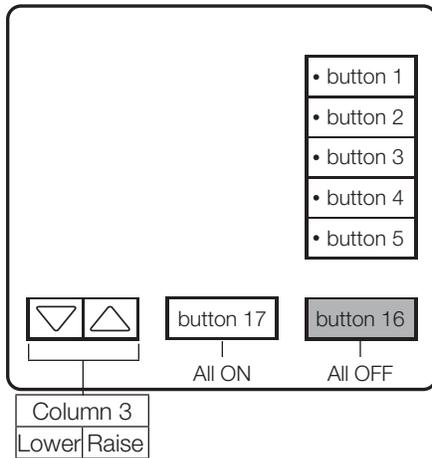
### Tabletop seeTouch Keypad

RadioRA 2 Models (RR-): T5RL, T10RL, T15RL

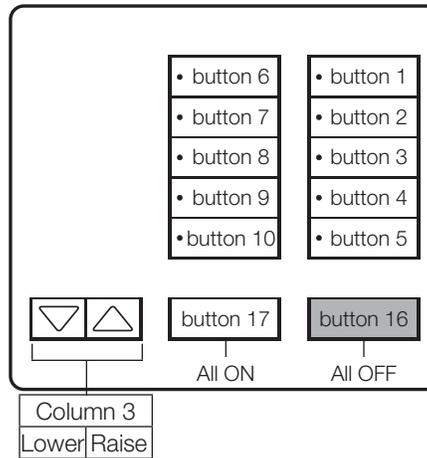
HomeWorks QS Models (HQR-, HQK-, HQT-, HQM-, HQN-):

T5RL, T10RL, T15RL, T5CRL, T10CRL, T15CRL

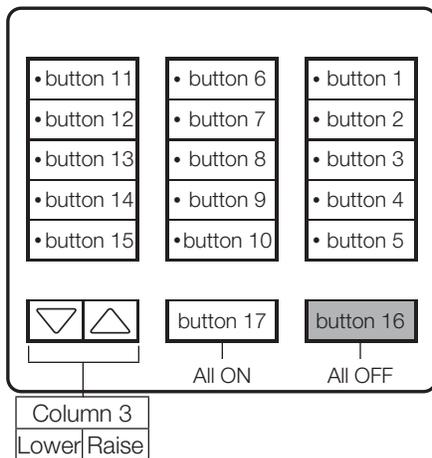
T5-RL



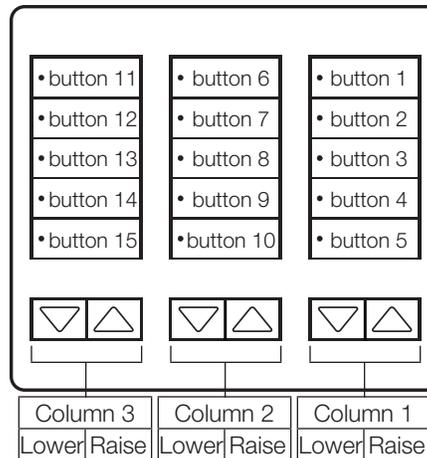
T10-RL



T15-RL



T15-CRL



### Why Integrate with a Tabletop seeTouch Keypad?

- Simulate a button press
- Control LEDs of unprogrammed buttons

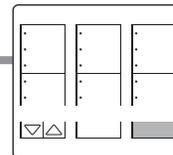
### Additional Commands

- None

### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Tabletop seeTouch Keypad			✓	✓	✓

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## Devices *(continued)*

### Tabletop seeTouch Keypad *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

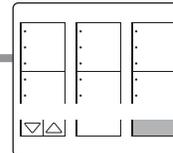
*Operation*      *Integration ID (example)*  
**#DEVICE, 3, Component Number, Action Number, Parameters**  
*Command*      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Button 1	1	Press, Release
Button 2	2	Press, Release
Button 3	3	Press, Release
Button 4	4	Press, Release
Button 5	5	Press, Release
Button 6	6	Press, Release
Button 7	7	Press, Release
Button 8	8	Press, Release
Button 9	9	Press, Release
Button 10	10	Press, Release
Button 11	11	Press, Release
Button 12	12	Press, Release
Button 13	13	Press, Release
Button 14	14	Press, Release
Button 15	15	Press, Release
Button 16	16	Press, Release
Button 17	17	Press, Release
Column 1: Lower	20	Press, Release
Column 1: Raise	21	Press, Release
Column 2: Lower	22	Press, Release
Column 2: Raise	23	Press, Release
Column 3: Lower	24	Press, Release
Column 3: Raise	25	Press, Release

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## Devices *(continued)*

### Tabletop seeTouch Keypad *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Component Numbers *(continued)*:

Component	Component Number	Available Actions
LED 1	81	Set or Get LED state
LED 2	82	Set or Get LED state
LED 3	83	Set or Get LED state
LED 4	84	Set or Get LED state
LED 5	85	Set or Get LED state
LED 6	86	Set or Get LED state
LED 7	87	Set or Get LED state
LED 8	88	Set or Get LED state
LED 9	89	Set or Get LED state
LED 10	90	Set or Get LED state
LED 11	91	Set or Get LED state
LED 12	92	Set or Get LED state
LED 13	93	Set or Get LED state
LED 14	94	Set or Get LED state
LED 15	95	Set or Get LED state

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press	3	None
Set (#) Release	4	None
Set (#) or Get (?) LED State <i>Set is for unprogrammed LEDs only</i>	9	0 = Off 1 = On

#### Example DEVICE Commands

Examples presume keypad has been assigned Integration ID 3.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1.	#DEVICE,3,1,3<CR><LF>
Turn On LED 1.	#DEVICE,3,81,9,1<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 1?	?DEVICE,3,81,9<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,3,81,9,1<CR><LF>

Continued on next page...

# Lutron integration protocol

## Devices *(continued)*

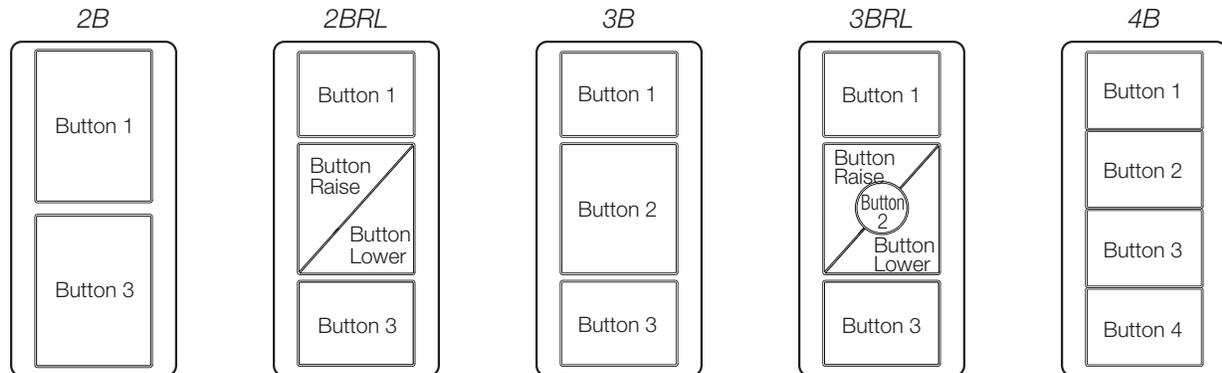
### Pico Wireless Control

CURRENT Models: PJ-2B, PJ-2BRL, PJ-3B, PJ-3BRL, PJ2-2B, PJ2-2BRL, PJ2-3B, PJ2-3BRL, PJ2-4B

LEGACY Models:

QS Models (QSR4P-, QSR8P-, QSRKP-, QSRMP-): 2, 2R, 3R

RadioRA 2 Models (RRD- P): 3BRL-L, 3BRL-S



### Why Integrate with a Pico Wireless Control?

- Simulate a button press
- Monitor button presses

### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
QS Model	1	✓ <sup>2</sup>			✓
RadioRA 2 Model			✓		
Pico PJ- Model	1	✓ <sup>2,3</sup>	✓	✓	
Pico PJ2- Model	1	✓ <sup>2,3</sup>	✓	✓	✓

### NOTES

1. In QS Standalone systems, the Pico wireless control is integrated through its associated QSM. Refer to the **QS Sensor Module (QSM)** section.
2. Can be used only when associated to a QSM.
3. PJ2-4B is supported only on QSM software version 7.28 and higher.

Continued on next page...



## Devices *(continued)*

### Pico Wireless Control *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

<sup>Operation</sup>      <sup>Integration ID (example)</sup>  
**#DEVICE, 2, Component Number, Action Number, Parameters**  
<sub>Command</sub>      <sub>Use "DEVICE Command-specific fields" tables to complete these command fields.</sub>

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
<b>For all Legacy models and all Current models except for PJ2-4B</b>		
Button 1	2	Press, Release
Button 2	3	Press, Release
Button 3	4	Press, Release
Button Raise	5	Press, Release
Button Lower	6	Press, Release
<b>For PJ2-4B model only</b>		
Button 1	8	Press, Release
Button 2	9	Press, Release
Button 3	10	Press, Release
Button 4	11	Press, Release

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press	3	None
Set (#) Release	4	None

#### Example DEVICE Commands

Examples presume the Pico wireless control has been assigned Integration ID 2.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1 (on a non-4B model).	#DEVICE,2,2,3<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
Button 1 was pressed.	~DEVICE,2,2,3<CR><LF>

# Lutron integration protocol

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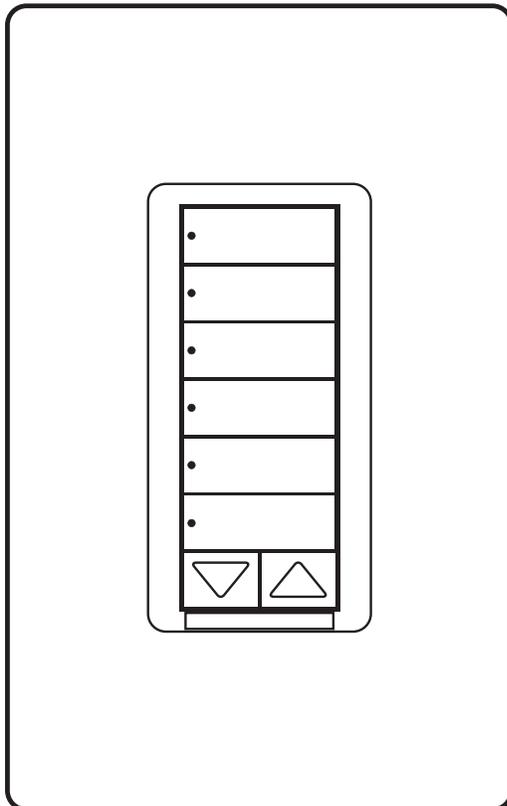
## Devices *(continued)*

### Hybrid Keypad

RadioRA 2 Models (RRD-H): 1RLD, 2RLD, 3BSRL, 4S, 5BRL, 6BRL

HomeWorks QS Models (HQRD-H): 1RLD, 2RLD, 3BSRL, 4S, 5BRL, 6BRL

H6BRL



#### Why Integrate with a Hybrid Keypad?

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- Turn On to specific light level or Off
- Raise/Lower light level
- Query current light level

#### Additional Commands

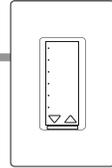
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- None

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Hybrid Keypad			✓	✓	✓

Continued on next page...



## Devices *(continued)*

### Hybrid Keypad *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

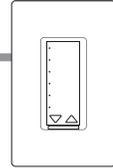
*Operation*      *Integration ID (example)*  
 #DEVICE, 2, Component Number, Action Number, Parameters  
*Command*      Use "DEVICE Command-specific fields" tables  
                          to complete these command fields.

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Button 1	1	Press, Release
Button 2	2	Press, Release
Button 3	3	Press, Release
Button 4	4	Press, Release
Button 5	5	Press, Release
Button 6	6	Press, Release
Button 7	7	Press, Release
Button Top Lower	16	Press, Release
Button Top Raise	17	Press, Release
Button Bottom Lower	18	Press, Release
Button Bottom Raise	19	Press, Release
LED 1	81	Set or Get LED state
LED 2	82	Set or Get LED state
LED 3	83	Set or Get LED state
LED 4	84	Set or Get LED state
LED 5	85	Set or Get LED state
LED 6	86	Set or Get LED state
LED 7	87	Set or Get LED state

Continued on next page...



## Devices *(continued)*

### Hybrid Keypad *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press	3	None
Set (#) Release	4	None
Set (#) or Get (?) LED State	9	0 = Off 1 = On 2 = Normal-Flash: 1 flash every second <sup>1</sup> 3 = Rapid-Flash: 10 flashes every second <sup>1</sup>

#### NOTE

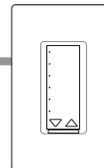
1. "Set" is for LEDs on unprogrammed buttons and buttons with LED logic 'Defined by Integration.'

#### Example DEVICE Commands

Examples presume the keypad has been assigned Integration ID 2.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1.	#DEVICE,2,1,3<CR><LF>
Turn On LED 5.	#DEVICE,2,85,9,1<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 1?	?DEVICE,2,81,9<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,2,81,9,1<CR><LF>

Continued on next page...



## Devices *(continued)*

### Hybrid Keypad *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

$\begin{matrix} \text{Operation} & \text{Integration ID (example)} \\ \# \text{OUTPUT}, 1, & \text{Action Number, Parameters} \\ \text{Command} & \text{Use "OUTPUT Command-specific fields" tables} \\ & \text{to complete these command fields.} \end{matrix}$

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	Level=0–100 or 0.00–100.00 Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) Start Flashing <sup>3,4,5</sup>	5	Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS

#### NOTES

- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
- Fractional seconds “SS.ss” will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.31 seconds a value of 1.25 seconds will be used.
- The system will not report a level while the output is flashing, it will instead report that it is flashing.
- Default flash every second, unless fade time is specified (flash period is 2× fade time).
- To stop a dimmer from flashing, send it to a valid level.

#### Example OUTPUT Commands

Examples presume dimmer has been assigned Integration ID 1.

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set dimmer to 75% with a 1 min 30 sec fade.	#OUTPUT,1,1,75,01:30<CR><LF>
Start Raising dimmer level.	#OUTPUT,1,2<CR><LF>
Stop Raising/Lowering dimmer level.	#OUTPUT,1,4<CR><LF>
Start Flashing a dimmer.	#OUTPUT,1,5<CR><LF>
Start Flashing a dimmer once every 2 seconds.	#OUTPUT,1,5,1<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,1,1<CR><LF>
<b>Response</b> <sup>1,2</sup> : ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 90%.	~OUTPUT,1,1,90.00<CR><LF>

#### NOTES

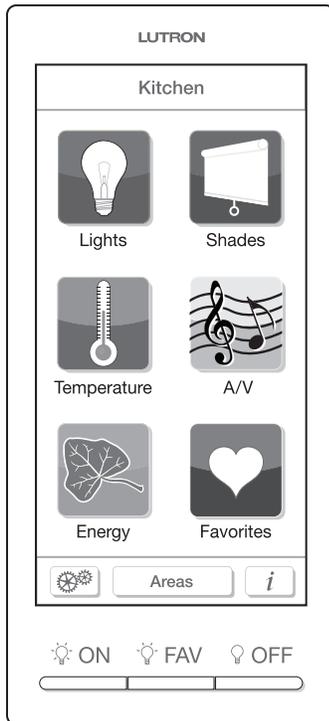
- The system will report the target level of a dimmer while it is fading from one level to another. The actual level is not transmitted while dimming between levels.  
Example: If the “Over Sink” (1) dimmer is at 20% and is then commanded to go to 100% by sending #OUTPUT,1,1,100, the response from the system will be ~OUTPUT,1,1,100.00
- The system will not report a level while the output is flashing, it will instead report that it is flashing.

## Devices *(continued)*

### Dynamic Keypad

Model: HQ-J-DK420

HQ-J-DK420



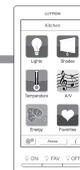
#### Why Integrate with a Dynamic Keypad?

- Recognize a button press/release in order to control a third party device from the Dynamic Keypad's user interface
- Simulate a button press
- Control LEDs of unprogrammed buttons

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Dynamic Keypad				✓	✓

Continued on next page...



## Devices *(continued)*

### Dynamic Keypad *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*
*Integration ID (example)*  
**#DEVICE, 2, Component Number, Action Number, Parameters**  
*Command*
*Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Button 1 (left hard button)	1	Press, Release
Button 2 (middle hard button)	2	Press, Release
Button 3 (right hard button)	3	Press, Release
Button N <sup>1</sup>	N	Press, Release
LED M <sup>1</sup>	M	Set or Get LED state

##### NOTE

- Component Numbers for the various pages of buttons and LEDs for a Dynamic Keypad are generated by the HomeWorks QS or myRoom Software.

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press	3	None
Set (#) Release	4	None
Set (#) Hold	5	None
Set (#) Double-tap	6	None
Set (#) or Get (?) LED State	9	0 = Off 1 = On 2 = Normal-Flash 3 = Rapid-Flash

#### Example DEVICE Commands

Examples presume the Dynamic Keypad has been assigned Integration ID 23.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 118.	#DEVICE,23,118,3<CR><LF>
Turn On LED 566.	#DEVICE,23,566,9,1<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 566?	?DEVICE,23,566,9<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,23,566,9,1<CR><LF>      Continued on next page...

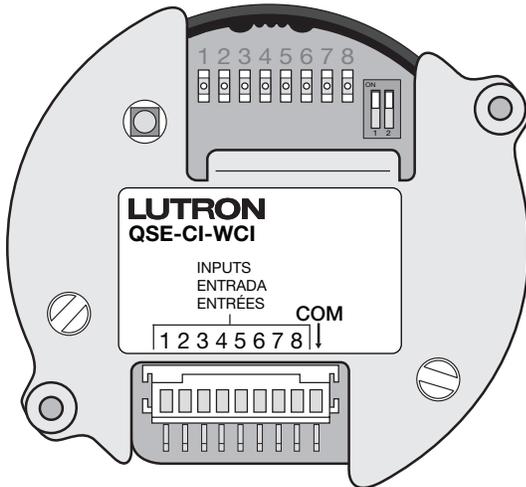
# Lutron integration protocol

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## Devices *(continued)*

### Wallbox Input Closure Interface

Model: QSE-CI-WCI



#### Why Integrate with a Wallbox Input Closure Interface?

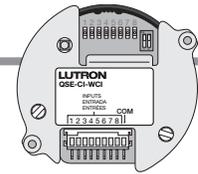
---

- Simulate a button press

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Wallbox Input Closure Interface	✓	✓		✓	✓

Continued on next page...



## Devices *(continued)*

### Wallbox Input Closure Interface *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*
*Integration ID (example)*  
**#DEVICE, 2, Component Number, Action Number, Parameters**  
*Command*
*Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

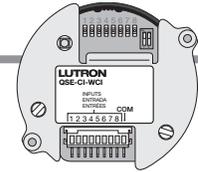
##### Component Numbers:

Component	Component Number	Available Actions
Button 1	1	Press, Release, Double-tap, Hold, Hold Release
Button 2	2	Press, Release, Double-tap, Hold, Hold Release
Button 3	3	Press, Release, Double-tap, Hold, Hold Release
Button 4	4	Press, Release, Double-tap, Hold, Hold Release
Button 5	5	Press, Release, Double-tap, Hold, Hold Release
Button 6	6	Press, Release, Double-tap, Hold, Hold Release
Button 7	7	Press, Release, Double-tap, Hold, Hold Release
Button 8	8	Press, Release, Double-tap, Hold, Hold Release
LED 1 <sup>1</sup>	81	Set or Get LED state
LED 2 <sup>1</sup>	82	Set or Get LED state
LED 3 <sup>1</sup>	83	Set or Get LED state
LED 4 <sup>1</sup>	84	Set or Get LED state
LED 5 <sup>1</sup>	85	Set or Get LED state
LED 6 <sup>1</sup>	86	Set or Get LED state
LED 7 <sup>1</sup>	87	Set or Get LED state
LED 8 <sup>1</sup>	88	Set or Get LED state

#### NOTE

1. Available only on units in a Quantum, HomeWorks, or myRoom plus system.

Continued on next page...



## Devices *(continued)*

### Wallbox Input Closure Interface *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Press	3	None
Set (#) Release	4	None
Set (#) Hold (only if input mode is Momentary)	5	None
Set (#) Double-tap	6	None
Set (#) or Get (?) LED State <sup>1</sup>	9	0 = Off 1 = On 2 = Normal-Flash: 1 flash every second <sup>2</sup> 3 = Rapid-Flash: 10 flashes every second <sup>2</sup>
Set (#) Hold Release <sup>2</sup>	32	None

#### NOTES

1. Quantum, HomeWorks, or myRoom plus only. "Set" is for unprogrammed buttons and buttons with LED logic 'Defined by Integration.'
2. Available only on units in a Quantum, HomeWorks, or myRoom plus system.

#### Example DEVICE Commands

Examples presume keypad has been assigned Integration ID 2.

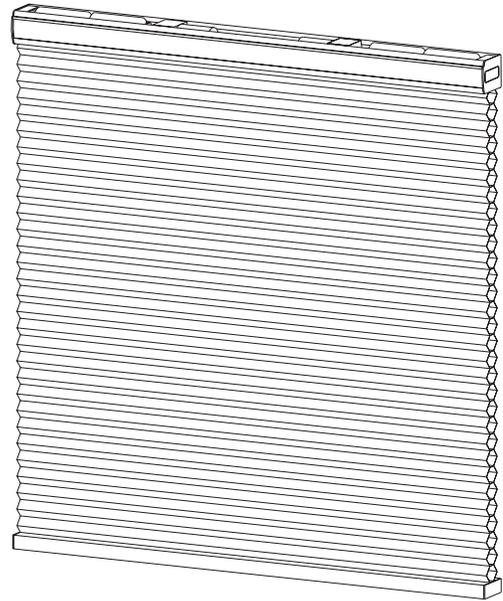
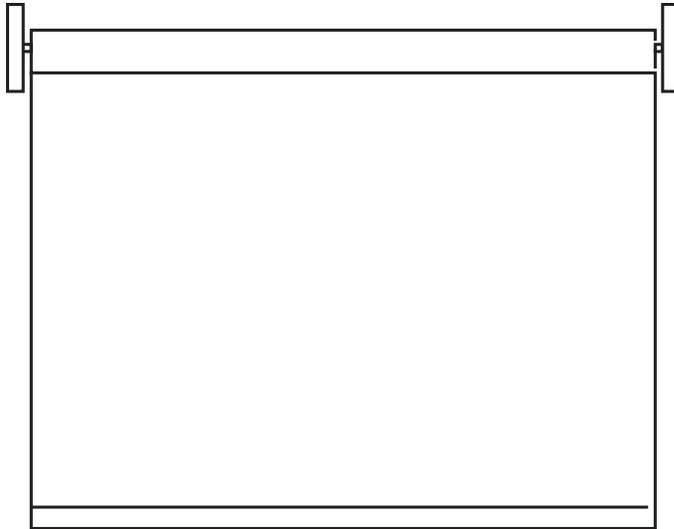
Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1.	#DEVICE,2,1,3<CR><LF>
Turn On LED 5.	#DEVICE,2,85,9,1<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 1?	?DEVICE,2,81,9<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,2,81,9,1<CR><LF>

# Lutron integration protocol

---

## Devices *(continued)*

### Sivoia QS Shade/Sivoia QS Wireless Shade



---

#### Why Integrate with a Sivoia QS Shade?

- Set shades to a specific level
- Query current level

---

#### Integration Capabilities

- One controllable output (use OUTPUT command)

---

#### Supported Command Types

- **OUTPUT** allows control and monitoring of the shade output
- **SHADEGRP** allows control of shade groups in a Quantum or HomeWorks QS system. Shade Groups are collections of shades that operate in unison.

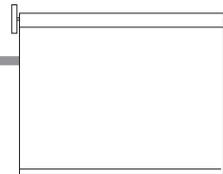
---

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Sivoia QS Shade	✓	✓		✓	✓
Sivoia QS Wireless Shade			✓	✓	✓

*Includes all roller, cellular, and drapery styles*

Continued on next page...



## Devices *(continued)*

### Sivoia QS Shade/Sivoia QS Wireless Shade *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

$\begin{array}{l} \text{Operation} \\ \text{Integration ID (example)} \end{array}$   
**#OUTPUT, 1, Action Number, Parameters**  
 $\begin{array}{l} \text{Command} \\ \text{Use "OUTPUT Command-specific fields" tables} \\ \text{to complete these command fields.} \end{array}$

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	Level <sup>1</sup> = 0–100 or 0.00–100.00 <sup>2</sup> Fade <sup>3</sup> in: SS.ss <sup>4</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>5</sup> in: SS.ss <sup>4</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None

#### NOTES

- For shades, a level of 0 (or 0.00) equals closed, and a level of 100 (or 100.00) equals full open.
- 0% = Closed; 100% = Open
- Fade is not available for shades since they move at a constant rate. The parameter must be entered but is ignored.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a delay time is specified as 1.45 seconds a value of 1.25 seconds will be used.
- The Delay time is optional. When not used, the system will use a zero-second delay. The minimum delay time is 0.25 seconds. The maximum delay time is 4 hours. *Not supported in QS Standalone.*

#### Example OUTPUT Messages

Examples presume shade has been assigned Integration ID 1.

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set shade to 75% with a 1 min 30 sec delay.	#OUTPUT,1,1,75,0,1:30<CR><LF>
Start Raising shade level.	#OUTPUT,1,2<CR><LF>
Stop Raising/Lowering shade level.	#OUTPUT,1,4<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,1,1<CR><LF>
<b>Response 1:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 90%.	~OUTPUT,1,1,90.00<CR><LF>

#### NOTE

- The system will report the target level of a shade. The actual level is not transmitted while they are moving.  
Example: If the Living Room Blackouts (Integration ID 1) are at 20% and are commanded to go to 100% by sending #OUTPUT,1,1,100, the response from the system will be ~OUTPUT,1,1,100.00

Continued on next page...



## Devices *(continued)*

### Sivoia QS Shade/Sivoia QS Wireless Shade *(continued)*

#### OUTPUT Commands *(continued)*

#### SHADEGRP Command Formats

*Operation*                      *Integration ID (example)*  
**#SHADEGRP, 2, Action Number, Parameters**  
*Command*                      *Use "SHADEGRP Command-specific fields" tables to complete these command fields.*

#### SHADEGRP Command-specific fields

##### Action Numbers and Parameters:

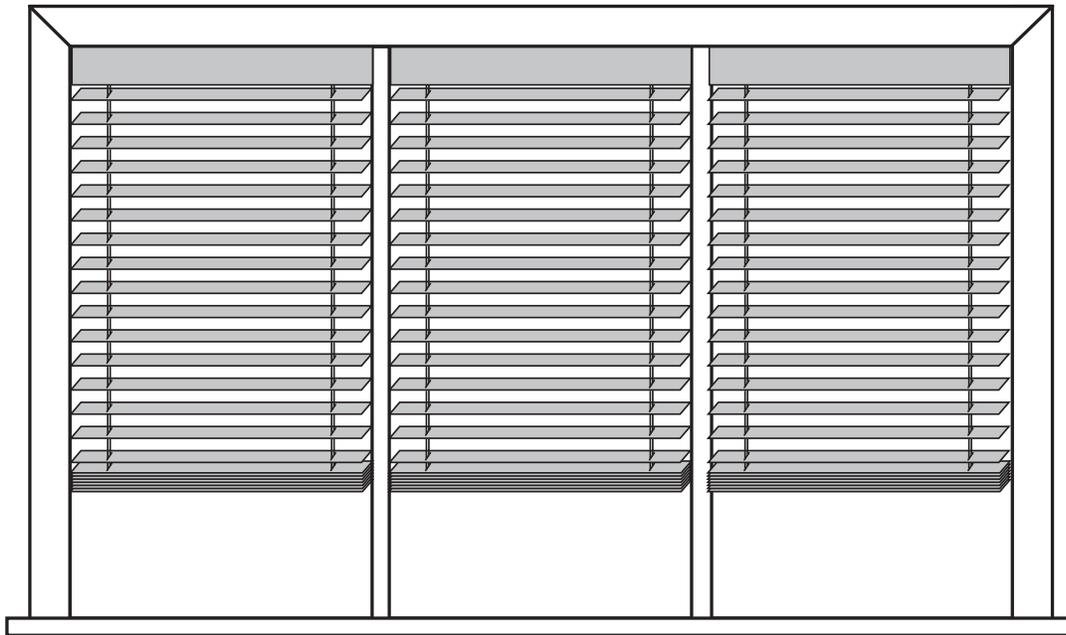
Action	Action Number	Parameters
Set (#) or Get (?) Shade Group Level <sup>1</sup>	1	Level <sup>2</sup> =0–100 or 0.00–100.00 Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising <sup>4</sup>	2	None
Set (#) Start Lowering <sup>4</sup>	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) or Get (?) Current Preset	6	Preset Number <sup>5</sup> =0–30
Set (#) Tilt Level	14	Level <sup>6</sup> =0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Lift and Tilt Levels	15	Lift <sup>6</sup> =0–100 or 0.00–100.00 Tilt <sup>6</sup> =0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising Tilt <sup>4</sup>	16	None
Set (#) Start Lowering Tilt <sup>4</sup>	17	None
Set (#) Stop Raising or Lowering Tilt <sup>4</sup>	18	None
Set (#) Start Raising Lift <sup>4</sup>	19	None
Set (#) Start Lowering Lift <sup>4</sup>	20	None
Set (#) Stop Raising or Lowering Lift <sup>4</sup>	21	None

#### NOTES

1. Get (?) Shade Group Level (action number 1).
2. The Fade and Delay time are optional. For shades, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay. When not used, the system will use a zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours.
3. Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a delay time is specified as 1.45 seconds, a value of 1.25 seconds will be used.
4. When a Raise/Lower command is issued, the shade group's level will continue to go towards open/close until a Stop command is received.
5. Preset 0 is the Open Preset and Preset 30 is the Closed Preset.
6. The Level is accepted as a percentage, where 100% is fully open and 0% is fully closed.

## Devices *(continued)*

### Sivoia QS Venetian Blind / Sivoia QS Wireless Venetian Blind



---

#### Why Integrate with a Sivoia QS Venetian Blind?

- Set Venetian blind tilt, lift to specific levels
- Query current tilt, lift levels

---

#### Integration Capabilities

- One controllable output (use OUTPUT command)

---

#### Supported Command Types

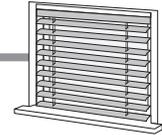
- **OUTPUT** allows control and monitoring of the Venetian blind output
- **SHADEGRP** allows control of shade groups in a HomeWorks QS system. Shade Groups are collections of shades that operate in unison

---

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Sivoia QS Venetian Blind	✓			✓	✓
Sivoia QS Wireless Venetian Blind			✓	✓	✓

Continued on next page...



## Devices *(continued)*

### Sivoia QS Venetian Blind / Sivoia QS Wireless Venetian Blind

*(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

*Operation*      *Integration ID (example)*  
**#OUTPUT, 1, Action Number, Parameters**  
*Command*      Use "OUTPUT Command-specific fields" tables  
                          to complete these command fields.

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

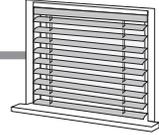
Action	Action Number	Parameters
Set (#) or Get (?) Lift Level	1	Lift Level <sup>1</sup> = 0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>4</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) or Get (?) Tilt Level	9	Tilt Level <sup>1</sup> = 0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>4</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) or Get (?) Lift and Tilt Levels	10	Lift Level <sup>1</sup> = 0–100 or 0.00–100.00 Tilt Level <sup>1</sup> = 0–100 or 0.00–100.00 Fade <sup>2</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>4</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising Tilt	11	None
Set (#) Start Lowering Tilt	12	None
Set (#) Stop Raising or Lowering Tilt	13	None
Set (#) Start Raising Lift	14	None
Set (#) Start Lowering Lift	15	None
Set (#) Stop Raising or Lowering Lift	16	None

#### NOTES

	100%	75%	50%	25%	0%
<b>Lift</b>					
<b>Tilt</b>					

1. Fade is not available for blinds since they move at a constant rate. The parameter must be entered but is ignored.
2. Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a delay time is specified as 1.45 seconds, a value of 1.25 seconds will be used.
3. The Delay time is optional. When not used, the system will use a zero-second delay. The minimum delay time is 0.25 seconds. The maximum delay time is 4 hours. *Not supported in QS Standalone.*

Continued on next page...



## Devices *(continued)*

### Sivoia QS Venetian Blind / Sivoia QS Wireless Venetian Blind

*(continued)*

OUTPUT Commands *(continued)*

#### Example OUTPUT Messages

Examples presume shade has been assigned Integration ID 1.

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set Venetian blind to lift 0%, tilt 50%	#OUTPUT,1,10,0,50<CR><LF>
Start raising Venetian tilt.	#OUTPUT,1,11<CR><LF>
Stop raising Venetian tilt.	#OUTPUT,1,13<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the Venetian lift and tilt?	?OUTPUT,1,10<CR><LF>
<b>Response<sup>1</sup>:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Venetian lift level is 0%, tilt level 50%.	~OUTPUT,1,10,0.00,50.00<CR><LF>

#### NOTE

1. The system will report the target lift level and target tilt level of a Venetian blind. The actual levels are not transmitted while it is moving. Example: If the Kitchen Venetian (Integration ID 1) is set at 25% lift and 75% tilt, and is commanded to go to 100% lift and 50% tilt by sending #OUTPUT,1,10,100,50, the response from the system will be ~OUTPUT,1,10,100.00,50.00

# Lutron integration protocol

## Devices *(continued)*

### Maestro Dimmer and Plug-In Module

RadioRA 2 Models (RRD-): 6D, 6CL, 6NA, 6ND, 8ANS, 8S-DV, 10D, 10ND, F6AN-DV

RadioRA 2 Models (RR-): 3PD, 15APS, 3LD

HomeWorks QS/myRoom plus Models (HQRD-, HQRA): 6D, 6CL, 6ND, 10D, 10ND, 6NA, F6AN-DV, 8ANS, 8S-DV

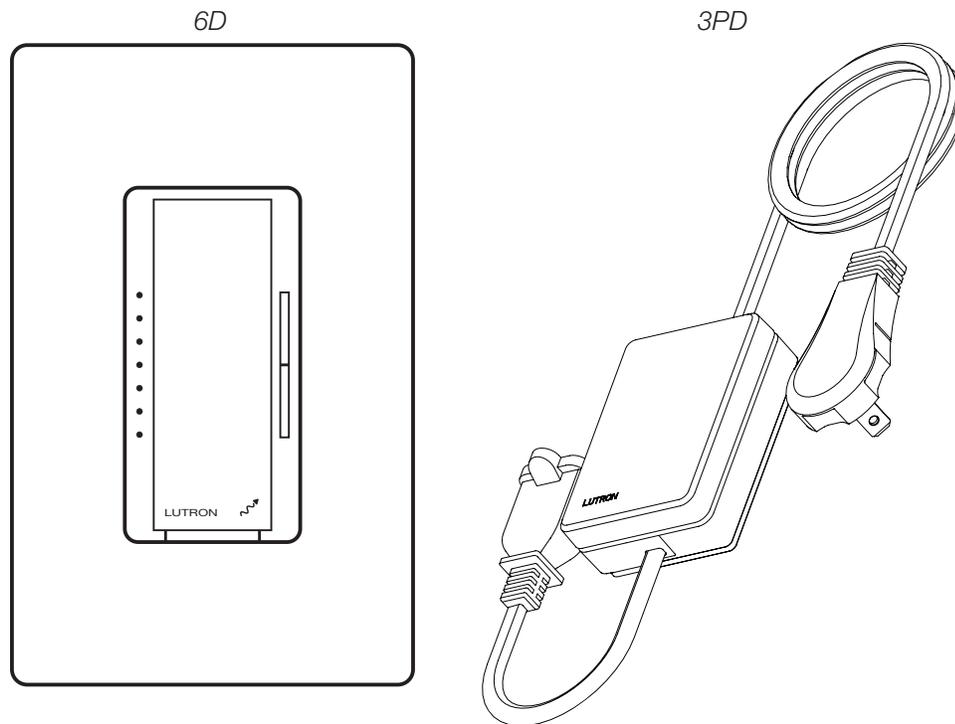
HomeWorks QS/myRoom plus Models (HWD-, HWA-): 6D, 6ND, 10D, 10ND, 5NE<sup>1</sup>, 8ANS

HomeWorks QS/myRoom plus Models (HQR-): 3PD-1, 15APS-1, 3LD

Clear Connect Device Models (CCD-W): 6D, 6NA, F6AN-DV, 15APS-1

#### NOTE

1. 5NE is not available in architectural style



#### Why Integrate with a Maestro Dimmer or Plug-In Module?

- Turn On to specific light level or Off
- Raise/Lower light level
- Query current light level

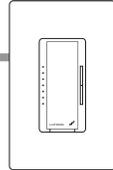
#### Additional Commands

- None

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
RadioRA 2 Model			✓		
HomeWorks QS / myRoom plus Models				✓	✓
Clear Connect Device Model					

Continued on next page...



## Devices *(continued)*

### Maestro Dimmer and Plug-In Module *(continued)*

#### DEVICE Commands

##### DEVICE Command Format

<sup>Operation</sup>  
<sup>Integration ID (example)</sup>  
**#DEVICE**<sup>1, 2,</sup> **Component Number, Action Number, Parameters**  
<sub>Command</sub>      *Use "OUTPUT Command-specific fields" tables to complete these command fields.*

##### NOTE

- Supported only in HomeWorks QS 4.0 or higher.

##### DEVICE Command-specific fields

###### Component Numbers:

Component	Component Number	Available Actions
Maestro Tap Switch	6	Press, Release, Double Tap, Hold

###### Action Numbers and Parameters:

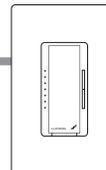
Action	Action Number	Parameters
Set (#) Press	3	None
Set (#) Release	4	None
Set (#) Hold	5	None
Set (#) Double Tap	6	None

##### Example OUTPUT Commands

Examples presume dimmer has been assigned Integration ID 2.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Button 1.	#DEVICE,2,1,3,<CR><LF>

Continued on next page...



## Devices *(continued)*

### Maestro Dimmer and Plug-In Module *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

*Operation*      *Integration ID (example)*  
**#OUTPUT, 1, Action Number, Parameters**  
*Command*      Use "OUTPUT Command-specific fields" tables  
                          to complete these command fields.

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	Level=0–100 or 0.00–100.00 Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS
Set (#) Start Raising	2	None
Set (#) Start Lowering	3	None
Set (#) Stop Raising or Lowering	4	None
Set (#) Start Flashing <sup>3,4,5</sup>	5	Fade <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS Delay <sup>1</sup> in: SS.ss <sup>2</sup> , SS, MM:SS, or HH:MM:SS

#### NOTES

1. The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay.
2. Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.31 seconds a value of 1.25 seconds will be used.
3. The system will not report a level while the output is flashing, it will instead report that it is flashing.
4. Default flash every second, unless fade time is specified (flash period is 2× fade time).
5. To stop a dimmer from flashing, send it to a valid level.

#### Example OUTPUT Commands

Examples presume dimmer has been assigned Integration ID 1.

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set dimmer to 75% with a 1 min 30 sec fade.	#OUTPUT,1,1,75,01:30<CR><LF>
Start Raising dimmer level.	#OUTPUT,1,2<CR><LF>
Stop Raising/Lowering dimmer level.	#OUTPUT,1,4<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,1,1<CR><LF>
<b>Response<sup>1</sup>:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to 90%.	~OUTPUT,1,1,90.00<CR><LF>

#### NOTE

1. The system will report the target level of a dimmer while it is fading from one level to another. The actual level is not transmitted while dimming between levels.  
Example: If the "Over Sink" (1) dimmer is at 20% and is then commanded to go to 100% by sending #OUTPUT,1,1,100, the response from the system will be ~OUTPUT,1,1,100.00

# Lutron integration protocol

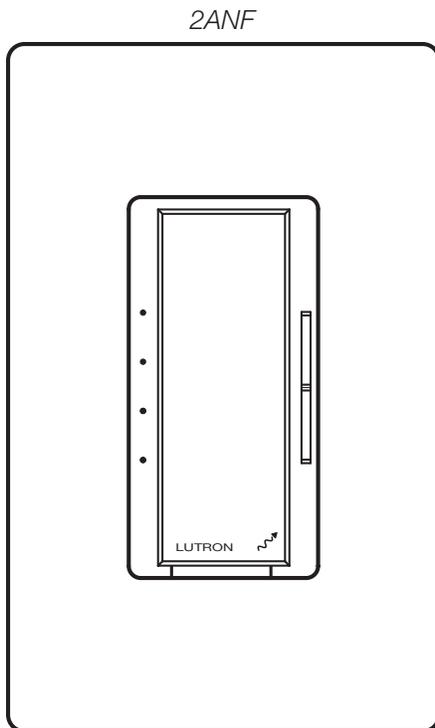
---

## Devices *(continued)*

### Maestro Fan Speed Control

RadioRA 2 Models (RRD-): 2ANF

HomeWorks QS/myRoom Models (HQRD-, HQRA-, HWD-, HWA-): 2ANF



#### Why Integrate with a Maestro Fan Speed Control?

---

- Turn On to specific speed (High, Medium-High, Medium, Low, or Off)
- Raise/Lower fan speed
- Query current speed

#### Additional Commands

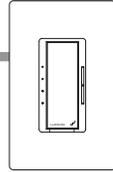
---

- None

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
RadioRA 2 Fan Speed Control			✓		
HomeWorks QS/myRoom Fan Speed Control				✓	✓

Continued on next page...



## Devices *(continued)*

### Maestro Fan Speed Control *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

<sup>Operation</sup>  
<sup>Integration ID (example)</sup>  
**#OUTPUT<sup>1</sup>, 1, Action Number, Parameters**  
<sub>Command</sub>

Use "OUTPUT Command-specific fields" tables to complete these command fields.

#### NOTE

- Supported only in HomeWorks QS 4.0 or higher and RadioRA 2 6.0 or higher.

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Zone Level	1	Levels: 0 = Off 1–25% = Low 26–50% = Medium 56–75% = Medium High 76–100% = High

#### Example OUTPUT Commands

Examples presume dimmer has been assigned Integration ID 1.

Operation	Command String
<b>Execute:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set fan speed to Medium High.	#OUTPUT,1,1,75<CR><LF>
<b>Query:</b> ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,1,1<CR><LF>
<b>Response:</b> ~OUTPUT, Integration ID, Action Number, Parameters	
Output level is set to High.	~OUTPUT,1,1,100.00<CR><LF>

# Lutron integration protocol

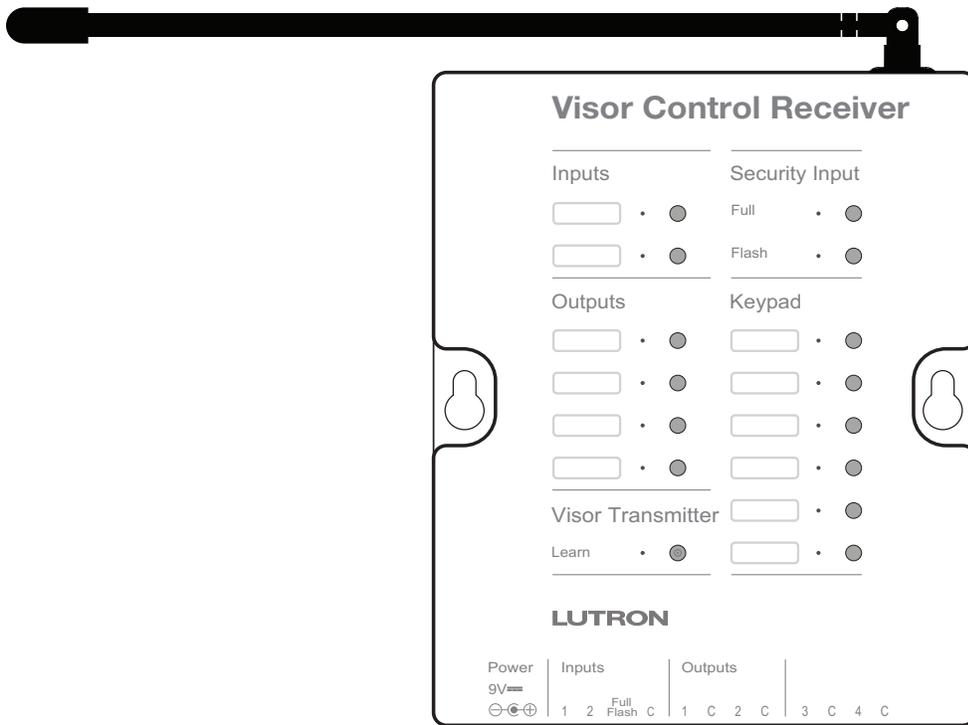
## Devices *(continued)*

### Visor Control Receiver

RadioRA 2 Model: RR-VCRX

HomeWorks QS/myRoom Model: HQR-VCRX

RR-VCRX



#### Why Integrate with a Visor Control Receiver?

- Simulate a keypad press or contact closure inputs
- Control LEDs of unprogrammed buttons
- Control contact closure outputs

#### Additional Commands

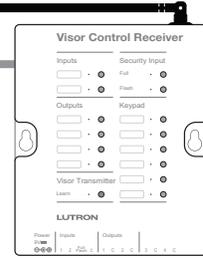
- None

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Visor Control Receiver			✓	✓	✓

Continued on next page...

# Lutron integration protocol



## Devices *(continued)*

### Visor Control Receiver *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 5, Component Number, Action Number, Parameters**  
*Command*      *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Scene 1	1	Press, Release
Scene 2	2	Press, Release
Scene 3	3	Press, Release
Scene 4	4	Press, Release
Scene 5	5	Press, Release
Scene 6	6	Press, Release
Full/Security	30	Open Input, Close Input
Security Flash	31	Open Input, Close Input
Input 1	32	Open Input, Close Input
Input 2	33	Open Input, Close Input
LED Scene 1	81	Set or Get LED state
LED Scene 2	82	Set or Get LED state
LED Scene 3	83	Set or Get LED state
LED Scene 4	84	Set or Get LED state
LED Scene 5	85	Set or Get LED state
LED Scene 6	86	Set or Get LED state

##### Action Numbers and Parameters:

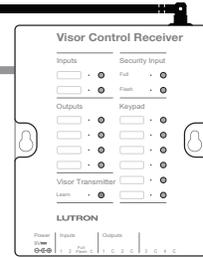
Action	Action Number	Parameters
Set (#) Press or Input Close	3	None
Set (#) Release or Input Open	4	None
Set (#) or Get (?) LED State <sup>1</sup>	9	0=Off; 1=On

#### NOTES

- Valid for Scene LEDs only.

Continued on next page...

# Lutron integration protocol



## Devices *(continued)*

### Visor Control Receiver *(continued)*

#### DEVICE Commands *(continued)*

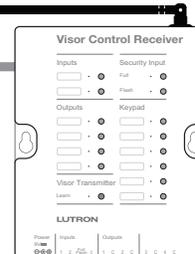
#### Example DEVICE Commands

Examples presume Visor Control Receiver has been assigned Integration ID 5.

Operation	Command String
<b>Execute:</b> #DEVICE, Integration ID, Component Number, Action Number, Parameters	
Press Scene 1.	#DEVICE,5,1,3<CR><LF>
Turn On Scene 1 LED.	#DEVICE,5,9,81,1<CR><LF>
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the state of LED 1?	?DEVICE,5,9,81<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
LED 1 is On.	~DEVICE,5,9,81,1<CR><LF>

Continued on next page...

# Lutron integration protocol



## Devices *(continued)*

### Visor Control Receiver *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Format

*Operation*      *Integration ID (example)*  
**#OUTPUT,21, Action Number, Parameters**  
*Command*      *Action number is always 1 for visor control outputs*      *Use "OUTPUT Command-specific fields" tables to complete the parameter field.*

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Output State	1	Level <sup>1</sup> = 0–100 or 0.00–100.00
Set (#) CCO Pulse Time	6	Pulse <sup>2</sup> time in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS, or Delay <sup>4</sup> in: SS.ss <sup>3</sup> , SS, MM:SS, or HH:MM:SS

#### NOTES

- Any level greater than 0 will close the output. When level is equal to 0 the output will open.
- The default time is one second.
- Fractional seconds "SS.ss" will be rounded down to the nearest quarter second. For example, if a fade time is specified as 1.45 seconds a value of 1.25 seconds will be used.
- The Fade and Delay time are optional. When not used, the system will use a one-second fade time with zero-second delay. The minimum fade and delay time is 0 seconds. The maximum fade and delay time is 4 hours. For shade outputs, the Fade parameter has no effect (since shades have fixed speeds) but it is required when specifying an optional delay.

#### Example OUTPUT Messages

Examples presume CCO has been assigned Integration ID 21.

Operation	Command String
<b>Set:</b> #OUTPUT, Integration ID, Action Number, Parameters	
Set output to open.	#OUTPUT,21,1,0<CR><LF>
Set output to close.	#OUTPUT,21,1,1<CR><LF>
<b>Query</b> <sup>1</sup> : ?OUTPUT, Integration ID, Action Number	
What is the state of the output?	?OUTPUT,21,1<CR><LF>
<b>Response</b> <sup>2</sup> : ~OUTPUT, Integration ID, Action Number	
Output state is closed.	~OUTPUT,21,1,100.00<CR><LF>

#### NOTES

- Momentary outputs should not be queried.
- The system will report the target level of outputs. Any level greater than 0 means that the output is closed.

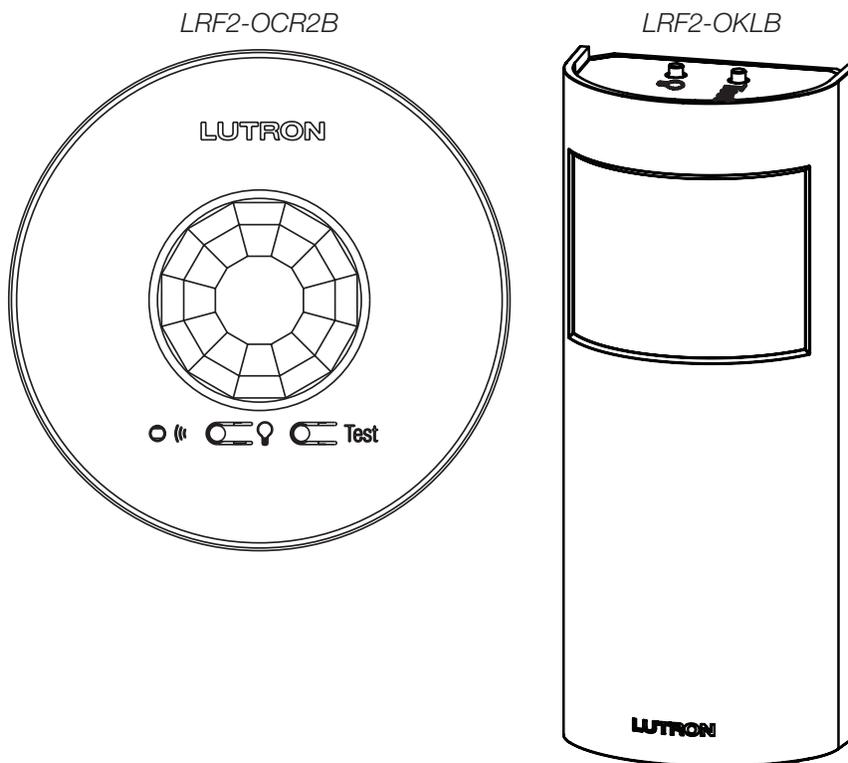
# Lutron integration protocol

## Devices *(continued)*

### Radio Powr Savr Sensor

CURRENT Models (LRF2-, CCD-): OCR2B, VCR2B, OKLB, OHLB, OWLB, VKLB, VHLB, VWLB

LEGACY Models (LRF2-): OCRB, VCRB



#### Why Integrate with a Radio Powr Savr Sensor?

- Monitor occupied, unoccupied status of a single sensor

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Radio Powr Savr Sensor			✓	✓	✓

Continued on next page...



# Lutron integration protocol

## Devices *(continued)*

### Temperature Controls

RadioRA 2 Models: LR-HVAC-1-WH, LR-HWLV-HVAC

HomeWorks QS Models: LR-HVAC-1-WH, LR-HWLV-HVAC, LR-HVAC-230-S, HQWT-T-HW

myRoom Model: LR-HVAC-230-S

LR-HVAC-1-WH



LR-HWLV-HVAC



LR-HVAC-230-S



HQWT-T-HW



### Why Integrate with an HVAC Controller?

- Get current temperature
- Set or get heat setpoints and cool setpoints
- Set or get operating mode, fan mode and Eco Mode<sup>1</sup>
- Get connection status to the temperature sensor
- Get schedule information and hold schedules

### Supported Command Types

- HVAC allows control and monitoring of the HVAC controller
- DEVICE allows monitoring of temperature sensors

### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
LR-HVAC-1-WH; LR-HWLV-HVAC			✓	✓	
LR-HVAC-230-S				✓	✓
HQWT-T-HW				✓	

<sup>1</sup> HQWT-T-HW does not support Eco Mode

# Lutron integration protocol



## Devices (continued)

## Temperature Controls (continued)

### HVAC Commands

### HVAC Command Format

*Operation* | *Integration ID (example)*  
**#HVAC,21, Action Number, Parameters**  
*Command* | *Use "HVAC Command-specific fields" tables to complete these command fields.*

### HVAC Command-specific fields

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Current Temperature (°F) <sup>1,2</sup>	1	Temperature=32–212 °F
Set (#) or Get (?) Heat and Cool Setpoints (°F) <sup>1,3,4,5</sup>	2	Setpoint Heat (SPH)=32–212 °F Setpoint Cool (SPC)=32–212 °F
Set (#) or Get (?) Operating Mode <sup>6</sup>	3	Mode (1=Off/Protect, 2=Heat, 3=Cool, 4=Auto, 5=Em. Heat/Auxiliary Only, 6 <sup>7</sup> =Locked out, 7=Fan, 8=Dry)
Set (#) or Get (?) Fan Mode <sup>6</sup>	4	Mode (1 =Auto, 2=On, 3=Cycler, 4=No Fan, 5=High, 6=Medium, 7=Low, 8=Top)
Set (#) or Get (?) Eco (Setback) Mode <sup>8</sup>	5	Mode (1 =Off, 2=On)
Get (?) Eco Offset <sup>8</sup>	6	Eco Offset = 1–11 °F
Set (#) or Get (?) Schedule Status <sup>9</sup>	7	0=Schedule Unavailable, Get (?) only 1=Following Schedule, Set (#) or Get (?) 2=Permanent Hold, Set (#) or Get (?) 3=Temporary Hold <sup>6</sup> , Get (?) only
Get (?) Temperature Sensor Connection Status <sup>6</sup>	8	1=All Sensors are Active 2=Missing Sensor 3=Wired Sensor Only 4=No Sensor
Get (?) Schedule Event	9	Schedule # (1–7), Event # (1–4), HH,MM, SPH, SPC
Get (?) Schedule Day Assignment	10	Schedule#(1–7), DD(Bitmap:Sunday(Bit 0)–Saturday(Bit 6) 1–active day, 0–inactive day)
Get (?) System Mode	11	1 = Normal 2 = Away 3 = Green
Get (?) Heat and Cool Setpoints (°F) without Eco Offset if applied <sup>1,8</sup>	12	Setpoint Heat (SPH)=32–212 °F Setpoint Cool (SPC)=32–212 °F
Get (?) Emergency Heat Available	13	1 = Not Available 2 = Available

#### NOTES

- Allow for reported temperature values to be zero padded, with up to 3 digits before the decimal point, and 2 digits after.
  - Possible reported values of 5 °C: "005", "05", "5", "005.", "005.", "5.", "005.0", "05.0", "5.0", "005.00", "05.00", "5.00"
  - Possible reported values of 5.5 °C: "005.5", "05.5", "5.5", "005.50", "05.50", "5.50"
  - Possible reported values of 21 °C: "021", "21", "021.0", "21.0", "021.00", "21.00"
  - Possible reported values of 21.5 °C: "021.5", "21.5", "021.50", "21.50"
- Setting of current temperature is only possible if the HVAC zone is connected to a 3rd party HVAC controller.
- Changing the setpoint will turn Eco Mode off if it is currently on.
- To leave a parameter unchanged, use "255" as the value for that parameter when sending the command.
- For the HQT-T-HW, this range depends on the programming in the database. The setpoint range is 40–113 °F (5–45 °C).
- HQWT-T-HW does not support this integration feature.
  - Following Schedule → Running programmed schedule; set points from schedule.
  - Permanent Hold → Schedule is not running; set points as adjusted.
  - Temporary Hold → Running schedule; set points as adjusted. Returns to following schedule at next schedule event.
- RCS HVAC controller locked out due to missing wired sensor. This parameter can only be read.
- Schedule Unavailable → Schedule not programmed or device needs date/time.
- HQWT-T-HW does not support Eco Mode.

**Note:** If the thermostat is setup to use Fahrenheit, it is recommended to use Fahrenheit Integration command set. If it is setup to use Celsius, it is recommended to use the Celsius Integration command set.

Continued on next page...

# Lutron integration protocol



## Devices *(continued)*

## Temperature Controls *(continued)*

## HVAC Commands *(continued)*

## HVAC Command-specific fields *(continued)*

### Action Numbers and Parameters *(continued)*:

Action	Action Number	Parameters
Set (#) or Get (?) Call Status	14	0=None, Last was Heat 1=Heat Stage 1 2=Heat Stage 1 and 2 3=Heat Stage 1, 2, and 3 4=Heat Stage 3 5=None, Last was Cool 6=Cool Stage 1 7=Cool Stage 1 and 2 8=Off 9=Emergency Heat/Auxiliary Only 10=Dry
Set (#) or Get (?) Current Temperature (°C) <sup>1,2,3</sup>	15	Temperature=0–100 °C
Set (#) or Get (?) Heat and Cool Setpoints (°C) <sup>2, 4, 5, 6</sup>	16	Setpoint Heat (SPH)=0–100 °C Setpoint Cool (SPC)=0–100 °C
Get (?) Heat and Cool Setpoints (°C) without Eco Offset if applied <sup>2, 4, 7</sup>	17	Setpoint Heat (SPH)=0–100 °C Setpoint Cool (SPC)=0–100 °C

### NOTES

- HomeWorks QS software version 4.1 and higher.
- Allow for reported temperature values to be zero padded, with up to 3 digits before the decimal point, and 2 digits after.
  - Possible reported values of 5 °C: “005”, “05”, “5”, “005.”, “005.”, “5.”, “005.0”, “05.0”, “5.0”, “005.00”, “05.00”, “5.00”
  - Possible reported values of 5.5 °C: “005.5”, “05.5”, “5.5”, “005.50”, “05.50”, “5.50”
  - Possible reported values of 21 °C: “021”, “21”, “021.0”, “21.0”, “021.00”, “21.00”
  - Possible reported values of 21.5 °C: “021.5”, “21.5”, “021.50”, “21.50”
- Setting of current temperature is only possible if the HVAC zone is connected to a 3rd party HVAC controller.
- Changing the setpoint will turn Eco Mode off if it is currently on.
- To leave a parameter unchanged, use “255” as the value for that parameter when sending the command.
- For the HQWT-T-HW, this range depends on the programming in the database. The heat/cool setpoints increase or decrease in increments of 0.5 °C.
- HQWT-T-HW does not support Eco Mode.
 

**Note:** If the thermostat is setup to use Fahrenheit, it is recommended to use Fahrenheit Integration command set. If it is setup to use Celsius, it is recommended to use the Celsius Integration command set.

Continued on next page...

# Lutron integration protocol



## Devices *(continued)*

### Temperature Controls *(continued)*

#### HVAC Commands *(continued)*

#### Example HVAC Commands

Operation	Command String
<b>Execute:</b> #HVAC, Integration ID, Action Number, Parameters	
Set heat setpoint to 68 °F and cool setpoint to 72 °F.	#HVAC,1,2,68,72<CR><LF>
Set system mode to cool.	#HVAC,1,3,3<CR><LF>
Turn Eco mode on.	#HVAC,1,5,2<CR><LF>
Set heat setpoint to 18.5 C and cool setpoint to 21.5 C	#HVAC,21,16,18.5,21.5<CR><LF>
<b>Query:</b> ?HVAC, Integration ID, Action Number	
What is the current temperature?	?HVAC,1,1<CR><LF>
What are the settings for Schedule 1, Event 2?	?HVAC,1,9,1,2<CR><LF>
What days are running Schedule 1?	?HVAC,1,10,1<CR><LF>
What are the current heat and cool setpoints in Celsius?	?HVAC,21,16<CR><LF>
What are the current heat and cool setpoints in Fahrenheit if the Celsius values are 18.5 °C and 21.5 °C respectively?	?HVAC,21,2<CR><LF>
What are the current heat and cool setpoints in Fahrenheit if the Celsius values are 10 °C and 20 °C respectively?	?HVAC,21,2<CR><LF>
<b>Response:</b> ~HVAC, Integration ID, Action Number, Parameters	
Current Temperature is 70 °F.	~HVAC,1,1,70<CR><LF>
Schedule 1, Event 2 starts at 8:00 am with SPH=65,SPC=78	~HVAC,1,9,1,2,08,00,65,78<CR><LF>
Schedule 1 is being run on Monday and Tuesday.	~HVAC,1,10,1,06<CR><LF>
Current heat and cool setpoints in Celsius are 18.5 °C and 21.5 °C respectively.	~HVAC,21,16,18.5,21.5<CR><LF>
Current heat and cool setpoints in Fahrenheit are 65.3 °F and 70.7 °F respectively.	~HVAC,21,2,65.3,70.7<CR><LF>
Current heat and cool setpoints in Fahrenheit are 50 °F and 68 °F respectively.	~HVAC,21,2,50,68<CR><LF>

#### NOTES

- If the thermostat is setup to use Fahrenheit, it is recommended to use Fahrenheit Integration command set. If it is setup to use Celsius, it is recommended to use the Celsius Integration command set.
- Allow for reported temperature values to be zero padded, with up to 3 digits before the decimal point, and 2 digits after.
  - Possible reported values of 5 °C: “005”, “05”, “5”, “005.”, “005.”, “5.”, “005.0”, “05.0”, “5.0”, “005.00”, “05.00”, “5.00”
  - Possible reported values of 5.5 °C: “005.5”, “05.5”, “5.5”, “005.50”, “05.50”, “5.50”
  - Possible reported values of 21 °C: “021”, “21”, “021.0”, “21.0”, “021.00”, “21.00”
  - Possible reported values of 21.5 °C: “021.5”, “21.5”, “021.50”, “21.50”



## Devices *(continued)*

### Palladiom Thermostat<sup>1</sup>

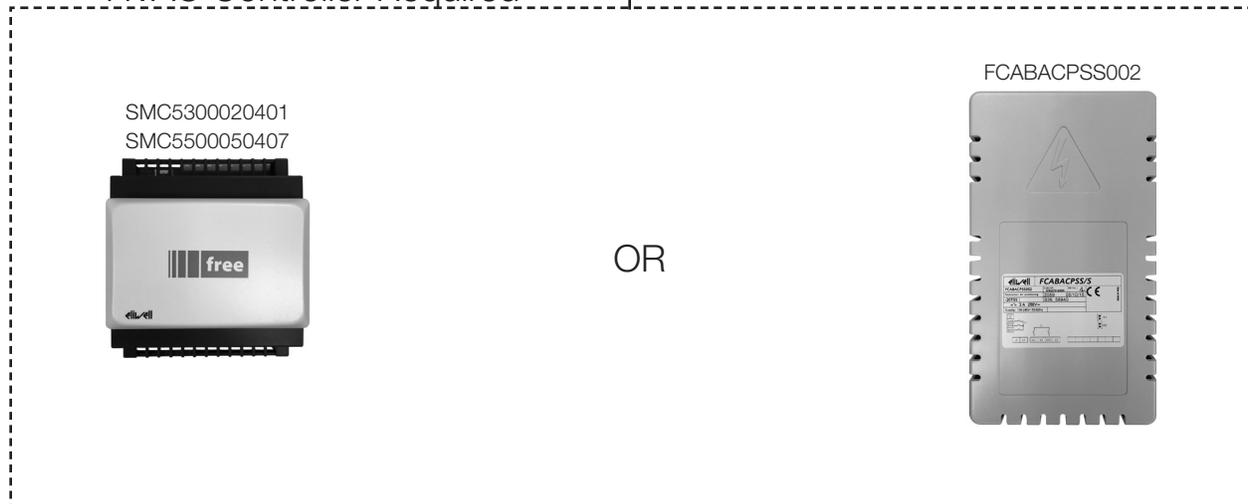
myRoom Model: MWP-T-OHW

MWP-T-OHW



HVAC Controller  
Communication Link

HVAC Controller Required



### Why Integrate with a Palladiom Thermostat?

- Get current temperature
- Set or get single setpoint
- Set or get operating mode and fan mode
- Set or get positive or negative drifts

### Supported Command Types

- HVAC allows control and monitoring of the Palladiom Thermostat and HVAC Controller

### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
MWP-T-OHW					✓

<sup>1</sup> Requires myRoom 10.0 or newer

Continued on next page...



## Devices *(continued)*

### Palladiom Thermostat *(continued)* HVAC Zone Commands

#### HVAC Command Format

*Operation Integration ID (example)*

#HVAC,21, Action Number, Parameters

*Command Use "HVAC Command-specific fields" tables to complete these command fields.*

#### HVAC Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) or Get (?) Current Temperature (°F) <sup>2,3</sup>	1	Temperature=32–104 °F
Set (#) or Get (?) Operating Mode	3	Mode (1=Off, 4=Auto)
Set (#) or Get (?) Fan Mode	4	Mode (1=Auto, 4=No Fan, 5=High, 6=Medium, 7=Low)
Set (#) or Get (?) Call Status	14	0= None, Last was Heat 1= Heat Stage 1 5= None, Last was Cool 6= Cool Stage 1 8= Off
Set (#) or Get (?) Current Temperature (°C) <sup>3</sup>	15	Temperature=0–40 °C
Set (#) or Get (?) Single Setpoint (°F) and Drifts <sup>1,2</sup>	18	Single Setpoint=50–90 °F Negative Drift=0–15 °F Positive Drift=0–15 °F
Set (#) or Get (?) Single Setpoint (°C) and Drifts <sup>1,2</sup>	19	Single Setpoint=10–32 °C Negative Drift=0–8 °C Positive Drift=0–8 °C

#### Example HVAC Commands

Operation	Command String
<b>Execute:</b> #HVAC, Integration ID, Action Number, Parameters	
Set Single Setpoint to 75 °F, Positive Drift to 2 °F and Negative Drift to 1 °F.	#HVAC,21,18,75,1,2<CR><LF>
Set System Operating Mode to "Auto".	#HVAC,21,3,4<CR><LF>
Set Fan Mode to "Medium".	#HVAC,21,4,6<CR><LF>
Set Single Setpoint to 20 °C and leave the Drifts unaffected	#HVAC,21,19,20,255,255<CR><LF>
<b>Query:</b> ?HVAC, Integration ID, Action Number	
What is the Current Temperature?	?HVAC,21,1<CR><LF>
What is the Current Operating Mode?	?HVAC,21,3<CR><LF>
What is the Current HVAC Call Status?	?HVAC,21,14<CR><LF>
<b>Response:</b> ~HVAC, Integration ID, Action Number, Parameters	
Current Temperature is 70 °F.	~HVAC,21,1,70<CR><LF>
Current Operating Mode is "Off".	~HVAC,21,3,1<CR><LF>

- To leave a parameter unchanged, use "255" as the value for that parameter when sending the command.
- Allow for reported temperature values to be zero padded, with up to 3 digits before the decimal point, and 2 digits after.
  - Possible reported values of 5 °C: "005", "05", "5", "005.", "005.", "5.", "005.0", "05.0", "5.0", "005.00", "05.00", "5.00"
  - Possible reported values of 5.5 °C: "005.5", "05.5", "5.5", "005.50", "05.50", "5.50"
  - Possible reported values of 21 °C: "021", "21", "021.0", "21.0", "021.00", "21.00"
  - Possible reported values of 21.5 °C: "021.5", "21.5", "021.50", "21.50"
- Setting of current temperature is only possible if the HVAC zone is connected to a 3rd party HVAC controller.



## Devices *(continued)*

### Palladiom Thermostat *(continued)*

#### DEVICE Commands

##### DEVICE Command Format

$\begin{array}{l} \text{Operation} \\ \text{Integration ID (example)} \\ \text{Command} \end{array}$ 
**#DEVICE,21, Component Number, Action Number, Parameters**
  
*Use "DEVICE Command-specific fields" tables to complete these command fields.*

##### DEVICE Command-specific fields

###### Component Numbers:

Component	Component Number	Available Actions
Internal Sensor	17	Get temperature
Remote Sensor #1	18	Get temperature
Remote Sensor #2 <sup>1</sup>	42	Get temperature

###### Action Numbers and Parameters:

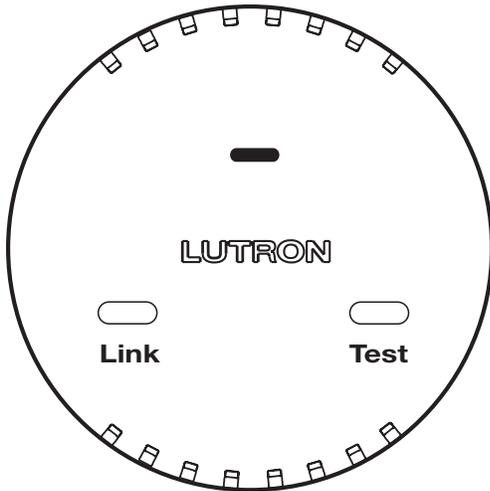
Action	Action Number	Parameters
Get (?) Sensor Temperature (°F) <sup>2, 3</sup>	41	None
Get (?) Sensor Temperature (°C) <sup>2, 3</sup>	42	None

1. Used only when the Palladiom thermostat controls separate heating and cooling zones.
2. This function reports "UNKNOWN" if the value is not known.
3. When issuing this command, use the integration ID and component number of the temperature sensor, not the HVAC zone.

## Devices *(continued)*

### Wireless Temperature Sensor

Model: LRF2-TWRB



#### Why Integrate with a Wireless Temperature Sensor?

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- Get battery status

**Note:** To get current temperature, see **HVAC Controller** section.

#### Additional Commands

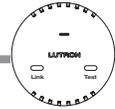
---

- None

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
Wireless Temperature Sensor			✓	✓	

Continued on next page...



## Devices *(continued)*

### Wireless Temperature Sensor *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

<sup>Operation</sup>  
<sup>Integration ID (example)</sup>  
 ?DEVICE, 1, Component Number, Action Number, Parameters  
<sub>Command</sub>

Use "DEVICE Command-specific fields" tables to complete these command fields.

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Internal Sensor	1	Get battery status

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Get (?) battery status	22	
Battery status response (~)	22	Serial number, power source, status, latest status update timestamp Power source: 0 = Unknown 1 = Battery powered 2 = Externally powered Status: 0 = Unknown 1 = Good 2 = Low battery 3 = Device missing 4 = Device not activated Status update timestamp: MM/DD/YYYY HH:MM:SS

#### Example DEVICE Messages

Operation	Command String
<b>Query:</b> ?DEVICE, Integration ID, Component Number, Action Number	
What is the Temperature Sensor's Battery Status?	?DEVICE, 1, 1, 22<CR><LF>
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number, Parameters	
Status Report	~DEVICE, 1, 1, 22, 0x123ABCDE, 1, 1, 03/27/2018 12:55:00 <CR><LF>

# Lutron integration protocol

## Devices *(continued)*

### QSE-IO Control Interface



#### Why Integrate with a QSE-IO?

- Know the state of the Contact Closure Inputs (CCIs).
- Control the state of the Contact Closure Outputs (CCOs).

#### Integration Capabilities

5 Contact Closure Inputs (CCIs) and 5 Contact Closure Outputs. The QSE-IO mode of operation is specified by its DIP switch configuration.

- CCI and CCO states can be polled in any DIP configuration.
- CCI events can be monitored through integration in any DIP configuration.
- CCI events (closures or openings of CCIs) can be 'spoofed' (faked) through integration in DIP configurations where momentary CCIs are specified.
- CCO events can be monitored through integration in any DIP configuration.
- The CCO state logic is typically tied to the states of the CCIs or other devices on the QS link and thus, CCO events cannot be generated through integration in most DIP configurations; the exceptions are the output DIP configurations (e.g., Shade Output, Zone Control Output) and the Integration DIP configuration that allows full monitoring of CCIs and control of CCOs through integration.
- Occupancy events can be monitored through integration when the QSE-IO is in an Occupancy DIP configuration.

#### Supported Command Types

- **DEVICE** allows monitoring of CCI and CCO events and polling of CCI/CCO states and in certain QSE-IO DIP configurations, allows 'spoofing' of CCI events and generation of CCO events.
- **OUTPUT** (in certain output-oriented QSE-IO DIP configurations) allows control and monitoring of the CCOs.

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
QSE-IO	✓	✓		✓	✓

Continued on next page...



## Devices *(continued)*

### QSE-IO Control Interface *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 5, Component Number, Action Number, Parameters**  
*Command*      Use "DEVICE Command-specific fields" tables  
                          to complete these command fields.

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
CCI 1	1	Report (~) closure/opening <sup>1</sup> Poll (?) status <sup>2</sup> Spoof (#) closure/opening <sup>3</sup>
CCI 2	2	Report (~) closure/opening <sup>1</sup> Poll (?) status <sup>2</sup> Spoof (#)closure/opening <sup>3</sup>
CCI 3	3	Report (~) closure/opening <sup>1</sup> Poll (?) status <sup>2</sup> Spoof (#)closure/opening <sup>3</sup>
CCI 4	4	Report (~) closure/opening <sup>1</sup> Poll (?) status <sup>2</sup> Spoof (#)closure/opening <sup>3</sup>
CCI 5	5	Report (~) closure/opening <sup>1</sup> Poll (?) status <sup>2</sup> Spoof (#)closure/opening <sup>3</sup>
CCO 1	11	Report (~) closure/opening <sup>4</sup> Poll (?) status <sup>2</sup> Generate (#) closure/opening <sup>3</sup>
CCO 2	12	Report (~) closure/opening <sup>4</sup> Poll (?) status <sup>2</sup> Generate (#) closure/opening <sup>3</sup>
CCO 3	13	Report (~) closure/opening <sup>4</sup> Poll (?) status <sup>2</sup> Generate (#) closure/opening <sup>3</sup>
CCO 4	14	Report (~) closure/opening <sup>4</sup> Poll (?) status <sup>2</sup> Generate (#) closure/opening <sup>3</sup>
CCO 5	15	Report (~) closure/opening <sup>4</sup> Poll (?) status <sup>2</sup> Generate (#) closure/opening <sup>3</sup>
Occupancy Sensor 1	41	Report (~) occupied/unoccupied <sup>3,5</sup>
Occupancy Sensor 2	42	Report (~) occupied/unoccupied <sup>3,5</sup>
Occupancy Sensor 3	43	Report (~) occupied/unoccupied <sup>3,5</sup>
Occupancy Sensor 4	44	Report (~) occupied/unoccupied <sup>3,5</sup>
Occupancy Sensor 5	45	Report (~) occupied/unoccupied <sup>3,5</sup>

#### NOTES

1. Monitoring type 2 must be enabled (see QSE-CI-NWK-E #MONITORING section)
2. Not available in Quantum
3. Feature supported in only some QSE-IO DIP configurations
4. Monitoring type 5 must be enabled (see QSE-CI-NWK-E #MONITORING section)
5. Monitoring type 6 must be enabled (see QSE-CI-NWK-E #MONITORING section)

Continued on next page...

# Lutron integration protocol



## Devices *(continued)*

### QSE-IO Control Interface *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

#### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) Closure Report (~) Closure or Occupied <sup>1</sup>	3	None
Set (#) Opening Report (~) Opening or Unoccupied <sup>1</sup>	4	None
Set (#) CCO State <sup>1, 2</sup>	14	Level (0 = Open, 100 = Close)
Get (?) CCO State <sup>2</sup>		None
Report (~) CCO State		Level (0 = Open, 100 = Close)
Get (?) CCI State <sup>2, 3</sup>	35	None

#### NOTES

1. Feature supported in only some QSE-IO DIP configurations. See QSE-IO installation instructions at [www.lutron.com](http://www.lutron.com)
2. Not available in Quantum
3. Requires NWK firmware 8.47 or newer for QS Standalone systems.

Continued on next page...



## Devices *(continued)*

### QSE-IO Control Interface *(continued)*

#### OUTPUT Commands

#### OUTPUT Command Formats

*Operation*      *Integration ID (example)*  
#OUTPUT, 1, Action Number, Parameters  
*Command*      *Use "OUTPUT Command-specific fields" tables  
to complete these command fields.*

#### OUTPUT Command-specific fields

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Set (#) CCO state <sup>1,2</sup>	1	Level (0 = Open, 100 = Close)
Get (?) CCO state		None
Report (~) CCO state		Level (0 = Open, 100 = Close)

#### NOTES

1. Feature supported in only some QSE-IO DIP configurations. See QSE-IO installation instructions at [www.lutron.com](http://www.lutron.com)
2. Not available in Quantum

# Lutron integration protocol

---

## Devices *(continued)*

### QS Sensor Module (QSM)

Models: QSMX-, QSM2-, QSM3-, QSM4-, QSM5-, QSM6-, QSM7-



#### Why Integrate with a QS Sensor Module?

---

- View occupancy events that occur.

#### Integration Capabilities

---

- Can view occupancy events for up to 14 sensors.
- Can view the Pico wireless control button Press/Release Events.

#### Compatibility

	QS Standalone	Quantum	RadioRA 2	HomeWorks QS	myRoom plus
QS Sensor Module	✓	✓		✓	✓

Continued on next page...



## Devices *(continued)*

### QS Sensor Module (QSM) *(continued)*

#### DEVICE Commands

#### DEVICE Command Formats

*Operation*      *Integration ID (example)*  
**#DEVICE, 19, Component Number, Action Number, Parameters**  
*Command*              *Use "DEVICE Command-specific fields" tables to complete these command fields.*

#### DEVICE Command-specific fields

##### Component Numbers:

Component	Component Number	Available Actions
Wired Occupancy sensors	1 – 4	Occupied, Unoccupied
Wireless Occupancy sensors 1 – 10	5 – 14	Occupied, Unoccupied
Pico 1 Buttons <sup>1,2</sup>	61 – 65	Press, Release
Pico 2 Buttons <sup>1,2</sup>	82 – 86	Press, Release
Pico 3 Buttons <sup>1,2</sup>	103 – 107	Press, Release
Pico 4 Buttons <sup>1,2</sup>	124 – 128	Press, Release
Pico 5 Buttons <sup>1,2</sup>	145 – 149	Press, Release
Pico 6 Buttons <sup>1,2</sup>	166 – 170	Press, Release
Pico 7 Buttons <sup>1,2</sup>	187 – 191	Press, Release
Pico 8 Buttons <sup>1,2</sup>	208 – 212	Press, Release
Pico 9 Buttons <sup>1,2</sup>	229 – 233	Press, Release
Pico 10 Buttons <sup>1,2</sup>	250 – 254	Press, Release

#### NOTES

- All models *except* PJ2-4B: Pico wireless control button order (Top, Favorite, Bottom, Raise, Lower) dictates Component Number (see Pico 1 example, below):

Pico 1 Button	Sample Component Number
Top	61
Favorite	62
Bottom	63
Raise	64
Lower	65

- Model PJ2-4B\* *only*: Pico wireless control button order is 1, 2, 3, 4 and component mapping will be as below:

Pico 1 Button	Sample Component Number
1	61
2	64
3	65
4	63

\* Model PJ2-4B is supported only on QSM software version 7.28 and higher.

Continued on next page...



## Devices *(continued)*

### QS Sensor Module (QSM) *(continued)*

#### DEVICE Commands *(continued)*

#### DEVICE Command-specific fields *(continued)*

---

##### Action Numbers and Parameters:

Action	Action Number	Parameters
Report (~) Occupied or Button Press	3	None
Report (~) Unoccupied or Button Release	4	None

##### Example DEVICE Commands

---

Examples presume QSM has been assigned integration ID QSMID.

Operation	Command String
<b>Response:</b> ~DEVICE, Integration ID, Component Number, Action Number	
Wired Occupancy Sensor 1 transitions to Occupied	~DEVICE,QSMID,1,3<CR><LF>
Wired Occupancy Sensor 1 transitions to Unoccupied	~DEVICE,QSMID,1,4<CR><LF>
Wireless Occupancy Sensor 1 transitions to Occupied	~DEVICE,QSMID,5,3<CR><LF>
Wireless Occupancy Sensor 1 transitions to Unoccupied	~DEVICE,QSMID,5,4<CR><LF>
Pico 1 Favorite button press	~DEVICE,QSMID,62,3<CR><LF>

## Customer Assistance

If you have questions concerning the installation or operation of this product, call Lutron Customer Assistance.

Please provide the exact model number when calling.  
Model number can be found on the product packaging.  
Example: MWP-T-OHW-SN-A

U.S.A., Canada, and the Caribbean:	1.844.LUTRON1 (588.7661)
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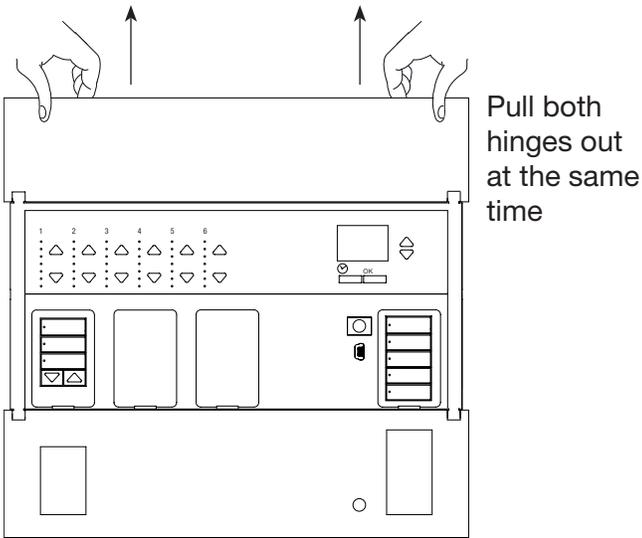
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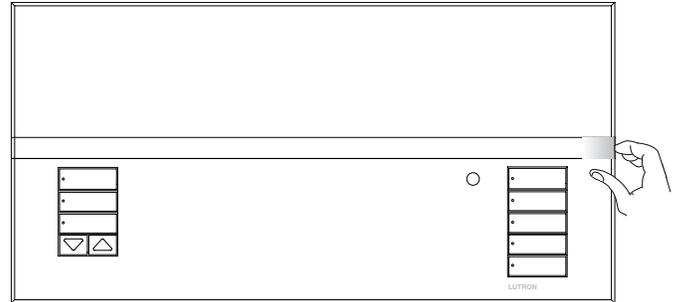
# Replacement Kit Instructions



## Faceplate Replacement

To remove either faceplate, open it fully (flush to the wall), and pull up (for the top faceplate) or down (for the bottom faceplate) to pull both hinges out of their slots at the same time.

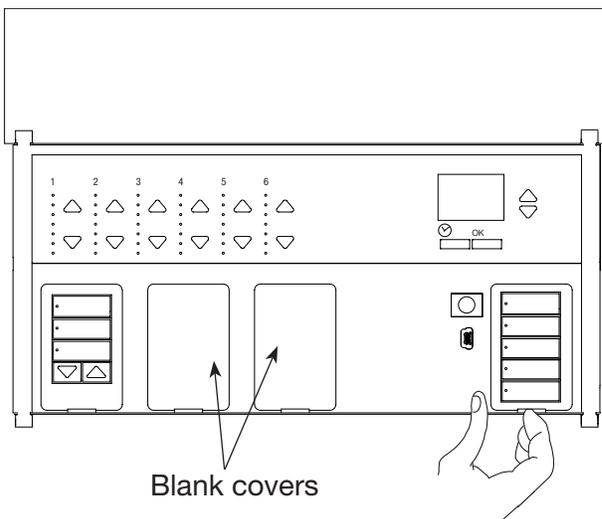
Replace by sliding the hinges back into their slots.



## Stripe Replacement

To remove the stripe, lift the end and pull away from the faceplate until the tabs pop out of their slots.

Replace plastic stripe by pressing the tabs back into their slots. For metal stripe, remove adhesive liner and press into place.



## Button Kit Replacement

Note: Lighting and shade buttons are replaced the same way.

To replace a column of buttons, insert the tip of your finger into the slot at the bottom of the button column, and gently lift up. The button kit should pop out.

If you are adding a shade button kit where there is currently a blank cover, remove the lower faceplate (see above) and remove the blank cover.

Replace the button kit by gently pressing it into the opening until it snaps into place, and replace the bottom faceplate if necessary.

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For a period of one year from the date of purchase, and subject to the exclusions and restrictions described below, Lutron warrants each new unit to be free from manufacturing defects. Lutron will, at its option, either repair the defective unit or issue a credit equal to the purchase price of the defective unit to the Customer against the purchase price of comparable replacement part purchased from Lutron. Replacements for the unit provided by Lutron or, at its sole discretion, an approved vendor may be new, used, repaired, reconditioned, and/or made by a different manufacturer.

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3. Equipment and parts external to the unit, including those sold or supplied by Lutron (which may be covered by a separate warranty).
4. The cost of repairing or replacing other property that is damaged when the unit does not work properly, even if the damage was caused by the unit.

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# Replacement Instructions

## Important Notes:

### Please Read Before Installation

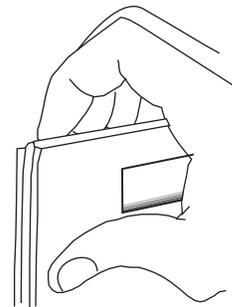
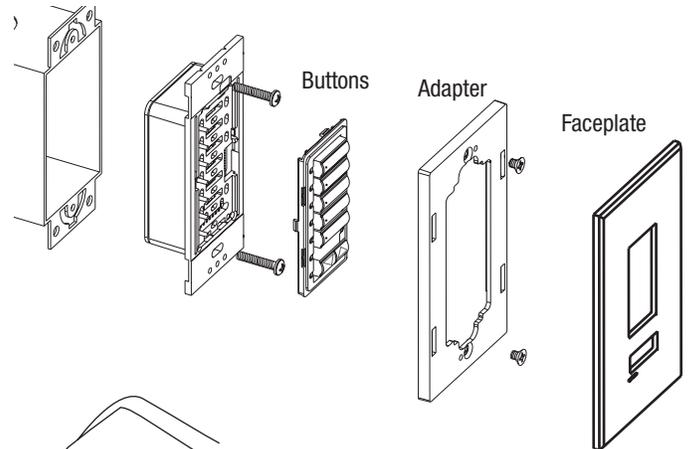
1. Ensure all controls are correctly wired and mounted before installing faceplates.
2. Ensure yokes of controls are free from debris (e.g. plaster, spackling compound) before installing faceplate adapter and faceplate.

### Cleaning Instructions

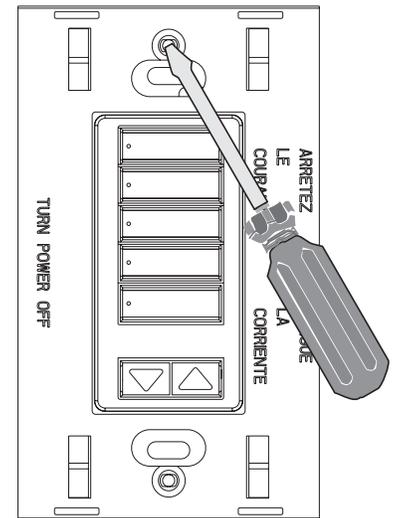
To clean, wipe with a clean damp cloth. DO NOT use any chemical cleaning solutions.

### Installation

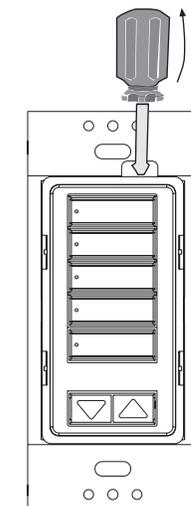
1. Remove the currently installed faceplate, adapter, and buttons.
  - a. Snap off the faceplate.
  - b. Remove 2 screws from the faceplate adapter and remove adapter (if present).
  - c. Remove button assembly from keypad by gently prying it from the top.
 Removing the faceplate adapter is required for insert models or if the new faceplate kit is a different color than the one being removed.
2. Snap on the buttons by lining up the two tabs on the bottom of the buttons with the two slots in the keypad just above the lower keypad mounting screw. Using your thumbs, press in the bottom, and then snap in the top of the buttons.
3. Attach faceplate adapter to controls with screws provided.
4. Attach the faceplate to the faceplate adapter by pressing at the top and bottom of the faceplate until it snaps into place.



a. Snap off faceplate



b. Remove screws and faceplate adapter (if present)



c. Gently pry out buttons

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If the unit is commissioned by Lutron or a Lutron approved third party as part of a Lutron commissioned lighting control system, the term of this warranty will be extended, and any credits against the cost of replacement parts will be prorated, in accordance with the warranty issued with the commissioned system, except that the term of the unit's warranty term will be measured from the date of its commissioning.

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2. On-site labor costs to diagnose issues with, and to remove, repair, replace, adjust, reinstall and/or reprogram the unit or any of its components.
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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.

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Lutron Electronics Co., Inc.  
Made and printed in U.S.A. 03/07  
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## Description

The GRX-PWM provides 12 VDC Pulse Width Modulated (PWM) control and ballast switching capabilities in one enclosure. With the GRX-PWM, a GRAFIK Eye 3000 Series Control Unit\* can control PWM ballasts powered by 100-277 VAC and provide switching relays that can handle the in-rush current for a full circuit of ballasts. The GRX-PWM can also be used to switch any of the load types listed below.

\*GRX-PWM will also work with Lutron GP or LP panel outputs.

## Product Specifications

**FEATURES**.....Provides a PELV (Class 2: USA) isolated 12 VDC 1 kHz PWM output signal that conforms to IEC60929 and JIS C8120-2.  
Accepts a constant-gate drive fluorescent signal

<b>INPUT VOLTAGE RATING</b>	100/120 V ~, 50/60 Hz
<b>SWITCHED VOLTAGE RATING</b>	100-277 V ~, 50/60 Hz
<b>H2 TERMINAL INPUT RATING</b>	200 mA max
<b>DH2 TERMINAL INPUT RATING</b>	100 mA
<b>12 VDC PWM OUTPUT RATING</b>	400 mA - sources current only

Source/Load Type	Switched Hot Current 100-277 V ~
Fluorescent: Lutron Eco-10™ (TVE Series)	16 A
Electronic Capacitive Non-Dim Other Manufacturer's 12 VDC PWM Ballasts (12 VDC PWM source only)	16 A
Incandescent	16 A
Low-Voltage	16 A
Metal Halide	16 A
Neon/Cold Cathode	16 A
Motors	1/4 HP @ 100-120 V ~ 1/2 HP @ 200-277 V ~

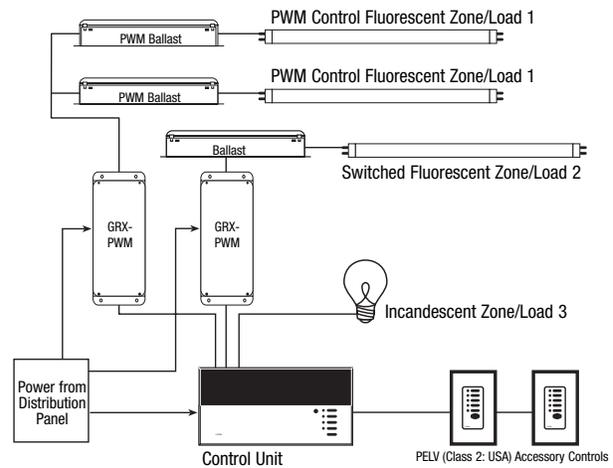
**TERMINALS** Two #12-20 AWG (0.5-2.5 mm<sup>2</sup>) conductors per terminal.  
**MOUNTING** NEMA Type 1 enclosure, indoor use only.  
**ENVIRONMENTAL** 32-104°F (0-40°C).  
**WEIGHT** 4.25 lb. (2 kg)

## Mounting

Find a suitable location for mounting.

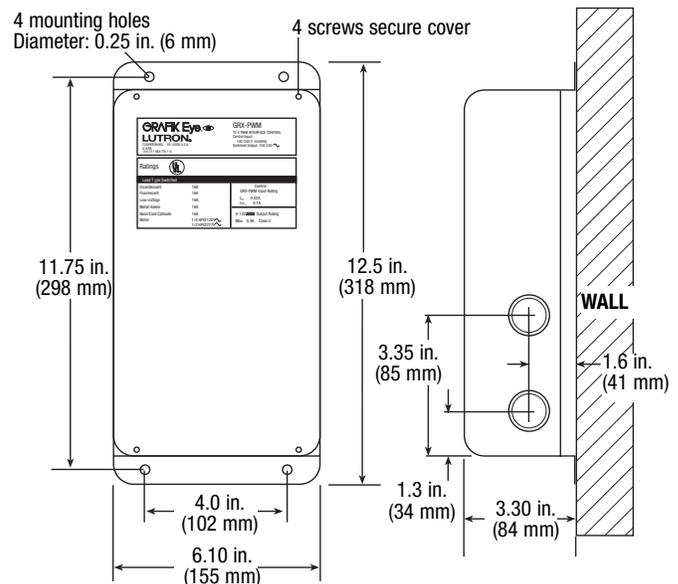
- Decide on the proper location for the GRX-PWM (NEMA Type 1 enclosure, indoor use only). See System Wiring Layout below.
- The environment where the GRX-PWM is placed must have an ambient temperature range of 32-104°F (0-40°C).
- Mount the enclosure vertically on a wall (screws not provided). See Mounting Diagram below.
- Mounting method must be able to support weight and forces applied during installation.
- Internal relays will click while in operation; mount where audible noise is acceptable.

## System Wiring Layout



**Note:** When using a Control Unit, a GRX-PWM is required for each 12 VDC PWM fluorescent zone. (A 3-zone Control Unit with two fluorescent zones and one incandescent zone is shown as an example.)

## Mounting Diagram



# 100-277 V $\sim$ Control Interface

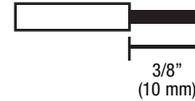
## Important Installation Information

- Install in accordance with all national and local electrical codes.
- Check for short-circuited loads during new installations before wiring the GRX-PWM.



**Caution:** Multiple feeds may enter this enclosure. Locate and lock each feed circuit breaker/MCB in the OFF position before wiring the Interface.

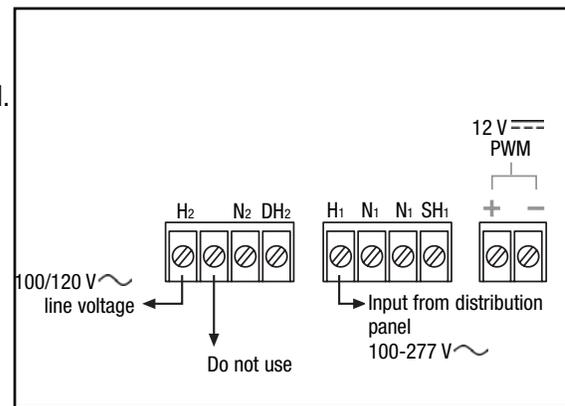
- Proper short-circuit and overload protection must be provided at the distribution panel. You can use up to a 20 A maximum circuit breaker/MCB or equivalent (tripping curve C according to IEC 898/EN60898 is recommended) with adequate short-circuit breaking capacity for your installation.
- Terminal blocks are rated for two #12-20 AWG (0.5-2.5 mm<sup>2</sup>) wires per terminal.
- Strip 3/8 in. (10 mm) of insulation from wires.
- Wiring Diagram A shows a GRX-PWM wired from one distribution panel. If the power requirement of the complete system is less than an MCB/circuit breaker rating, one feed can be jumpered inside the enclosure (as shown).
- Wiring Diagram B shows a GRX-PWM wired from two separate distribution panels that may be different phases or voltages.



- Use the internal terminal block label to see where to land wires.
  - The label shows two separate Hot terminals (H1 & H2).
  - H1 is the Hot feed to power the lighting load.
  - H2 is the Hot feed that powers internal circuitry of the GRX-PWM.
  - H2 has a 100/120 V $\sim$  connection. Do **not** use the unlabeled terminal.

Note 1: Not all terminal blocks receive a connection.

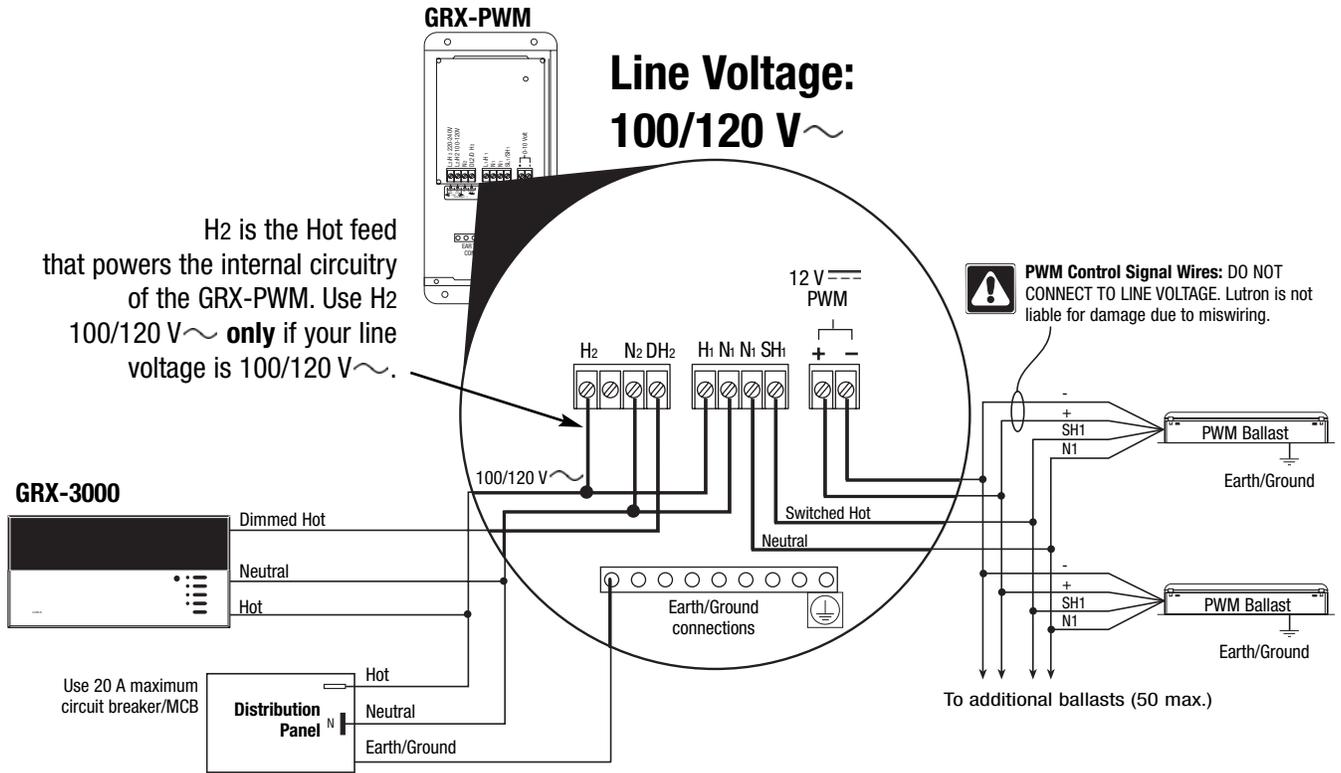
Note 2: The power feed to the Control Unit and H2 of the GRX-PWM must be the same phase! PELV (Class 2: USA), 12 V $\equiv$  PWM wiring from a ballast to the GRX-PWM must be separated from the power wiring. Enter the PELV (Class 2: USA) wires through the knockout adjacent to the 12 V $\equiv$  PWM terminal blocks. The Nomex<sup>®</sup> barrier ensures separation and is flexible to allow access to the terminals. The barrier must be in place when installation is complete.



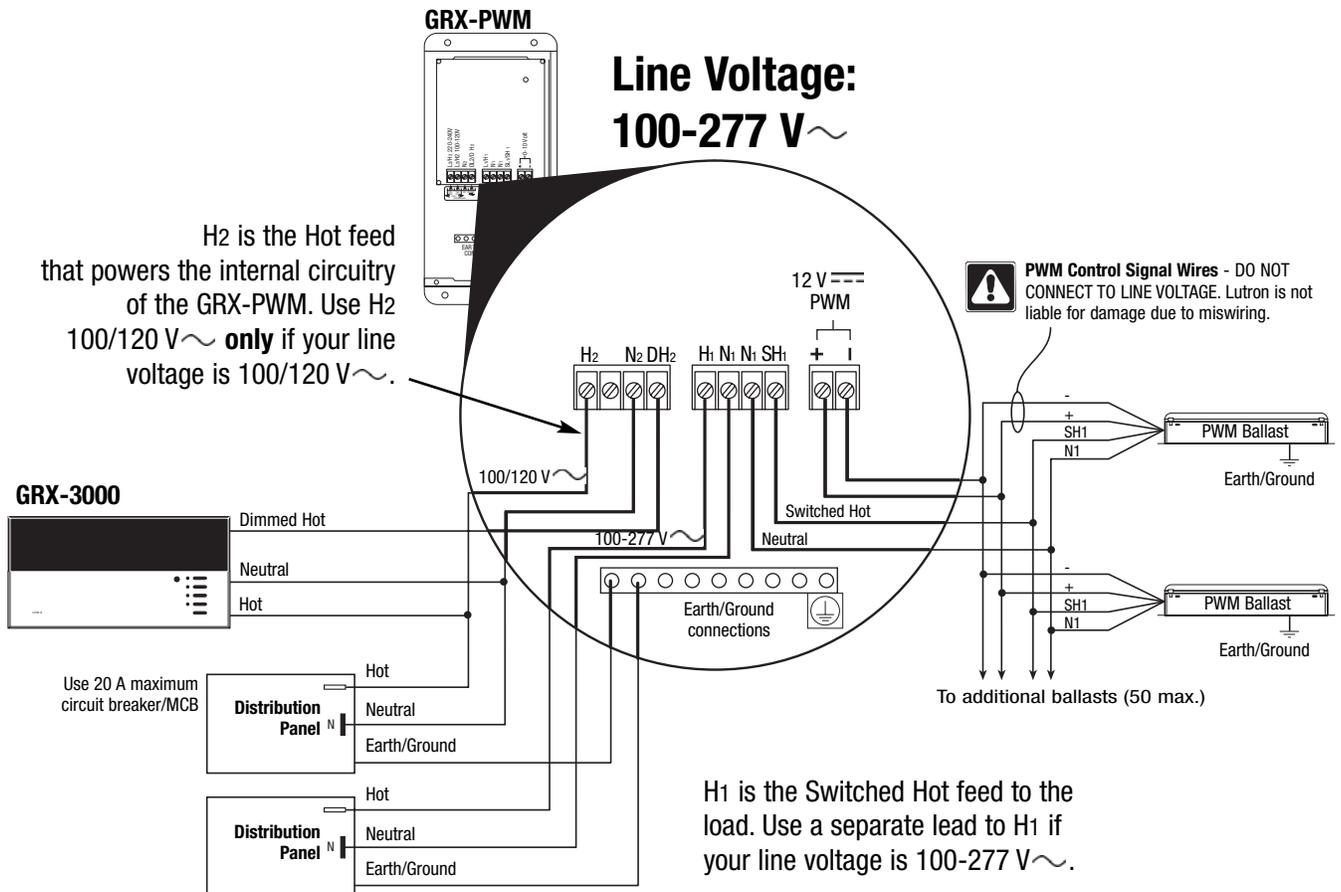
## GRX-PWM Internal Terminal Block Label Definitions

H2 100/120 V $\sim$	Power input for GRX-PWM control (line voltage <b>must be</b> 100/120 V $\sim$ only)
N2	Neutral for GRX-PWM control
DH2	GRAFIK Eye 3000 Series Control Unit Lighting Zone connection (Phase Control Input to GRX-PWM)
H1	Power input for lighting load (switched voltage can be 100-277 V $\sim$ )
N1	Neutral for lighting load (2 terminals provided and internally tied together — one for input neutral, and one for load neutral)
SH1	Switched output to power lighting load
+ -	PWM control signal terminals

**Wiring Diagram A: 100/120 V ~ GRX-PWM: 1 Distribution Panel**



**Wiring Diagram B: 100-277 V ~ GRX-PWM: 2 Distribution Panels**



## Operation

After wiring is complete, supply power to the GRX-PWM to check for proper operation.

- With the cover removed, an LED will provide visual feedback about the operation of the system.
- When power is first applied, the LED will turn on for 8 seconds to indicate start-up mode and then start to flash in one of two ways to indicate the status of the system:

### 1. Standard Operation

- The LED will flash at a rate of twice per second to signify proper communication between the Control Unit and the Interface.

### 2. Incorrect Operation - No Active Input

- The LED will repeatedly turn on for 1 second, then off for 1 second, to indicate that there is not an active phase control input to the GRX-PWM. Make sure that the phase control dimmer is ON and connected to the GRX-PWM at the terminal block marked DH2. Check that the corresponding zone for the DH2 terminal is ON and the light level is not set at the minimum output.
- When the LED indicates proper input of a phase control signal, then the output can be checked by looking at the load and checking operation from the Control Unit.
- For non-dimming ballasts, select non-dim load type on the *GRAFIK Eye* Control Unit and do not connect ballasts to PWM's + and - terminals.



Make sure that the Control Unit is set for **Fluorescent Load Type**. (Refer to *GRAFIK Eye* 3000 Series Installer's Guide.) If the load type is not set correctly, proper dimming will not occur.

## Troubleshooting

Symptom	Possible Cause	Solution
PWM Ballast does not dim or control unit to the Interface.	Miswire	Verify that LED pulses twice per second. If not, check wiring from phase control unit to the Interface.
	Power is OFF	Make sure that the <i>GRAFIK Eye</i> 3000 Series Control Unit is ON.
	Miswire	Check for proper polarity of PWM signals at terminal blocks. Does it match what is at every ballast? A miswire at any ballast will cause all ballasts to go to the low end.
	Incorrect control setup	<i>GRAFIK Eye</i> 3000 Series Control Unit is not configured for fluorescent load type.
Light does not switch on	Miswire	Check that the SH1 connection goes to the ballasts.
	Miswire	Check that the DH2 connection is actually wired to a phase control input.
Light does not switch off	Miswire	Check that load is connected to SH terminal.
	Miswire	Check that the DH2 connection is actually wired to a phase control input.
LED is not illuminated	No power input	Check that power is applied to the Interface.

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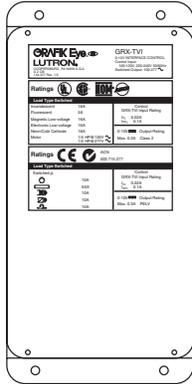
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Lutron will, at its option, repair or replace any unit that is defective in materials or manufacture within one year after purchase. For warranty service, return unit to place of purchase or mail to Lutron at 7200 Suter Rd., Coopersburg, PA 18036-1299, 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.  
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Made and printed in U.S.A. 2/06  
P/N 031-267 Rev. A





### Description

The GRX-TVI provides 0-10V control and ballast switching capabilities in one enclosure. The GRX-TVI gives *GRAFIK Eye* 3000 Series Control Units the ability to control any 0-10V ballasts powered by 100V-277V (**ballast must provide 0-10V sourcing of current**) and provides switching relays that can handle the in-rush current for a circuit of ballasts. The GRX-TVI gives a *GRAFIK Eye* 3000 Series Control Unit the ability to both dim and switch electronic ballasts, such as *Lutron's Eco-10™* (TVE models). The GRX-TVI can also be used to switch any of the load types listed below.

### Product Specifications

**FEATURES**.....Provides a Class 2/PELV isolated 0-10V output signal that conforms to EN60929 and IEC60929  
Accepts a constant-gate drive fluorescent signal (100-127V, 220-240V, 50/60Hz)

**INPUT POWER RATING**.....100-127/220-240V, 50/60Hz

**H2/L2 TERMINAL**.....20mA

**INPUT RATING**

**DH2/DL2 TERMINAL**.....100mA

**INPUT RATING**

**0-10V OUTPUT RATING**.....10µA-300mA - Sinks current only (maximum 150 ballasts)

Source/Load Type	230V (CE)	100-127V/ 200-277V
Fluorescent: <i>Lutron Eco-10™</i> (TVE Series)	—	16A
Electronic Capacitive Non-Dim	10A	16A
Other Manufacturer's 0-10V Ballasts (0-10V source only)	10A	16A
Incandescent	10A	16A
Low-Voltage	10A	16A
Metal Halide	10A	16A
Neon/Cold Cathode	10A	16A
Motors	1/4HP @ 100-120V 1/2HP @ 200-277V 1/2HP @ 230V CE	

**TERMINALS** Two #12-20AWG (0.5-2.5 mm<sup>2</sup>) conductors per terminal.

**MOUNTING** NEMA Type 1 enclosure, indoor use only.

**ENVIRONMENTAL** 32–104 °F (0–40 °C).

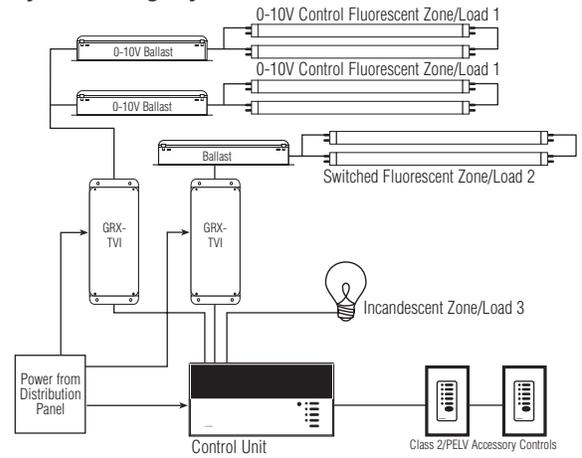
**WEIGHT** 4.25 lb. (2kg)

### Mounting

Find a suitable location for mounting.

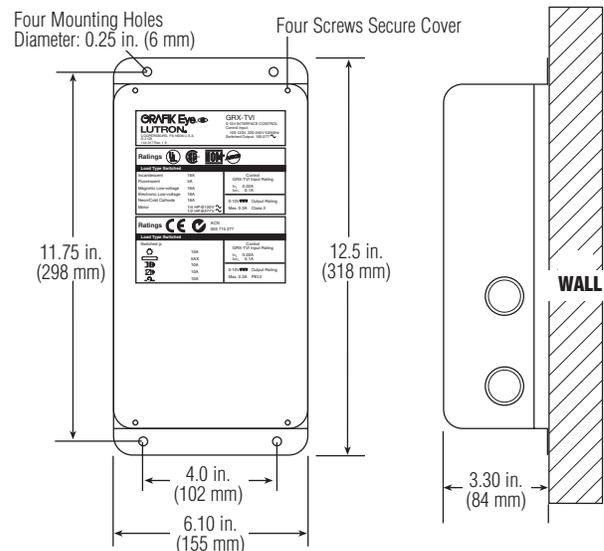
- Decide on the proper location for the GRX-TVI (NEMA Type 1 enclosure, indoor use only). See System Wiring Layout below.
- The environment where the GRX-TVI is placed must have an ambient temperature range of 32–104 °F (0–40 °C).
- Mount the enclosure vertically on a wall (screws not provided). See Mounting Diagram below.
- Mounting method must be able to support weight and forces applied during installation.
- Internal relays will click while in operation — mount where audible noise is acceptable.

### System Wiring Layout



**Note:** When using a Control Unit, a GRX-TVI is required for each 0-10V fluorescent zone. (A 3-zone Control Unit with two fluorescent zones and one incandescent zone is shown as an example.)

### Mounting Diagram



# 220-240V/CE Control Interface

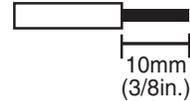
## Important Installation Information

- Install in accordance with all national and local electrical codes.
- Check for short circuited loads during new installations before wiring the GRX-TVI.



**Caution:** Multiple feeds may enter this enclosure. Locate and lock each feed circuit breaker/MCB in the OFF position before wiring the Interface.

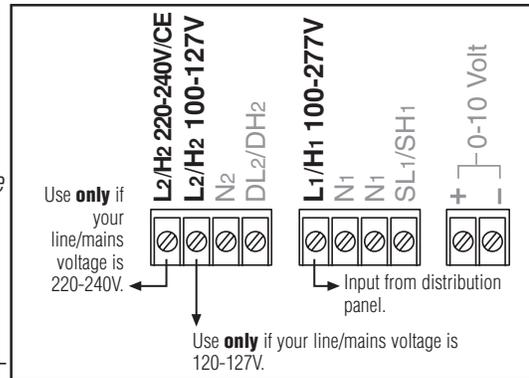
- Proper short circuit and overload protection must be provided at the distribution panel. You can use up to a 20A (16A for CE) maximum circuit breaker/MCB or equivalent (tripping curve C according to IEC 898/EN60898 is recommended) with adequate short circuit breaking capacity for your installation.
- Terminal blocks are rated for two #12-22 AWG (0.5-2.5 mm<sup>2</sup>) wires per terminal.
- Strip 3/8 in. (10 mm) of insulation from wires.
- Wiring Diagram A shows a GRX-TVI wired from one distribution panel. If the power requirement of the complete system is less than an MCB/circuit breaker rating, one feed can be jumpered inside the enclosure (as shown).
- Wiring Diagram B shows a GRX-TVI wired from two separate distribution panels that may be different phases or voltages.
- Use the internal terminal block label to see where to land wires.



- The label shows two separate Hot/Live terminals (L1/H1 & L2/H2).  
L1/H1 is the Hot/Live feed to power the lighting load.  
L2/H2 is the Hot/Live feed that powers internal circuitry of the GRX-TVI.  
*L2/H2 has a 100-127V connection **and** a 220-240V connection - use **only** the one corresponding to line voltage for your application.*

Note 1: Not all terminal blocks receive a connection.

Note 2: The power feed to the Control Unit and L2/H2 of the GRX-TVI must be the same phase!  
Class 2/PELV, 0-10V wiring from a ballast to the GRX-TVI-CE must be separated from the power wiring. Enter the Class 2/PELV wires through the knockout adjacent to the 0-10V terminal blocks. The Nomex<sup>®</sup> barrier ensures separation and is flexible to allow access to the terminals. The barrier must be in place when installation is complete.

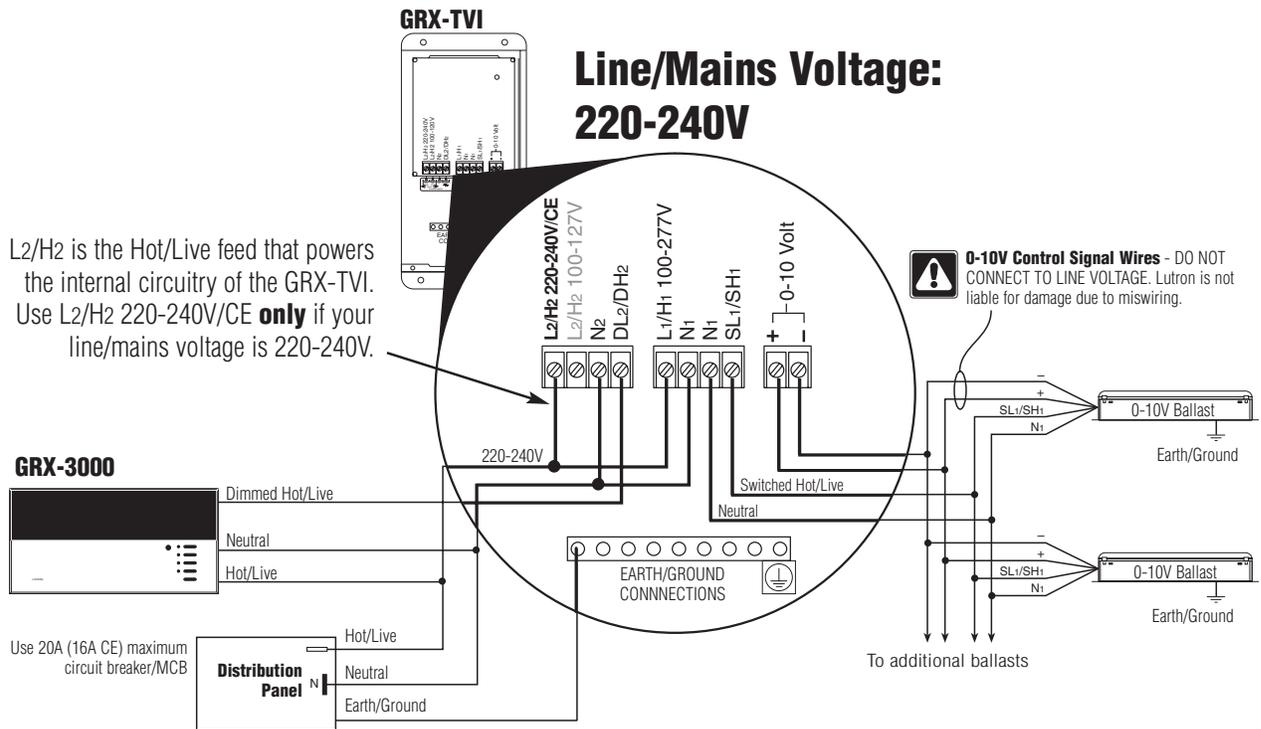


## GRX-TVI Internal Terminal Block Label Definitions

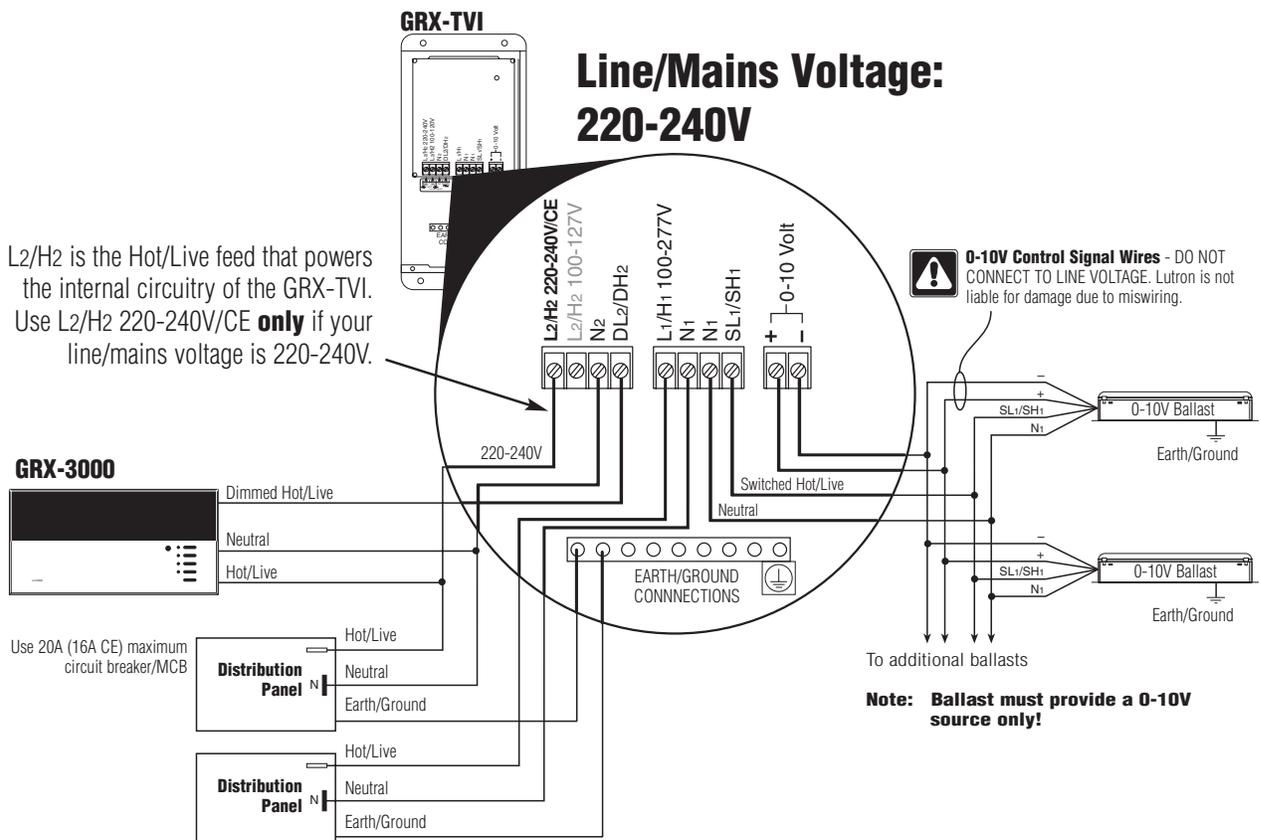
Use **only one** input according to Input Voltage:

L2/H2 240V	Power input for GRX-TVI control (line/mains voltage <b>must be</b> 220-240V)
L2/H2 127V	Power input for GRX-TVI control (line/mains voltage <b>must be</b> 100-127V)
N2	Neutral for GRX-TVI control
DL2/DH	GRAFIK Eye 3000 Series Control Unit Lighting Zone connection (Phase Control Input to GRX-TVI)
L1/H1	Power input for lighting load
N1	Neutral for lighting load (2 terminals provided and internally tied together — one for input neutral and one for load neutral)
SL1/SH1	Switched output to power lighting load
+ -	0-10V control signal wires ( <b>ballast must provide a 0-10V source only</b> )

## Wiring Diagram A: 220-240V/CE GRX-TVI — 1 Distribution Panel



## Wiring Diagram B: 220-240V/CE GRX-TVI — 2 Distribution Panels



# 100-127V Control Interface

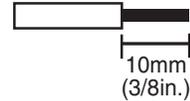
## Important Installation Information

- Install in accordance with all national and local electrical codes.
- Check for short circuited loads during new installations before wiring the GRX-TVI.



**Caution:** Multiple feeds may enter this enclosure. Locate and lock each feed circuit breaker/MCB in the OFF position before wiring the Interface.

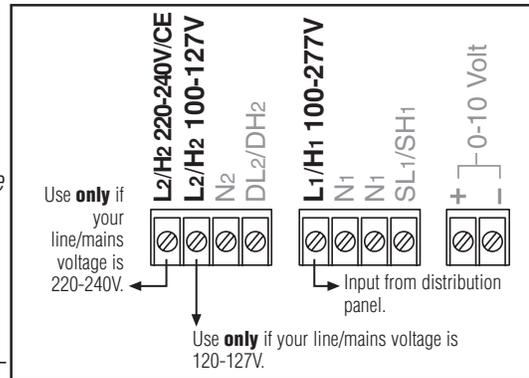
- Proper short circuit and overload protection must be provided at the distribution panel. You can use up to a 20A (16A for CE) maximum circuit breaker/MCB or equivalent (tripping curve C according to IEC 898/EN60898 is recommended) with adequate short circuit breaking capacity for your installation.
- Terminal blocks are rated for two #12-22 AWG (0.5-2.5 mm<sup>2</sup>) wires per terminal.
- Strip 3/8 in. (10 mm) of insulation from wires.
- Wiring Diagram C shows a GRX-TVI wired from one distribution panel. If the power requirement of the complete system is less than an MCB/circuit breaker rating, one feed can be jumpered inside the enclosure (as shown).
- Wiring Diagram D shows a GRX-TVI wired from two separate distribution panels that may be different phases or voltages.
- Use the internal terminal block label to see where to land wires.



- The label shows two separate Hot/Live terminals (L1/H1 & L2/H2).  
L1/H1 is the Hot/Live feed to power the lighting load.  
L2/H2 is the Hot/Live feed that powers internal circuitry of the GRX-TVI.  
*L2/H2 has a 100-127V connection **and** a 220-240V connection - use **only** the one corresponding to line voltage for your application.*

Note 1: Not all terminal blocks receive a connection.

Note 2: The power feed to the Control Unit and L2/H2 of the GRX-TVI must be the same phase!  
Class 2/PELV, 0-10V wiring from a ballast to the GRX-TVI-CE must be separated from the power wiring. Enter the Class 2/PELV wires through the knockout adjacent to the 0-10V terminal blocks. The *Nomex*® barrier ensures separation and is flexible to allow access to the terminals. The barrier must be in place when installation is complete.

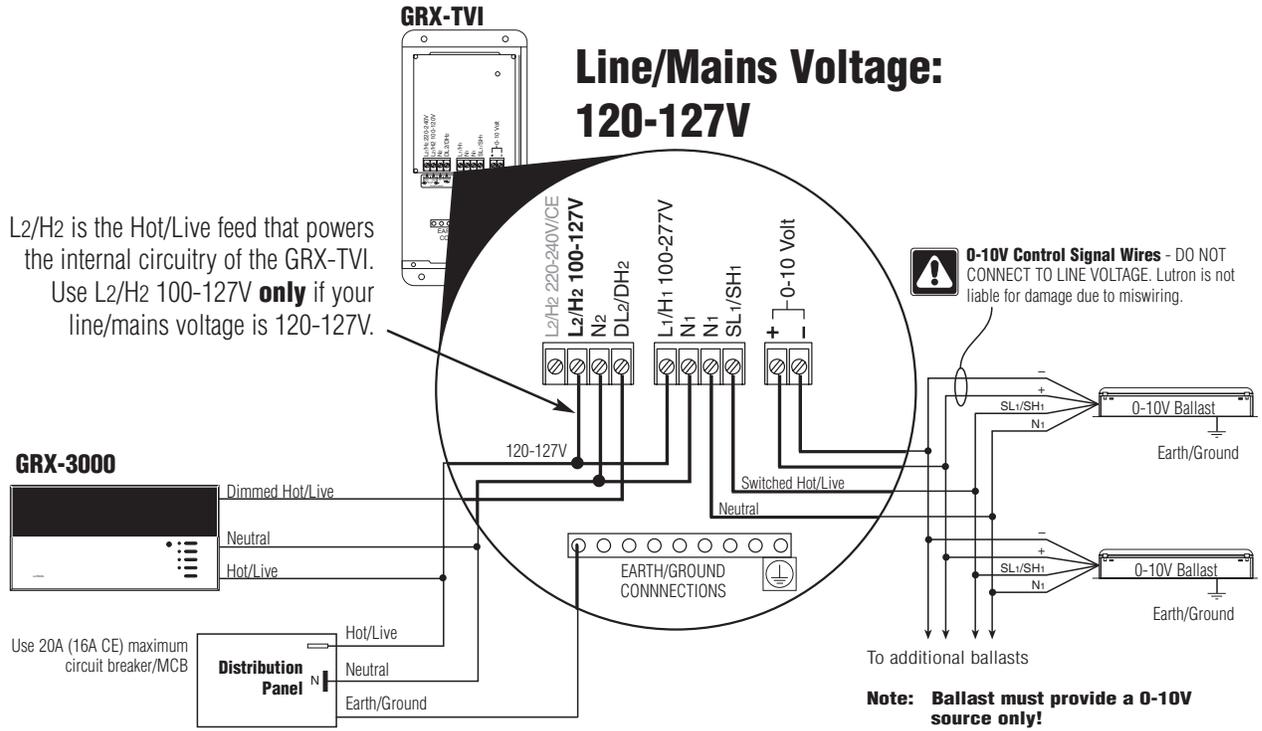


## GRX-TVI Internal Terminal Block Label Definitions

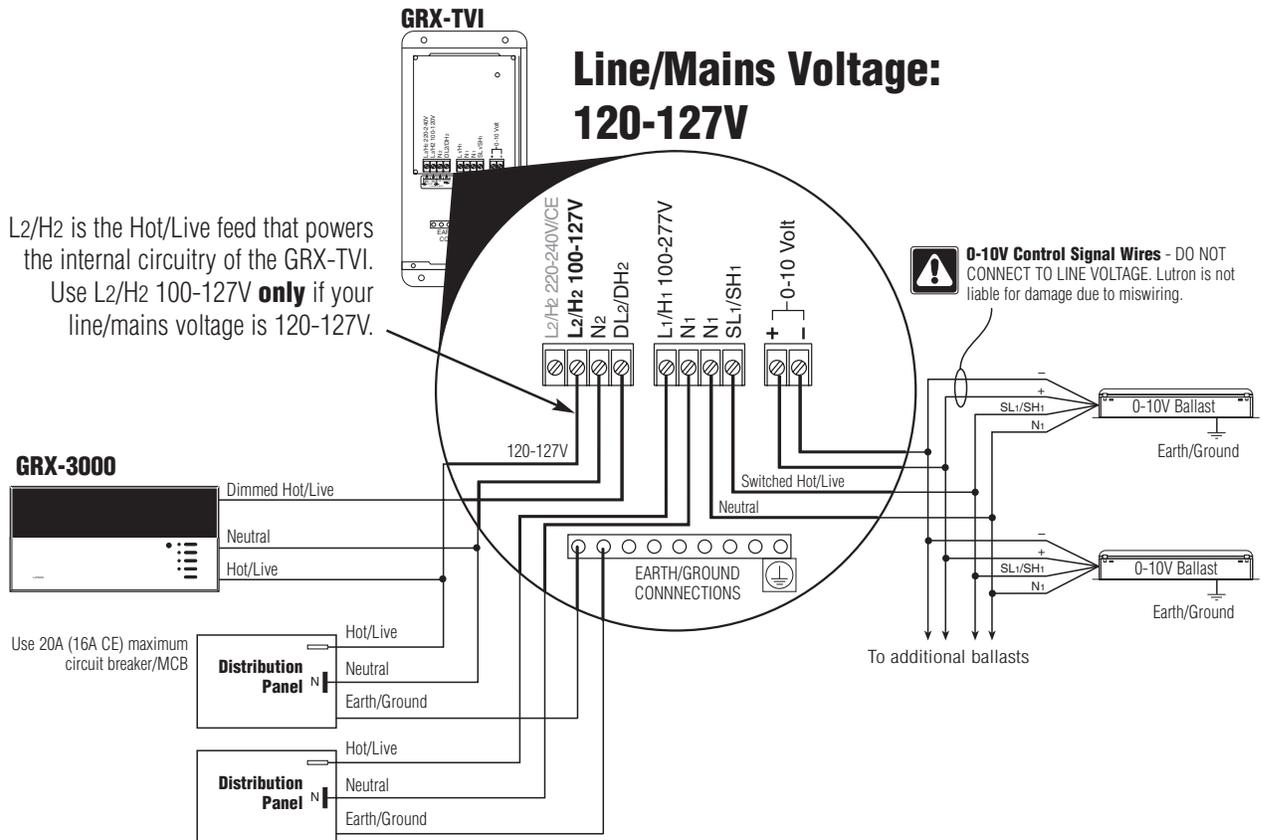
Use **only one** input according to Input Voltage:

L2/H2 240V	Power input for GRX-TVI control (line/mains voltage <b>must be</b> 220-240V)
L2/H2 127V	Power input for GRX-TVI control (line/mains voltage <b>must be</b> 100-127V)
N2	Neutral for GRX-TVI control
DL2/DH	GRAFIK Eye 3000 Series Control Unit Lighting Zone connection (Phase Control Input to GRX-TVI)
L1/H1	Power input for lighting load
N1	Neutral for lighting load (2 terminals provided and internally tied together — one for input neutral and one for load neutral)
SL1/SH1	Switched output to power lighting load
+ -	0-10V control signal wires ( <b>ballast must provide a 0-10V source only</b> )

### Wiring Diagram C: 100-127V GRX-TVI — 1 Distribution Panel



### Wiring Diagram D: 100-127V GRX-TVI — 2 Distribution Panels



## Operation

After wiring is complete, supply power to the GRX-TVI to check for proper operation.

- With the cover removed, an LED will provide visual feedback about the operation of the system.
- When power is first applied, the LED will turn on for 8 seconds to indicate start-up mode and then start to flash in one of two ways to indicate the status of the system:
  - 1. Standard Operation**
    - The LED will flash at a rate of twice per second to signify proper communication between the Control Unit and the Interface.
  - 2. Incorrect Operation - No Active Input**
    - The LED will repeatedly turn on for 1 second then off for 1 second to indicate that there is not an active phase control input to the GRX-TVI. Make sure that the phase control dimmer is ON and connected to the GRX-TVI at the terminal block marked DL2/DH2. Check that the corresponding zone for the DL2/DH2 terminal is ON and the light level is not set at the minimum output.
- When the LED indicates proper input of a phase control signal, then the output can be checked by looking at the load and checking operation from the Control Unit.
- For non-dimming ballasts, select non-dim load type on the GRAFIK Eye Control Unit and do not connect ballasts to 0-10V terminals.



Make sure that the Control Unit is set for **Fluorescent Load Type**. (Refer to *GRAFIK Eye 3000 Series Installer's Guide*.) If the load type is not set correctly, proper dimming will not occur.

## Troubleshooting

Symptom	Possible Cause	Solution
0-10V Ballast does not dim or control unit to the Interface.	Miswire	Verify that LED pulses twice per second. If not, check wiring from phase control unit to the Interface.
	Power is OFF	Make sure that the <i>GRAFIK Eye 3000 Series Control Unit</i> is ON.
	Miswire	Check for proper polarity of 0-10V signals at terminal blocks. Does it match what is at every ballast? A miswire at any ballast will cause all ballasts to go to the low end.
	Incorrect Control Setup	<i>GRAFIK Eye 3000 Series Control Unit</i> is not configured for fluorescent load type.
Light does not switch on	Miswire	Check that the SL <sub>1</sub> /SH <sub>1</sub> connection goes to the ballasts.
	Miswire	Check that the DL <sub>2</sub> /DH <sub>2</sub> connection is actually wired to a phase control input.
Light does not switch off	Miswire	Load is not connected to SH (SL) terminal.
	Miswire	Check that the DL <sub>2</sub> /DH <sub>2</sub> connection is actually wired to a phase control input.
LED is not illuminated	No Power Input	Check that power is applied to the Interface.

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### 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.

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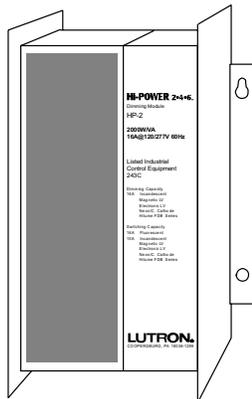
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Lutron Electronics Co., Inc.  
Made and printed in U.S.A. 8/03  
P/N 032-119 Rev. B

# Hi-POWER 2•4•6™

Installation Instructions  
Please Leave for Occupant

HP-2, HP-4, & HP-6  
Dimming Module  
120/277VAC, 60Hz



## Description

The Hi-POWER 2•4•6 Dimming Module provides the capability to control a large zone of lighting from either a Lutron incandescent wallbox dimmer or from Class 2 controls. Multiple modules can be used together in a system to control a total load of up to 30,000W/VA. The Hi-POWER 2•4•6 Dimming Module can dim 120V incandescent, magnetic low-voltage, electronic low-voltage, neon/cold-cathode loads, 277V magnetic low-voltage, and Lutron's Hi-lume® FDB-series and Eco-10™, 120V and 277V fluorescent dimming ballasts. It can also switch these loads (except Hi-lume FDB and Eco-10 ballasts) as well as metal halide and non-capacitive fluorescent loads.

## Important Notes

### Please Read Before Installation

1. Install in accordance with all local and national electrical codes.
2. **CAUTION:** Only a qualified electrician should install this system. Turn power OFF at circuit breakers or remove fuses before wiring. Do not wire with power on. Improper wiring can result in personal injury or damage to equipment. Damage to product caused by wiring with power on voids warranty.
3. Do not remove factory-installed bypass jumpers on load circuit terminals until load circuits are tested (see Start-up Procedure on page 5).
4. The Hi-POWER dimming modules are designed to operate in ambient temperatures between 0°C-40°C (32°F-104°F).
5. To reduce the risk of overheating and possible damage to other equipment, the module must be mounted as shown on page 2. Failure to provide adequate space for cooling may result in overheating and void the warranty.

6. Module hums slightly during operation and the internal relay clicks when the circuit is turned on and off. Choose an installation location where these sounds are acceptable.
7. Operation of dimmed low-voltage circuit with all lamps inoperative or removed may result in current flow in excess of normal levels. To avoid transformer overheating and possible failure, Lutron strongly recommends the following:
  - a. Do not operate dimmed low-voltage circuits without lamps in place.
  - b. Replace burned-out lamps immediately.
  - c. Use transformers incorporating thermal protection or fused transformer primary windings to prevent transformer failure due to overcurrent.
8. Dimmed electronic low-voltage transformers may produce an audible noise when dimmed. For more information, call the toll-free **Lutron Hotline** at 1-800-523-9466.
9. See "Neon/Cold-Cathode Dimming" (pages 14-15) before attempting to dim neon/cold-cathode lamps.
10. For proper dimming performance fluorescent lamps must be operated at full intensity for 100 hours prior to dimming.

## Electrical Ratings

Module		HP-2	HP-4	HP-6
Inputs Required	Control Circuit 120VAC, 60Hz	1 (20VA)	1 (20VA)	1 (20VA)
	Load Circuit 120/277 <sup>1,4</sup> VAC, 60Hz	1	2	3
Outputs Available	Dimmed Hot	1	2	3
	Switched Hot	1	2	3
Minimum load per Module	Hi-lume FDB or Eco-10 ballasts	1	2	3
	All other loads	50W/VA	100W/VA	150W/VA
Heat Dissipation	BTU/Hr Maximum	200	400	600

### Capacity of each Output <sup>2,3</sup>

Load Type	Dimmed	Switched <sup>4</sup>
Incandescent	16A (1920W)	10A
Magnetic Low-Voltage, Electronic Low-Voltage, or Neon/Cold-Cathode	16A (1920VA)	10A
Hi-lume FDB or Eco-10 Fluorescent	16A	—
Fluorescent (non-capacitive)	—	16A
Metal Halide	—	10A

<sup>1</sup> 277V Hi-lume FDB or Eco-10 fluorescent, or 277V magnetic low-voltage only.

<sup>2</sup> Any load circuit can be connected to any phase.

<sup>3</sup> Each load circuit may be connected to a different load type; however, load types cannot be mixed on the same circuit.

<sup>4</sup> Switched loads may be either 120 or 277VAC.

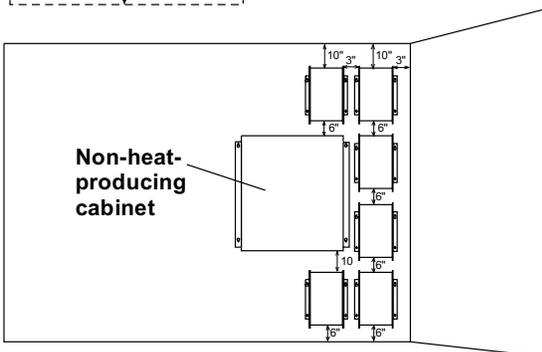
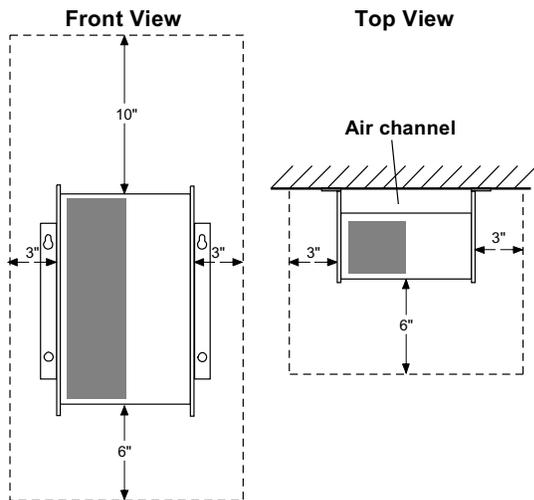
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## Mounting and Dimensions

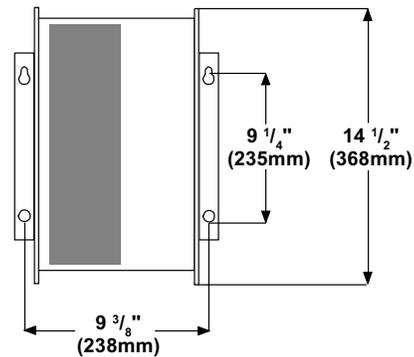
- 1. Choose an appropriate location.**  
Select a convenient location such as an electrical closet or basement. Make sure location is at least 6' from sensitive equipment (and its wiring). Also, make sure to locate module where its sounds (relays clicking and slight humming) are acceptable. Ensure ambient temperatures are between 0°C-40°C (32°F-104°F). Module must be mounted away from steam pipes, direct sunlight, or other heat sources.
- 2. Plan placement of modules (see below).**  
Modules must be mounted vertically. Make sure nothing blocks the air channel between the back of the module and the wall.
  - Leave 6" (152mm) of space above and below modules and 3" (76mm) of space on either side of modules.
  - Leave 10" (204mm) between the top of the module and the ceiling, and 6" (152mm) between the bottom of the module and the floor.
  - Leave 6" (152mm) of clearance in front of each module.

### Airspace Required

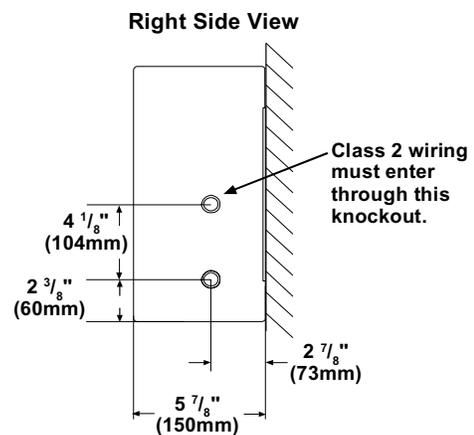
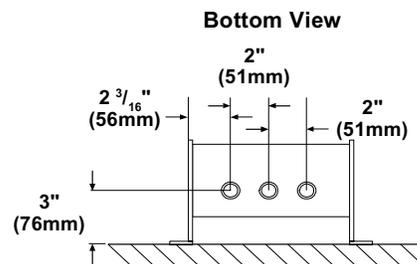


- 3. Mount modules (see below).**  
Using the mounting dimensions shown below, mark (while keeping the module vertical), then drill mounting holes. Securely fasten the module to the wall. Mounting holes are keyed to facilitate mounting.

### Mounting Dimensions



### Knockout Locations



## Wiring



**WARNING:** Turn power OFF to all circuits before installing any part of the Dimming System. Wiring with the power on can result in serious personal injury or damage to equipment.

### 1. Pull dedicated feeds.

For each circuit in the Hi-POWER module, pull a 20A dedicated feed: one circuit for the HP-2, two circuits for the HP-4, and three circuits for the HP-6 (see Typical System Wiring Diagram).

### 2. Provide control circuit power to first module.

The Hi-POWER module requires power to operate its circuitry. This control circuit can be wired from any of the dedicated feeds coming into the Hi-POWER module as long as they have an additional 20VA of capacity available for each Hi-Power module connected to the same control (refer to Power Feed Wiring Diagram on page 4 for terminal locations). Do not wire control circuit power to any additional modules.

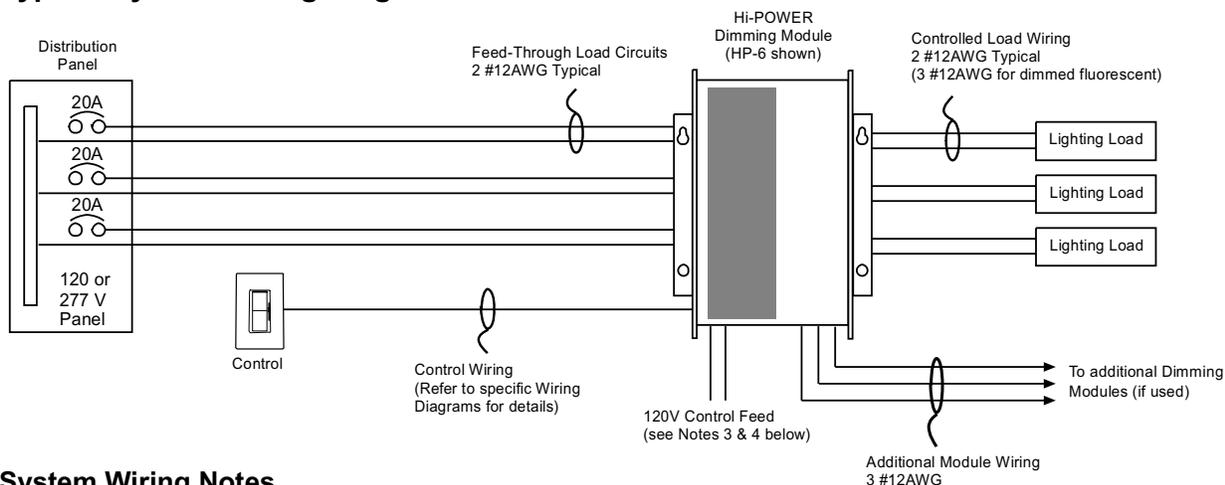


**IMPORTANT:** If more than one module is used, only connect power to the control circuit of the first module.

### 3. Wire between Hi-POWER modules.

If more than one Dimming Module is being operated from the same control, run 3 #12 wires from the Additional Module Terminals on the first module to the Additional Module Terminals on the next. No connection is made to the Control Circuit Terminals on the additional modules. Wire additional modules until all are connected in a line. See Power Feed Wiring Diagram on page 4 for location of the Additional Module Terminals. Wiring is 1 to 1, 2 to 2, 3 to 3. Do not cross wires.

## Typical System Wiring Diagram



## System Wiring Notes

1. Load circuit input feeds can be connected to any phase.
2. Power and control wires must be run in separate raceways. Run individual neutrals for each input and load circuit.
3. Module requires a 120V control circuit input feed. It can be provided from any source, such as one of the load circuits, with 20VA of spare capacity for each Hi-POWER module in the system (For GRAFIK Eye 3000, the control circuit feed must be on same phase as the power for the GRAFIK Eye Control Unit.) If necessary, a 277:120V, 100VA transformer may be used to obtain proper input. (Examples are Acme #TA-2-81303, Hammond Mfg. #MH100GP, or equivalents.)
4. In systems with more than one dimming module per lighting zone, connect feed to control circuit of first module only. **Control circuits must be 120V only.**
5. The diagram represents a three load circuit model (HP-6). For one circuit (HP-2) or two circuit (HP-4) applications, the number of circuits controlled differs, but the wiring will be the same. A different load type may be used on each circuit if desired. However, do not mix load types on the same load circuit.
6. 15A circuit breakers may be used in place of 20A circuit breakers. Do not exceed 1440W per 15A circuit.

#### 4. Wire to Controlled Loads.

Load wiring differs depending on the load type and whether the load is dimmed or switched (see below). Refer to Load Wiring Diagrams on page 7 for load wiring specifics.

Load Type	Load Wiring Diagram	
	Dimmed	Switched
Incandescent	1	3
Magnetic Low-Voltage	1	3
Electronic Low-Voltage	1	3
Neon/Cold-Cathode	1	3
Hi-lume FDB	2	—
Eco-10	2	—
Fluorescent (non-capacitive)	—	3
Metal Halide	—	3



**NOTE:** Electronic and magnetic low-voltage transformers may create an audible noise when connected to a dimmer.

#### 5. Wire to Controls.

Control wiring will vary depending on the type of control being used. Refer to the appropriate page for the necessary control wiring:

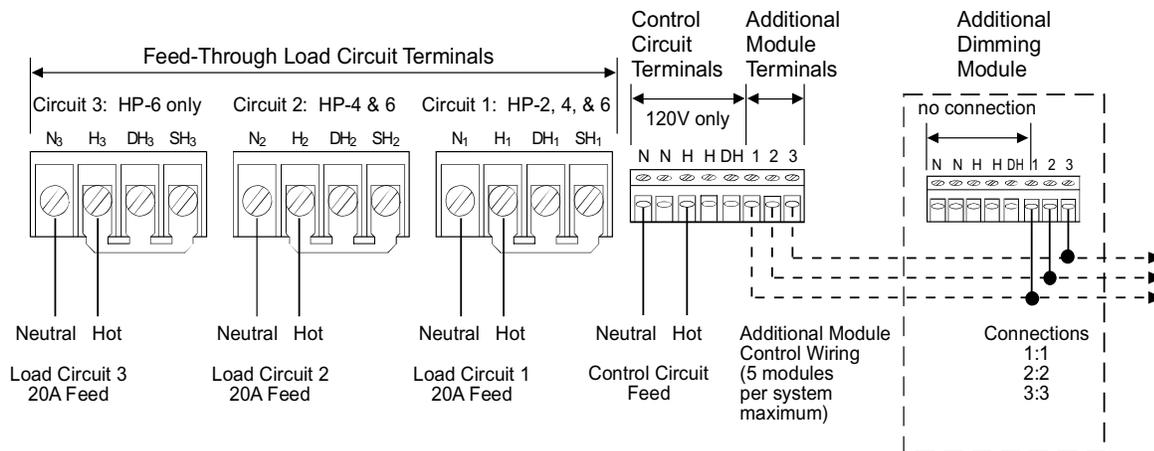
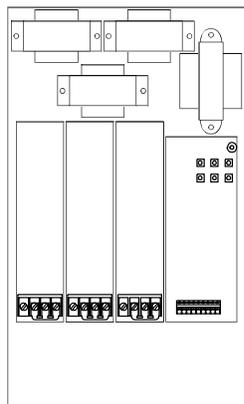
Control Type	Control Wiring Diagram	Page
Single-pole dimmer*	1	8
Mechanical 3-way dimmer*	2-4	8
Maestro	5-7	9
Vareo	8-10	10
Nova T* Infrared	11	11
Nova T* Omnislide	12	11
GRAFIK Eye 3000	13	11
Class 2 Control (raise/lower)	14	12-13

\* Rotary, Glyder, Ariadni, Skylark, Diva, Luméa, Nova T\* Slide-to-Off, Nova T\* Preset, Nova Slide-to-Off, Nova Preset, Centurion, and Athena.

#### 6. Start-up system.

Go to Start-up Procedure on page 5 to put the dimming system in operation.

### Power Feed Wiring Diagram



## Start-up Procedure

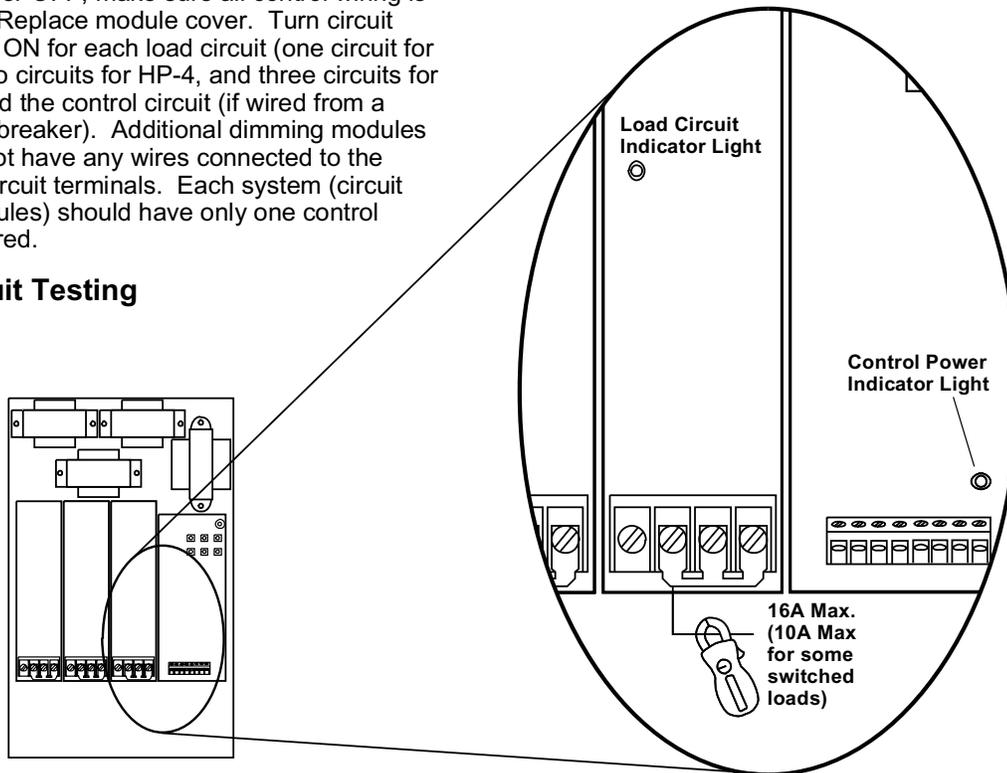
### Check Load Circuits.

1. Make sure the factory-installed bypass jumper(s) are still in place between the H (Hot), SH (Switched Hot), and DH (Dimmed Hot) terminals of each load circuit. Replace module cover. Turn circuit breakers on for each load circuit (1 circuit for HP-2, 2 circuits for HP-4, and 3 circuits for HP-6). Each Load Circuit Indicator Light inside the dimming module should light to full intensity.
2. Check the input current to the Hot terminal of each load circuit with a "clamp-on" type current probe. The current should be no more than 16A for dimmed loads or 10A for switched loads (16A for non-capacitive fluorescent). See diagram.
3. Turn loads ON for at least 10 minutes. If any circuit breaker trips, turn power OFF, then locate and correct miswire or overload.
4. Repeat the above steps until the circuit breaker does not trip. If the Hi-POWER module is controlled by a line voltage dimmer, proceed to Check Control Circuit section (next column). If the module is controlled by Class 2 controls, proceed to "Remove Bypass Jumpers" (next column).

### Check Control Circuit (line-voltage dimmer only).

1. With power OFF, make sure all control wiring is correct. Replace module cover. Turn circuit breakers ON for each load circuit (one circuit for HP-2, two circuits for HP-4, and three circuits for HP-6) and the control circuit (if wired from a different breaker). Additional dimming modules should not have any wires connected to the control circuit terminals. Each system (circuit and modules) should have only one control circuit wired.

### Load Circuit Testing



2. Adjust slider/knob/rocker on control, then switch control on and off. The lighting should remain on full, but the control power indicator light should dim up and down and/or switch on or off as the control is adjusted. Make sure the Load Circuit Indicator Lights are not dimming or switching on or off with the control. If they are, control and load wiring are incorrect. Correct wiring errors and repeat Start-up Procedure.

### Remove Bypass Jumpers.

1. Turn power OFF. Make sure to remove power from all circuits providing power to the Hi-POWER dimming module.
2. Remove the load circuit bypass jumper(s) from all modules. Do not remove factory-installed jumper from Class 2 terminal block when using Lutron NTRCS-1, NRCS-1, and RCS-1 controls. See wiring diagram on pages 12-13 for details.
3. Turn power ON to all circuits. Test the control(s) to make sure they adjust the light level. The system should now function properly. If not, refer to the Troubleshooting section on page 16.
4. Proceed to Calibration on page 6.

## Calibration

### High-End and Low-End Trim Adjustment

The high-end and low-end light levels are adjustable to get the best dimming range for the particular application and load type.

- **For Lutron Hi-lume or ECO-10 fluorescent loads:** This unit is factory-calibrated and does not require low-end light adjustment. If lamps flicker or drop out at minimum dimming level there may be an installation error. Continued use of the system in this mode will cause premature lamp failure. If this is occurring, call the **Lutron Hotline** at 1-800-523-9466. For proper dimming performance fluorescent lamps must be operated at full intensity for 100 hours.
- **For incandescent, magnetic low-voltage, and electronic low-voltage loads:** Some adjustment will be necessary to achieve full-range dimming.
- **For neon/cold-cathode loads:** Depending on the installation, you may be able to achieve a lower dimming range. The low-end should be adjusted so that no flickering occurs or the transformer may fail prematurely.

### Control Adjustment: Line-voltage incandescent dimmer

**CAUTION:** For all adjustments, use the supplied non-conductive probe. Failure to do so can result in personal injury or damage to equipment. Do not use screwdriver or finger.

#### High-End Trim

1. Adjust the wall control to its full intensity position.
2. Using the non-conductive probe, push the small buttons labeled “RAISE” or “LOWER” (see diagram at right) to make the high-end light level brighter or dimmer.
3. Repeat for each load circuit as necessary.

#### Low-End Trim

1. Adjust the wall control to its minimum position.
2. Using the non-conductive probe, push the small buttons labeled “RAISE” or “LOWER” (see diagram at right) to make the low-end light level brighter or dimmer.
3. Repeat for each load circuit as necessary.

### Control Adjustment: Class 2 Raise/Lower

**CAUTION:** For all adjustments, use the supplied non-conductive probe. Failure to do so can result in personal injury or damage to equipment. Do not use screwdriver or finger.

### High-End Trim

1. Using the non-conductive probe, turn the Fade Rate Adjust (see figure below) fully counterclockwise.
2. Activate the raise function on the control for 10 seconds to bring the lights to their maximum intensity.
3. Using the non-conductive probe, push the small buttons labeled “RAISE” or “LOWER” (see figure below) to make the high end light level brighter or dimmer.
4. Repeat for each load circuit as necessary.

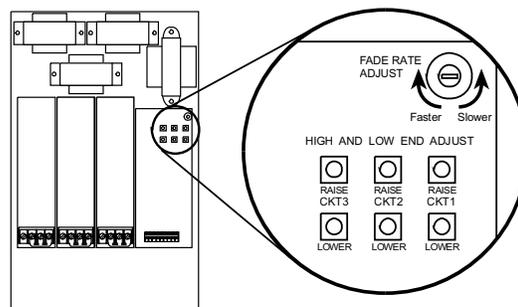
### Low-End Trim

1. Using the non-conductive probe, turn the Fade Rate Adjust (see figure below) fully counterclockwise.
2. Activate the lower function on the control for 10 seconds to bring the lights to their minimum intensity.
3. Using the non-conductive probe, push the small buttons labeled “RAISE” or “LOWER” to make the low-end light level brighter or dimmer.
4. Repeat for each load circuit as necessary.

### Fade Rate Adjustment (Class 2 controls only)

The fade rate is the time it takes for the lights to go from the lowest to highest intensity (or vice-versa) when activating a Class 2 wired raise/lower control. If you are using Class 2 wired NTRCS-1, NRCS-1, or RCS-1 multi-location wall controls, the Hi-POWER module is factory preset to the fastest fade rate. The fade rate can be changed in increments of approximately 2, 4, 8, 15, 30, and 60 seconds. Use the non-conductive probe to turn the Fade Rate Adjust (see figure below) clockwise to fade faster or counterclockwise to fade slower.

### Intensity and Fade Adjust Location



## Load Wiring

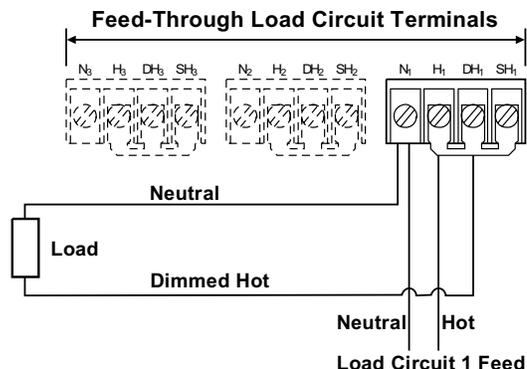
### Diagram 1

#### Dimmed loads:

**Incandescent, Magnetic Low-Voltage, Electronic Low-Voltage, Neon/Cold-Cathode**

#### Wiring notes:

1. For Neon/Cold-Cathode loads, refer to pages 14 and 15 for proper installation.
2. Terminal blocks are rated for 2 #12 AWG max.
3. Load wiring must be 120VAC.
4. The diagrams represent a single load circuit model (HP-2). For two circuit (HP-4) or three circuit (HP-6) applications, repeat the same wiring method for each circuit. A different load type may be used on each circuit if desired. However, do not mix load types on the same load circuit.



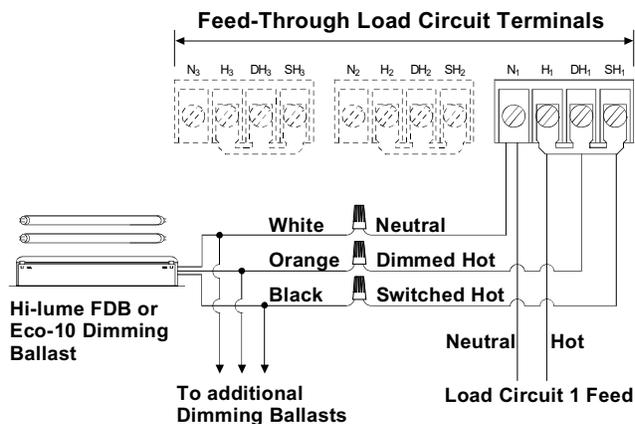
### Diagram 2

#### Dimmed Loads:

**Hi-lume FDB and Eco-10 Fluorescent Dimming Ballasts**

#### Wiring notes:

1. Use only Lutron Hi-lume or Eco-10 Fluorescent Dimming Ballasts.
2. Terminal blocks are rated for 2 #12 AWG max.
3. Load wiring may be 120VAC or 277VAC. Control circuit must be 120VAC.
4. The diagrams represent a single load circuit model (HP-2). For two circuit (HP-4) or three circuit (HP-6) applications, repeat the same wiring method for each circuit. A different load type may be used on each circuit if desired. However, do not mix load types on the same load circuit.



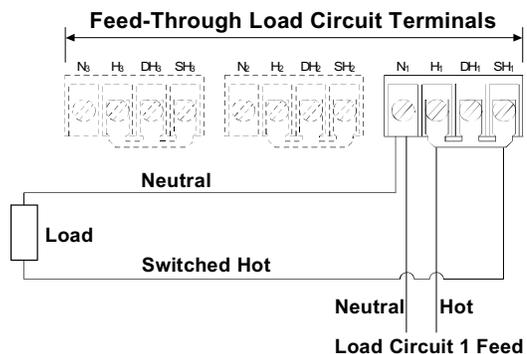
### Diagram 3

#### Switched loads:

**Incandescent, Magnetic Low-Voltage, Electronic Low-Voltage, Neon/Cold-Cathode, Non-Capacitive Fluorescent, and Metal Halide**

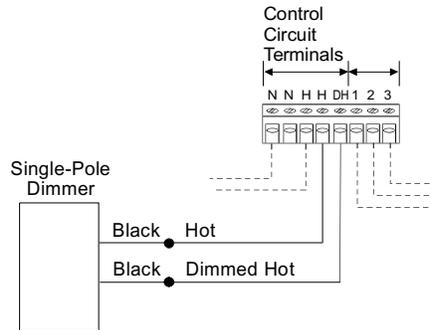
#### Wiring notes:

1. Terminal blocks are rated for 2 #12 AWG max.
2. Load wiring may be 120VAC or 277VAC. Control circuit must be 120VAC.
3. The diagram represented a single load circuit model (HP-2). For two circuit (HP-4) or three circuit (HP-6) applications, repeat the same wiring method for each circuit. A different load type may be used on each circuit if desired. However, do not mix load types on the same load circuit.

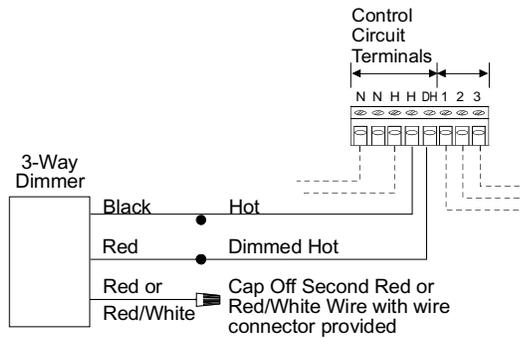


# Control Wiring

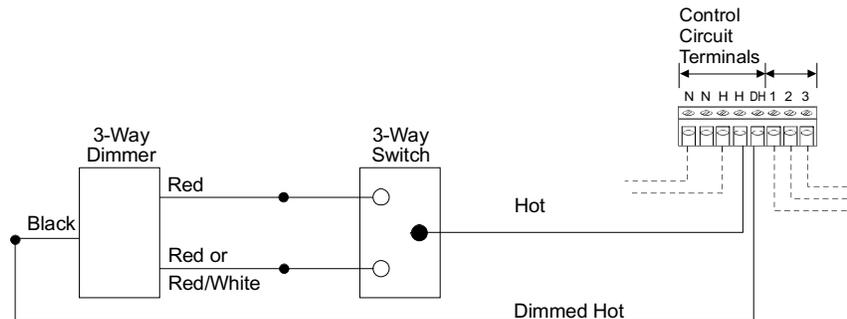
**Diagram 1: Single-pole Dimmer**



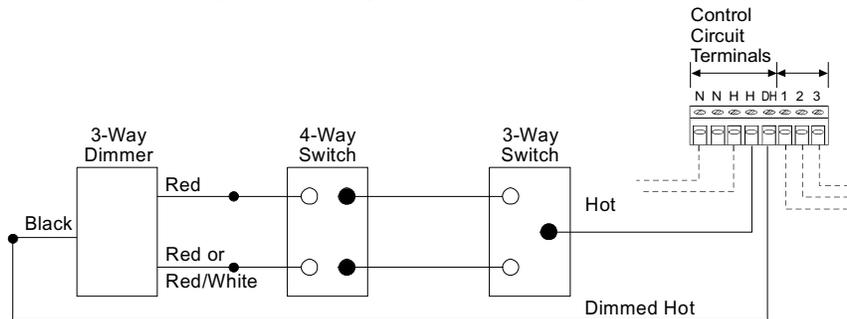
**Diagram 2: Mechanical 3-way Dimmer (Single location)**



**Diagram 3: Mechanical 3-way Dimmer (Two location)**



**Diagram 4: Mechanical 3-way Dimmer (Three location)**



## Control Wiring

Diagram 5: Maestro Incandescent Dimmer (Single location)

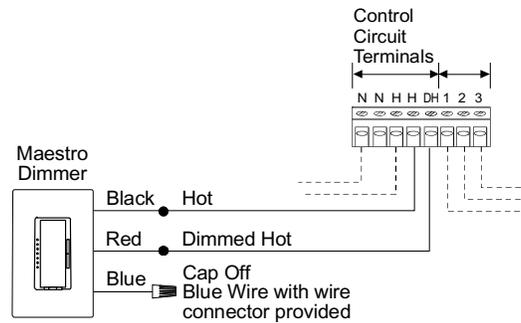


Diagram 6: Maestro Incandescent Dimmer (Two location)

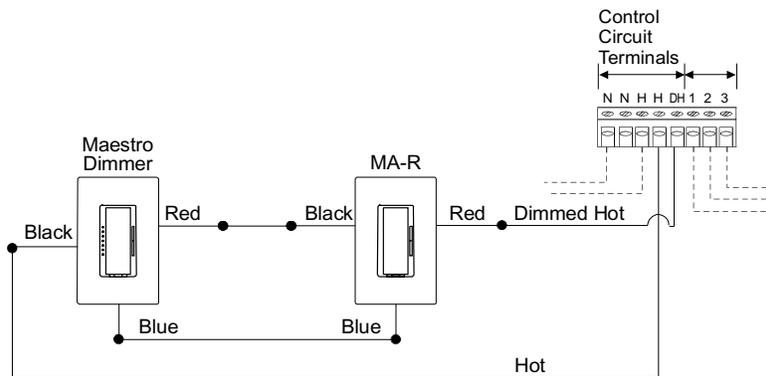
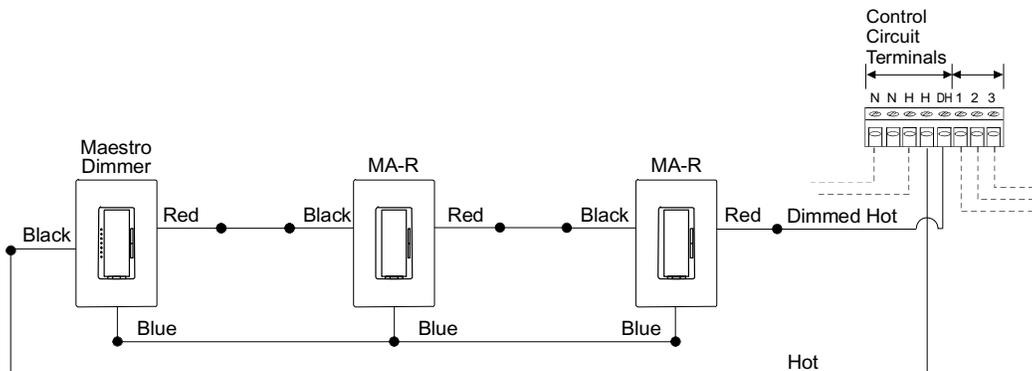
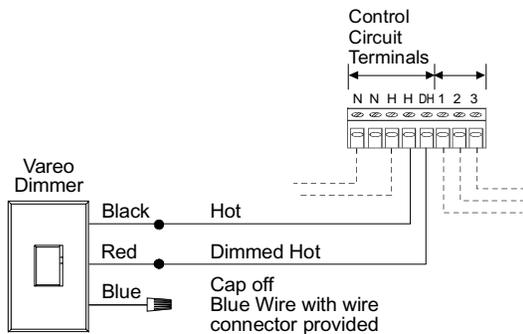


Diagram 7: Maestro Incandescent Dimmer (Three location)

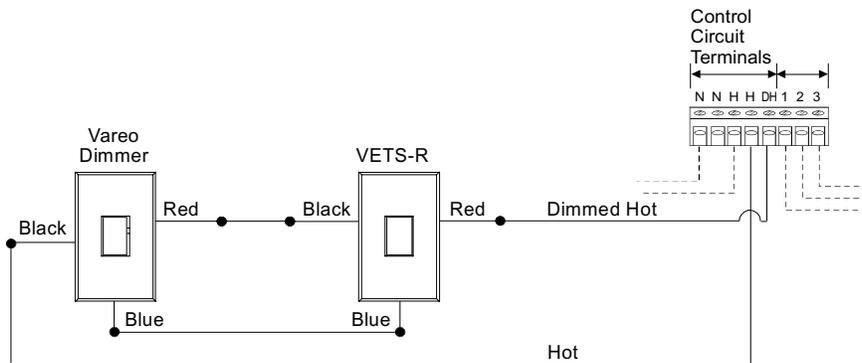


# Control Wiring

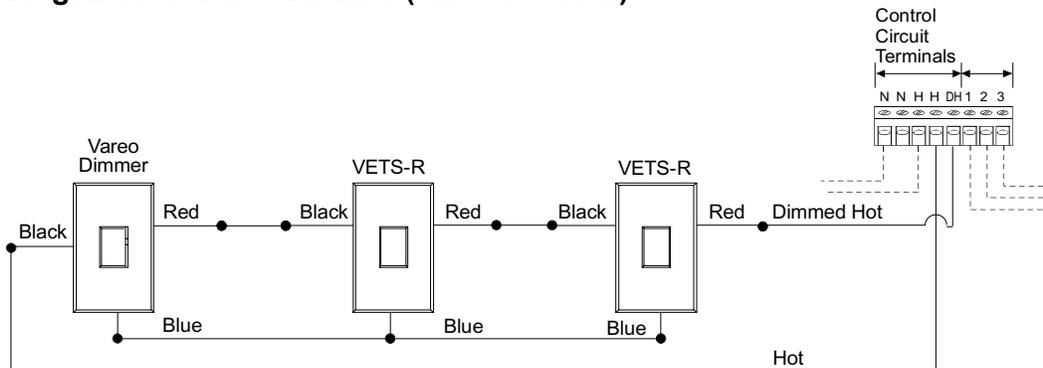
**Diagram 8: Vareo Dimmer (Single location)**



**Diagram 9: Vareo Dimmer (Two location)**



**Diagram 10: Vareo Dimmer (Three location)**



## Control Wiring

Diagram 11: Nova T\* Infrared Dimmer

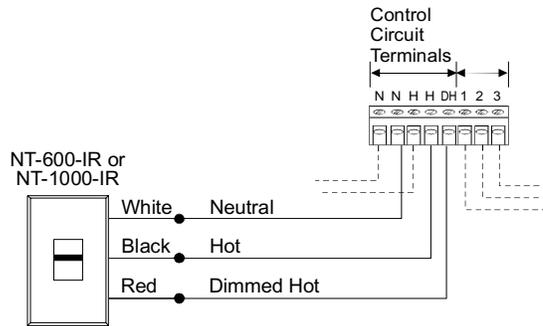


Diagram 12: Nova T\* Omnislide Dimmers (Two location)

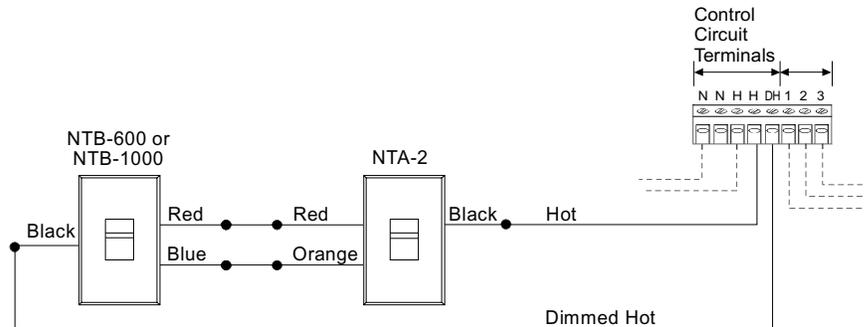
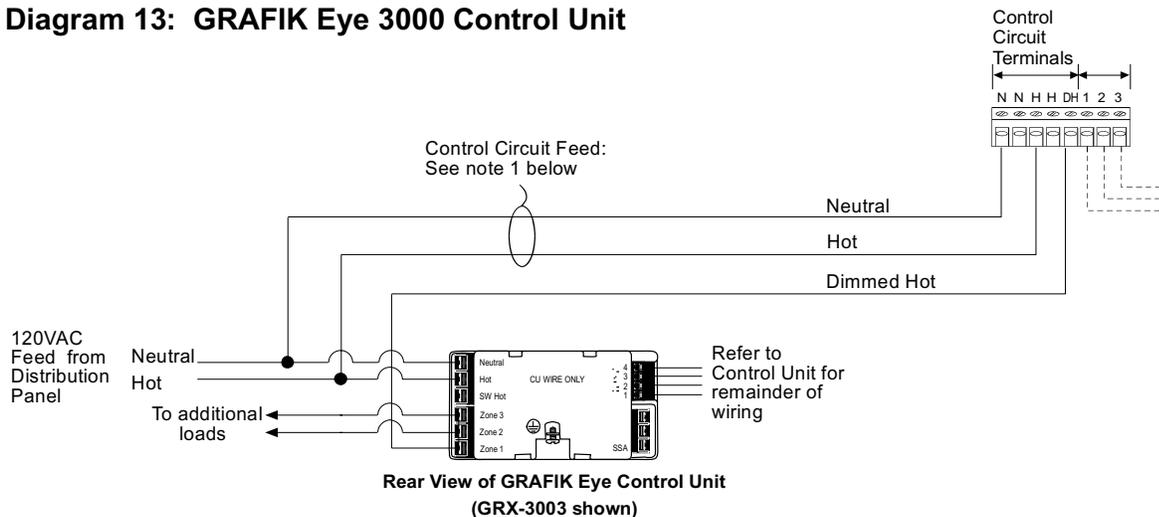


Diagram 13: GRAFIK Eye 3000 Control Unit



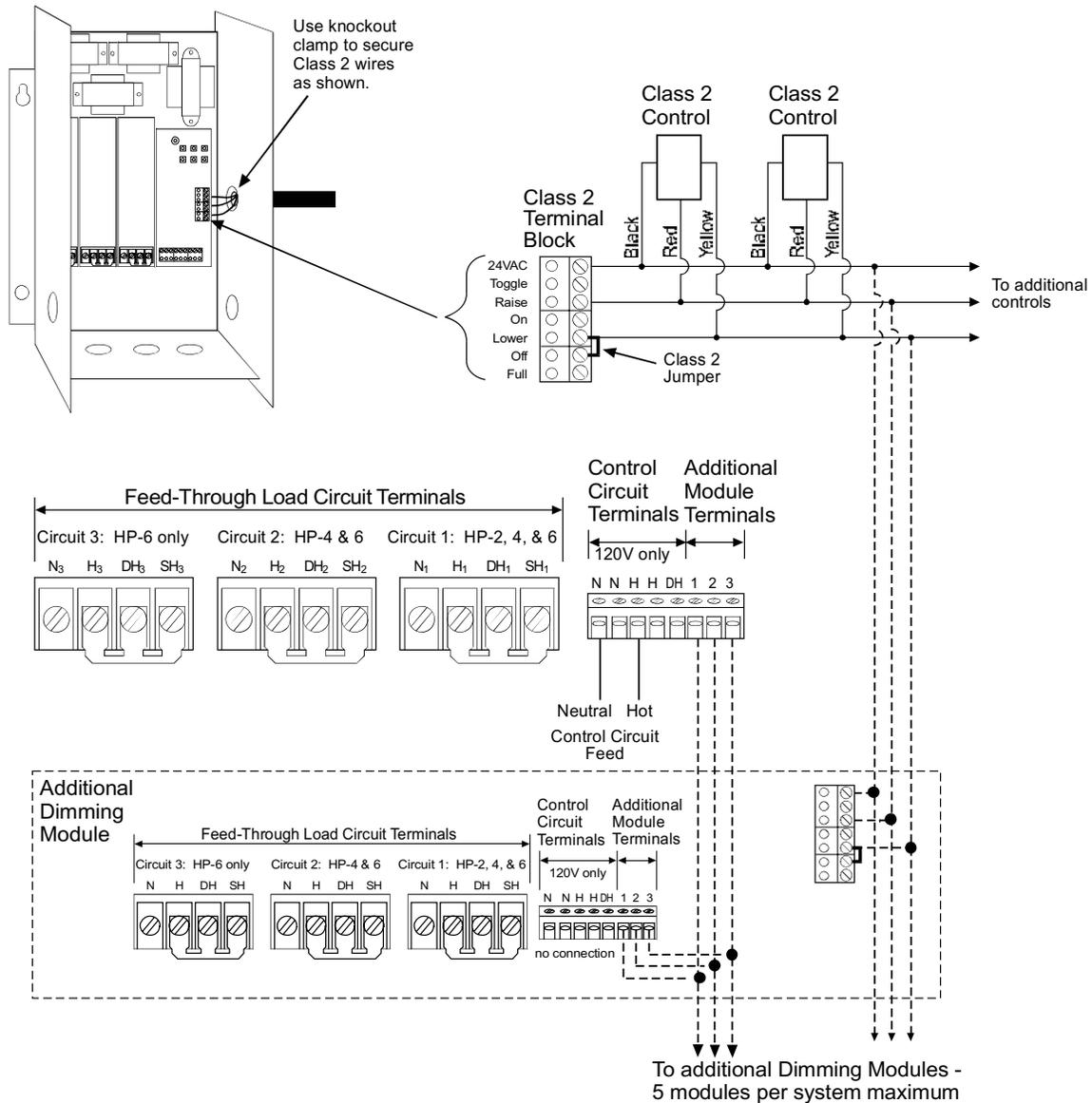
### GRAFIK Eye 3000 Wiring Notes:

1. Control Circuit feed is shown coming from the GRAFIK Eye Control Unit's feed. The load for each Hi-POWER module connected to the circuit is 20VA. If the circuit does not have sufficient capacity to support the load of the module(s), the Control Circuit feed can be supplied from any circuit with sufficient capacity as long as it is on the **same phase** as the GRAFIK Eye Control Unit.
2. Load type should be set as incandescent on the GRAFIK Eye Control Unit.
3. Dimmed Hot is shown as Zone 1 in the diagram, but can be provided from any zone on the Control Unit.
4. Refer to GRAFIK Eye Installation Sheet for remainder of Control Unit wiring.

## Control Wiring

### Diagram 14: Class 2 Controls: NTRCS-1, NRCS-1, RCS-1

These controls provide single-location or multi-location raise/lower dimming with "off" at low-end. For other Class 2 control options refer to page 13.



#### Class 2 Wiring Notes:

1. Class 2 terminal block is removable. It is packaged loose with the dimming module.
2. Position terminal block so wires exit as shown through the knockout indicated. Class 2 wiring must exit through this knockout.
3. To avoid contact between Class 2 wires and branch circuit wiring below, maintain 1-1/2" or less of Class 2 wiring within the enclosure. Do not leave any extra wire within the enclosure. Secure wiring using a knockout clamp.
4. **DO NOT** remove Class 2 factory bypass jumper between the Lower and Off terminals when using NTRCS-1, NRCS-1, or RCS-1 controls.

## Class 2 Control Options

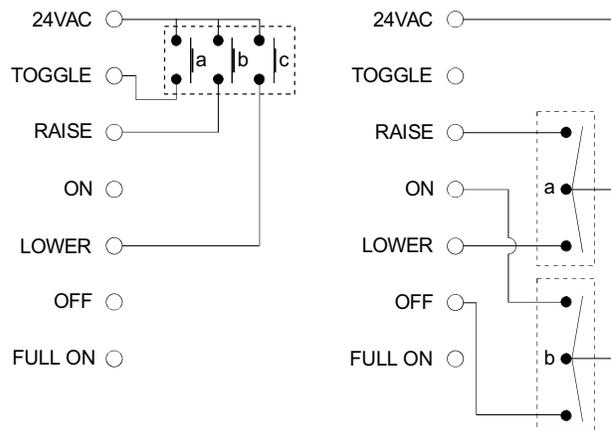
### Definitions of Control Options

<b>RAISE</b>	Increases the light level while the switch is activated.
<b>LOWER</b>	Decreases light level while the switch is activated. Does not turn lights off.
<b>LOWER/OFF</b>	Decreases light level while the switch is activated. Turns lights off after the low-end is reached.
<b>ON</b>	Fades lights on to preset level.
<b>OFF</b>	Fades lights off.
<b>TOGGLE</b>	Fades lights on to preset level if they are off, fades lights off if they are on.
<b>FULL ON</b>	Turns lights on instantly to full when the switch is activated. No other control options are available while this switch is activated. Must be a maintained switch closure.
<b>FADE RATE</b>	Rate at which the light level changes while you activate a control option (for example, the rate at which the light level changes as you hold the RAISE button and the rate at which the lights fade on or off when you press the on or off). For all of the above options except "full on", the FADE RATE is adjustable inside the dimming module. See page 6 for location and adjustment instructions.

### How to Access Control Options:

The desired Control Option is accessed with a 24VAC switch closure. Switch closures must be rated for switching 5mA at 24VAC RMS. See the chart below for the specific terminations of the switch closure on the Class 2 terminal block and type of switch closure permissible. See page 12 for the Class 2 terminal block location and terminal designations.

### Typical Class 2 Control Wiring Examples:



**Example 1:** Three SPST momentary pushbuttons. Switch "a" controls the TOGGLE on/off function. Switch "b" controls the RAISE function. Switch "c" controls the LOWER function.

**Example 2:** Two momentary, center off SPDT switches. Switch "a" performs the RAISE and LOWER functions. Switch "b" performs the ON/OFF functions.

Control Option	Switch Closure Between:	Switch Closure Type
RAISE	RAISE and 24VAC terminals	Either momentary or maintained
LOWER	LOWER and 24VAC terminals Remove factory installed jumper between LOWER & OFF terminals	Either momentary or maintained
LOWER/OFF	LOWER and 24VAC terminals DO NOT remove factory installed jumper between LOWER & OFF terminals	Either momentary or maintained
ON	24VAC and ON	Either momentary or maintained
OFF	24VAC and OFF	Either momentary or maintained
TOGGLE	24VAC and TOGGLE	Must be momentary
FULL ON	24VAC and FULL ON	Must be maintained

## 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 Derated 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 be more successful than 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 in the Derated Luminous Tube Length Chart for Dimming Applications. Other combinations will flicker and perform poorly. Note that there are few successful combinations for red neon tubes smaller than 11 mm.

### Transformers

1. Normal power factor transformers must be used; electronic transformers cannot be dimmed.
2. When choosing transformer secondary currents, 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. Do not use standard luminous tube length charts to size transformers in dimming applications. 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, call 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. High voltage (GTO-15) cable connecting a transformer output terminal to a cold-cathode tube must not be longer than twenty feet.
2. All GTO-15 cables should be spaced a minimum of four inches from any other GTO-15 cable.
3. It is recommended that only one GTO-15 cable be run per conduit.
4. Optimal dimming performance is achieved when GTO-15 cable is enclosed in plastic conduit or run without conduit. If codes require metal conduit, aluminum is preferred and lengths must be kept to less than six feet per transformer.
5. Braided or shielded GTO-15 cable must not be used for dimming applications.

## Luminous Tube Length Chart for Neon/Cold-cathode Dimming Applications

Transformer Ratings			Approximate number of feet of tubing																					
Secondary Voltage (V)	Secondary Short Circuit Current (mA)	Input Volt-Amperes with Secondary Short Circuit (VA)	Neon Fill (clear or fluorescent red)									Argon /Mercury Fill (colors other than neon red)												
			Tube Size (millimeters)									Tube Size (millimeters)												
			25	22	20	18	15	14	13	12	11	10	9	25	22	20	18	15	14	13	12	11	10	9
15000	60	900	77	64	58	54	45	X	X	X	X	X	X	96	80	72	64	58	51	48	44	38	35	X
	30	450	77	64	58	54	45	X	X	X	X	X	X	96	80	72	64	58	51	48	44	38	35	X
12000	20	270					X	X	X	X	X	X	X					X	X	X	X	X	X	X
	60	720	59	50	46	41	34	32	29	26	X	X	X	76	63	56	50	44	40	37	35	30	28	X
	30	360	59	50	46	41	34	32	29	26	X	X	X	76	63	56	50	44	40	37	35	30	28	X
9000	20	225					X	X	X	X	X	X	X					X	X	X	X	X	X	X
	120	1080	58	49	41	35	28	25	25	23	20	17	X	74	62	50	42	37	33	30	28	26	22	X
	60	540	50	43	36	30	25	23	22	20	18	16	X	64	54	44	36	32	29	26	26	22	20	X
7500	30	270	50	43	36	30	25	23	22	20	X	X	X	64	54	44	36	32	29	26	26	22	20	X
	20	180					21	20	18	16	X	X	X					27	25	23	22	18	16	X
	120	900	44	35	29	24	22	20	20	17	16	14	X	56	44	36	31	28	26	25	22	20	18	X
6000	60	450	38	31	25	21	20	18	16	16	14	13	X	49	38	31	28	25	22	22	20	18	16	X
	30	225	38	31	25	21	20	18	16	16	X	X	X	49	38	31	28	25	22	22	20	18	16	X
	20	150					16	16	15	14	X	X	X					22	20	18	17	15	14	X
5000	120	720	35	29	24	20	18	16	16	14	13	11	X	44	37	30	26	22	21	20	18	16	14	X
	60	360	30	25	21	17	16	14	14	12	11	10	X	38	32	26	22	19	18	17	15	14	13	X
	30	180	30	25	21	17	16	14	14	12	X	X	X	38	32	26	22	19	18	17	15	14	13	X
4000	20	130					14	13	12	10	X	X	X					18	16	14	14	12	10	X
	120	600	28	24	20	16	15	14	13	10	9	8	X	37	30	25	21	18	18	15	14	12	10	X
	60	300	25	21	17	14	13	12	11	9	8	8	X	32	26	22	18	16	15	13	13	10	10	X
3000	30	160	25	21	17	14	13	12	11	9	X	X	X	32	26	22	18	16	15	13	13	10	10	X
	20	100					11	10	10	8	X	X	X					14	13	12	11	9	8	X
	60	240	20	17	14	12	10	9	8	8	7	6	X	26	22	18	15	14	13	12	11	9	8	X
2000	30	140	20	17	14	12	10	9	8	8	X	X	X	26	22	18	15	14	13	12	11	9	8	X
	20	90					8	8	8	7	X	X	X					11	10	10	10	7	6	X
	60	180	13	10	9	8	8	7	7	6	5	5	X	18	14	13	11	10	9	8	7	6	6	X
2000	30	100	13	10	9	8	8	7	7	6	5	5	X	18	14	13	11	10	9	8	7	6	6	X
	20	75					6	6	5	5	4	3	X					8	7	6	6	5	4	X
	30	75					5	5	5	5	X	X	X					7	6	6	6	5	4	X
	20	50					5	4	4	4	X	X	X					6	6	6	5	4	3	X
Recommended gas pressure, mm/Hg			6	7	7.5	8	9	10	10	11	12	13	6	7	7.5	8	9	10	10	11	12	13		

**NOTES:**

- This table has been modified for dimming applications. When calculating total length of tube, add approximately 1 foot for each section of tubing (each pair of electrodes).
- **Do not** use this table for non-dimming installations.
- X denotes a combination which cannot be successfully dimmed.
- Tube length is shown in feet. To convert to meters: 1 foot = 0.305 meters.

**WARNING: Potentially hazardous high voltage can be present. Testing, handling, and servicing should be performed only by a qualified electrician.**

## Troubleshooting Guide

Symptom	Causes	Solution
Lights do not come on.	Load input feed power not present	Check load power indicator light(s) and verify that all input breakers are on and wiring is connected properly.
	Control input feed power is not present.	Check control power indicator light and verify that the control wiring is connected properly.
Lights cannot be dimmed.	Bypass jumpers are not removed.	Remove bypass jumpers on load circuit terminal blocks.
	Dimmed load is miswired to switched hot output load terminal.	Compare load wiring to wiring diagrams on page 7.
	Low-end trim is set too high.	Refer to page 6 and adjust low-end trim.
	Control dimmer is not operating properly.	Check that Control Power Indicator Light dims when control is adjusted; check wiring.
	Shorted triac - usually caused by a load short or overload.	Try to adjust high-end or low-end trim. If lights remain at full, triac is shorted. Contact Lutron for a Replacement Triac Kit . Verify proper load size and load wiring before replacing triac.
Portion of slider travel does not affect light level.	High- and/or low-end trim need adjustment.	Refer to page 6 and adjust high- and/or low-end trim settings.
Hi-lume FDB or Eco-10 lamps flicker at low-end.	Lamps not operated at full intensity before dimming.	Operate lamps at full intensity for 100 hours prior to dimming.
	Hi-lume FDB or ECO 10 ballasts improperly wired to Dimming Module.	Refer to wiring diagram on page 7 and correct wiring.
Neon lamps flicker at low-end.	Low-end trim is set too low.	Refer to page 6 and adjust low-end trim.
	There is a problem with the neon installation.	Refer to pages 14 and 15 for approved neon dimming installation specifications.
Switched load does not turn off.	Bypass jumper not removed.	Remove bypass jumpers on load circuit terminal blocks.
Lights do not dim low enough.	Low-end trim needs adjustment.	Refer to page 6 and adjust low-end trim.
Lights do not brighten to full or remain at low-end.	High-end trim is set too low.	Refer to page 6 and adjust high-end trim.
Lights on different dimming modules dim at different rates when using Class 2 raise/ lower controls.	Fade rate adjustment set differently on each module.	Refer to page 6 and adjust fade rates so that they are the same.
Circuit breaker trips on power up.	Additional dimming module slaves wired incorrectly.	Compare additional module wiring to diagrams on page 4.

### Worldwide Technical and Sales Assistance

If you need assistance, call the toll-free **Lutron Technical Assistance Hotline:**  
 (800) 523-9466 (U.S.A., Canada and the Caribbean)  
 Other countries call (610) 282-3800  
 FAX (610) 282-3090

### Warranty

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

This warranty is in lieu of all other warranties, express or implied, 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 wiring or installation.

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 the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty may last, so the above limitations and exclusions may not apply to you.

# LUTRON®

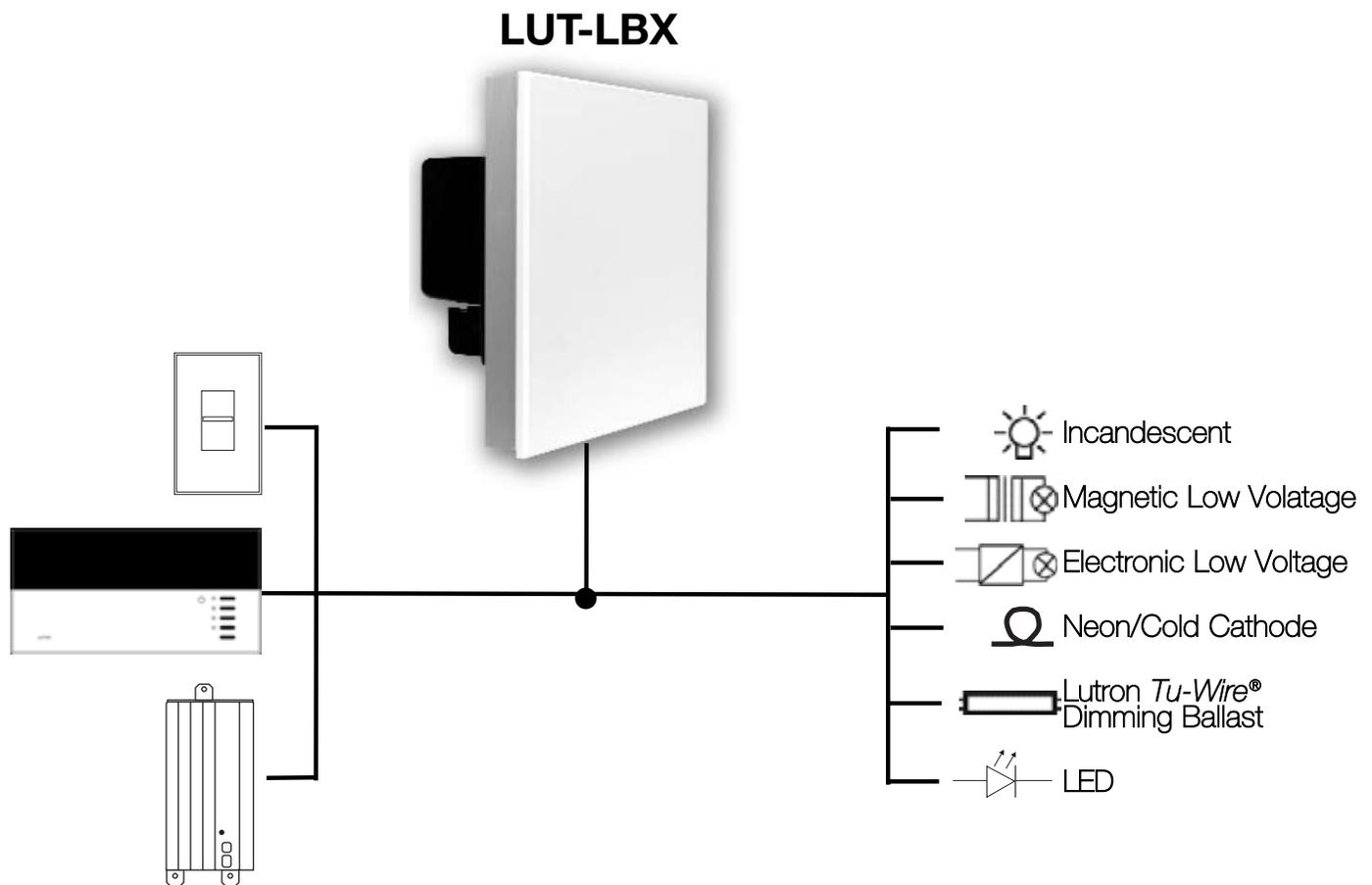
Lutron Electronics Co., Inc.  
 7200 Suter Road  
 Coopersburg, PA 18036-1299 USA  
 Made and Printed in U.S.A. 6/96 P/N 030-452 Rev. B

# LUT-LBX Synthetic Minimum Load

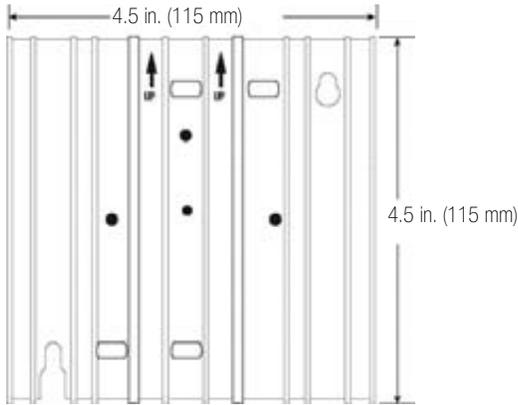
## For use with Reverse and Forward Phase Dimmers

*Installation Instructions*

**Please Read**



- This device provides capability for certain Lutron dimmers to control low-wattage loads from 0 watts up to the dimmer's minimum rating.
- It presents a simulated load to the dimmer to meet the minimum load requirements even when the actual load is smaller.

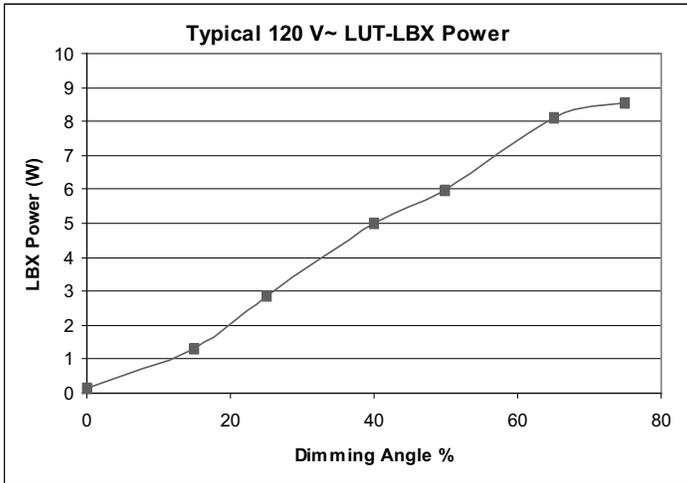


Interface shown with faceplate removed

This “load-side” equipment installs on the zone wiring in parallel with the lighting load. It provides an equivalent minimum load for Lutron dimmers when the actual load is too low for proper control unit operation.

Input:

- 120 V $\sim$  100 mA 50/60 Hz (LUT-LBX)
- Power dissipation less than 10 watts

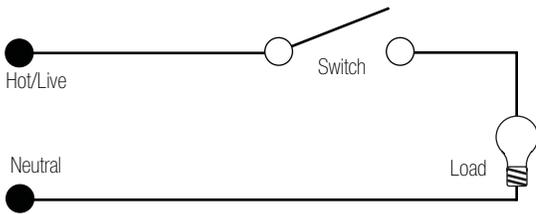


**Danger!** Always turn OFF the circuit breakers/MCB or remove the main fuses from the power line before doing any work. Failure to do so can result in serious personal injury. **Disconnect all power sources before servicing unit.**

1. This Interface must be installed by a qualified electrician in accordance with all applicable regulations.
2. Improper wiring can result in personal injury, damage to the Interface, or damage to other equipment.
3. One LUT-LBX per circuit below minimum load.
4. The LUT-LBX must be mounted with arrows on yoke facing upward to ensure adequate cooling.
5. **CAUTION!** Dimmed magnetic low-voltage transformers: To avoid excessively high current flow that can cause transformer overheating and failure, observe the following:
  - (a) Do not operate the MLV dimmers with all of the lamps removed or with any lamps inoperative.
  - (b) Replace any burned out lamps immediately.
  - (c) Use only transformers that incorporate thermal protection or fused primary windings.
6. The LUT-LBX does not change the approved load types of the dimmer. Use the required dimmer for the given load type.
7. For LED lighting dimming operation, refer to Application Note #138.

## Test load for short circuits

- Turn power Off.
- Connect standard switch between Hot/Live lead and the load wire to test circuit.
- Turn power On and check for short or open circuits.

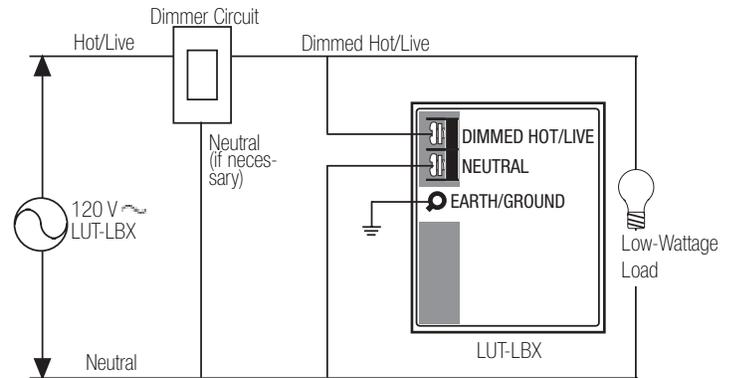


## Installation Instructions

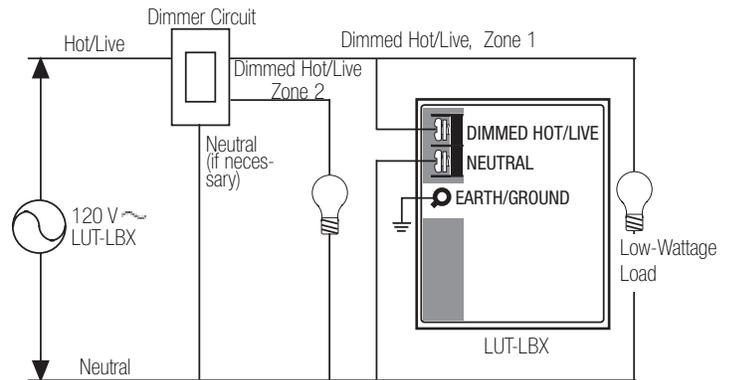
1. Turn power Off to the Control Unit.
2. Mount standard U.S. 2-gang wallbox (available from Lutron, P/N 241-496); 3 1/2 in. (89 mm) deep is strongly recommended, 2 3/4 in. (68 mm) minimum. Allow at least 4 1/2 in. (110 mm) clearance above/below Interfaces to ensure proper heat dissipation.
3. Strip 1/2 in. (12 mm) insulation from all wires in wallbox and wire as shown. All connections are made using #12 AWG to #16 AWG (2.5 - 1 mm<sup>2</sup>) wire. Power terminals can accept up to two #12 AWG (2.5 mm<sup>2</sup>) wires. The recommended installation torque is 9.0 in.●lbs. (1.0 N●m) for line voltage connections.



## Single-Zone Wiring



## Dual-Zone Wiring

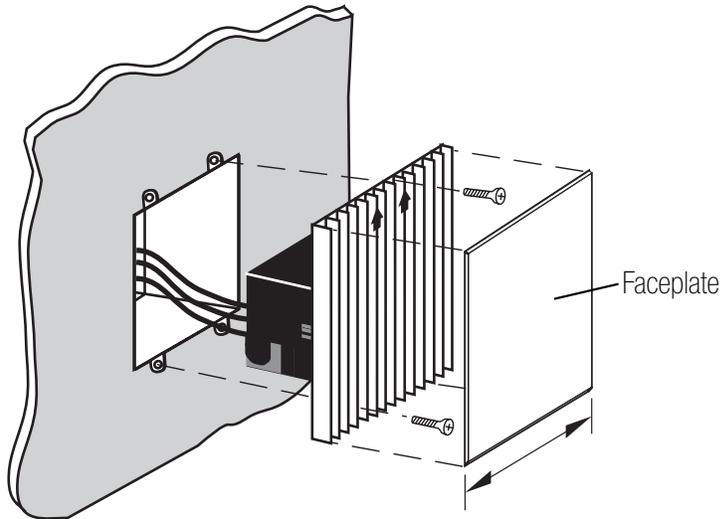


\* Wallbox may be recess mounted or surface mounted. If mounting Interface in a panel, please refer to Panel Mounting section for important information.

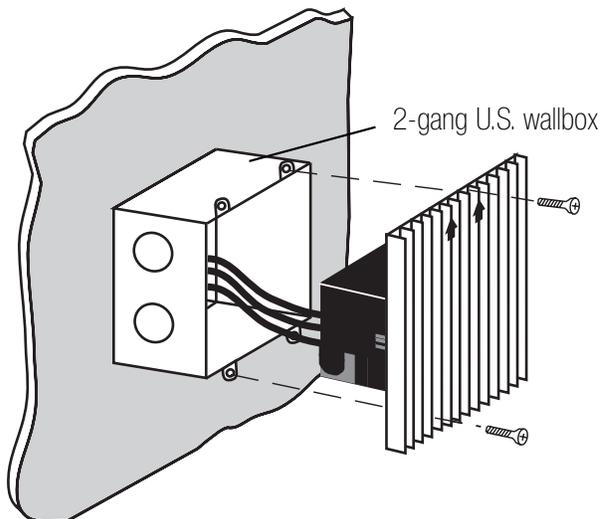
## Mounting: Interface must be mounted *vertically!*

1. Confirm all connections and mount the Interface using the screws provided.
2. Restore power to the system.

Recess Mount



Surface Mount

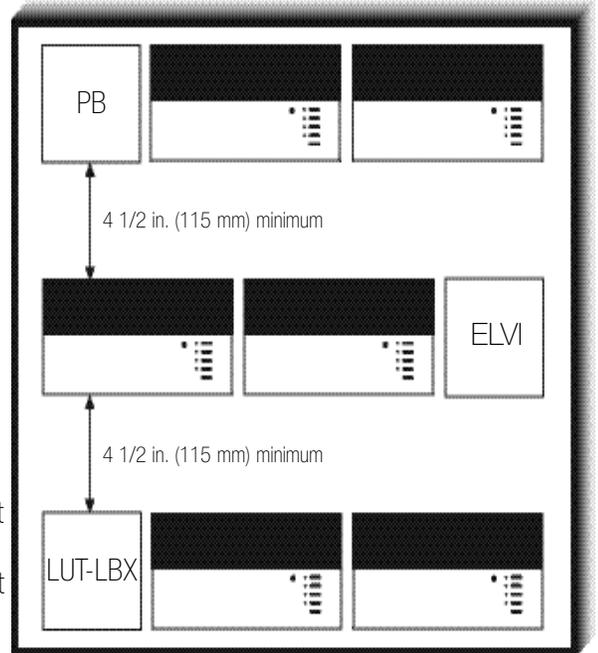


## Panel Mounting

- The enclosure must be in accordance with all local and national electrical codes.
- Lutron does not recommend using a door to enclose the front of a panel, since this restricts airflow to the *GRAFIK Eye* Control Units and Interfaces.
- If mounting multiple Control Units or Interfaces in an enclosure:
  1. Ambient temperature within an enclosure must remain between 32 - 104 °F (0 - 40 °C).
  2. If not mounting in a metal enclosure, all units **must** be mounted in a wallbox.
- To improve heat dissipation of the Interface, remove the faceplate from the unit.



*GRAFIK Eye* Control Units and Interface Units dissipate heat when operating. Obstructing these units can cause malfunction to both the Control Unit and the Interface if ambient temperature does not remain between 32 - 104 °F (0 - 40 °C).



## Troubleshooting Guide

<u>Symptom</u>	<u>Causes</u>	<u>Solution</u>
Lights do not come on.	Power is off	Restore power to the control unit.
	Miswire	Confirm wiring per wiring diagrams.
	Bulb(s)/lamp(s) burned out	Replace bulb(s)/lamp(s).
	Control Unit	Refer to troubleshooting section of Control Unit Installation Guide.
Lights turn on/off unexpectedly.	Load Type	Confirm that the load type being switched/dimmed is compatible with the control unit or dimmer being used. Line/Mains voltage phase control dimming only.
	Miswire	Confirm wiring per wiring diagrams.
	Control Unit	Refer to the troubleshooting section of Control Unit Installation Guide.
	Damaged/disconnected LUT-LBX	Lighting load does not meet minimum requirements of dimmer; check for damage or disconnection.

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TEL +852-2104-7733  
FAX +852-2104-7633

#### **Japan**

Lutron Asuka Co. Ltd.  
No. 16 Kowa Building, 4F, 1-9-20,  
Akasaka, Minato-ku, Tokyo 107-0052  
Japan  
TEL +81-3-5575-8411  
FAX +81-3-5575-8420

#### **Asia Technical Hotlines**

Northern China: 10-800-712-1536  
Southern China: 10-800-120-1536  
Hong Kong: 800-901-849  
Indonesia: 001.803.011.3994  
Japan: +81.3.5575.8411  
Macau: 0800.401  
Singapore: 800-120-4491  
Taiwan: 00-801-137-737  
Thailand: 001-800-120-665853  
Other Areas: +65-6220-4666

#### **Lutron Electronics Co., Inc. One Year Limited Warranty**

For a period of one year from the date of purchase, and subject to the exclusions and restrictions described below, Lutron warrants each new unit to be free from manufacturing defects. Lutron will, at its option, either repair the defective unit or issue a credit equal to the purchase price of the defective unit to the Customer against the purchase price of comparable replacement part purchased from Lutron. Replacements for the unit provided by Lutron or, at its sole discretion, an approved vendor may be new, used, repaired, reconditioned, and/or made by a different manufacturer.

If the unit is commissioned by Lutron or a Lutron approved third party as part of a Lutron commissioned lighting control system, the term of this warranty will be extended, and any credits against the cost of replacement parts will be prorated, in accordance with the warranty issued with the commissioned system, except that the term of the unit's warranty term will be measured from the date of its commissioning.

#### **EXCLUSIONS AND RESTRICTIONS**

This Warranty does not cover, and Lutron and its suppliers are not responsible for:

1. Damage, malfunction or inoperability diagnosed by Lutron or a Lutron approved third party as caused by normal wear and tear, abuse, misuse, incorrect installation, neglect, accident, interference or environmental factors, such as (a) use of incorrect line voltages, fuses or circuit breakers; (b) failure to install, maintain and operate the unit pursuant to the operating instructions provided by Lutron and the applicable provisions of the National Electrical Code and of the Safety Standards of Underwriter's Laboratories; (c) use of incompatible devices or accessories; (d) improper or insufficient ventilation; (e) unauthorized repairs or adjustments; (f) vandalism; or (g) an act of God, such as fire, lightning, flooding, tornado, earthquake, hurricane or other problems beyond Lutron's control.
  2. On-site labor costs to diagnose issues with, and to remove, repair, replace, adjust, reinstall and/or reprogram the unit or any of its components.
  3. Equipment and parts external to the unit, including those sold or supplied by Lutron (which may be covered by a separate warranty).
  4. The cost of repairing or replacing other property that is damaged when the unit does not work properly, even if the damage was caused by the unit.
- EXCEPT AS EXPRESSLY PROVIDED IN THIS WARRANTY, THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF ANY TYPE, INCLUDING ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. LUTRON DOES NOT WARRANT THAT THE UNIT WILL OPERATE WITHOUT INTERRUPTION OR BE ERROR FREE.

NO LUTRON AGENT, EMPLOYEE OR REPRESENTATIVE HAS ANY AUTHORITY TO BIND LUTRON TO ANY AFFIRMATION, REPRESENTATION OR WARRANTY CONCERNING THE UNIT. UNLESS AN AFFIRMATION, REPRESENTATION OR WARRANTY MADE BY AN AGENT, EMPLOYEE OR REPRESENTATIVE IS SPECIFICALLY INCLUDED HEREIN, OR IN STANDARD PRINTED MATERIALS PROVIDED BY LUTRON, IT DOES NOT FORM A PART OF THE BASIS OF ANY BARGAIN BETWEEN LUTRON AND CUSTOMER AND WILL NOT IN ANY WAY BE ENFORCEABLE BY CUSTOMER.

IN NO EVENT WILL LUTRON OR ANY OTHER PARTY BE LIABLE FOR EXEMPLARY, CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFITS, CONFIDENTIAL OR OTHER INFORMATION, OR PRIVACY; BUSINESS INTERRUPTION; PERSONAL INJURY; FAILURE TO MEET ANY DUTY, INCLUDING OF GOOD FAITH OR OF REASONABLE CARE; NEGLIGENCE, OR ANY OTHER PECUNIARY OR OTHER LOSS WHATSOEVER), NOR FOR ANY REPAIR WORK UNDERTAKEN WITHOUT LUTRON'S WRITTEN CONSENT ARISING OUT OF OR IN ANY WAY RELATED TO THE INSTALLATION, DEINSTALLATION, USE OF OR INABILITY TO USE THE UNIT OR OTHERWISE UNDER OR IN CONNECTION WITH ANY PROVISION OF THIS WARRANTY, OR ANY AGREEMENT INCORPORATING THIS WARRANTY, EVEN IN THE EVENT OF THE FAULT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY, BREACH OF CONTRACT OR BREACH OF WARRANTY OF LUTRON OR ANY SUPPLIER, AND EVEN IF LUTRON OR ANY OTHER PARTY WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

NOTWITHSTANDING ANY DAMAGES THAT CUSTOMER MIGHT INCUR FOR ANY REASON WHATSOEVER (INCLUDING, WITHOUT LIMITATION, ALL DIRECT DAMAGES AND ALL DAMAGES LISTED ABOVE), THE ENTIRE LIABILITY OF LUTRON AND OF ALL OTHER PARTIES UNDER THIS WARRANTY ON ANY CLAIM FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE MANUFACTURE, SALE, INSTALLATION, DELIVERY, USE, REPAIR, OR REPLACEMENT OF THE UNIT, OR ANY AGREEMENT INCORPORATING THIS WARRANTY, AND CUSTOMER'S SOLE REMEDY FOR THE FOREGOING, WILL BE LIMITED TO THE AMOUNT PAID TO LUTRON BY CUSTOMER FOR THE UNIT. THE FOREGOING LIMITATIONS, EXCLUSIONS AND DISCLAIMERS WILL APPLY TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW, EVEN IF ANY REMEDY FAILS ITS ESSENTIAL PURPOSE.

#### **TO MAKE A WARRANTY CLAIM**

To make a warranty claim, promptly notify Lutron within the warranty period described above by calling the Lutron Technical Support Center at (800) 523-9466. Lutron, in its sole discretion, will determine what action, if any, is required under this warranty. To better enable Lutron to address a warranty claim, have the unit's serial and model numbers available when making the call. If Lutron, in its sole discretion, determines that an on-site visit or other remedial action is necessary, Lutron may send a Lutron Services Co. representative or coordinate the dispatch of a representative from a Lutron approved vendor to Customer's site, and/or coordinate a warranty service call between Customer and a Lutron approved vendor.

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.

These products may be covered under one or more of the following U.S. patents: 4,797,599; 4,803,380; and corresponding foreign patents. Lutron, the sunburst logo, Tu-Wire, and Grafik Eye are registered trademarks of Lutron Electronics Co., Inc. © 2006 Lutron Electronics Co., Inc.



Lutron Electronics Co., Inc.  
Made and printed in U.S.A.  
P/N 030-852 Rev. A 01/07



# GRAFIK Eye® Power Interfaces

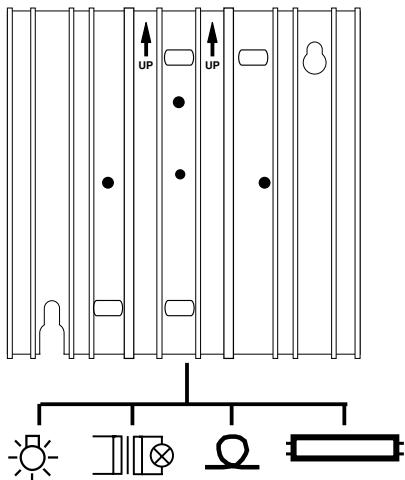
## Power Booster (PB)

## Electronic Low Voltage Interface (ELVI)

## Fluorescent Dimming Ballast Interface (FDBI)

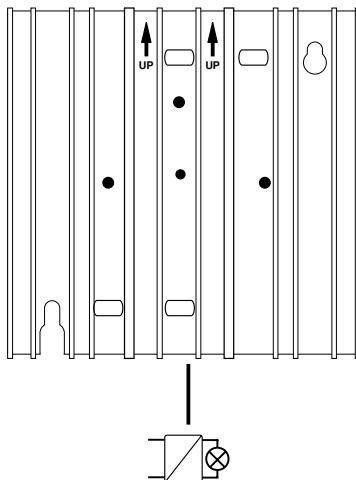
*Installation Instructions — Please Read*

### PB



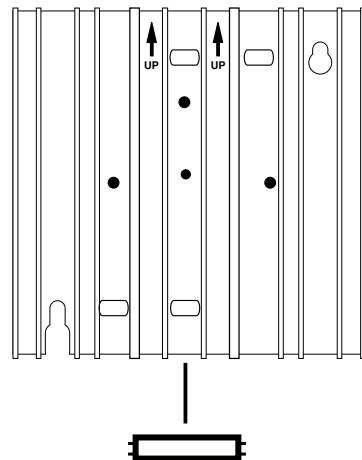
Incandescent  
Magnetic Low Voltage  
Neon/Cold Cathode  
Lutron *Tu-Wire*® Dimming Ballast

### ELVI

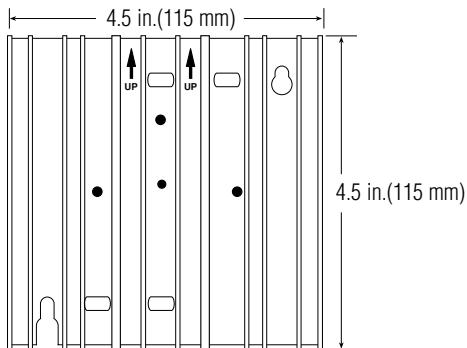


Electronic Low Voltage

### FDBI



Lutron *Hi-lume*® or *Eco-10*™  
Fluorescent Dimming Ballast



### Interface shown with faceplate removed

This “load-side” equipment installs on the zone wiring between the Control Unit\* and the lighting load.

The **PB** increases a Control Unit’s zone load capacity for Incandescent/Halogen (Tungsten), Magnetic Low Voltage, Neon/Cold Cathode, and Lutron *Tu-Wire* load types.

The **ELVI** enables a zone of the Control Unit to control Electronic Low-Voltage loads.

The **FDBI** enables a zone of the Control Unit to control fluorescent loads with Lutron *Hi-lume* or *Eco-10* phase-controlled dimming ballasts.

The maximum load capacity for each Interface is shown in the table that follows.

Unit	120V	220-240V (AU)	230V (CE)
PB	1920W/VA 16A	2400W/VA 10A	1840W/VA† 8A†
ELVI	1000W/VA 8.3A	1200W/VA 5A	1200W/VA 5.2A
FDBI	1920W/VA 16A	2400W/VA 10A	— —

† 1200W/VA and 5.2A for flush mount (as shown on pg. 6).



**Danger!** Always turn OFF the circuit breakers/MCB or remove the main fuses from the power line before doing any work. Failure to do so can result in serious personal injury. More than one MCB can power this device.

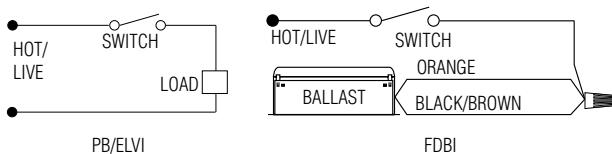
**Disconnect all power sources before servicing unit.**

1. This Interface must be installed by a qualified electrician in accordance with all applicable regulations.
2. Improper wiring can result in personal injury, damage to the Interface, or damage to other equipment.
3. Up to two **PB/ELVI/FDBIs** per zone.
4. The **PB/ELVI/FDBI** must be mounted with arrows facing upward to ensure adequate cooling.
5. **PB:** If using low-voltage incandescent fixtures, use only with iron core (magnetic) transformers.
6. **ELVI:** Use only with solid-state (electronic) low-voltage transformers that are manufacturer approved to be dimmed by reverse phase control.
7. **CAUTION!** Dimmed magnetic low-voltage transformers: To avoid excessively high current flow that can cause transformer overheating and failure, observe the following:
  - (a) Do not operate the Interface with all of the lamps removed or with any lamps inoperative.
  - (b) Replace any burned out lamps immediately.
  - (c) Use only transformers that incorporate thermal protection or fused primary windings.
8. **ELVI/FDBI:** These Interfaces contain a thermal device that turns Off the Interface if overloaded. The Interface will turn On when it cools.

\* See Page 5 for other Lutron products that can be used to control your PB/ELVI/FDBI.

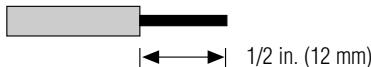
## Test load for short circuits

- Turn power Off.
- **PB/ELVI:** Connect standard switch between Hot/Live lead and the load wire to test circuit.
- **FDBI:** Connect standard switch between Hot/Live lead and the Dimmed Hot/Live and switched Hot/Live leads of the ballast.
- Turn power On and check for short or open circuits.



## Wiring Instructions

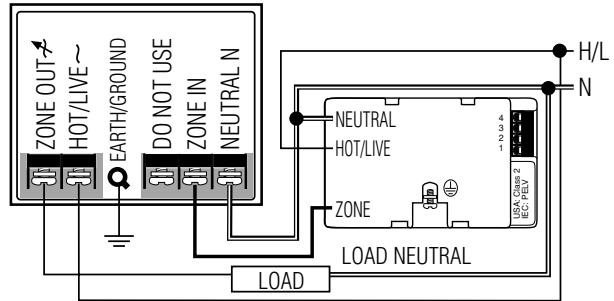
1. Turn power Off to the Control Unit *and* the feed to the **PB**, **ELVI**, or **FDBI**!
2. Mount standard U.S. 2-gang wallbox\* (available from Lutron, P/N 241-641), 3 1/2 in. (87 mm) deep is strongly recommended, 2 3/4 in. (68 mm) minimum. Allow at least 4 1/2 in. (110 mm) clearance above/below Interfaces to ensure proper heat dissipation.
3. Strip 1/2 in. (12 mm) insulation from all wires in wallbox and wire as shown. All connections are made using #12 AWG (2.5 mm<sup>2</sup>) wire. Power terminals can accept up to two #12 AWG (2.5 mm<sup>2</sup>) wires. The NEUTRAL N terminal is for the Control neutral, **not** the load neutral! The recommended installation torque is 9.0 in.•lbs. (1.0 N•m) for line voltage connections.



## Single-Feed Wiring for PB/ELVI 120V and 220-240V

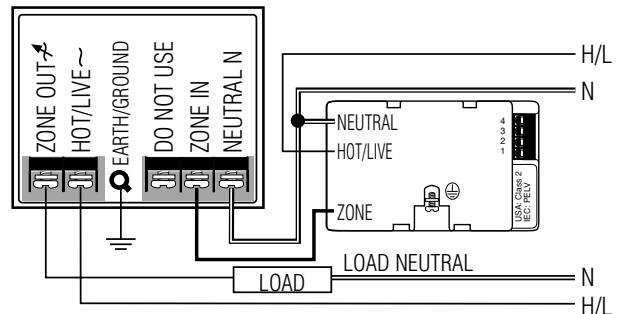


The **PB/ELVI** may be on the same circuit as the Control Unit *only if* the total load does not exceed the rating of the breaker.



## Dual-Feed Wiring for PB/ELVI 120V and 220-240V

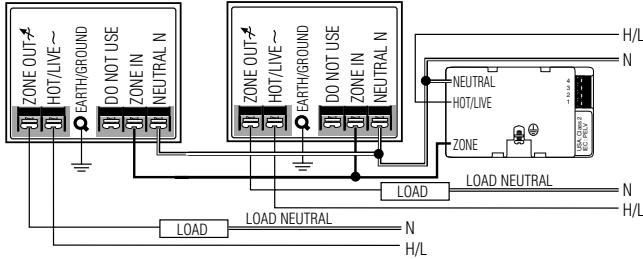
The load breaker/MCB can be on a different phase than the control breaker/MCB.



\* Wallbox may be flush mounted or surface mounted. If mounting Interface in a panel, please refer to Panel Mounting section for important information.

## Dual-Feed Wiring for Two (2) PB/ELVI Interfaces on One Zone - 120V and 220-240V

The load breaker/MCB can be on a different phase than the control breaker/MCB.



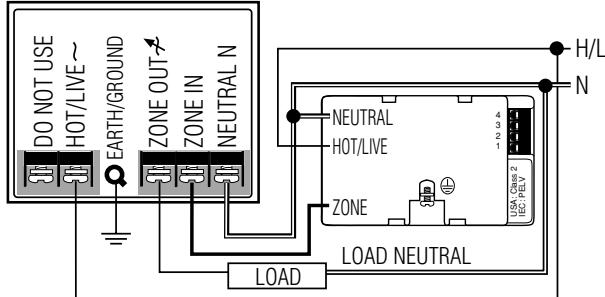
## Tu-Wire Dimming Ballast

- When using a **PB** to control a Lutron *Tu-Wire* dimming ballast, the associated zone on the GRAFIK Eye® 3000 Series Control Unit must be set to the *Tu-Wire* load type. Please see the *GRAFIK Eye* 3000 Series Installer's Guide for more details.
- The **PB 230V** must not be used with *Tu-Wire* ballasts because the *Tu-Wire* load type is not available on 230V CE models of the *GRAFIK Eye* Control Unit.

## Single-Feed Wiring for PB/ELVI 230V

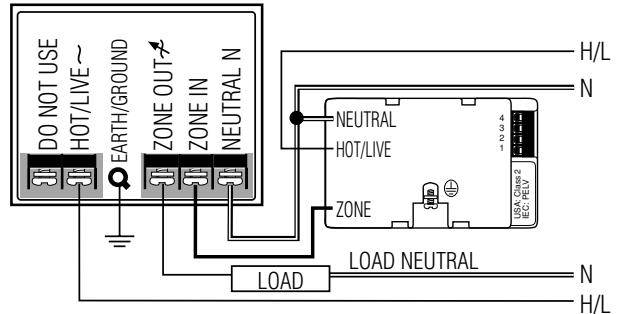


The **PB/ELVI** may be on the same circuit as the Control Unit *only if* the total load does not exceed the rating of the breaker.



## Dual-Feed Wiring for PB/ELVI 230V

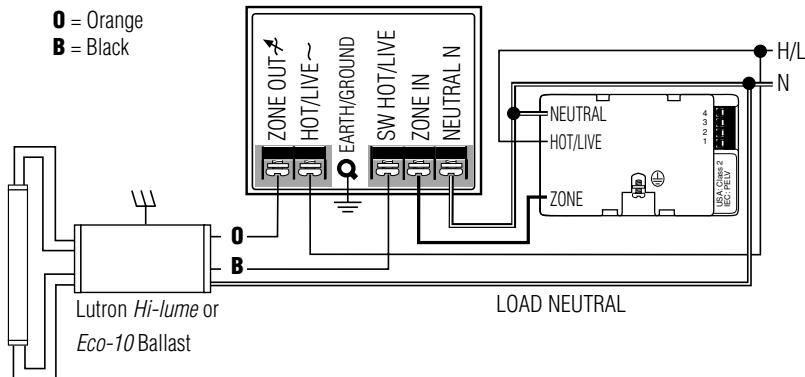
The load breaker/MCB can be on a different phase than the control breaker/MCB.



## Single-Feed Wiring for FDBI 120V and 220-240V

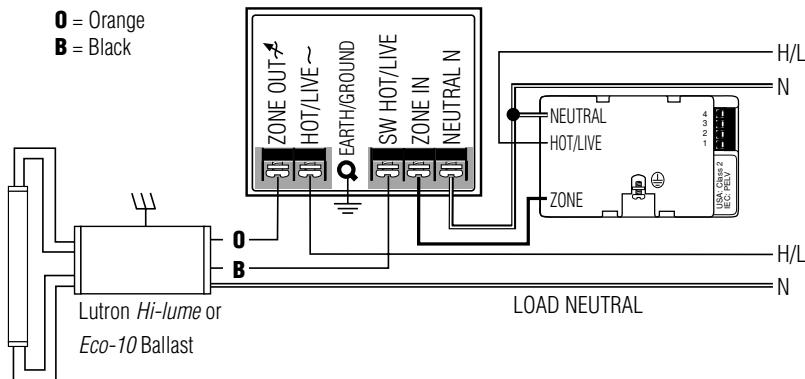


The **FDBI** may be on the same circuit as the Control Unit if, and only if, the total load does not exceed the rating of the breaker. Connect ZONE OUT only to Lutron *Hi-lume* or *Eco-10* Electronic Dimming Ballasts.



## Dual-Feed Wiring for FDBI 120V and 220-240V

The load breaker/MCB can be on a different phase than the control breaker/MCB. Connect ZONE OUT only to Lutron *Hi-lume* or *Eco-10* Electronic Dimming Ballasts.



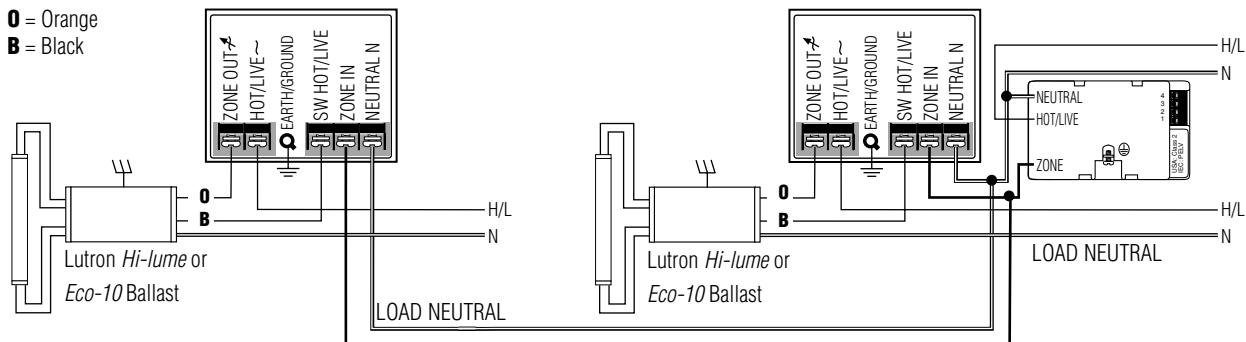
## Lutron Products

The following Lutron products can also be used to control your **PB/ELVI/FDBI**:

- *GRAFIK Eye* GP Dimming Panels.
- *GRAFIK Eye* LP Dimming Panels.
- Homeworks Interactive™ Remote Power Panels.
- Lutron fluorescent wallbox dimmers.
- Please contact Lutron for use with other *Homeworks Interactive* or *RadioRA*® dimmers.

## Dual-Feed Wiring for Two (2) FDBI Interfaces on One Zone 120V and 220-240V

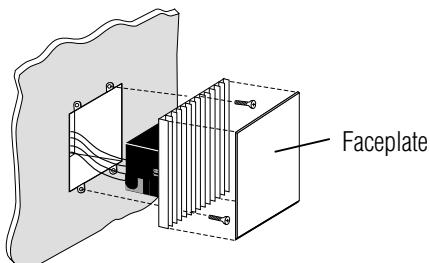
The load breaker/MCB can be on a different phase than the control breaker/MCB. Connect ZONE OUT only to Lutron *Hi-lume* or *Eco-10* Electronic Dimming Ballasts.



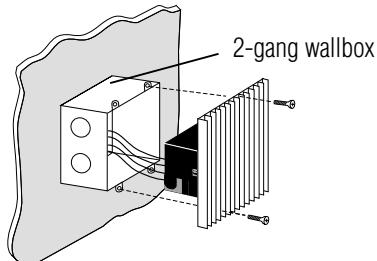
## Mounting: Interface must be mounted *vertically*!

1. Confirm all connections and mount the Interface using the screws provided.
2. Restore power to the system.

### Flush Mount



### Surface Mount

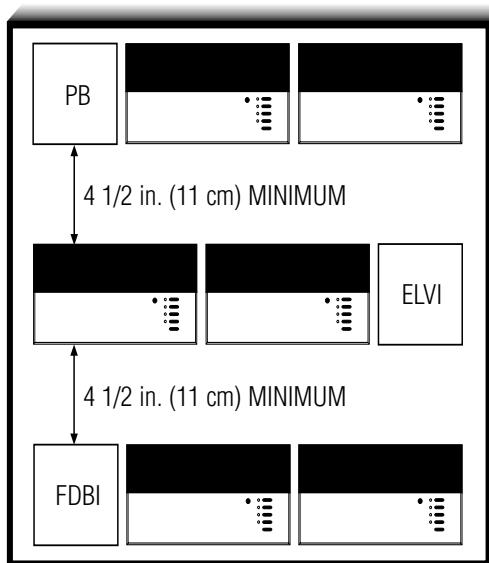


# Panel Mounting

- The enclosure must be in accordance with all local and national electrical codes.
- Lutron does not recommend using a door to enclose the front of a panel, since this restricts airflow to the *GRAFIK Eye* Control Units and Interfaces.
- If mounting multiple Control Units or Interfaces in an enclosure:
  1. Ambient temperature within an enclosure **must remain between 32°—104° F (0°—40° C)**.
  2. If not mounting in a metal enclosure, all units **must** be mounted in a wallbox.
- To improve heat dissipation of Power Interfaces, remove the faceplate from the unit.



*GRAFIK Eye* Control Units and Interface Units dissipate heat when operating. Obstructing these units can cause malfunction to both the Control Unit and the Interface if ambient temperature does not remain between 32°—104° F (0°—40° C).



# Troubleshooting Guide

Symptom	Causes	Solution
Lights do not come on.	Power is off	Restore power to the <b>PB/ELVI/FDBI</b> . Restore power to the Control Unit.
	Miswire	Confirm wiring per wiring diagrams.
	Bulb(s)/lamp(s) burned out	Replace bulb(s)/lamp(s).
	<i>GRAFIK Eye</i> 3000 Control Unit	Refer to troubleshooting section of <i>GRAFIK Eye</i> Control Unit Installer's Guide.
	Interface is overloaded	Check for excess load, proper mounting, and adequate air convection. Allow unit to cool.
Lights turn on/off unexpectedly.	Load Type	Confirm that the load type being switched/dimmed is compatible with the <b>PB/ELVI/FDBI</b> .
	<i>GRAFIK Eye</i> 3000 Control Unit	Refer to the troubleshooting section of <i>GRAFIK Eye</i> Control Unit Installation Guide.

Internet: [www.lutron.com](http://www.lutron.com)  
E-mail: [product@lutron.com](mailto:product@lutron.com)

#### **WORLD HEADQUARTERS**

Lutron Electronics Co. Inc.,  
**TOLL FREE:** (800) 523-9466  
(U.S.A., Canada, Caribbean)  
Tel: (610) 282-3800;  
International 1- 610-282-3800  
Fax: (610) 282-3090;  
International 1-610-282-3090

#### **ASIAN HEADQUARTERS**

Lutron Asuka Co, Ltd.,  
**TOLL FREE:** (0120) 083417 (Japan)  
Tel: (03) 5405-7333;  
International 81-3-5405-7333  
Fax: (03) 5405-7496;  
International 81-3-5405-7496

#### **EUROPEAN HEADQUARTERS**

Lutron EA Ltd.,  
**FREEPHONE:** 0800 282107 (U.K.)  
Tel: (207) 702-0657;  
International 44-207-702-0657  
Fax: (207) 480-6899;  
International 44-207-480-6899

#### **HONG KONG SALES OFFICE**

Lutron GL (Hong Kong)  
Tel: 2104-7733;  
International 852-2104-7733  
Fax: 2104-7633;  
International 852-2104-7633

#### **SINGAPORE**

Lutron GL (Singapore)  
Tel: 65 220 4666  
Fax: 65 220 4333

#### **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.

This product may be covered by one or more of the following U.S. patents: 4,797,599; 4,803,380; and corresponding foreign patents.

Lutron, GRAFIK Eye, Hi-lume, Homeworks, Radio RA, and Tu-Wire are registered trademarks, and Eco-10, Tu-Wire, and Homeworks Interactive are trademarks of Lutron Electronics Co., Inc.

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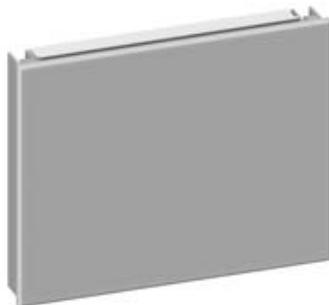
# **LUTRON®**

Lutron Electronics Co., Inc.  
Made and printed in U.S.A.  
P/N 030-739 Rev. A 2/02

Please Read



Phase-Adaptive  
Power Module



3-Wire Fluorescent  
Power Module



Switching  
Power Module

## Models and Capacities

Module Type	Control	Load	Load Capacity	Model Number
Phase-Adaptive	120 V $\sim$ 50 / 60 Hz	120 - 277 V $\sim$ 50 / 60 Hz	16 A	PHPM-PA-DV-WH
Phase-Adaptive	120 V $\sim$ 50 / 60 Hz	120 V $\sim$ 50 / 60 Hz	16 A	PHPM-PA-120-WH
3-Wire Fluorescent	120 V $\sim$ 50 / 60 Hz	120 - 277 V $\sim$ 50 / 60 Hz	16 A	PHPM-3F-DV-WH
3-Wire Fluorescent	120 V $\sim$ 50 / 60 Hz	120 V $\sim$ 50 / 60 Hz	16 A	PHPM-3F-120-WH
Switching	120 V $\sim$ 50 / 60 Hz	120 - 277 V $\sim$ 50 / 60 Hz	16 A	PHPM-SW-DV-WH

## General Notes



**Danger!** Always turn OFF the circuit breakers or remove the main fuses from the power line before doing any work. Failure to do so can result in serious personal injury. More than one disconnect may be required to de-energize this device. Disconnect all power sources before servicing unit.

- This power module must be installed by a qualified electrician in accordance with all applicable regulations.
- Improper wiring can result in personal injury, damage to the interface, or damage to other equipment.
- Up to three power modules per zone.
- The power module must be mounted with arrow facing upward to ensure adequate cooling.
- CAUTION! Dimmed magnetic low-voltage transformers: To avoid excessively high current flow that can cause transformer overheating and failure, observe the following:
  - (a) Do not operate the power module with all of the lamps removed or with any lamps inoperative.
  - (b) Replace any burned out lamps immediately.
  - (c) Use only transformers that incorporate thermal protection or fused primary windings.

- Phase-Adaptive/Fluorescent: These power modules contain circuitry that will shut down the output if it is overloaded. To correct the problem, turn off power and reduce the load to the specified rating before re-applying power.



**Note!** Plastic faceplate must be installed on module for normal operation (all models).

## Load Type Capability

### Switching Power Module:

- Incandescent (tungsten)
- Halogen
- Magnetic low-voltage transformer (iron core)
- Electronic (solid-state) low-voltage transformer.
- Magnetic and electronic fluorescent lamp ballasts
- Neon/cold-cathode
- HID
- Motor
  - 1/2 HP at 277 V  $\sim$
  - 1/3 HP at 120 V  $\sim$

### Phase-Adaptive Power Module:

- Incandescent (tungsten)
- Halogen
- Magnetic low-voltage transformer (iron core)
- Electronic (solid-state) low-voltage transformer
- Lutron Tu-Wire™ electronic fluorescent dimming ballast
- Neon/cold-cathode

### 3-Wire Fluorescent Power Module:

- Lutron *Hi-Lume* and *Eco-10* (Eco Series) line-voltage control electronic dimming ballasts

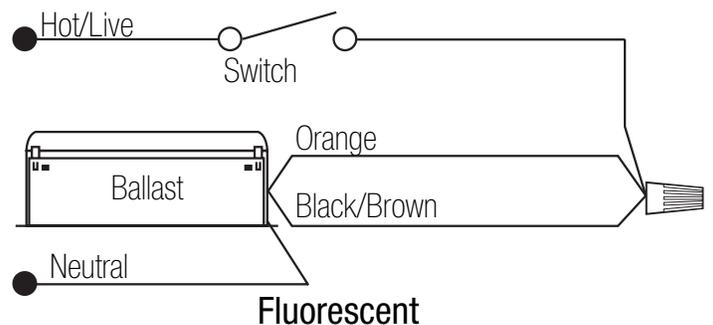
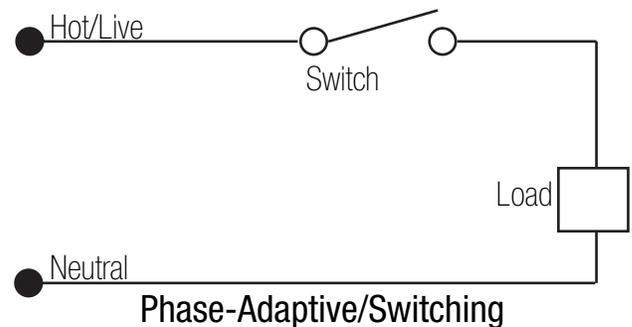
## Product Compatibility

The following Lutron products may be used to control these power modules:

- *GRAFIK Eye* QS control units
- *GRAFIK Eye* 3000 Series control units
- LP, LCP, GP dimming panels
- *HomeWorks* remote power panels

## Test Load for Short-Circuit

- Turn power Off.
- Phase-Adaptive/Switching: Connect standard switch between Hot/Live lead and the load wire to test circuit.
- Fluorescent: Connect standard switch between Hot/Live lead and the Dimmed Hot/Live and switched Hot/Live leads of the ballast.
- Turn power On and check for short or open circuits.



## Wiring

- Mount in 2-gang U.S. wallbox 3.5 in. (89 mm) deep or 4 x 4 in. (102 mm) junction box 2.1 in. deep (53 mm). Indoors only.
- This device generates heat; mount only where ambient temperature is 32 - 104 °F (0 - 40 °C).
- Mount with arrows facing up to ensure adequate cooling.
- Allow 4.5 in. (114 mm) above and below unit and between faceplates when mounting several in a vertical layout.
- Mount so line (mains) voltage wiring is at least 6 ft. (1.8 m) from sound or electronic equipment and wiring.
- Mount within 7° of true vertical.

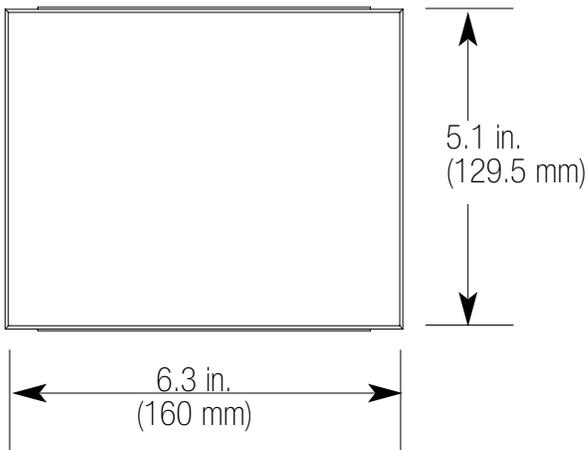
- Provide #12 AWG (2.5 mm<sup>2</sup>) copper (Cu) wires (75 °C minimum) for input power and load circuit.
- Strip 1/2 in. (12 mm) insulation from wires before connecting.
- Run separate neutral for load circuit - no common neutrals.



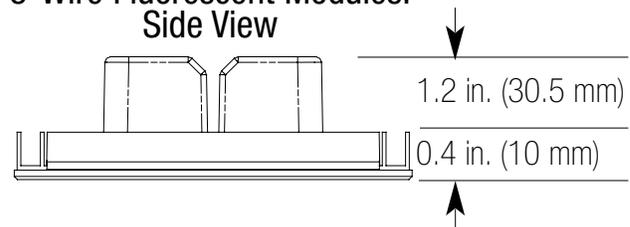
**Note!** Plastic faceplate must be installed on module for normal operation (all models).

## Dimensions

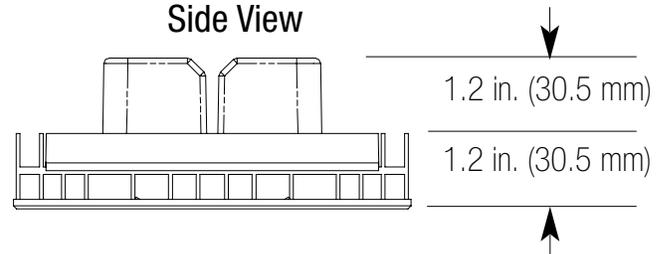
All Modules: Front View



Switching and  
3-Wire Fluorescent Modules:  
Side View

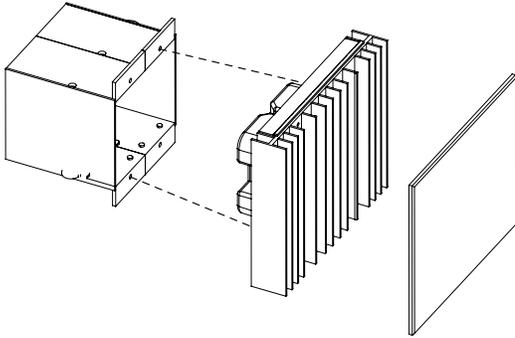


Phase-Adaptive Module:  
Side View

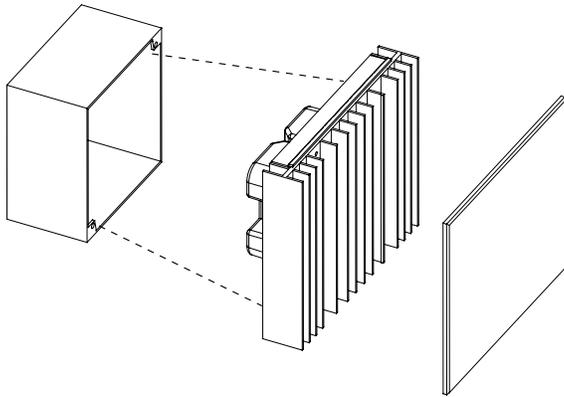


## Mounting Methods

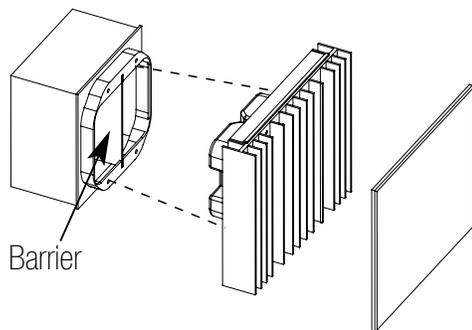
Mount to 2-gang U.S. wallbox



Mount to 4 x 4 in. (102 mm), 2.1 in. (53 mm) deep U.S. junction box



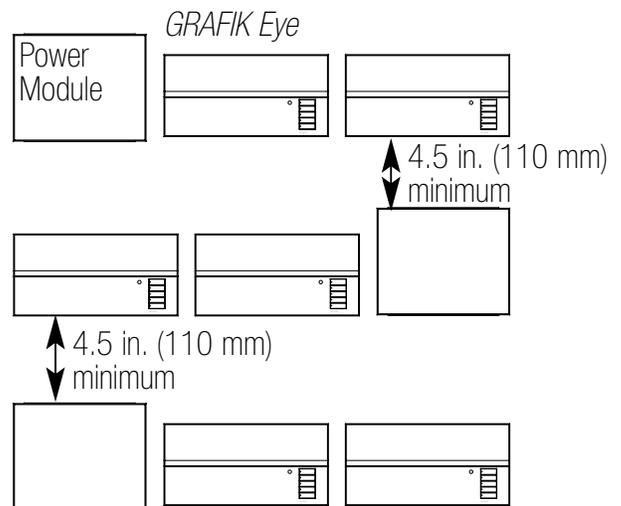
Mount to 4 x 4 in. (102 mm), 2.1 in. (53 mm) deep U.S. junction box with barrier (for 277 V<sub>~</sub> loads if required by local electrical code)



## Mounting Inside an Enclosure with GRAFIK Eye Control Units

- Mount in accordance with all local and national electrical codes.
- Proper ventilation is required. Ambient temperature inside enclosure must remain between 32 - 104 °F (0 - 40 °C) when GRAFIK Eye control units and power modules are operating.
- See diagram below for required spacing between units.

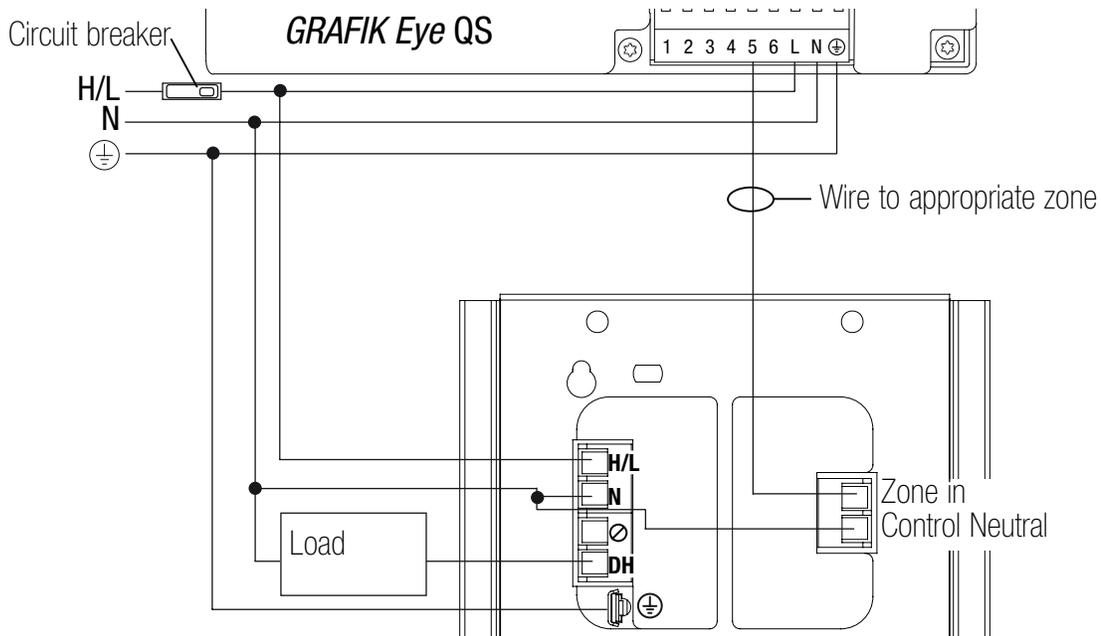
**Note!** Plastic faceplate must be installed on module for normal operation (all models).



## Single-Feed Wiring

The power module may be on the same circuit as the control unit only if the total load does not exceed the rating of the branch circuit breaker in accordance with local and national electrical codes.

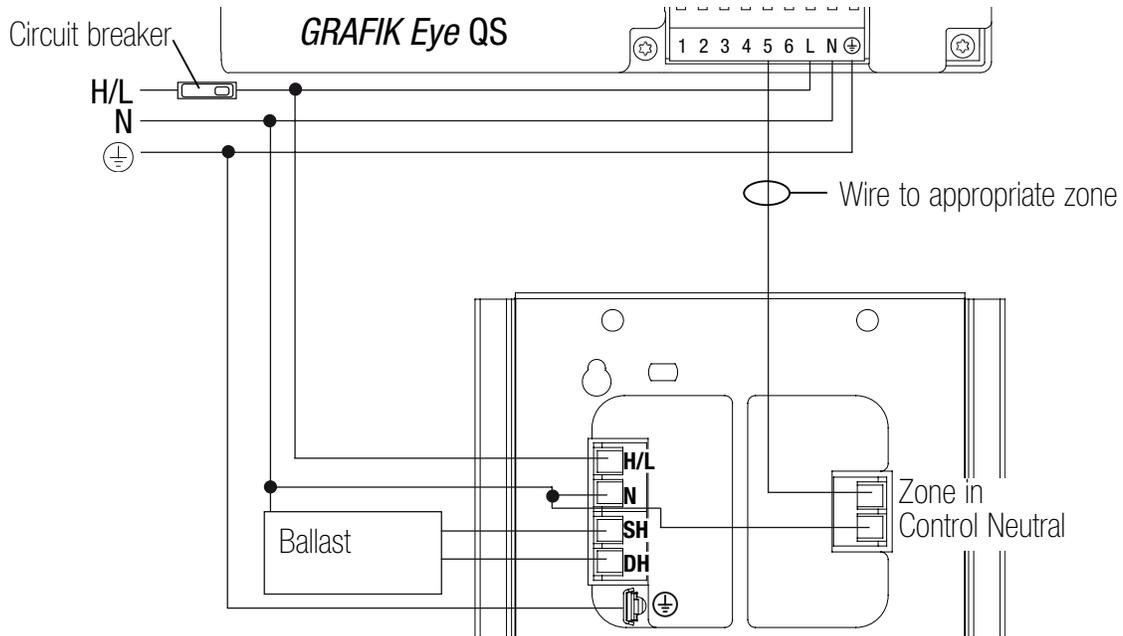
## Phase-Adaptive Module Wiring



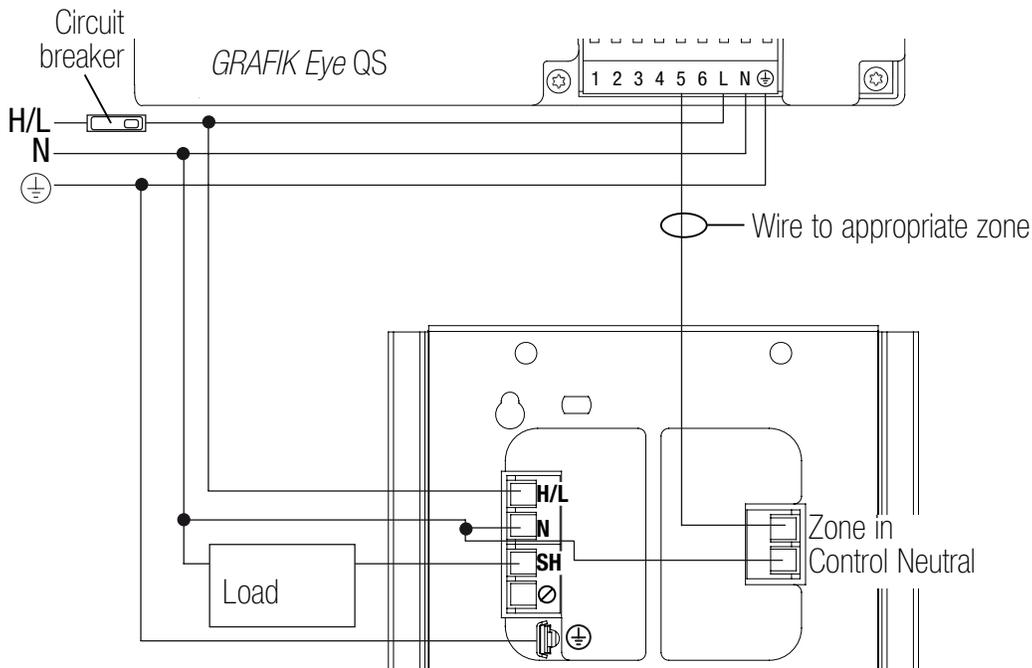
## Legend

- H/L Hot/Live
- N Neutral
- SH Switched Hot
- DH Dimmed Hot
- ⊕ Ground
- ⊘ Not Used

## Fluorescent 3-Wire Module Wiring



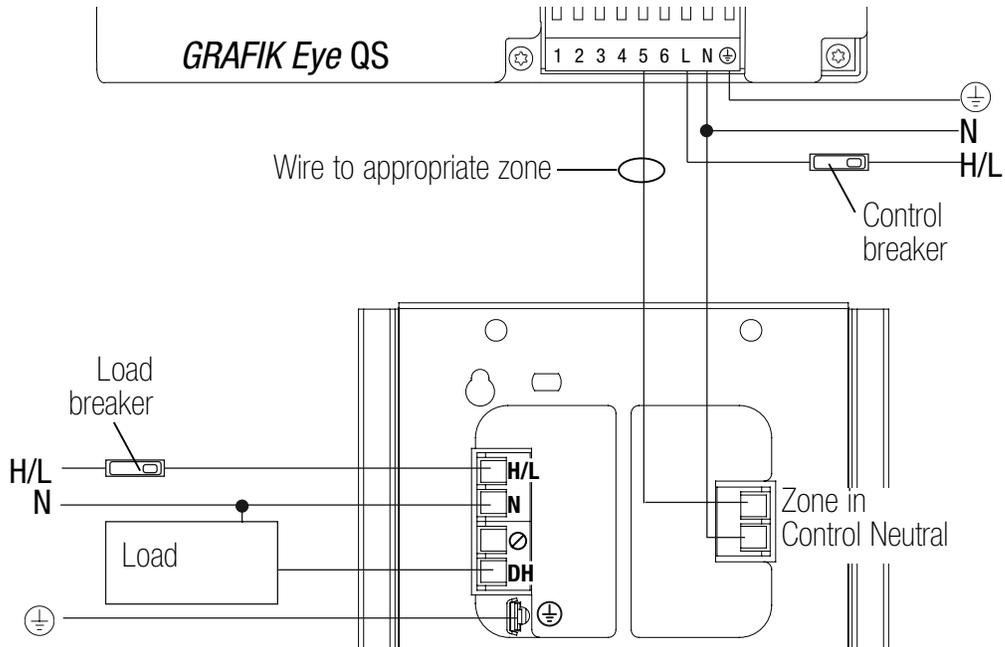
## Switching Module Wiring



## Dual-Feed Wiring

The load breaker can be on a different phase than the control breaker. Both breakers must be turned off prior to installing or servicing the module.

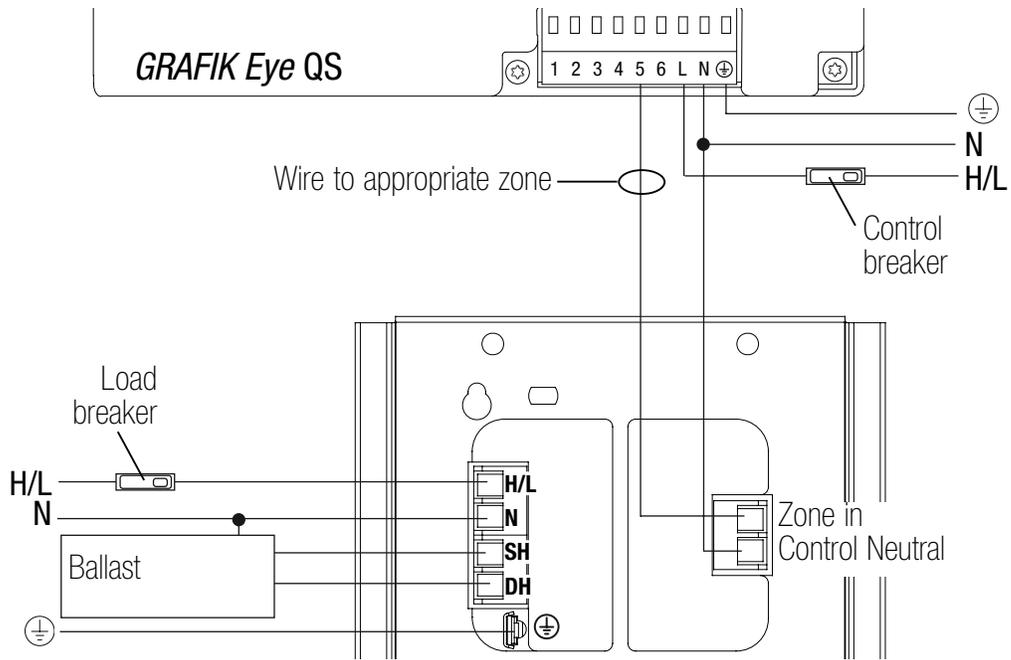
### Phase-Adaptive Module Wiring



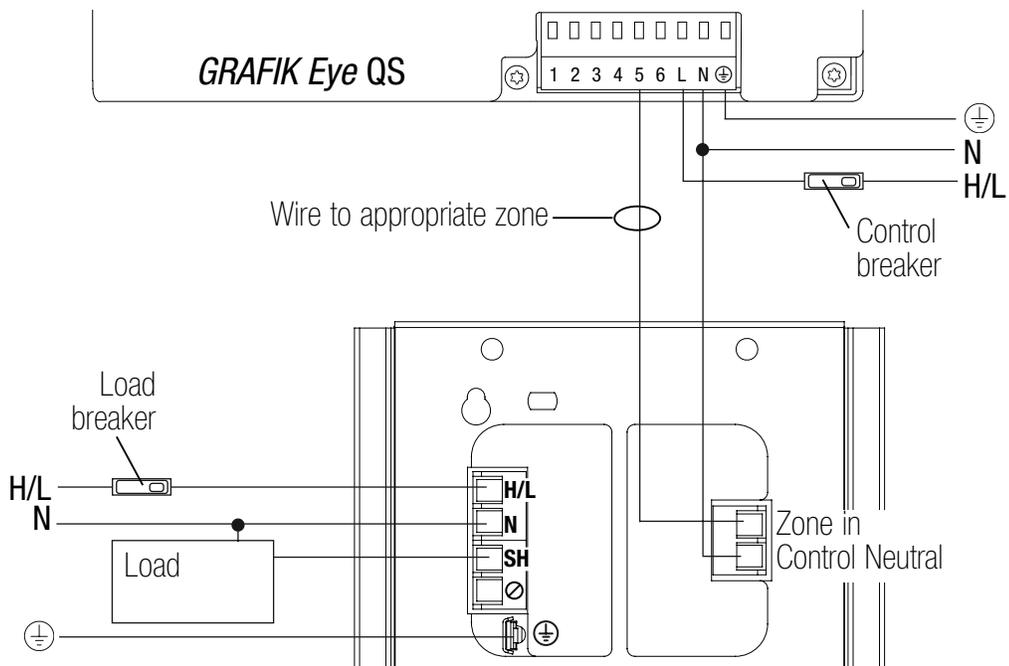
### Legend

H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⊕	Ground
⊘	Not Used

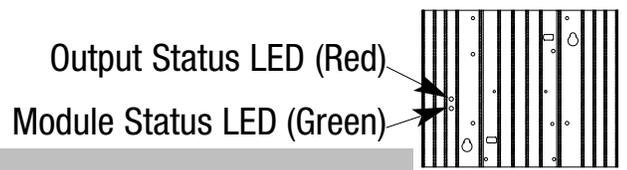
## Fluorescent 3-Wire Module Wiring



## Switching Module Wiring



## PHASE-ADAPTIVE POWER MODULE DIAGNOSTICS AND TROUBLESHOOTING



<b>Module Status LED (green)</b>	
<b>LED Action</b>	<b>Comments</b>
Off	Module not powered. <b>Caution:</b> Control input may still be powered. Turn off all breakers before removing unit.
1 blink/second (“heartbeat”)	Module powered; normal operation

<b>Output Status LED (red)</b>			
<b>LED Action</b>	<b>Control Input Status</b>	<b>Load Status</b>	<b>Comments</b>
Off	Input signal off or disconnected	Off	Load off
Continuously on	On	On	Incandescent/electronic dimming
1 blink/second (“heartbeat”)	On	On	Magnetic dimming
1 blink, pause, repeat	On	Off	Load short-circuit/overload <sup>1</sup>
2 blinks, pause, repeat	On	Off	Over-voltage error <sup>2</sup>
3 blinks, pause, repeat	On	On full	Shorted component <sup>3</sup>
4 blinks, pause, repeat	On	Off	DC detection <sup>4</sup>

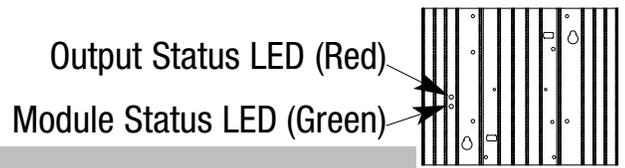
<sup>1</sup>Remove power; repair fault; re-apply power.

<sup>2</sup>Verify proper load on output.

<sup>3</sup>Replace power module; internal device is damaged.

<sup>4</sup>Possible faulty MLV load.

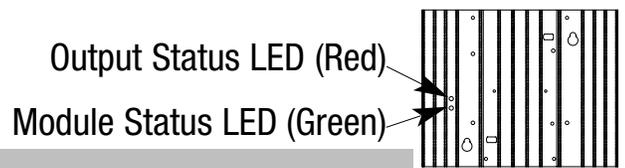
### 3-WIRE FLUORESCENT POWER MODULE DIAGNOSTICS AND TROUBLESHOOTING



<b>Module Status LED (green)</b>	
LED Action	Comments
Off	Module not powered. <b>Caution:</b> Control input may still be powered. Turn off all breakers before removing unit.
1 blink/second (“heartbeat”)	Module powered; normal operation

<b>Output Status LED (red)</b>			
LED Action	Control Input Status	Load Status	Comments
Off	Input signal off or disconnected	Off	Load off
Continuously on	On	On	Load on. <b>Note:</b> Output may repeatedly turn on and off if DH is overloaded or if DH and SH are miswired.

### SWITCHING POWER MODULE DIAGNOSTICS AND TROUBLESHOOTING



<b>Module Status LED (green)</b>	
LED Action	Comments
Off	Module not powered. <b>Caution:</b> Control input may still be powered. Turn off all breakers before removing unit.
1 blink/second (“heartbeat”)	Module powered; normal operation

<b>Output Status LED (red)</b>			
LED Action	Control Input Status	Load Status	Comments
Off	Input signal off or disconnected	Off	Load off
Continuously on	On	On	Load on

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E-mail: product@lutron.com

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Macau : 0800.401  
Singapore: 800.120.4491  
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Thailand: 001.800.120.665853  
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#### **Lutron Electronics Co., Inc. One Year Limited Warranty**

For a period of one year from the date of purchase, and subject to the exclusions and restrictions described below, Lutron warrants each new unit to be free from manufacturing defects. Lutron will, at its option, either repair the defective unit or issue a credit equal to the purchase price of the defective unit to the Customer against the purchase price of comparable replacement part purchased from Lutron. Replacements for the unit provided by Lutron or, at its sole discretion, an approved vendor may be new, used, repaired, reconditioned, and/or made by a different manufacturer.

If the unit is commissioned by Lutron or a Lutron approved third party as part of a Lutron commissioned lighting control system, the term of this warranty will be extended, and any credits against the cost of replacement parts will be prorated, in accordance with the warranty issued with the commissioned system, except that the term of the unit's warranty term will be measured from the date of its commissioning.

#### **EXCLUSIONS AND RESTRICTIONS**

This Warranty does not cover, and Lutron and its suppliers are not responsible for:

1. Damage, malfunction or inoperability diagnosed by Lutron or a Lutron approved third party as caused by normal wear and tear, abuse, misuse, incorrect installation, neglect, accident, interference or environmental factors, such as (a) use of incorrect line voltages, fuses or circuit breakers; (b) failure to install, maintain and operate the unit pursuant to the operating instructions provided by Lutron and the applicable provisions of the National Electrical Code and of the Safety Standards of Underwriter's Laboratories; (c) use of incompatible devices or accessories; (d) improper or insufficient ventilation; (e) unauthorized repairs or adjustments; (f) vandalism; or (g) an act of God, such as fire, lightning, flooding, tornado, earthquake, hurricane or other problems beyond Lutron's control.
2. On-site labor costs to diagnose issues with, and to remove, repair, replace, adjust, reinstall and/or reprogram the unit or any of its components.
3. Equipment and parts external to the unit, including those sold or supplied by Lutron (which may be covered by a separate warranty).
4. The cost of repairing or replacing other property that is damaged when the unit does not work properly, even if the damage was caused by the unit.

EXCEPT AS EXPRESSLY PROVIDED IN THIS WARRANTY, THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF ANY TYPE, INCLUDING ANY IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY. LUTRON DOES NOT WARRANT THAT THE UNIT WILL OPERATE WITHOUT INTERRUPTION OR BE ERROR FREE.

NO LUTRON AGENT, EMPLOYEE OR REPRESENTATIVE HAS ANY AUTHORITY TO BIND LUTRON TO ANY AFFIRMATION, REPRESENTATION OR WARRANTY CONCERNING THE UNIT. UNLESS AN AFFIRMATION, REPRESENTATION OR WARRANTY MADE BY AN AGENT, EMPLOYEE OR REPRESENTATIVE IS SPECIFICALLY INCLUDED HEREIN, OR IN STANDARD PRINTED MATERIALS PROVIDED BY LUTRON, IT DOES NOT FORM A PART OF THE BASIS OF ANY BARGAIN BETWEEN LUTRON AND CUSTOMER AND WILL NOT IN ANY WAY BE ENFORCEABLE BY CUSTOMER.

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NOTWITHSTANDING ANY DAMAGES THAT CUSTOMER MIGHT INCUR FOR ANY REASON WHATSOEVER (INCLUDING, WITHOUT LIMITATION, ALL DIRECT DAMAGES AND ALL DAMAGES LISTED ABOVE), THE ENTIRE LIABILITY OF LUTRON AND OF ALL OTHER PARTIES UNDER THIS WARRANTY ON ANY CLAIM FOR DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE MANUFACTURE, SALE, INSTALLATION, DELIVERY, USE, REPAIR, OR REPLACEMENT OF THE UNIT, OR ANY AGREEMENT INCORPORATING THIS WARRANTY, AND CUSTOMER'S SOLE REMEDY FOR THE FOREGOING, WILL BE LIMITED TO THE AMOUNT PAID TO LUTRON BY CUSTOMER FOR THE UNIT. THE FOREGOING LIMITATIONS, EXCLUSIONS AND DISCLAIMERS WILL APPLY TO THE MAXIMUM EXTENT ALLOWED BY APPLICABLE LAW, EVEN IF ANY REMEDY FAILS ITS ESSENTIAL PURPOSE.

#### **TO MAKE A WARRANTY CLAIM**

To make a warranty claim, promptly notify Lutron within the warranty period described above by calling the Lutron Technical Support Center at (800) 523-9466. Lutron, in its sole discretion, will determine what action, if any, is required under this warranty. To better enable Lutron to address a warranty claim, have the unit's serial and model numbers available when making the call. If Lutron, in its sole discretion, determines that an on-site visit or other remedial action is necessary, Lutron may send a Lutron Services Co. representative or coordinate the dispatch of a representative from a Lutron approved vendor to Customer's site, and/or coordinate a warranty service call between Customer and a Lutron approved vendor.

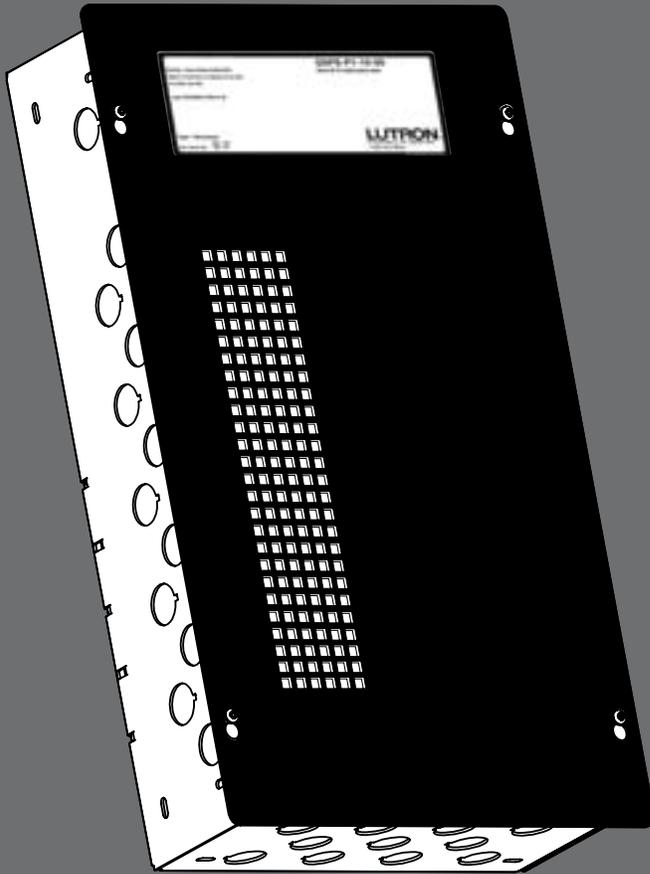
This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental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

These products may be covered under one or more of the following U.S. patents: 4,797,599; 5,309,068; 5,633,540; 6,091,205; 6,380,692; and corresponding foreign patents. U.S. and foreign patents pending.

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P/N 032-178 Rev. A 4/07





# QS® Smart Power Supply Panel

Installation  
Instructions

**QSPS-P1-10-60**

 **LUTRON®**

# QSPS-P1-10-60

120 V~ 60 Hz

5 A Max Input Current

## Installation Instructions (Please leave for occupant)

**Please read before installing.**

---

### Tools Required:

Wire Cutter/Stripper

Power Drill

Small Flat-Head Screwdriver

#2 Phillips Screwdriver

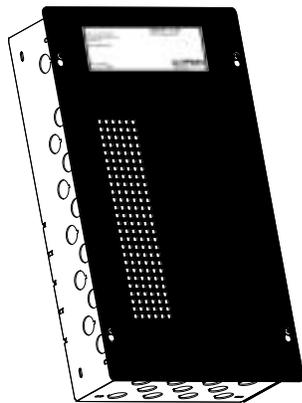
NOTE: Mounting hardware is not included due to the wide variety of wall materials.

Customer should determine the appropriate mounting hardware for their specific needs.

---

### Box Contents:

QSPS-P1-10-60



## 1

### Important Notes



**Adherence to these specifications is necessary to ensure a safe and successful installation.**

### 1.1

1. All wiring must be in accordance with national and local electrical codes.
2. QSPS-P1-10-60 must be installed by a qualified electrician.
3. Ambient operating temperature: 32 - 104 °F (0 - 40 °C), 0 - 90% humidity, non-condensing.
4. This product is intended for **indoor use only**.
5. Separate over current protection is required to be provided in accordance with Canadian Electrical Code, Part 1.

## 2 Installation

### 2.1

1. **Mount QSPS-P1-10-60** using one of the following methods (Mounting Hardware is not provided) Do not mount in any other orientation.
  - a. **Surface Mount** - Use the keyholes located on the back of the enclosure to fasten the QSPS-P1-10-60 to the wall. Use fasteners rated for a 50 lb. (23 kg) load. See illustration of QSPS-P1-10-60 .
  - b. **Recess Mount** - Install a 2 in x 4 in (50 mm x 100 mm) board between the studs as a bottom support. Fasten the QSPS-P1-10-60 to the right stud and bottom support inserting fasteners through the mounting holes provided.



#### CAUTION -

The equipment is air-cooled. Mount in a location where the vented cover will not be blocked. A minimum of 1 ft. (300 mm) is necessary.

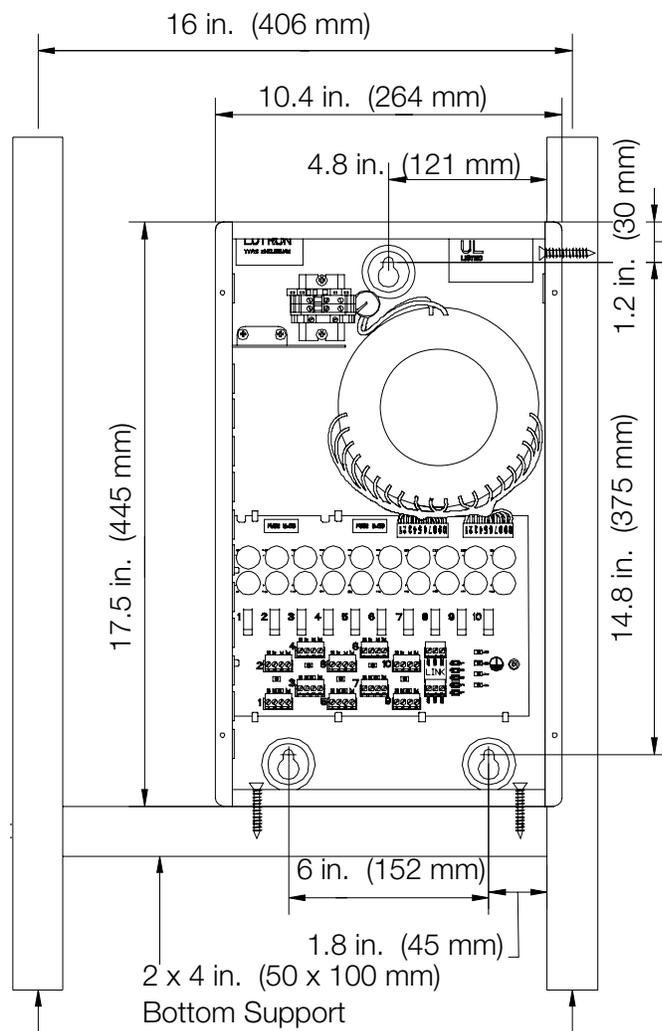


#### DANGER -

Locate and lock the supply breaker in the OFF position before wiring to the terminal blocks.

2. **Connect 120 V~ power wiring into the QSPS-P1-10-60.**

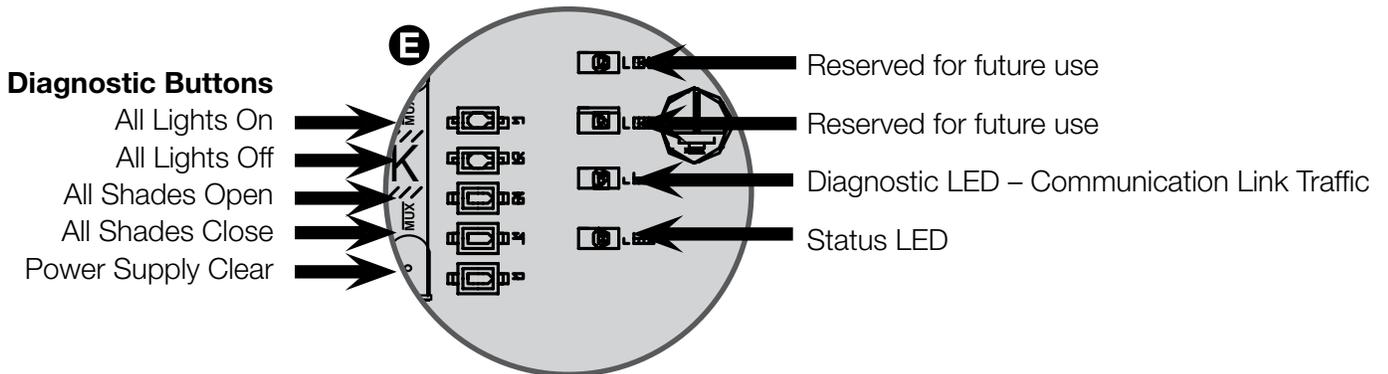
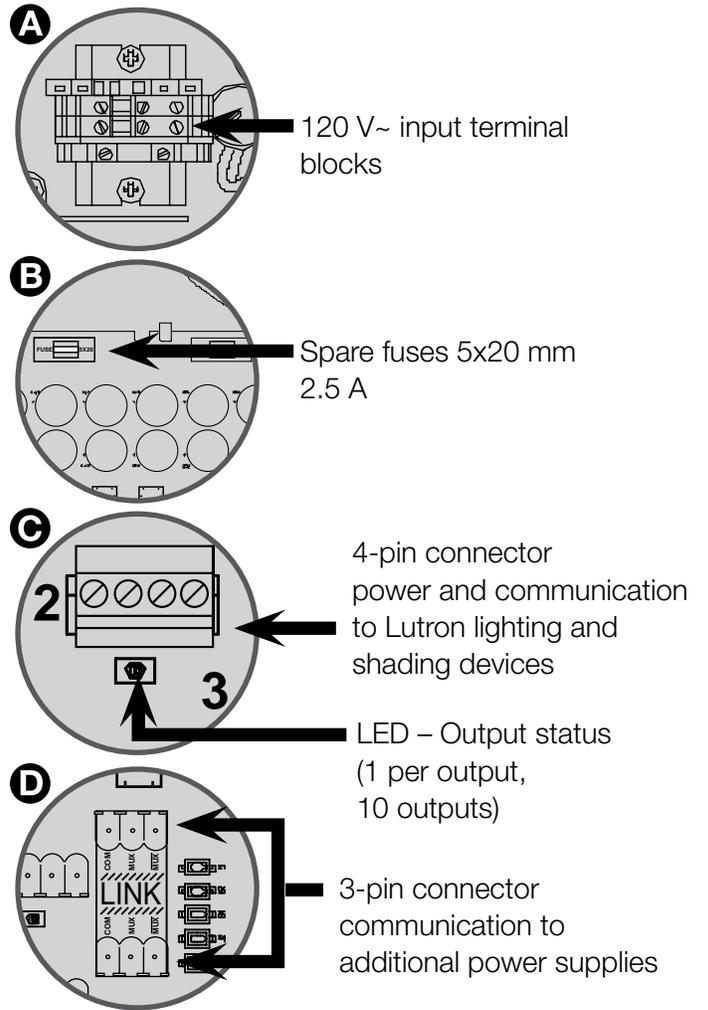
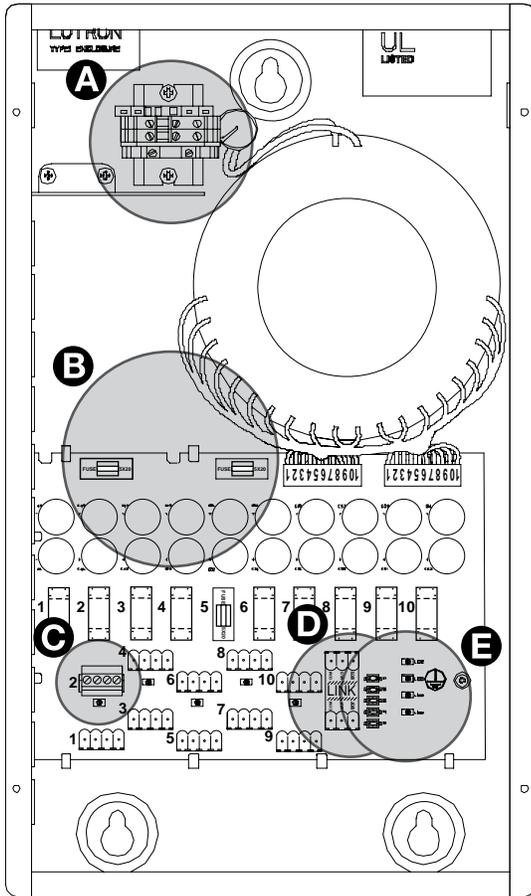
Remove one of the knockout tabs on the top left side of the enclosure near the input terminal blocks. Insert a strain relief into the knockout hole. Run the power wire through the strain relief to the input terminal blocks at the top left side of the enclosure. Tighten terminal blocks to 3.5 to 5 in-lbs. (0.4-0.6 N•m).



Note: Maximum of 1 QSPS-P1-10-60 per 15 A Breaker.  
Maximum of 2 QSPS-P1-10-60 per 20 A Breaker.  
Maximum feed breaker size of 30 Amps.  
Use only High-Magnetic breakers.

## 2 Installation (continued)

### 2.2 QSPS-P1-10-60 Parts identification



## 3 QS Link Wiring

### 3.1 Link Rules

The following Link rules must be observed for proper operation.

- Maximum of 100 devices (such as a GRAFIK Eye® QS, QS keypad, QSPS-P1-10-60, or Sivoia® QS shade)
- Maximum of 100 zones (such as a Sivoia QS shade, or a lighting zone on a GRAFIK Eye QS)
- Maximum 2,000 ft (600 m) of cable connecting all QSPS-P1-10-60 panels
- Maximum 2,000 ft (600 m) of cable to devices wired to each QSPS-P1-10-60
- Use only cable with at least one twisted/shielded pair for communications (MUX and  $\overline{\text{MUX}}$ )

### 3.2 Wire Length Chart

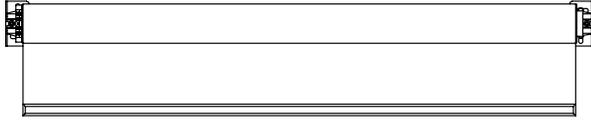
Maximum devices per one output		Maximum distance per one output based on wire guage		
Shades + Controls		#12 AWG (4 mm <sup>2</sup> )	#16 AWG (1.5 mm <sup>2</sup> )	#18 AWG (1 mm <sup>2</sup> ) GRX-CBL-346S-500
None	Up to 6 seeTouch QS keypads	1000 ft. (300 m)	500 ft. (150 m)	250 ft. (75 m)
1 Sivoia QS roller 64™	None	500 ft. (150 m)	200 ft. (60 m)	100 ft. (30 m)
1 Sivoia QS roller 64	Up to 2 seeTouch QS keypads	250 ft. (75 m)	75 ft. (20 m)	50 ft. (15 m)
2 Sivoia QS roller 64, ≤ 30 sq ft (2.75 sq m) each	None	250 ft. (75 m)	75 ft. (20 m)	50 ft. (15 m)
3 Sivoia QS roller64, ≤ 20 sq ft (1.8 sq m) each	None	250 ft. (75 m)	75 ft. (20 m)	50 ft. (15 m)

# 3

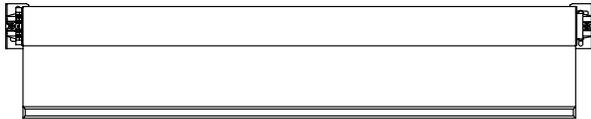
## QS Link Wiring (continued)

### 3.3 Example: Multiple shades per output

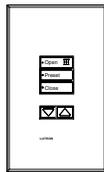
Sivoia QS roller 64, 25 sq. ft. (2.25 sq. m)



Sivoia QS roller 64, 25 sq. ft. (2.25 sq. m)



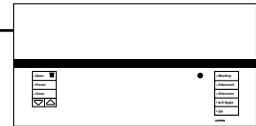
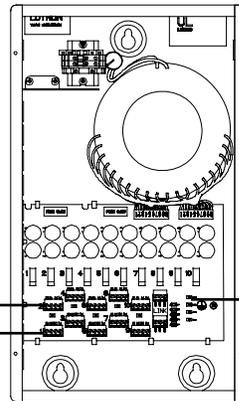
Up to 50 ft (15 m) of  
#18 AWG (1 mm<sup>2</sup>)  
4-conductor twisted/  
shielded wire



seeTouch® QS



Up to 250 ft (75 m) of  
#18 AWG (1 mm<sup>2</sup>)  
4-conductor twisted/  
shielded wire



GRAFIK Eye® QS

### 3

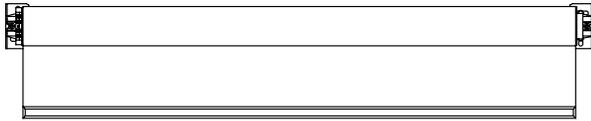
## QS Link Wiring (continued)

### 3.4 Example: One shade per output

Sivoia QS roller 64, 25 sq. ft. (2.25 sq. m)



Sivoia QS roller 64, 25 sq. ft. (2.25 sq. m)



Up to 100 ft (30 m) of  
#18 AWG (1 mm<sup>2</sup>)  
4-conductor twisted/  
shielded wire

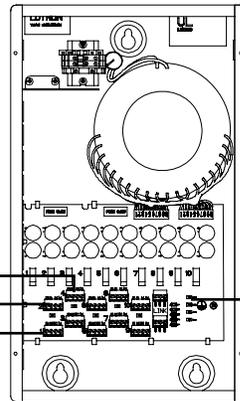
Up to 100 ft (30 m) of  
#18 AWG (1 mm<sup>2</sup>)  
4-conductor  
twisted/shielded wire



seeTouch® QS



Up to 250 ft (75 m) of  
#18 AWG (1 mm<sup>2</sup>)  
4-conductor twisted/  
shielded wire



GRAFIK Eye® QS

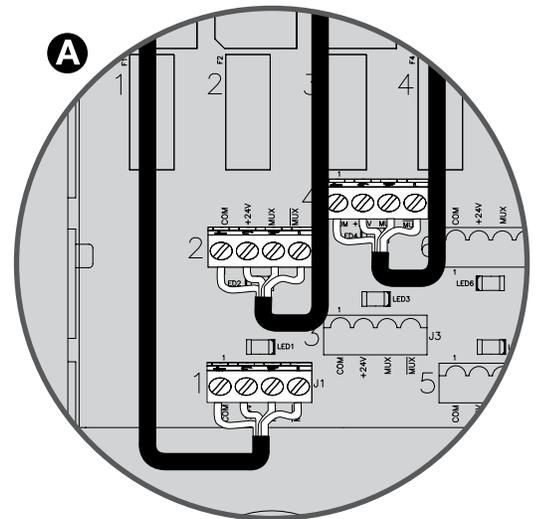
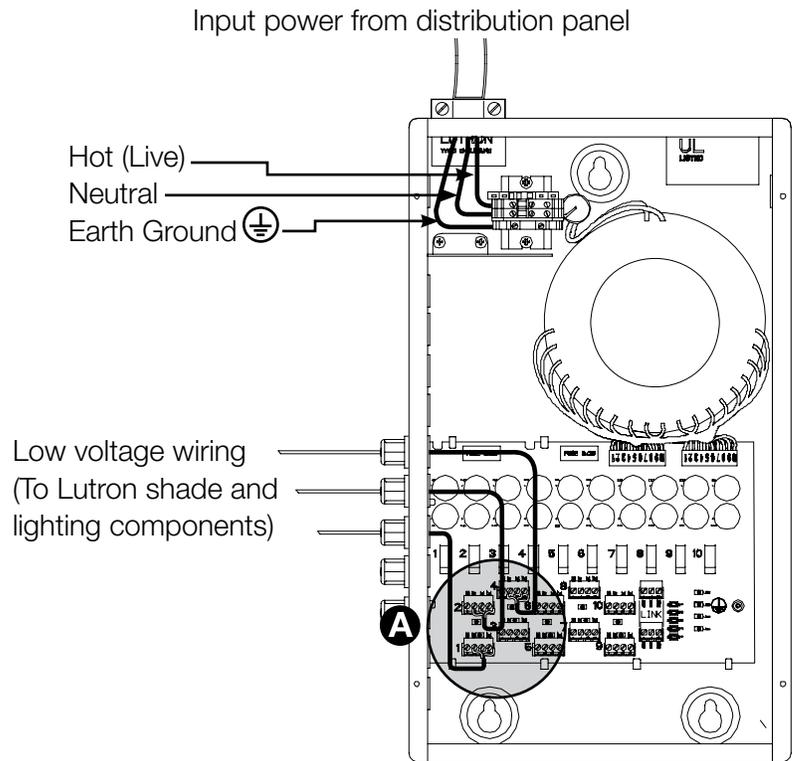
## 4 Wiring the QSPS-P1-10-60

### 4.1 Run low voltage wire into the QSPS-P1-60

Remove as many knockout tabs as necessary from the left side of the enclosure and insert strain reliefs.

Run the low-voltage communication wiring from the Lutron QS shade and lighting devices through the strain reliefs to the terminal blocks.

Strip insulation wire so that .25 in. (7 mm) of bare wire is exposed. Make sure to tighten the screws tightly and that no insulation is inside of the terminal block.

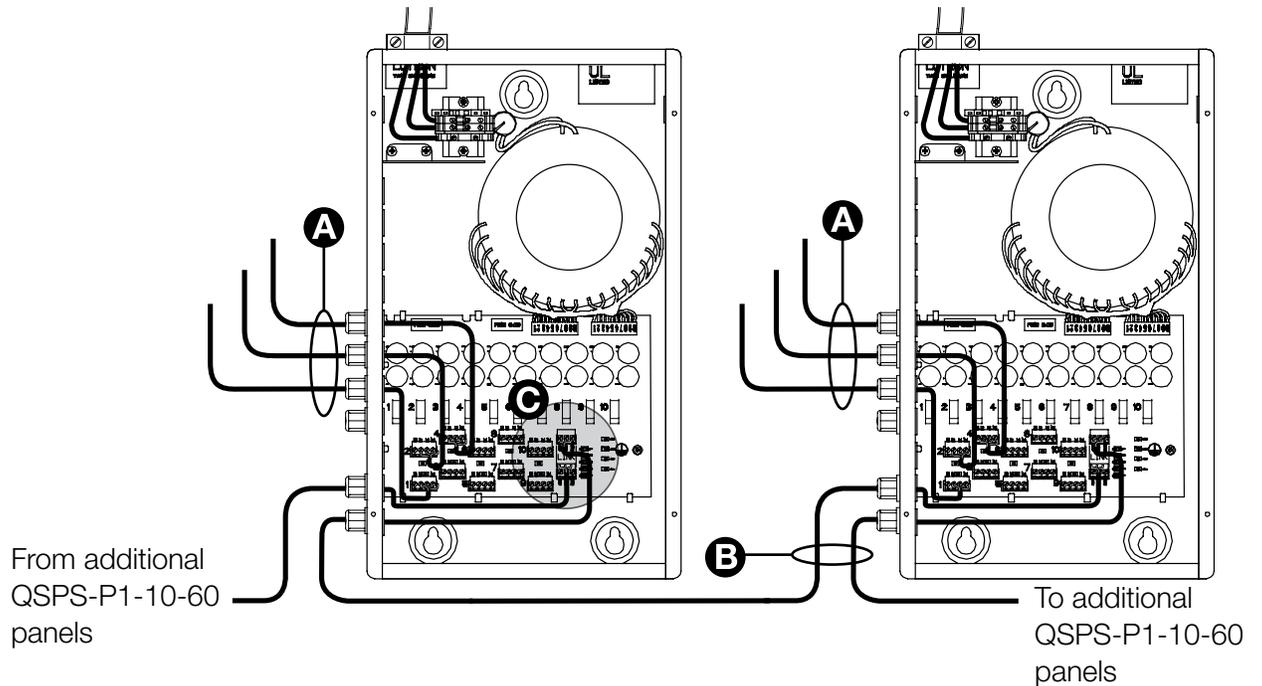


# 4

## Wiring the QSPS-P1-10-60 (continued)

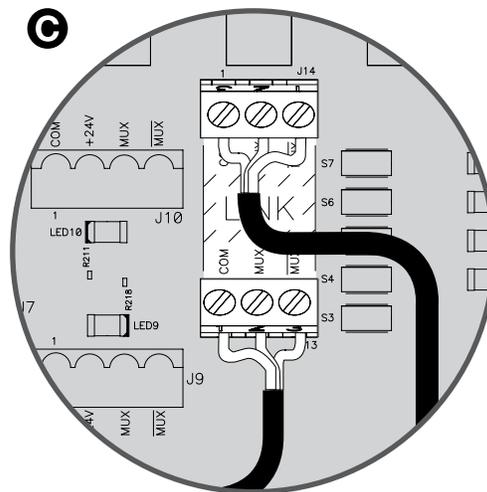
### 4.2 Connecting Multiple QSPS-P1-10-60 Panels

Use the two 3-pin terminal blocks when connecting multiple QSPS-P1-10-60 panels.



- A Device Link**  
4 - conductor power and communications to devices.  
Max 2,000 ft. (600 m) per QSPS-P1-10-60

- B Panel Link**  
3 - conductor communications  
Max 2,000 ft. (600 m) connecting all QSPS-P1-10-60 panels.



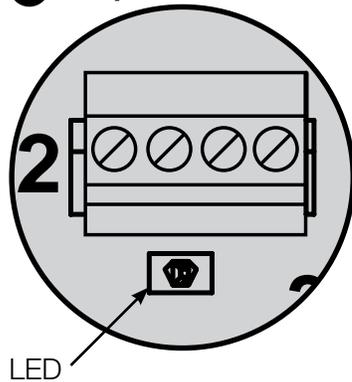
## 5 Diagnostics

The QSPS-P1-10-60 provides built-in diagnostics to help troubleshoot and verify your installation.

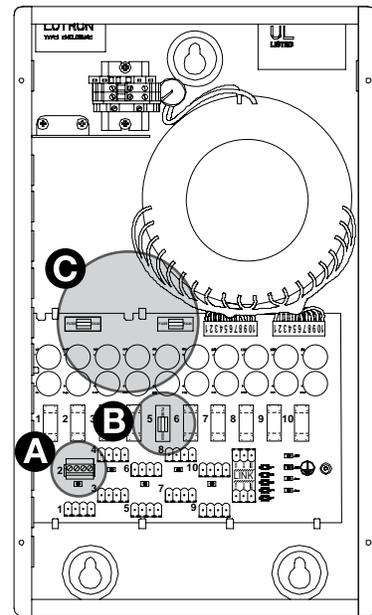
### 5.1 Output status LEDs

Each output has a status LED to indicate if the output is properly powered. If an output becomes overloaded, its status LED will blink to indicate the fault condition. Press the “Power Supply Clear” button after the fault condition has been cleared and the LED will stop blinking.

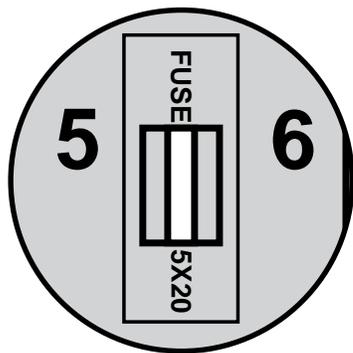
#### A Output status LEDs



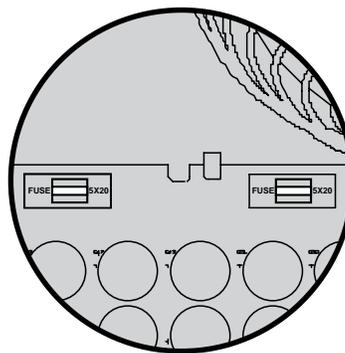
If an output status LED has turned off, the fuse will need to be replaced. The QSPS-P1-10-60 comes with two spare 5x20 mm 2.5A fuses.



#### B Fuses



#### C Spare fuses

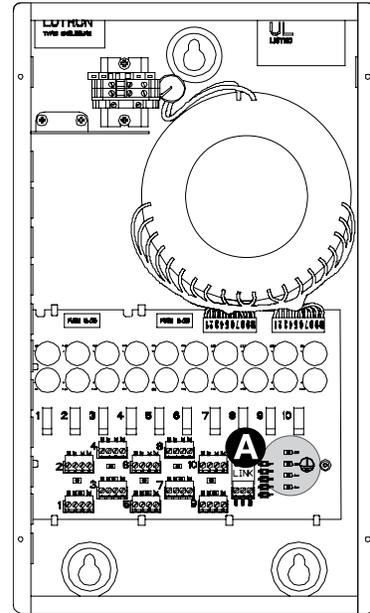
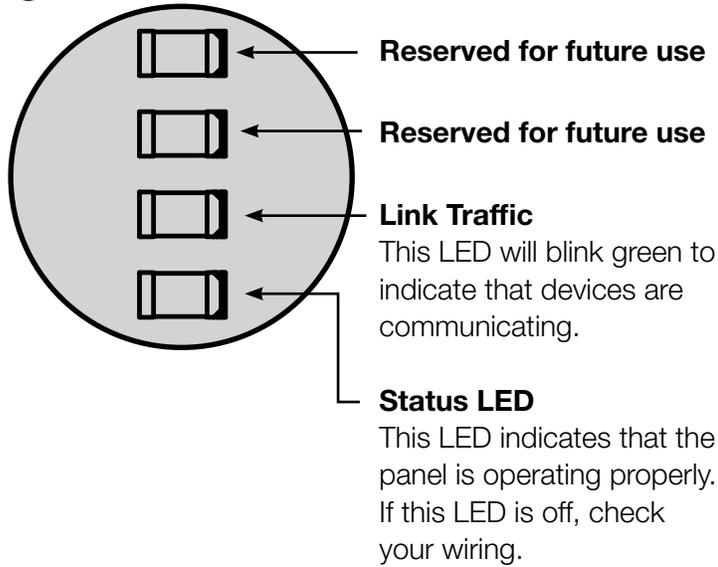


## 5 Diagnostics (continued)

### 5.2 Communications Link LEDs

The QSPS-P1-10-60 has four diagnostic LEDs for the communications link.

#### **A** Diagnostic LEDs



## 5 **Diagnostics** (continued)

### 5.3 **Verify Communications**

To verify the communications of your system, tap, hold, tap, hold the All Shades Open button. The QSPS-P1-10-60 is now trying to communicate with all other devices. All EDUs communicating on the link will wiggle and flash their green LED quickly. If you discover any EDUs that are not wiggling, verify that the EDU is powered and wired properly. Link Diagnostics Mode will automatically time out after 10 minutes.

To exit Link Diagnostics Mode, press and hold the All Shades Open button for 5 seconds.

# Limited Warranty

## SCOPE

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## LIMITED WARRANTY

Subject to the exclusions and restrictions described below, Lutron warrants that each System will be free from manufacturing defects from the date of shipment by Lutron for a period of (a) one year as to the wall controls, interfaces and system accessories of the Sivoia® QS Shade System (“External Sivoia® QS Components”) and (b) eight years as to the other Systems and the electronic drive unit, shade fabric and shade hardware of the Sivoia® QS Shade System. If any manufacturing defect exists in the External Sivoia® QS Components, so long as Customer promptly notifies Lutron of the defect within the one year warranty period and, if requested by Lutron, returns the defective part(s), Lutron will, at its option, either repair the defective part(s) or provide comparable replacement part(s). If any manufacturing defect exists in any of the components of a System other than the External Sivoia® QS Components, so long as Customer promptly notifies Lutron of the defect within the eight year warranty period and, if requested by Lutron, returns the defective part(s), Lutron will, at its option, either repair the defective part(s) or issue a credit to the Customer against the purchase price of comparable replacement part(s) purchased from Lutron as provided below:

Number of years from date of shipment	Percentage of cost of replacement parts credited by Lutron
Up to 2	100%
More than 2 but not more than 5	50%
More than 5 but not more than 8	25%
More than 8	0%

Replacement parts for the System provided by Lutron or, at its sole discretion, an approved vendor may be new, used, repaired, reconditioned, and/or made by a different manufacturer.

## EXCLUSIONS AND RESTRICTIONS

This Warranty will be void, and Lutron and its suppliers will have no responsibility under this Warranty, if Lutron or its representatives cannot access any components of the System to inspect, diagnose problems with or repair the System or any of its components as a result of concealment or inaccessibility of such components within a building structure.

This Warranty does not cover, and Lutron and its suppliers are not responsible for:

1. Damage, malfunction or inoperability diagnosed by Lutron or a Lutron approved third party as caused by normal wear and tear, abuse, misuse, incorrect installation, neglect, accident, interference or environmental factors, such as (a) use of incorrect line voltages fuses or circuit breakers; (b) failure to install, maintain and operate the System pursuant to the operating instructions provided by Lutron and the applicable provisions of the National Electrical Code and of the Safety Standards of Underwriter’s Laboratories; (c) use of incompatible devices or accessories; (d) improper or insufficient ventilation; (e) unauthorized repairs or adjustments or alterations; (f) vandalism; (g) an act of God, such as fire, lightning, flooding, tornado, earthquake, hurricane or other problems beyond Lutron’s control; or (h) direct exposure to corrosive materials.
2. On-site labor costs to diagnose issues with, and remove, repair, replace, adjust, reinstall and/or reprogram the System or any of its components.
3. Components and equipment external to the System, such as, non-Lutron lighting and automation systems; building wiring audio-visual equipment; and non-Lutron time clocks, photosensors and motion detectors.
4. The cost of repairing or replacing other property that is damaged when any System does not work properly, even if the damage was caused by the System.

**THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES. ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO EIGHT YEARS FROM THE DATE OF SHIPMENT, EXCEPT THAT SUCH IMPLIED WARRANTIES ARE LIMITED TO ONE YEAR FROM THE DATE OF SHIPMENT AS TO THE EXTERNAL Sivoia QS COMPONENTS.**

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**THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. 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 OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.**

#### **WARRANTY CLAIMS, TECHNICAL ASSISTANCE AND WARRANTY INFORMATION.**

Contact the Lutron Technical Support Center at the numbers provided below or your local Lutron sales representative with questions concerning the installation or operation of the System or this Warranty, or to make a warranty claim. Please provide the exact model number when calling.

U.S. and foreign patents pending.

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P/N 045-127 REV. B





**Lutron® | QS Link Power Supply** (QSPS-P1-1-50 / QSPS-P2-1-50 / QSPS-P3-1-50, 100-240 V~ 50/60 Hz  
1 A Input Current) Installation Instructions

**Tools Required:** Wire cutter/stripper, small flat-head screwdriver  
Optional: Power drill, mounting screws

**1 Important Notes: Adherence to these specifications is necessary to ensure a safe and successful installation.**

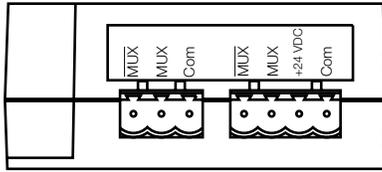
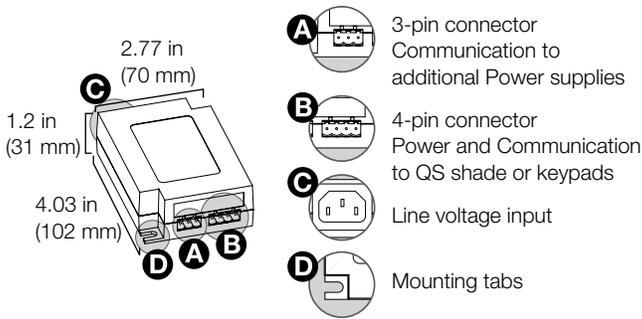
- All wiring must be in accordance with national and local electrical codes.
- Power supply should be installed by a qualified electrician.
- Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0 to 90% humidity, non-condensing.
- This product is intended for **indoor use only**.
- In Canada, separate over current protection is required, to be in accordance with Canadian Electrical Code, Part 1.

**2 Installation**

- The power supply may be surface mounted by using the mounting tabs if desired.

 - Unplug line voltage cable of the power supply before wiring low voltage terminal blocks.

**2. Parts identification**



**3 QS Link Wiring**

- Link Rules** -The following link rules must be observed for proper operation.
  - Use only cable with at least one twisted/shielded pair for communications (MUX and MUX)
  - Total length of power supply link (A) wire plus device link (B) wire in entire system must be less than 2000 ft. (609 m)

Maximum devices powered from one QSPS-P1-1-50		Total wire length of link (B) based on wire gauge		
Shades	Controls	#12 AWG (4 mm <sup>2</sup> )	#16 AWG (1.5 mm <sup>2</sup> )	#18 AWG (1 mm <sup>2</sup> ) GRX-CBL-346S-500
1 Sivoia QS shade	None	250 ft. (75 m)	100 ft. (30 m)	50 ft. (17 m)
None	Up to 8 seeTouch® QS keypads*	1200 ft. (350 m)	500 ft. (150 m)	300 ft. (75 m)

\* 2 seeTouch QS keypads may be exchanged for 1 control interface (QSE-CI-NWK-E)

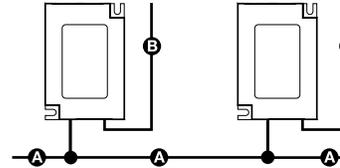
**4 Wiring the power supply**

**1. Run low voltage wire into the power supply**

- Run the low-voltage communication wiring from the Lutron QS shade or keypads to the power supply (B).
- Strip insulation wire so that 0.25 in. (7 mm) of bare wire is exposed. Make sure to tighten the screws tightly and that no insulation is inside of the terminal block.
- Connect each wire to appropriate terminal block.  
\*Note: Terminal blocks are removable for ease of wiring.

**2. Connecting multiple power supplies**

- Use the 3-pin terminal blocks when connecting communications (A) between multiple power supplies.

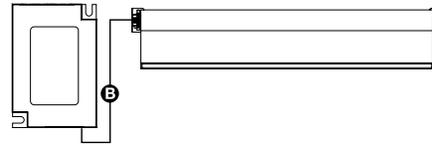


**A: Power Supply Link** (3-conductor)  
Communications used to connect all power supplies.

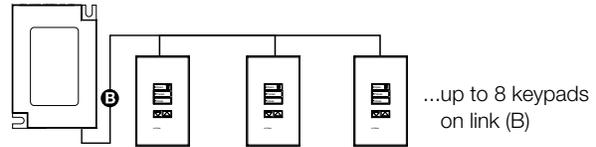
**B: Device Link** (4-conductor)  
Provides power and communications to devices.

**3. Plug in line voltage and low voltage terminal blocks to power supply.**

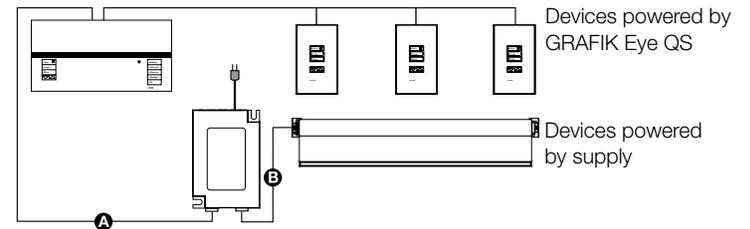
**Example: Powering one shade**  
(max of one shade per output of a power supply)



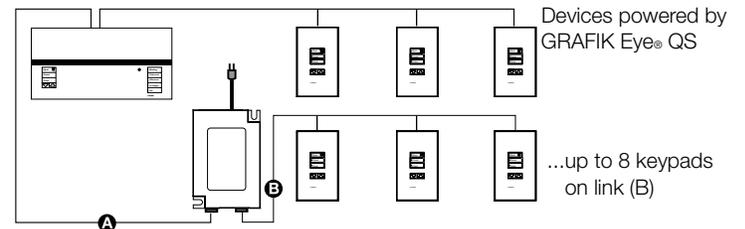
**Example: Powering keypads**



**Example: Connecting to a GRAFIK Eye® QS**



**Example: Connecting to a GRAFIK Eye QS**



## Limited Warranty

### SCOPE

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More than 5 but not more than 8	25%
More than 8	0%

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The product may be covered under one or more of the following U.S. patents: 6,983,783; 7,281,565, and corresponding patents pending. U.S. and foreign patents pending.

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P/N 030-979 REV. B





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