Operation & Maintenance Manual ::

Project ID ::

LUTRON®

Complete EcoSystem Manual

Warranty & Start-Up Information

Job Name:

Job Number:

Toll-Free 24/7 Technical Support Line: 1.800.523.9466

Field Service Scheduling 1.800.523.9466 ext.4439

02.17.09

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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Job Number:		

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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

Job Name:	Model Numbers:	
Job Number:		

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.

Job Name:	Model Numbers:	
Job Number:		

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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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Job Number:		

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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 majeures; 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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Job Number:		

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.

Job Name:	Model Numbers:	
Job Number:		

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Lutron Contacts for all Warranties and Support and Maintenance Plans

Internet: www.lutron.com
E-mail: 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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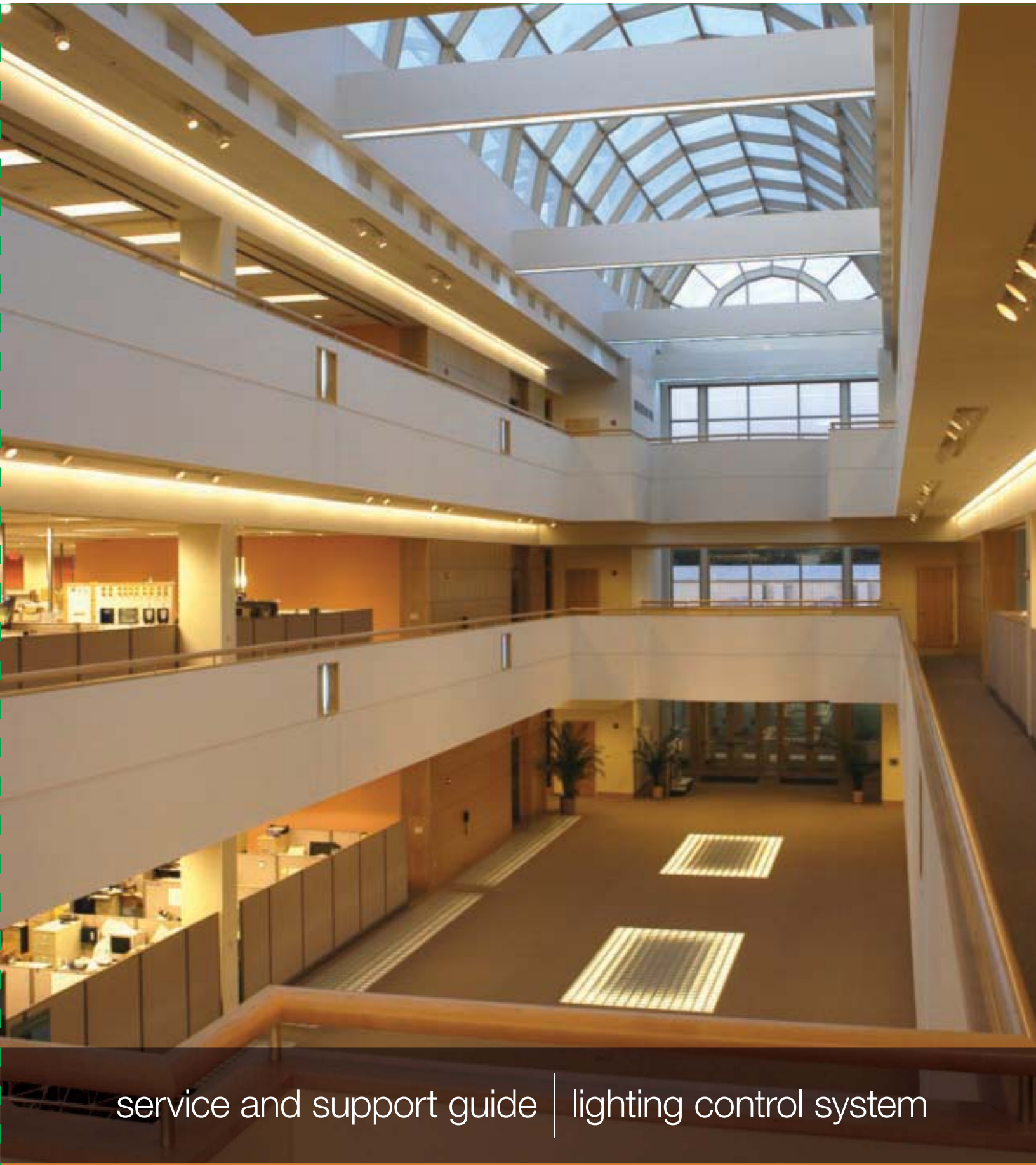
Job Number:		



service and support guide | lighting control system

LUTRON® SERVICES CO., INC.

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

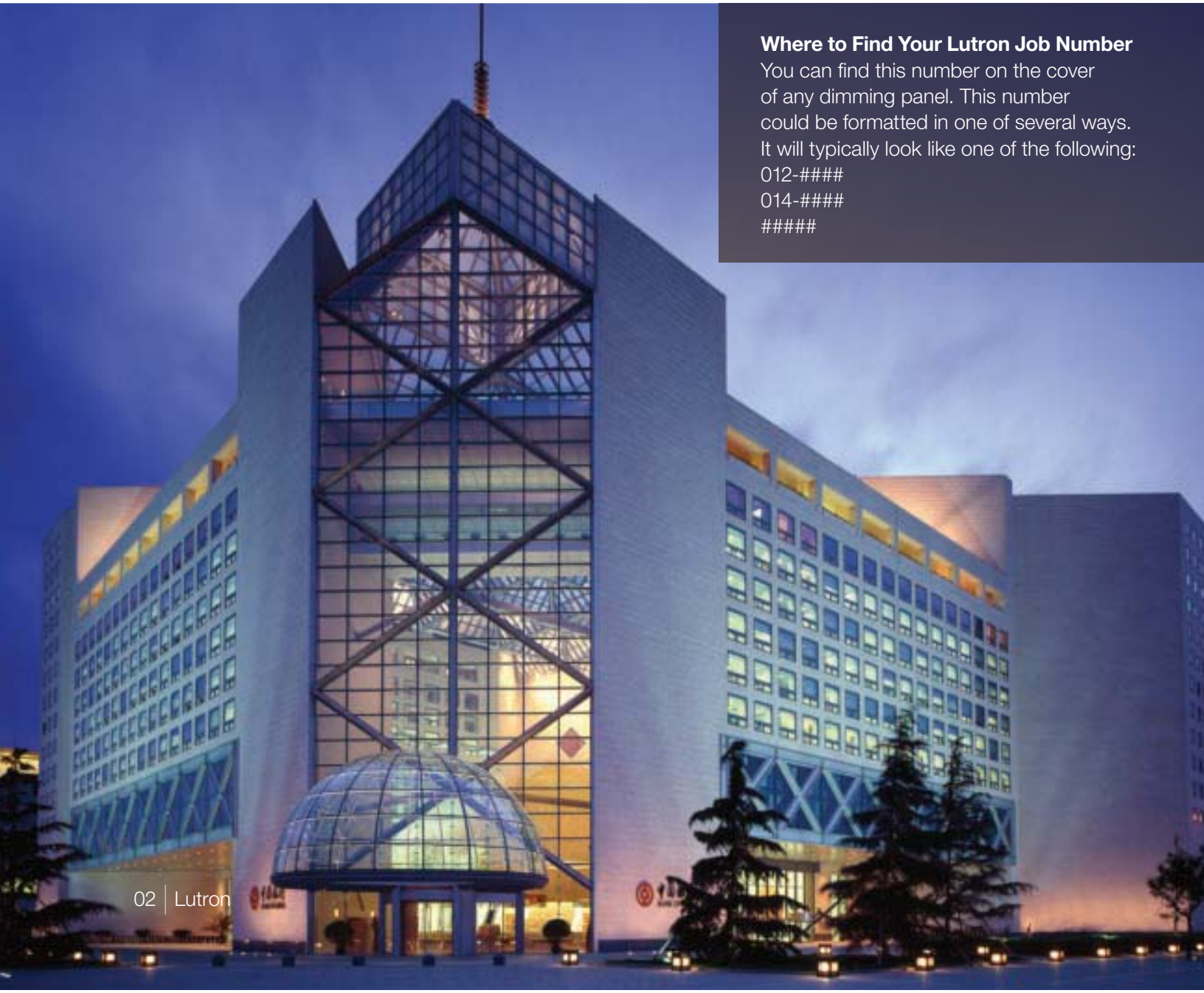
Thank you for purchasing a Lutron lighting control system.

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.

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 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.



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.

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 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.

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.

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	• 24-hour response time for service visits • Annual Scheduled Maintenance Visit (see page 7 for details) • 100% parts, 100% labor and any travel costs Lutron incurs • Technical Support, toll-free, around the clock, 365 days per year • Remote diagnostics and programming (for systems with that configuration/capability)	• Casinos • Convention centers • Luxury hotels/Resorts • Research centers/Vivariums • Hospitals
 gold	• 72-hour response time for service visits • Annual Scheduled Maintenance Visit (see page 7 for details) • 100% parts, 100% labor and any travel costs Lutron incurs • Technical Support, toll-free, around the clock, 365 days per year • Remote diagnostics and programming (for systems with that configuration/capability)	• Hotels • Stadiums/Arenas • Museums • Office buildings • High-end restaurants • Boutique retail • Large universities • Estates
 silver	• 100% parts, 100% labor and any travel costs Lutron incurs • Technical Support, toll-free, around the clock, 365 days per year • Remote diagnostics and programming (for systems with that configuration/capability)	• Places of worship • Residences • Libraries • Small offices • Small schools

To request more information or a quotation, please call 1.800.523.9466 and select option 4, then 4 or email LSCwarranty@lutron.com.

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.

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.

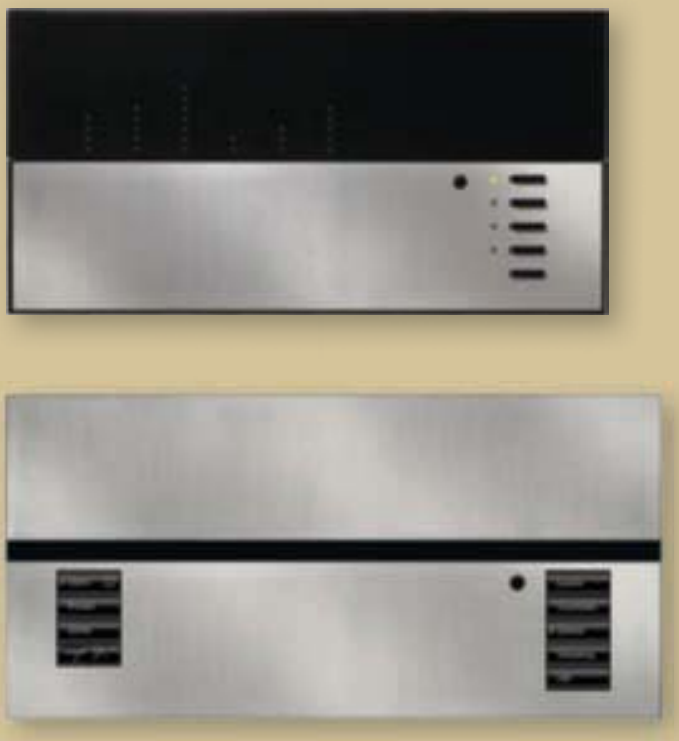
To upgrade your controls, please call 1.800.523.9466 and select option 4, then 5, or email rus@lutron.com.

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.

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.



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.

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.



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.

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.

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

LUTRON® SERVICES CO., INC.

www.lutron.com/service

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Coopersburg, PA 18036-1299

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Install & Setup Guides

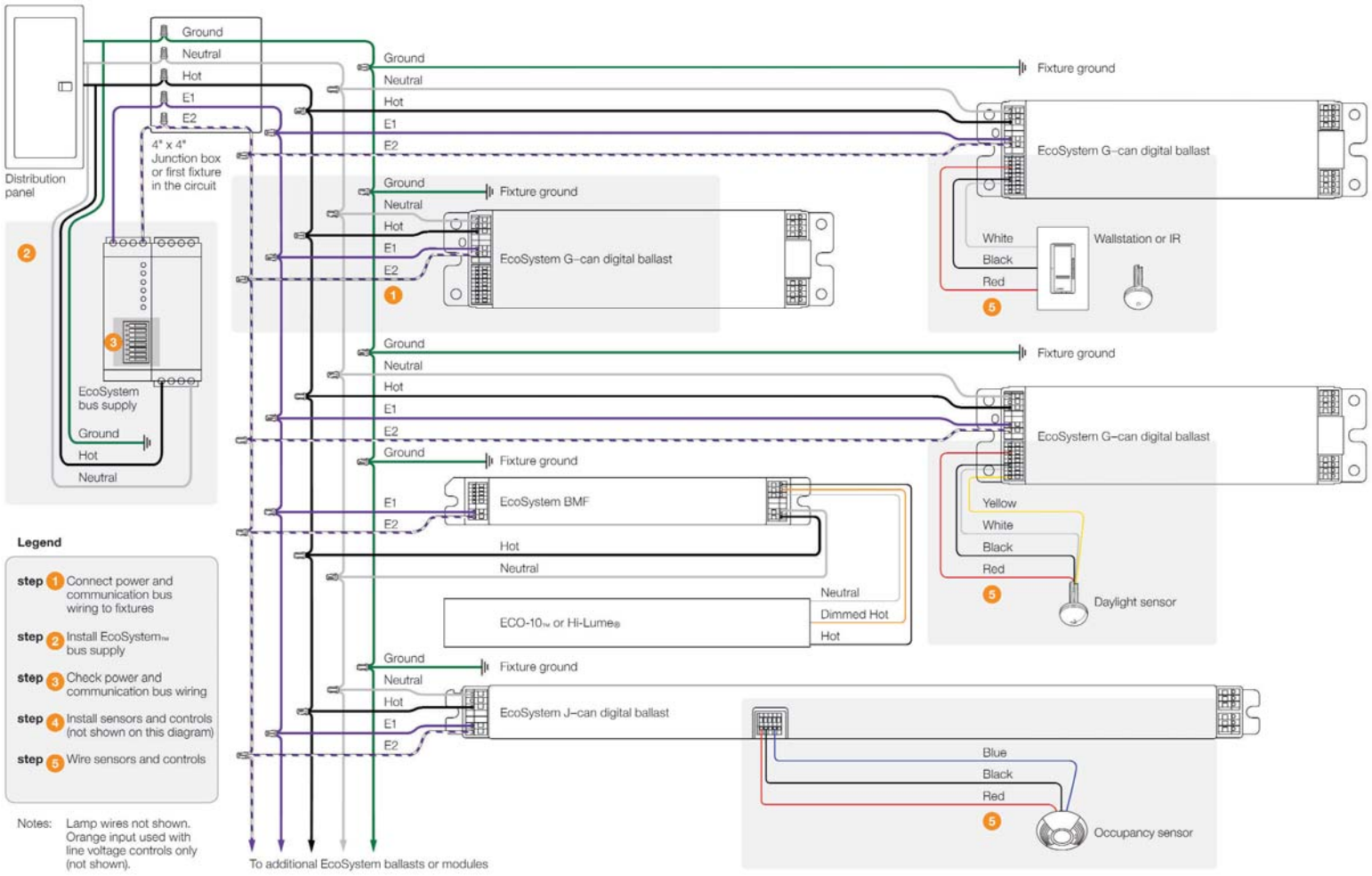
Job Name:

Job Number:

Toll-Free 24/7 Technical Support Line: 1.800.523.9466

Field Service Scheduling 1.800.523.9466 ext.4439

Wiring diagram



EcoSystem® | Quick Install Guide

Thank you for purchasing EcoSystem light control solutions by Lutron.

EcoSystem is an energy–efficient way to control the light in your space. These are some of the benefits that set EcoSystem apart:

- Every lighting fixture is a connection point for sensors and controls
- Sensors and controls connect to fixture with low-voltage wires and a PDA-style programmer assigns them to any fixture(s)
- No interfaces, power packs, or power rewiring
- Class 1 or Class 2 control wiring that can be in any order
- No need for separate controllers or equipment from multiple manufacturers

EcoSystem is designed to be simple, but if you have any questions that are not covered in this Quick Install Guide, visit www.lutron.com/ecosystem or call the Technical Support Center at 1.800.523.9466.

LUTRON®

www.lutron.com

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Coopersburg, PA 18036-1299

World Headquarters 1.610.282.3800
Technical Support Center 1.800.523.9466
Customer Service 1.888.LUTRON1

 | P/N 367-1400

LUTRON®

EcoSystem™ | Quick Install Guide

Start here

These six steps ensure the quickest installation of EcoSystem.

1. Connect power and communication bus wiring to fixtures
2. Install EcoSystem bus supply
3. Check power and communication bus wiring
4. Install sensors and controls
5. Wire sensors and controls

Consult individual component installation guides for details on each step.

6. When all the steps are completed and checked, call 1.800.523.9466 to schedule on-site Lutron commissioning. (Allow 10 days for scheduling)

Keep this document for your record.

If everything is wired correctly and issues persist, call 1.800.523.9466 for 24/7 technical assistance.

LUTRON

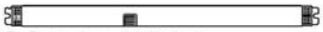
Review components

For each system ensure you have:

A At least one of these (may be pre-installed in the light fixtures):


EcoSystem G–can digital ballast


EcoSystem BMF and ECO-10™ or Hi-Lume®


EcoSystem J–can digital ballast

C At least one of these devices:


Bus supply
CS-1L-CM,
CS-1L-WM

D A programmer to make any adjustments from the standard operation of the system:


Programmer
C-PDA-CLR

B At least one of these devices:


Daylight sensor
C-SR-M1-WH


IR receiver
C-R-M1-WH


Wallstation
(1 button)
CC-1BRL-WH


Wallstation
(4 button)
CC-4BRL-WH

E Optional devices:

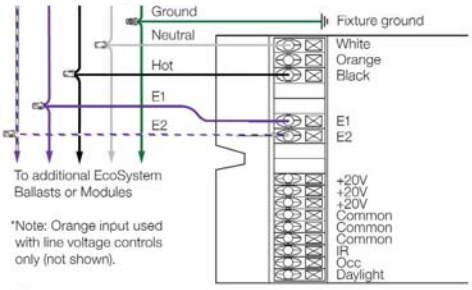

Occupancy sensor
(wall mounted)
LOS-WDT-WH (shown)
LOS-WDT-R-WH
LOS-WIR-WH


Occupancy sensor (ceiling mounted)
LOS-CUS-WH (shown)
LOS-CDT-(500, 1000, 2000)-WH
LOS-CDT-(500R, 1000R, 2000R)-WH
LOS-CIR-(450, 1500)-WH


IR handheld
control
C-FLRC-WH

step 1 Connect power and communication bus wiring to fixtures

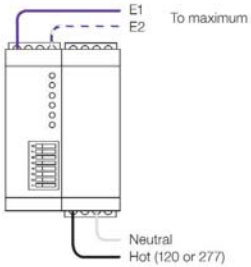
Connect power wiring (hot, neutral, ground) to each fixture.
Connect bus cable (E1, E2) to each figure.
Once complete, energize power to all fixtures, they should turn on to full brightness. If fixtures do not go to full brightness, check wiring and consult ballast installation guide.



☐ Checked by: _____

step 2 Install EcoSystem™ bus supply

Connect power wiring (hot, neutral, ground) to the bus supply.
Connect bus cable (E1, E2) to the bus supply.
The EcoSystem bus supply will provide 18 VDC output across the E1 and E2 wires to every fixture with an EcoSystem ballast or module.



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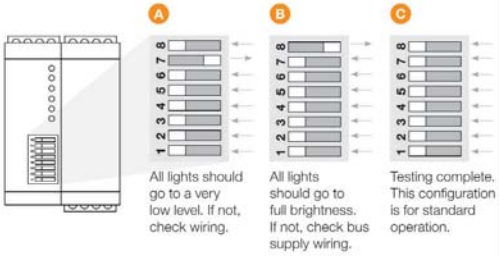
step 3 Check power and communication bus wiring

Power light fixtures and bus supply.
Use dip-switches on bus supply to check wiring.



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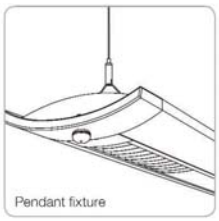
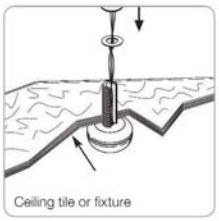
step 4 Install sensors and controls

Install sensors and wallstations as shown in the drawings.
Mount daylight sensors to ceiling tiles, or bottom of pendant fixtures. Consult drawings or instruction sheets for location of the daylight sensor, occupancy sensors and wallstations.


Pendant fixture


Ceiling tile or fixture

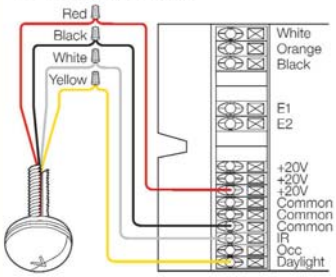
☐ Checked by: _____

step 5 Wire sensors and controls

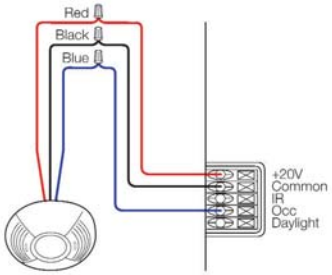
22AWG solid wire to the closest ballast or module. Do not exceed 100 ft from sensor to ballast.

Connect only one sensor to the IR & Daylight inputs. Wire sensors to one ballast only. Sensors will be programmed to control more than one ballast.

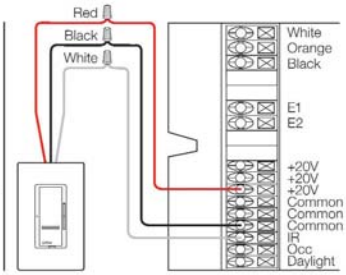
G–can with daylight sensor



J–can with occupancy sensor



G–can with wallstation



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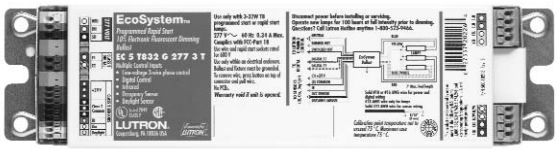
*Note: Orange input used with line voltage controls only (not shown).

EcoSystem™ Digital Ballast | Installation Guide



LUTRON

Lutron controls your light.™

Contents

1 Before You Get Started: Important Information About EcoSystem™ Ballasts

This section of the installation guide includes important topics that a fixture manufacturer or an electrical contractor needs to know before installing and wiring an EcoSystem dimming ballast. Read this section carefully before proceeding to the installation steps beginning on page 9.

What is EcoSystem?

Lutron's EcoSystem lighting network starts with one simple but essential building block—the EcoSystem dimming ballast—which replaces the non-dim ballast in a fixture. A variety of sensors or wallstations are connected directly to the ballast to create an efficient lighting control system. All of this can be accomplished on an individual ballast or up to 64 ballasts connected together - allowing sensors to have single or multiple zone control.

EcoSystem Ballasts

EcoSystem ballasts are available for many voltages and lamp types, please consult Lutron. If a ballast is not available for direct control via the EcoSystem Bus, a standard Lutron dimming ballast can be connected using a Ballast Module.

EcoSystem Ballast Wiring Snapshot

EcoSystem ballasts require power, like non-dim ballasts, and also receive low voltage control inputs from the EcoSystem Bus and sensors. Use this guide for ballast wiring details. A wiring summary is shown below:

Wire Power (solid #18 - #16 AWG) here

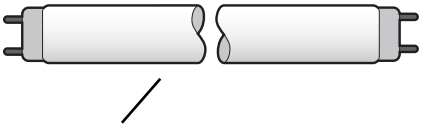
EcoSystem Bus (solid #18 - #16 AWG)- 2 low voltage wires connect up to 64 EcoSystem ballasts together. Wire bus Class 1 or Class 2 here

Lamp Wires (solid #18 AWG)- 2 wires for each lamp socket

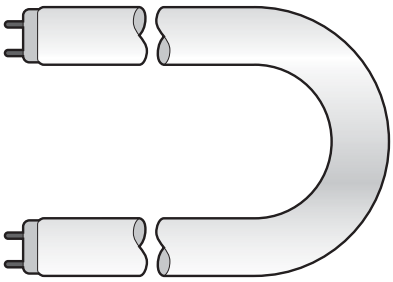
Class 2 Sensors (solid #22AWG)- Connect an EcoSystem daylight sensor, occupant sensor, and wallstation or IR receiver here

Lamp Types

EcoSystem T8 ballasts may be used with either linear or U-bend T8 lamps. T5 ballasts may only be used with linear T5 lamps.



T8/T5 linear lamps are straight with two pins at either end.



T8 U-bend lamps have a “U” shape and two pins at either end.

Seasoning New Lamps

Consult lamp manufacturer for lamp seasoning requirements prior to dimming.

To season lamps perform one of the following:

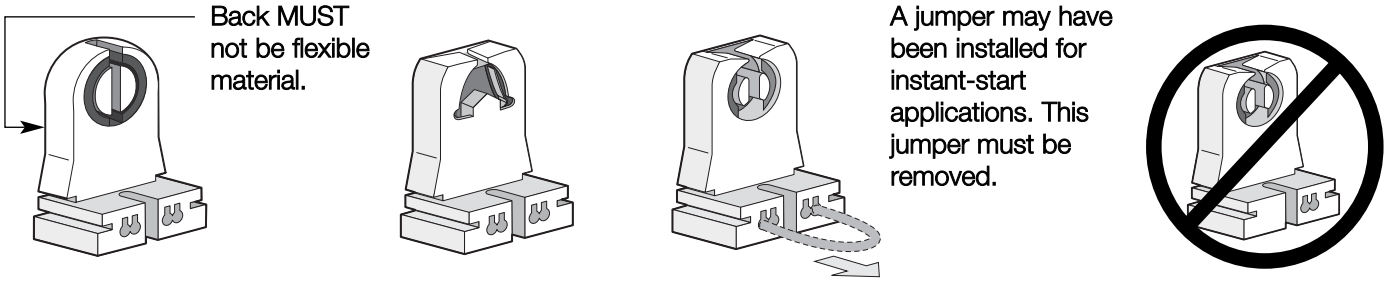
- Operate new lamps at full output continuously.
- Remove lamps from another (non-dimmed) area; re-install in dimming area.
- Use a seasoning station to build an inventory of properly seasoned lamps.

Rapid-Start Lamp Sockets

EcoSystem ballasts require rapid-start lamp sockets. Lutron recommends sockets that meet IEC 60400. Lutron recommends a rotary locking variety, with metal contacts that make firm contact with the lamp pins. The slide-in or knife-edge varieties can also be used.

Backing material of the socket should be the same material as the rest of the socket body, and should not deform with over-insertion of wires or lamp changes. For detailed specifications on sockets, refer to *Application Note #122: Lampholders and Lampholder Installation for Fluorescent Dimming*.

CAUTION:
Using EcoSystem ballasts with instant-start sockets may damage the ballasts.



Rapid-start (rotary locking variety)

Rapid-start (slide-in variety)

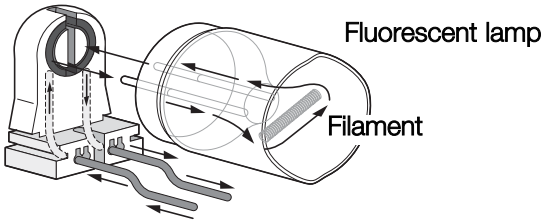
Rapid-start (knife-edge variety)

Instant-start (do not use)

Why Rapid-Start Sockets Are Important

Dimming ballasts must access both lamp pins to heat the lamp filaments. Without heating, the lamp will fail prematurely. Good lamp pin-to-socket contact and correct wiring are required to produce flicker-free dimming and to ensure long lamp life.

T8/T5 rapid-start socket



Flow of electricity for filament heating

Ballast Wiring

Maximum Wire Lead Length

Lead lengths from a ballast to the sockets must not exceed 7 ft (2.1 m). Exceeding the maximum lead length may cause lamp flicker, improper starting, and/or reduced lamp life.

Gauge Requirements

Terminal blocks on the ballast are poke-in wire trap connectors that accept the following wire gauges:

- Mains Wiring, EcoSystem Bus, Lamp Wiring: #18 – #16 AWG (1.02 – 1.29 mm) solid
- Class 2 Sensor Wires: #22 AWG (0.635 mm) Solid

✓ *NOTE: Ballast terminals hold only one solid wire. In most cases, a wire connection to the distribution bus or EcoSystem Bus is required.*

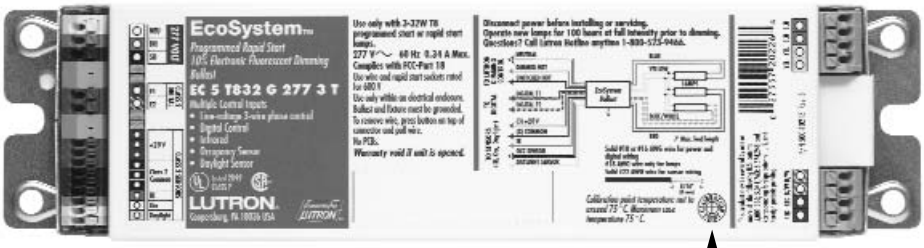
Separating Class 1 and Class 2 Wires

The EcoSystem Bus may be connected to the ballast using Class 1 or Class 2 wiring methods. Sensors and wallstations must be wired Class 2. When using both Class 1 and Class 2 wiring methods, it is essential to Class 2 wires separate from Mains and Class 1 wires by at least 0.25" (6.35 mm). Consult all applicable national and local codes for wiring restrictions.

Ballast Temperature

Ambient Operating Temperature

Lutron ballast specifications are based on a maximum case-temperature limit. The maximum temperature varies from ballast to ballast. Lutron marks the temperature rating of a location on the ballast case defined as the calibration point. Operating the ballast within the calibration point rating ensures that the maximum case-temperature rating has not been exceeded. Exceeding this rating will void the ballast's warranty.



Example Ballast and Calibration Point

Calibration Point Measurement Example

1. Ballast label reads: "Calibration point temperature not to exceed 65 °C. Maximum case temperature 75 °C."

2. Calibration point is measured and found to be 65 °C, therefore, case temp is less than 75 °C, and ballast will operate as specified.

Tips for Controlling Ballast Temperature

- DO attach the ballast to a grounded metal fixture.
- DO NOT mount the ballast on a poor thermal conductor, such as wood, plastic, etc.
- DO limit the quantity of the ballasts in an enclosed space (for instance, a cove installation or a strip fixture) so that the ballasts do not operate above the rated temperature.

Fixture Design

When designing a fixture, ensure that the calibration point and the maximum case temperature is not exceed under the worst-case expected conditions.

Control Methods

Lutron offers a variety of ways to control EcoSystem ballasts. Depending on the type of room or facility, a combination of sensors and wallstations can be used to control the fixtures.

EcoSystem Bus

The EcoSystem Bus enables you to connect a ballast to other EcoSystem ballasts and a Bus Supply to create a system of up to 64 ballasts. Any sensor or wallstation connected to an EcoSystem ballast can communicate with any or all fixtures on the EcoSystem Bus to form a subsystem. Subsystems are configured and programmed using the handheld EcoSystem Programmer.

Standard 3-Wire Control

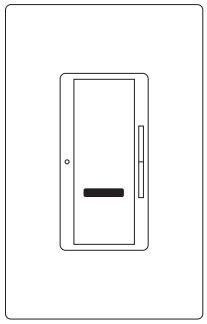
This is high voltage dimming from a traditional Lutron dimmer. Ballasts controlled by this method require three input wires: switched hot, dimmed hot, and neutral. The switched hot and neutral provide power to the ballast. The dimmed hot provides a line voltage dimming signal from the control to the ballast. EcoSystem digital inputs to the ballast (E1 and E2) must be provided as well. 3-wire dimming inputs cannot be grouped via the EcoSystem programmer, only ballasts hardwired to a 3-wire dimmer will be controlled by the 3-wire dimmer.

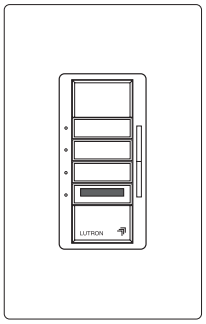
✓ *NOTE: Digital wiring and 3-wire input can be used simultaneously (for example, automatic digital control and manual control through a "local" dimmer.*

Digital Wallstations

One-button wallstations enable users to manually control any fixtures on the bus for simple on/off or raise/lower control. Scene control wallstations enable users to recall different lighting scenes in multi-purpose rooms. Wallstations also operate as programming points.

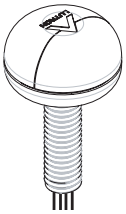
✓*NOTE: An IR sensor and wallstation cannot be connected to the same ballast.*





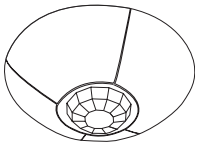
Daylight sensor

Designed to harvest natural light and maintain specific light levels in the space, the sensor automatically dims the lights when the available daylight is high or brightens the lights when the daylight is low. The sensor can control an individual fixture or a group of fixtures. In addition, the entire system can be programmed through the daylight sensor's integrated infrared receiver.



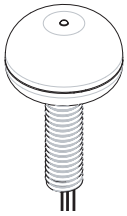
Occupant sensor

Automatically turns lights off in assigned fixtures when the space is unoccupied.



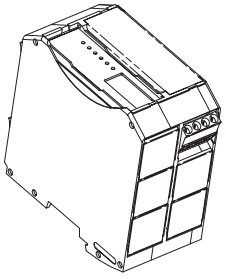
Infrared (IR) receiver

Provides personal control via an IR remote. The receiver wires directly to the ballast. It allows control an individual fixture or group of fixtures. It can be used as a programming port to program the system.



EcoSystem Bus Supply

The EcoSystem Bus Supply powers the communication bus between devices, and is capable of supporting a network of up to 64 ballasts or ballast modules, 32 occupant sensors, a combination of 64 wall controls and infrared (IR) receivers, and 8 daylight sensors.



2 Step by Step: Installing and Wiring an EcoSystem™ Dimming Ballast

This section lists the typical workflow followed to mount and wire an EcoSystem ballast. This section also describes the procedures needed to perform each step. If you are installing a fixture that is already mounted and partially wired, you will not need to perform all of the steps.

✓ *NOTE: If you have not already done so, refer to "Before You Get Started: Important Information About EcoSystem Ballasts" on page 2.*

Typical Workflow

Listed below is the typical workflow followed to mount and wire an EcoSystem ballast.

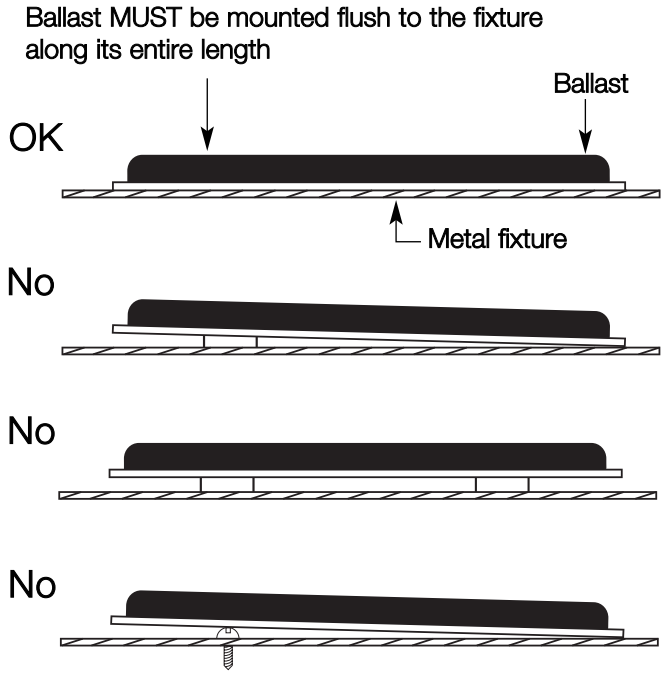
CAUTION:
Make sure the circuit breaker to all components is turned OFF before performing any wiring.

1. Mount the ballast.
2. Wire the lamp sockets.
3. Wire the ballast to the lamp sockets.
4. Connect line voltage (distribution panel or dimmer).
5. Connect the EcoSystem Bus.
6. Connect a wallstation.
7. Connect a daylight, occupant, and/or infrared sensor.
8. Mount the lamps.
9. Test the ballast.

Refer to the following pages for detailed procedures on how to perform each step.

Mounting the Ballast

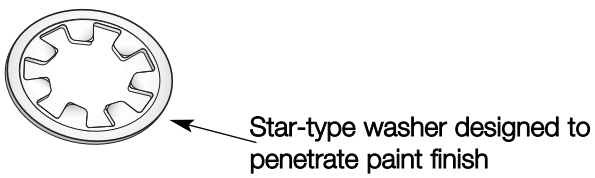
▶ **To mount the ballast in the fluorescent fixture,** use two screws to secure it to the fixture or 1 screw and a crow's foot. The ballast MUST be mounted flush to the fixture along its entire length.



CAUTION:

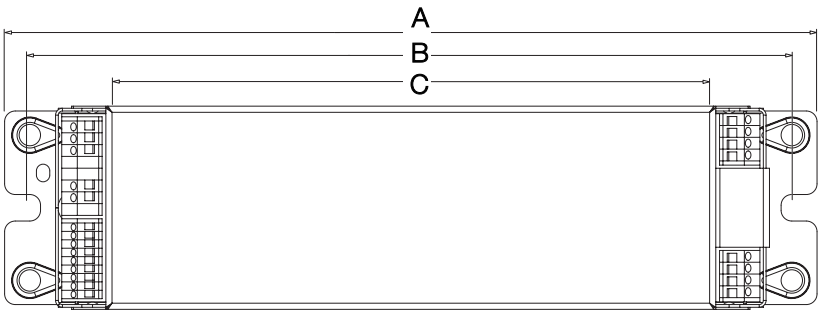
- Ballasts generate heat and must have a way to dissipate it. This is done by thermal conduction to the fixture.
- Screws, knockouts, dimples, or features that raise the ballast off the fixture (even slightly) are not acceptable since they impair the ballast's ability to dissipate heat.
- Do not mount the ballast on the fixture cover plate that holds the lamps. This mounting location is often the hottest point on the fixture.

Use "star-type" screws, washers, or nuts to penetrate the paint finish on the ballast and ground both the fixture and the ballast to the earth ground. Attach both ends of the ballast to the fixture to ensure proper grounding.

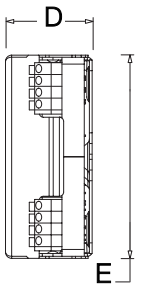


Ballast Dimensions

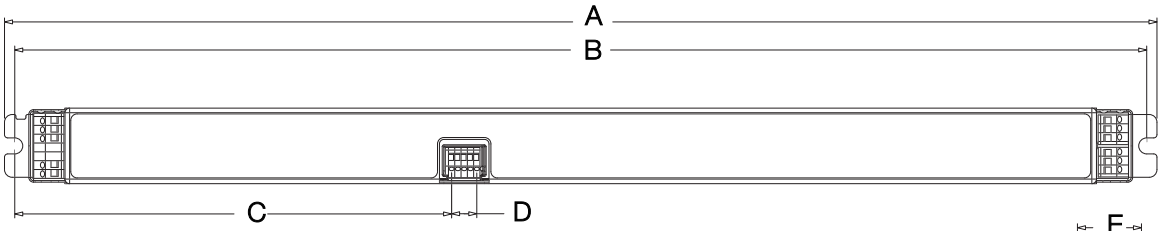
▶ **Two different EcoSystem Ballast Sizes are used.** Follow the guides below for mounting. “G” or “J” in the model number of the ballast (prior to the ballast voltage) indicates ballast dimensions.



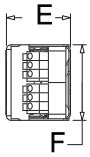
G Can Outline



G Can Dimensions
A = 9.5'' (241 mm)
B = 8.9'' (226 mm)
C = 7.1'' (180 mm)
D = 1.00'' (25 mm)
E = 2.38'' (60 mm)



J Can Outline



J Can Dimensions
A = 18.0'' (457 mm)
B = 17.68'' (449 mm)
C = 6.82'' (173 mm)
D = .39'' (10 mm)
E = 1.0'' (25 mm)
F = 1.18'' (30 mm)

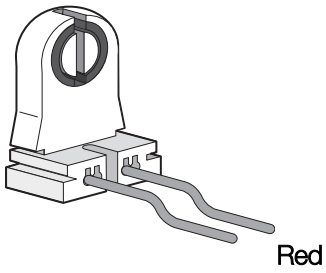
Wiring the Lamp Sockets

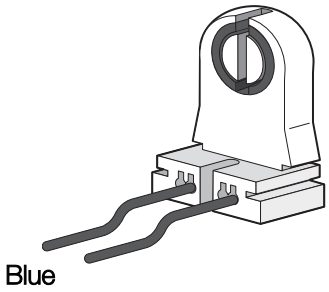
▶ **To wire lamp sockets,** refer to the following illustrations for one-lamp, two-lamp, three-lamp, and U-bend fixtures.

CAUTION:

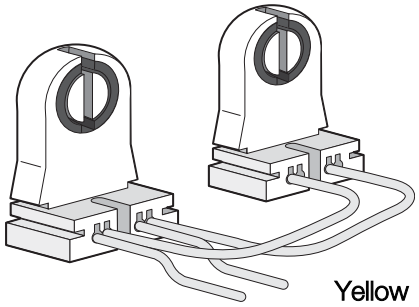
- Make sure the circuit breaker to the ballast is OFF before wiring.
- Use only rapid-start rotary locking, slide-in, or knife-edge sockets.

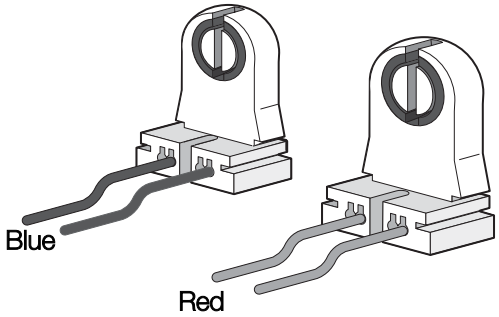
1-Lamp Socket Wiring



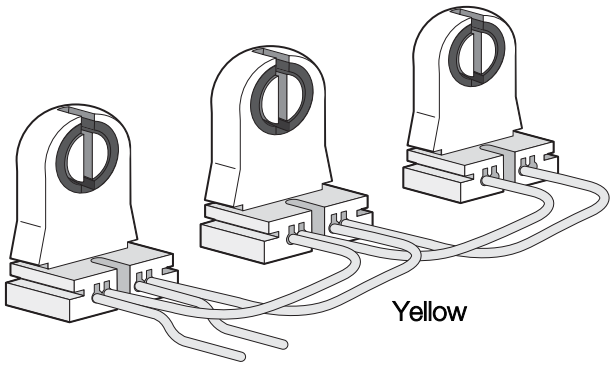


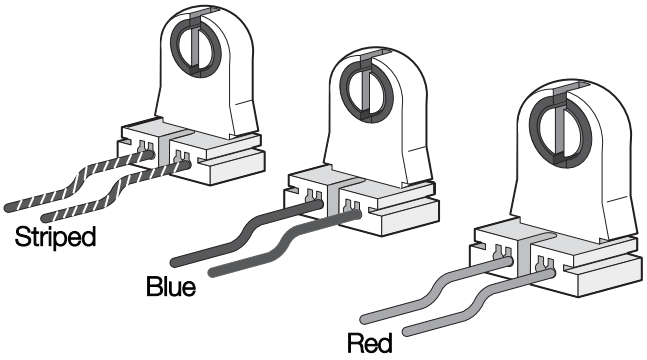
2-Lamp Socket Wiring



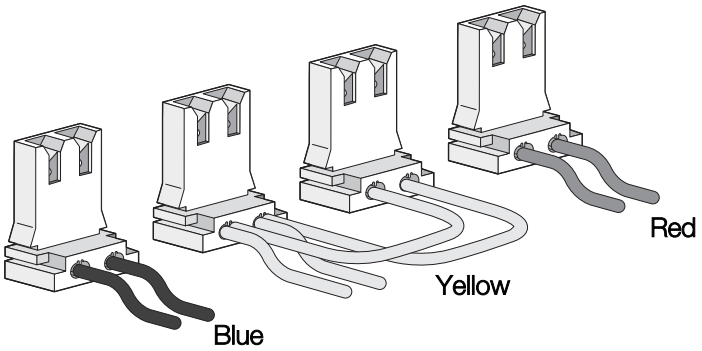


3-Lamp Socket Wiring





U-Bend Lamp Socket Wiring



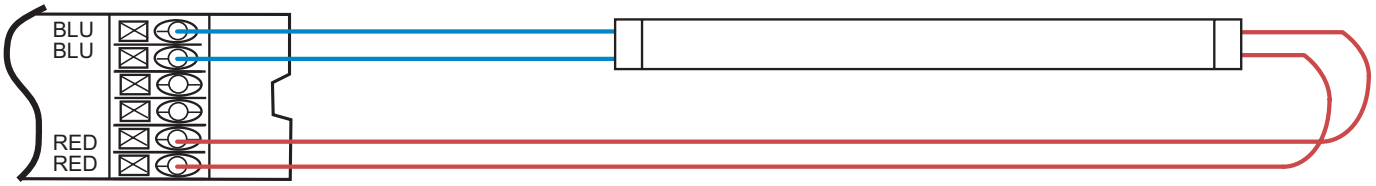
Wiring the Ballast to the Lamp Sockets

▶ **To wire the ballast to the lamp sockets,** refer to label on the dimming ballast. Images below are for reference only.

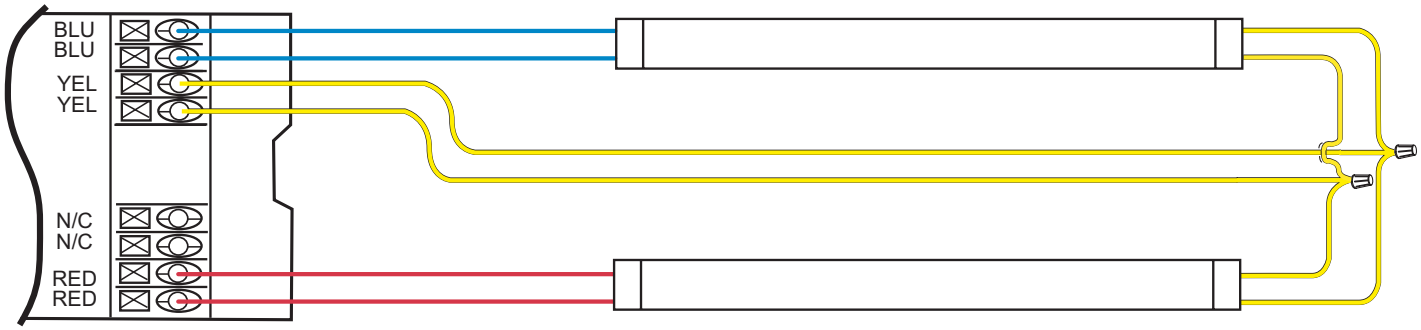
CAUTION:

- Make sure the circuit breaker to the ballast is OFF before wiring.
- Lead lengths from ballast to socket must not exceed 7 ft (2.1 m) for T8 lamps.

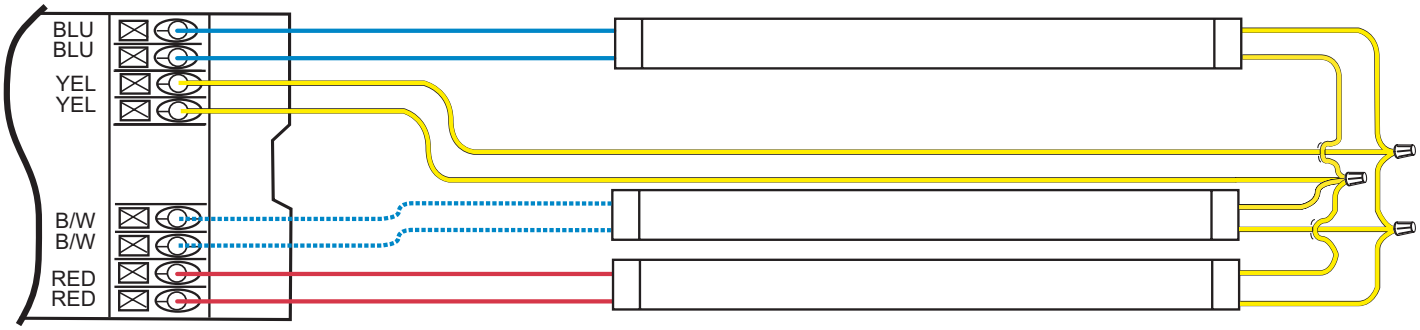
Wiring to One Lamp (J can shown)



Wiring to Two Lamps (G can shown)



Wiring to Three Lamps (G can shown)



Connecting the Line Voltage (Distribution Panel)

▶ **To wire the line voltage from the distribution panel,** wire the hot and neutral conductors from the distribution panel to the ballast terminals labeled HOT and NEU.

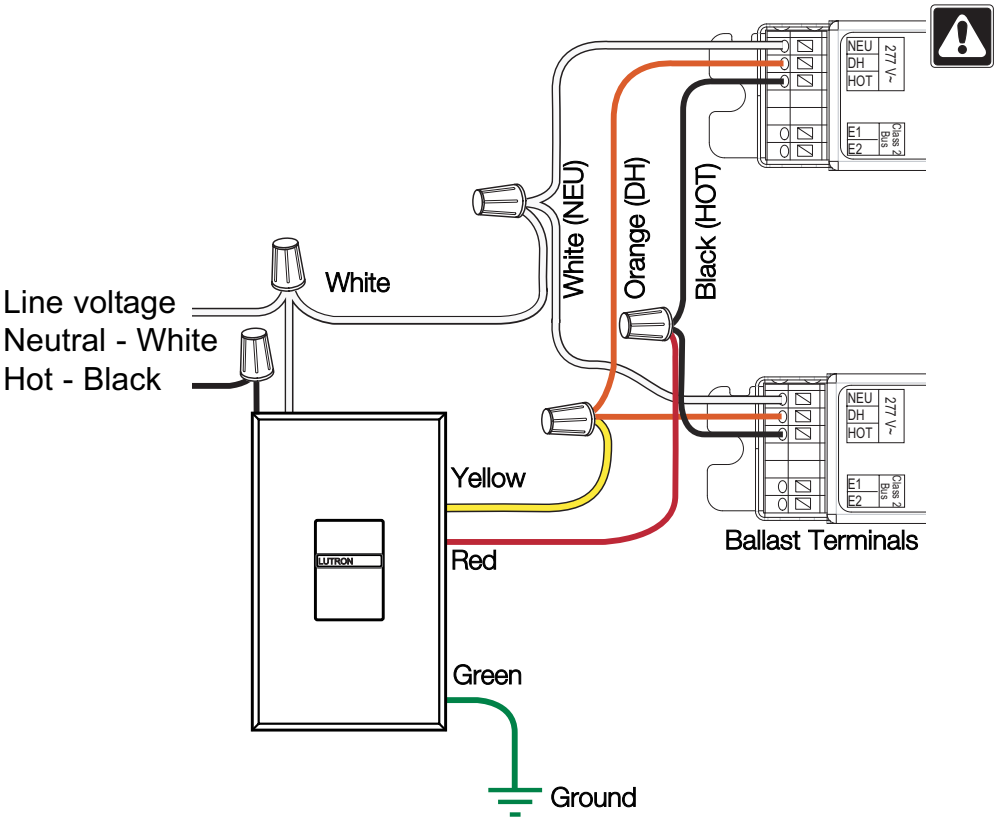
Wire color designations for line voltage terminals on the ballast are:

- White = neutral
- Black = hot (mains)

✓ *NOTE: Mains Voltage must match voltage specified on the ballast label.*

Connecting the Line Voltage (Dimmer or Dimming Panel)

▶ **To wire the line voltage from a dimmer or dimming panel,** wire the switched hot, dimmed hot, and neutral conductors from the dimming panel or dimmer to the ballast terminals as shown.



CAUTION:

- Make sure the circuit breaker at the distribution panel is OFF before wiring.
- The ballast terminals hold only one #18 – #16 AWG (1.02 – 1.29 mm) solid wire.

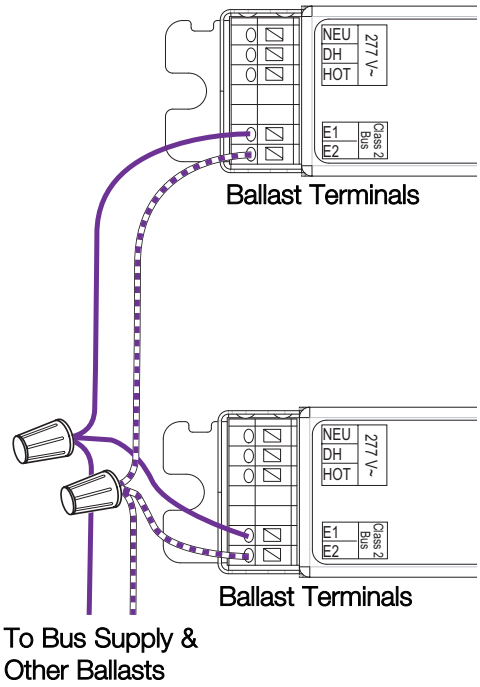
Connecting the EcoSystem Bus

▶ **To connect a ballast to other ballasts,** wire the EcoSystem bus as shown below. Note that:

- Bus wiring is topology-free (can be wired as daisy chain, star method, T-tap, etc).
- The power supply does not have to be located at the end of the EcoSystem bus.
- E1 and E2 wires are not polarity sensitive.
- Bus length is limited by the wire gauge used for E1 and E2 as follows:

Wire Gauge	Maximum Bus Length
#12 AWG (2.05 mm)	2,200 ft (670 m)
#14 AWG (1.63 mm)	1,400 ft (470 m)
#16 AWG (1.29 mm)	900 ft (270 m)

- Consult Bus Supply installation instructions for bus wiring details.



CAUTION:

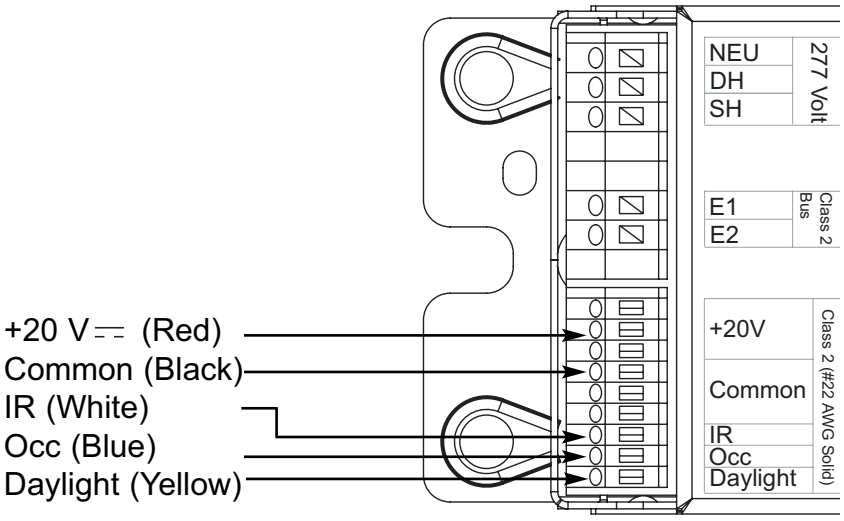
- Make sure the circuit breaker to the ballast is OFF before wiring.
- Ballast terminals hold only one #16 – #18 AWG solid wire. In most cases, a wire connection to the EcoSystem bus is required.
- Follow all applicable local and national codes.

Connecting Sensors and Wallstations

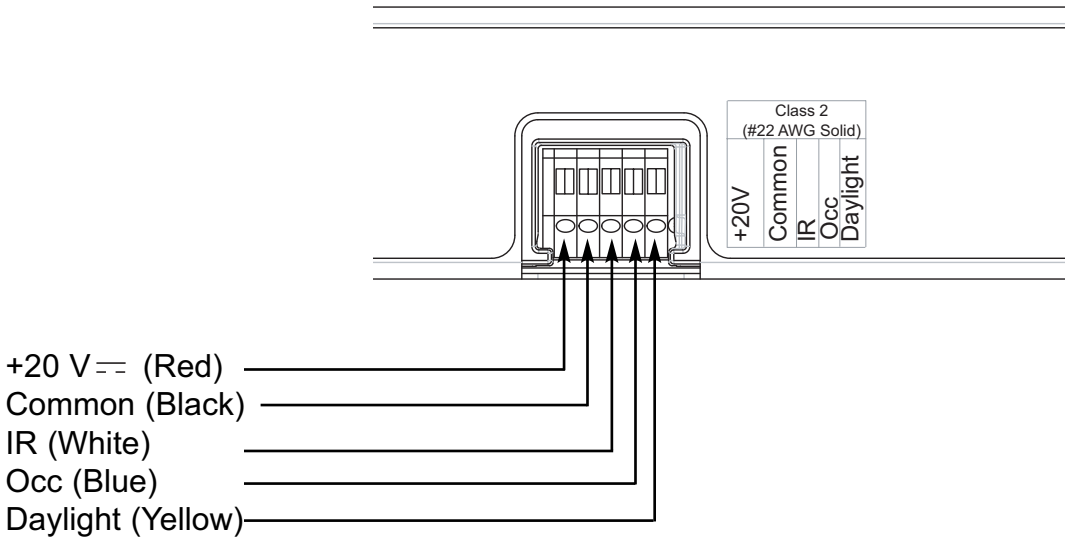
▶ **To connect a daylight sensor, occupant sensor, wallstation and/or infrared receiver,** refer to the instruction sheets provided with the devices. Diagrams for the Class 2 Sensor/Wallstation terminals are shown below.

✓*NOTE: The ballast accepts only one infrared input (either daylight sensor, IR sensor or Wallstation).*

G Can Class 2 Sensor Terminals



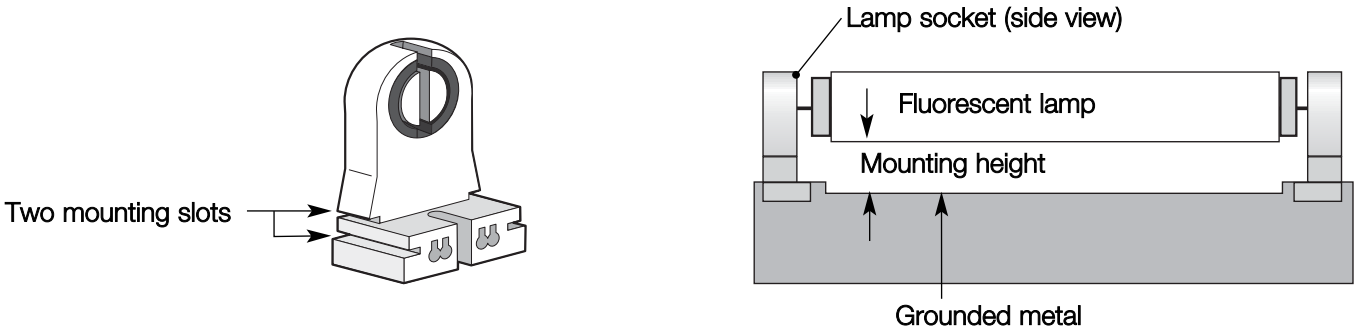
J Can Class 2 Sensor Terminals



Mounting the Lamps

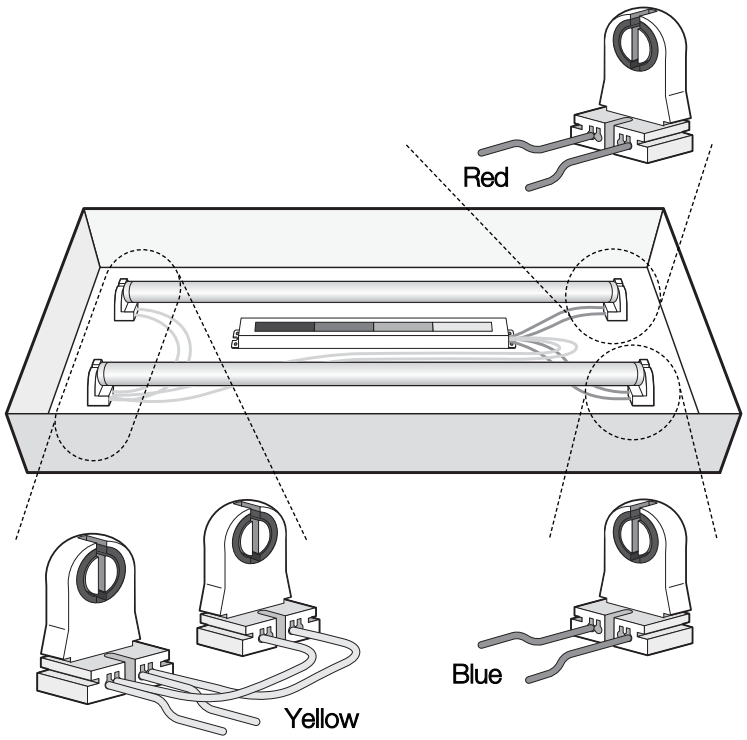
▶ **To mount the lamps,** use the mounting slots on the lamp sockets to keep the lamps between 1/4'' and 3/4'' (3.2 mm – 19.1 mm) away from the grounded metal surface of the fixture, as shown in the following illustration. Having a lamp too close to the grounded metal will not reduce lamp life but may cause a visible difference in brightness along the length of the lamp.

Rotate lamp pins to ensure good contact with the socket contacts. If not rotated properly for good connection, lamps may fail prematurely.

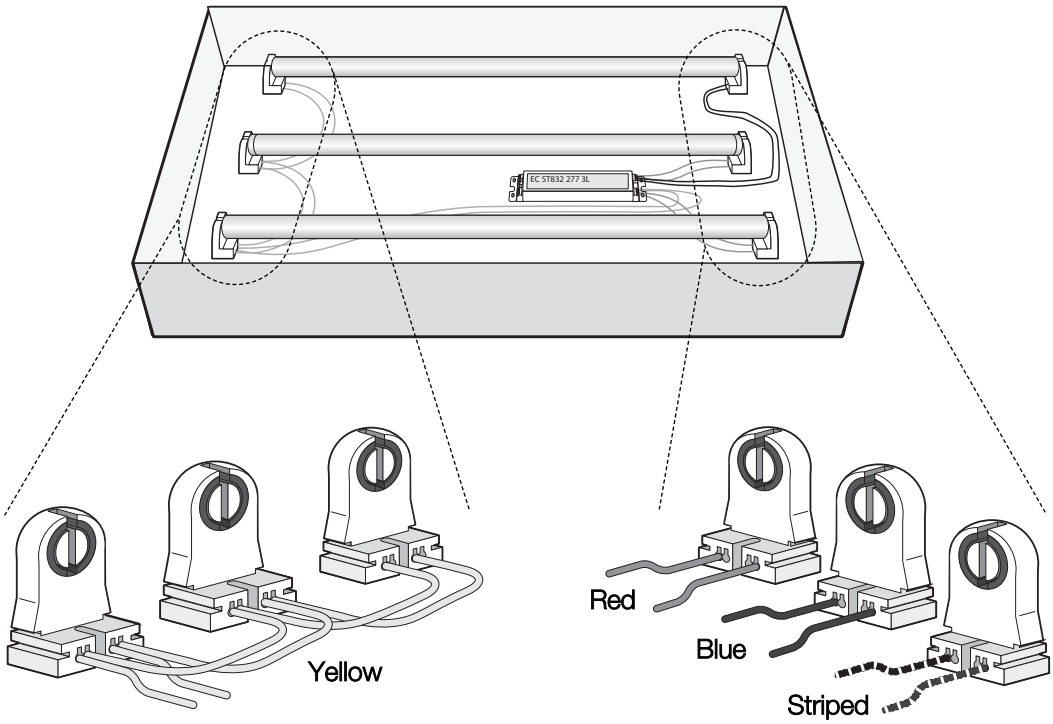


Sample Mounted and Wired Ballasts

Typical 2-Lamp Linear Fixture with Ballast Mounted in Center Trough



Typical 3-Lamp Linear Fixture with Ballast Mounted in Center Trough



Testing the Ballast

▶ **To check the ballast after mounting and wiring,** complete the following checklist.

✓ **Confirm all ballasts are properly wired,** double check all mains inputs and EcoSystem bus wires are properly terminated at the ballast. Confirm that the mains input voltage does not exceed ballast rated voltage. Terminate the EcoSystem Bus at the EcoSystem Bus Supply. If the bus is not connected, the lamps will remain at full intensity.

✓ **Complete installation,** confirm all fixtures and enclosures are properly closed, mounted, and grounded.

✓ **Power all ballasts,** all lamps should strike to full light output.

If any ballasts fail to strike lamps, confirm mains wiring to the ballast is correctly connected and of the appropriate voltage.

If lamps strike, drop out, or continue to flash, disconnect power and inspect ballast to lamp socket wiring. All wiring should match the wiring diagram on the ballast case.

✓ **Confirm proper dimming,** follow the instructions with the EcoSystem Bus Supply to manually override all ballast light levels to low end, off, and back to high end. If any ballasts do not react to the override commands, check EcoSystem Bus wiring and that the EcoSystem Bus Supply is powered and connected.

Notice:
Consult lamp manufacturer for lamp seasoning requirements prior to dimming

Ballast Warranty

LUTRON ELECTRONICS CO., INC.

BALLAST THREE YEAR LIMITED WARRANTY

For a period of three years from the date of shipment by Lutron, Lutron warrants each new ballast to be free from manufacturing defects. Lutron will, at its option, repair or provide a comparable replacement for any defective ballast that, in Lutron's opinion, has been installed and operated under pursuant to Lutron's product specifications and the applicable provisions of the National Electrical Code and of the Safety Standards of Underwriters Laboratories so long as Lutron is promptly notified of the defect within the three year warranty period and, if requested by Lutron, the ballast, is returned to Lutron.

This warranty is in lieu of all other express warranties and of all implied warranties, including implied warranties of merchantability and of fitness for a particular purpose. This warranty does not cover: the cost of installation, removal or reinstallation; damage resulting from misuse, abuse, or improper or incorrect repair; damage from improper wiring or installation; or incidental or consequential damages. Lutron's liability on any claim for damages arising out of or relating to the manufacture, sale, installation, delivery, or use of the ballast is limited to the purchase price of the ballast.

No Lutron agent, employee or representative has any authority to bind Lutron to any affirmation, representation or warranty concerning the ballast. 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 seller be liable or responsible for any (i) consequential or special damages, (ii) repair work undertaken without Lutron's prior consent, (iii) ancillary equipment not furnished by Lutron which is attached to or used in connection with the ballast, all such equipment being expressly excluded from this warranty, or (iv) damage to the ballast resulting from the use of ancillary equipment not furnished by Lutron for use with the ballast.

This warranty provides specific legal rights. Other rights, which vary from state to state, may exist. 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.

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 a covered ballast or this Warranty, or to make a warranty claim. Please provide the exact model number when calling.

USA and Canada (24 hrs/7days) Technical Support +1.800.523.9466
Other countries (8 a.m. - 8 p.m. ET) Technical Support +1.610.282.3800
http://www.lutron.com/ecosystem

These products may be covered under one or more of the following U.S. patents: 6,452,344, 6,674,248, and corresponding foreign patents. U.S. and foreign patents pending.

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EcoSystem™ Programmer | Programming Guide

LUTRON
Lutron controls your light...

Contents

1 Introduction

What is EcoSystem?

EcoSystem is a fluorescent lighting system capable of controlling fluorescent lights through automated and manual dimming. The automatic fluorescent light controls include motion sensors and daylight sensors, which monitor a space and appropriately adjust the light to avoid wasted energy and improve the work environment. The manual controls of the system include wall dimmers and handheld remote controls, which allow personal interaction with the lighting by the people in the space. EcoSystem can also work together with the security, HVAC, and other building management systems to provide the appropriate lighting for every situation.

The EcoSystem Bus

EcoSystem ballasts can be connected to one another to create a system of up to 64 ballasts. Any infrared (IR) receiver, sensor, or wall control connected to a ballast can communicate with any or all fixtures on the bus. Subsystems are configured and programmed using the handheld programmer.

EcoSystems that contain more than one ballast, or ballast module, require an EcoSystem bus power supply. This component powers the communication bus between devices, and is capable of supporting up to 64 ballasts or ballast modules, 32 occupant sensors, 64 wall controls, 64 infrared (IR) receivers, and 8 daylight sensors.

EcoSystem Programming

EcoSystem is programmed using the handheld EcoSystem programmer. Using a stylus, users make onscreen selections and transmit programming instructions via infrared, similar to a TV remote.

Transmitting to Control Devices with IR Receivers

Programming information is transmitted wirelessly from the EcoSystem programmer to a sensor or control with an integrated IR receiver. When programming, stand within 8 feet of the sensor or control and point the top of the programmer directly at it.

Keypads and IR receivers have LEDs that blink when programming messages are transmitted.

If the device does not receive the signal, move closer to the device or adjust the angle of the programmer. It is also important to ensure that the programmer battery is charged and has enough strength to transmit the signal to the device.

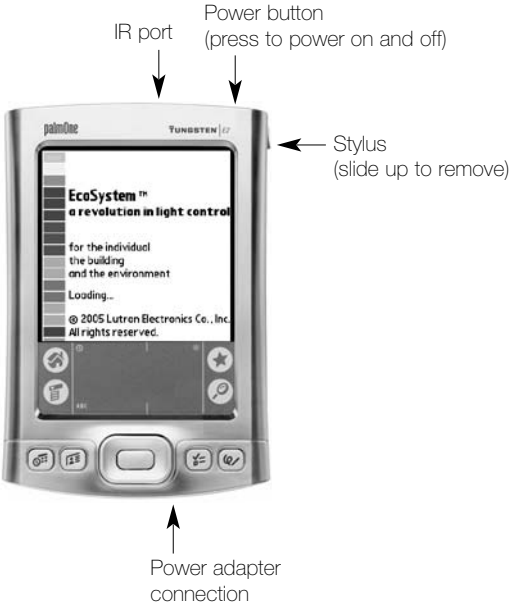
NOTE: Occupant sensors do not have integrated IR receivers.

Getting Familiar with the Programmer

2

This section describes how to perform basic system operations.

EcoSystem Programmer



Logging In

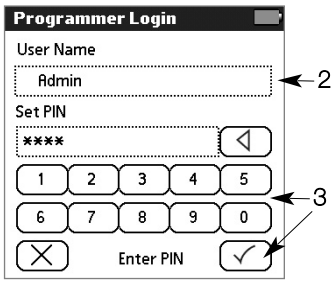
When the programmer is powered on, the user is prompted to enter a user name and personal identification number (PIN). PINs must include four to seven numbers. The default PIN is 4321.

1 Press the power button on the top of the programmer to power it on.

2 When the Programmer Login screen displays, select your User Name.

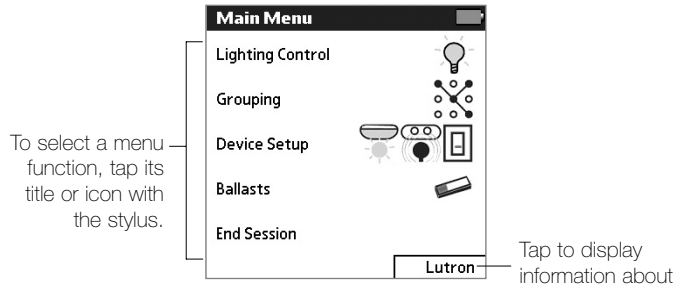
3 Tap the keypad with the stylus to enter your PIN, then tap ✓.

NOTE: To backspace, tap ◁.



Making Screen Selections

After logging in, the Main Menu becomes the primary navigation screen. To select a menu function, tap its title or icon with the stylus. To make other onscreen selections, simply tap the appropriate option.



Control Device Icons

The following control device icons are used on programmer screens.


Daylight sensor


Occupant sensor


Wallstation

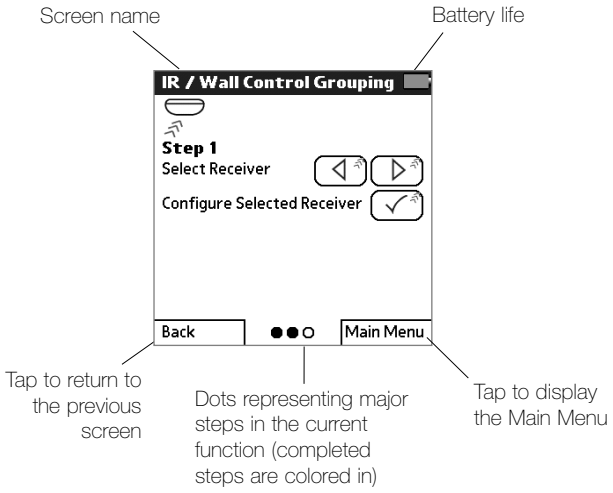

IR receiver


Ballast


Contact closure

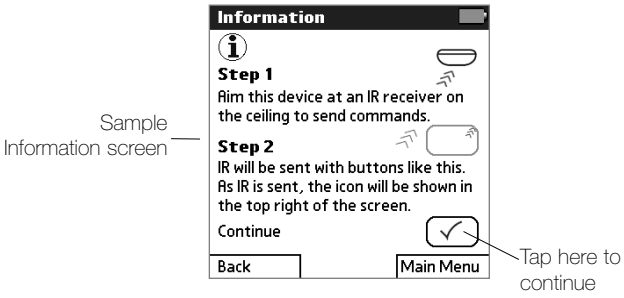
Programming Screen Components

The main components of EcoSystem programming screens are identified below.



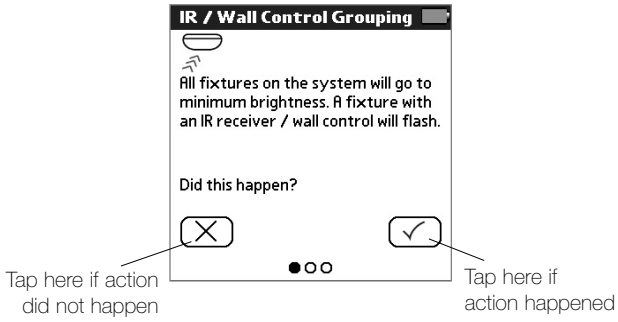
Information Screens

Information screens are displayed after menu functions are selected. These screens are for informational purposes only. Read the onscreen instructions and then tap ✓ to continue.



Prompt Screens

Prompt screens ask the user to confirm that an appropriate action occurred during programming.



Charging the Programmer

To charge the EcoSystem programmer, plug the AC charger into an outlet and connect it to the base of the programmer.

Logging Out

To exit the programmer software, from the Main Menu, tap End Session and then Log Out.

Programming Your EcoSystem

3

Typical Programming Workflow

Following is the typical workflow needed to program a new EcoSystem when it is installed:

1. Address the system. Begin by addressing the ballasts using the EcoSystem programmer. This enables the programmer to communicate with the ballasts and configure their settings.
2. Configure fixture groups. Next, configure the group of fixtures to be controlled by each device (IR receiver, daylight sensor, wall control, occupant sensor, or contact closure). A group can be as small as one fixture or as large as the entire EcoSystem bus.
3. Set up devices. Once fixture groups have been configured for each control device, set custom preferences for each device.
4. Configure ballast settings. To further fine-tune the system, customize the high level, fade time, and emergency settings for the ballasts.
5. Program ballasts to season new fluorescent lamps. Program the ballasts to operate at full intensity before dimming. New fluorescent lamps can have impurities. Follow the lamp manufacturer's recommendations on lamp seasoning requirements.

After initial programming is complete, the following additional functions are available to control and maintain an EcoSystem:

- Modify programmed settings as needed
- Manually control light levels via an IR receiver
- Replace existing ballasts
- Address new ballasts
- Season new lamps

- Reset the entire system to factory default settings
- Reset a single ballast to factory default settings

Refer to the following topics for detailed procedures on how to perform each programming step.

Addressing the System

Prior to programming, each ballast must be addressed. This enables the programmer to communicate with the ballasts and program their settings.

NOTE: To address new ballasts added to an existing EcoSystem, refer to page 34.

1 From the Main Menu, tap Ballasts and then Address System.

2 Tap Reset & Address New System.

3 Read the instructions, then tap ✓ to continue.

NOTE: Occupant sensors do not have integrated IR receivers.

4 Tap ✓ to continue.

Caution! *System will be set to factory defaults.*

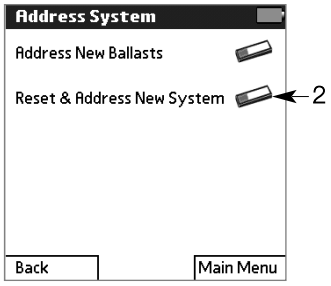
5 Tap ✓ to confirm the reset. (Or tap ✕ to Cancel.)

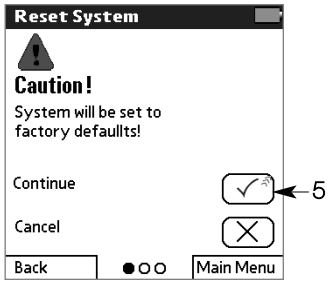
6 If all ballasts flash 3 times, tap ✓. Otherwise, tap ✕.

NOTE: If fixtures do not flash, the signal from the programmer did not reach the IR control device. Refer to page 4 for details.

7 Tap ✓ to address the system.

8 Tap ✓ to begin addressing.





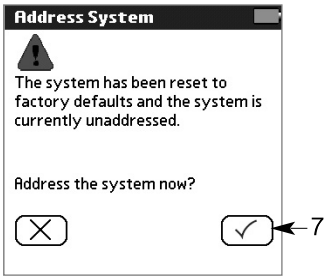
9 If all fixtures flash, tap ✓.

Fixtures will go to minimum brightness as they are addressed.

10 If all fixtures are at minimum level, tap ✓.

Caution! *Wait until all fixtures flash and are at their minimum level.*

11 If all fixtures go to their high level, tap ✓.



Configuring Fixture Groups

A group of fixtures must be configured for each sensor or control. By grouping multiple fixtures, lighting zones can be easily set up and changed.

1 From the Main Menu, tap Grouping.

2 Tap the icon for the sensor or control to be configured.

3 Read the instructions, then tap ✓ to continue.

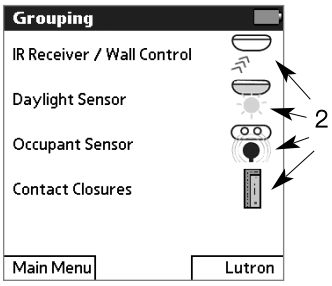
4 Point the programmer at any IR control device and tap ✓ to begin communication.

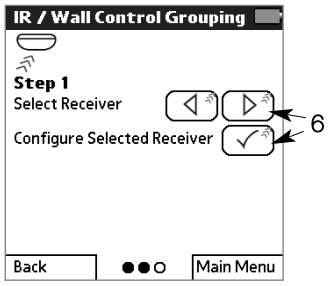
5 If a fixture connected to the sensor flashes and other fixtures go to minimum brightness, tap ✓.

NOTE: If all fixtures flash three times and then return to normal, no sensor was detected.

6 Use the left and right arrow buttons to scroll to the sensor you want to group (its connected fixture will flash). Tap ✓ to configure the selected sensor.

7 If the fixtures for this sensor go to full brightness and other fixtures go to minimum brightness, tap ✓.



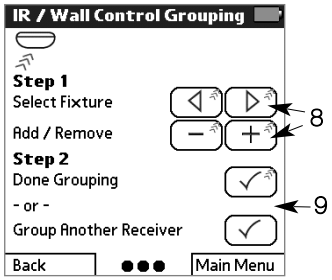


8 Scroll to the desired fixture (selected fixture will flash). Tap + to add the fixture to the group, or – to remove it.

Repeat this step for each fixture to be added or removed from the group.9 Select **Done Grouping** to exit. Or select **Group Another Receiver** to configure another group.

10 When done, if all fixtures go to high level, tap ✓.

Repeat this procedure to configure groups for each sensor and control.



Setting Light Levels for Daylight Sensors

To save energy, a light level can be set for each row of fixtures in a daylight sensor group. Throughout the day, fixtures automatically adjust their light level based on how much sunlight the space is receiving.

NOTE: Fixtures must be grouped before setting light levels. Refer to page 14.

1 From the Main Menu, tap Device Setup and then Daylight Sensor.

2 Read the instructions, then tap ✓ to continue.

3 Point the programmer at any IR receiver and tap ✓ to begin communication.

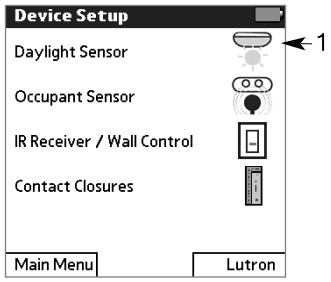
4 If all fixtures go to minimum brightness and a fixture connected to a daylight sensor flashes, tap ✓.

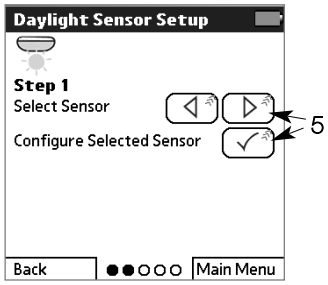
5 Scroll to the daylight sensor to be set (its group fixtures will flash). Then tap ✓ to configure the selected sensor.

6 If fixtures in row 1 of the selected sensor group go to full brightness and all other fixtures go to minimum brightness, tap ✓.

By default, fixtures grouped to the daylight sensor are in row 1.

7 Select the daylight row to be set.





8 Scroll to the desired fixture (selected fixture will flash). Tap + to add the fixture to the row, or – to remove it. Repeat for each fixture to be added or removed from the row.9 Select **Done**.

10 Set the light level to be maintained throughout the day for the row.

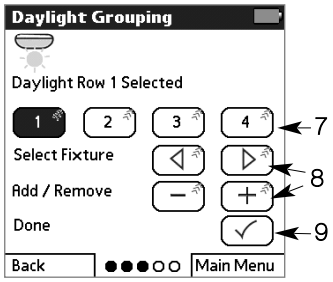
Tap the down arrow button to increase the fixture light output. Tap the up arrow button to decrease the fixture light output.

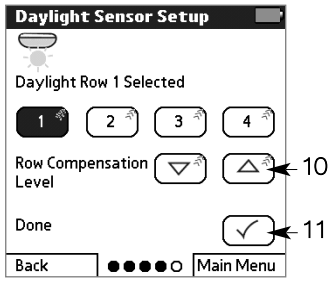
11 Select **Done**.

12 Select **Setup Another Sensor** to set up another daylight sensor. Or select **Done** to exit.

13 When done, if all fixtures flash and go to high level, tap ✓.

Repeat this procedure to set the daylight light levels for each row of fixtures in each daylight sensor group.





Setting Light Levels for Occupant Sensors

Occupied and unoccupied light levels can be set for each fixture in an occupant sensor group. The default occupied setting is the ballast's high level; the default unoccupied setting is OFF.

1 From the Main Menu, tap Device Setup and then Occupant Sensor.

2 Read the instructions, then tap ✓ to continue.

3 Point the programmer at any IR control device and tap ✓.

4 If all fixtures go to minimum brightness and a fixture connected to a sensor flashes, tap ✓.

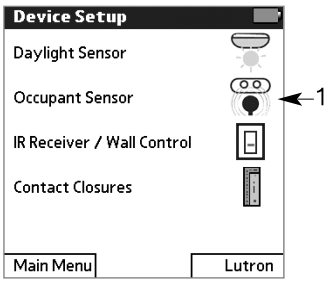
5 Scroll to the sensor to be set (its group fixtures will flash). Then tap ✓ to configure the selected sensor.

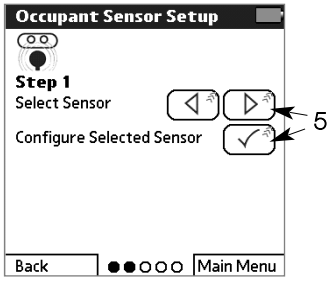
6 If fixtures in the sensor group go to their occupied level and other fixtures go to minimum brightness, tap ✓.

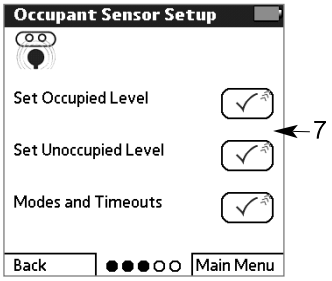
7 Select Set Occupied Level or Set Unoccupied Level.

8 If group fixtures go to their occupied/unoccupied level, tap ✓.

9 Note the warning, then tap ✓ to continue.







9 Tap the desired occupied or unoccupied light level. If needed, use the arrow keys to adjust the selected level incrementally.

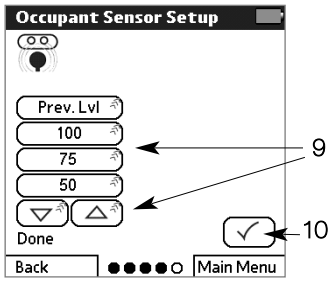
10 Select **Done**.

11 Depending on what you want to do next, select:

- Continue Setup of Current Sensor
- Setup Another Sensor
- Done

12 When done, if all fixtures flash and go to high level, tap ✓.

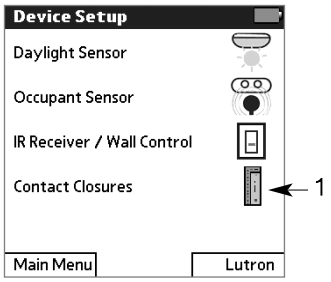
Repeat this procedure to set the occupied and unoccupied light levels for each occupant sensor.

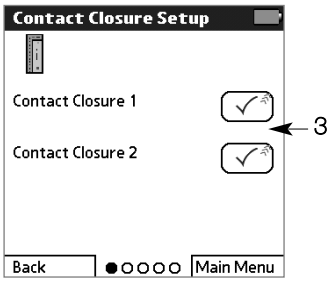


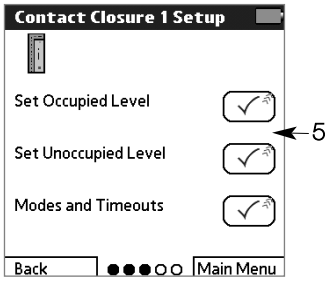
Setting Light Levels for Contact Closures

Occupied and unoccupied light levels can be set for each fixture in a contact closure group. The default occupied setting is the ballast's high level; the default unoccupied setting is OFF.

1 From the Main Menu, tap Device Setup and then Contact Closures.
2 Read the instructions. Point the programmer at any IR control device, then tap ✓ to continue.
3 Select contact closure 1 or 2.
4 If a group of fixtures go to full brightness and other fixtures go to minimum brightness, tap ✓.
5 Select Set Occupied Level or Set Unoccupied Level.
6 If group fixtures go to their occupied/unoccupied level, tap ✓.
7 Note the warning, then tap ✓ to continue.
8 Tap the occupied or unoccupied light level. If needed, use the arrow keys to adjust the selected level incrementally.
9 Select Done.



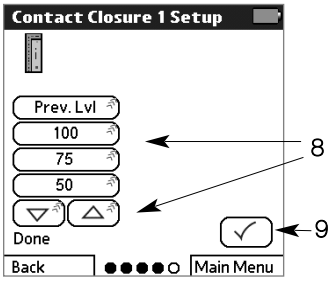




10 Depending on what you want to do next, select:
   - Continue Setup of Current Sensor
   - Setup Another Sensor
   - Done

11 When done, if all fixtures go to high level, tap ✓.

Repeat this procedure to set the occupied and unoccupied light levels for each contact closure group.



Setting the Operating Mode for Occupant Sensors and Contact Closures

Occupant sensors and contact closures can be set up to turn group fixtures on automatically. Otherwise, a user must turn the lights on manually using a wall control or IR remote.

1 From the Main Menu, tap Device Setup and then Occupant Sensors or Contact Closures.

2 Read the instructions, then tap ✓ to continue.

3 Point the programmer at any IR control device and tap ✓.

4 For occupant sensors, scroll to the sensor to be set (its group fixtures will flash). Then tap ✓ to configure the selected sensor.

   For contact closure devices, select contact closure 1 or 2.

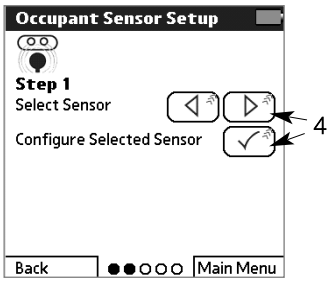
5 If fixtures in the sensor group go to full brightness and other fixtures go to minimum brightness, tap ✓.

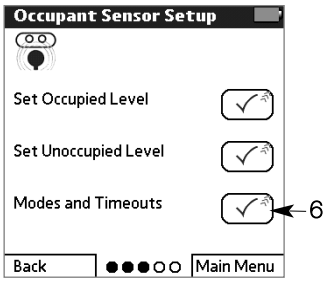
6 Select Modes and Timeouts.

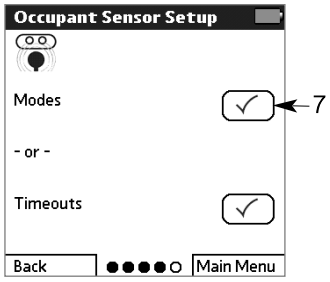
7 Select Modes.

8 Select whether fixtures for this sensor turn on manually or automatically.

9 Select Done.



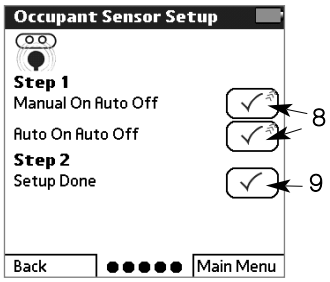




10 Depending on what you want to do next, select:
   - Continue Setup of Current Sensor
   - Setup Another Sensor
   - Done

11 When done, if all fixtures flash and then go to high level, tap ✓.

Repeat this procedure to set the mode each occupant sensor and contact closure device.



Setting an Additional Timeout Period for Occupant Sensors and Contact Closure Devices

Occupant sensors and contact closure devices can be set up to turn fixtures off automatically after a period of inactivity. The default timeout is zero seconds, in addition to the timeout setting provided by the occupant sensor.

1 From the Main Menu, tap Device Setup and then Occupant Sensors or Contact Closures.

2 Read the instructions, then tap ✓ to continue.

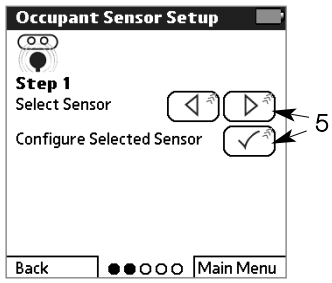
3 Point the programmer at any IR control device and tap ✓ to begin communication.

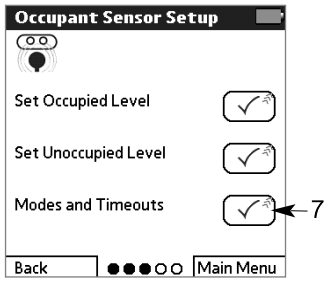
4 If all fixtures go to minimum brightness and a fixture connected to an occupant sensor flashes, tap ✓.

5 For occupant sensors, scroll to the sensor to be set (its group fixtures will flash). Then tap ✓ to configure the selected sensor.

   For contact closure devices, select contact closure 1 or 2.

6 For occupant sensors, if fixtures in the selected sensor group go to occupied level and other fixtures go to minimum brightness, tap ✓.





For contact closures, if a fixture group goes to full brightness and other fixtures go to minimum brightness, tap ✓.

7 Select Modes and Timeouts

8 Select Timeouts.

9 Note the warning, then tap ✓ to continue.

10 Select the number of minutes of inactivity after which the fixture group will turn off.

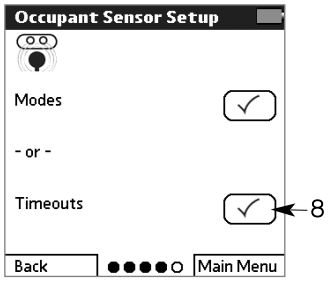
11 Select Done.

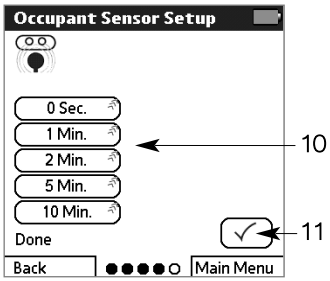
12 Depending on what you want to do next, select:

- Continue Setup of Current Sensor
- Setup Another Sensor
- Done

13 When done, if all fixtures flash and then go to high level, tap ✓.

Repeat this procedure to set a timeout for each occupant sensor and contact closure device.





Setting Up Scenes for Wall Controls

Wall controls can be set up to activate scenes (preset light levels). A different scene can be configured for each button on the control.

1 From the Main Menu, tap Device Setup and then IR Receiver/Wall Control.

2 Read the instructions, then tap ✓ to continue.

3 Point the programmer at any IR receiver and tap ✓ to begin communication.

4 If all fixtures go to minimum brightness and a fixture connected to a wall control flashes, tap ✓.

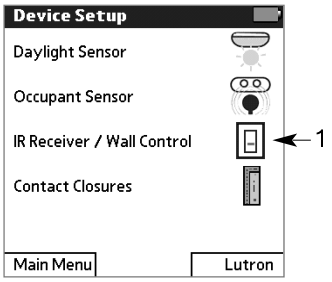
5 Scroll to the wall control to be set (its group fixtures will flash). Tap ✓ to configure the selected control.

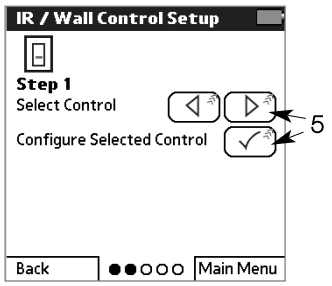
6 If fixtures for this control go to their scene 1 level, tap ✓.

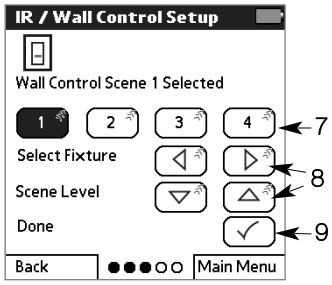
7 Select the number of the scene to be set (scene 1 matches the first button on the control, scene 2 matches the second button, and so on).

8 Scroll to the desired fixture (selected fixture will flash). Adjust the scene level up or down.

Repeat for each scene on the control.





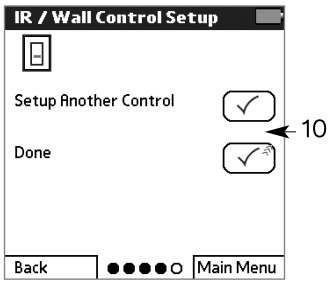


9 Select **Done**.

10 Select **Setup Another Control** to set scenes for another wall control. Or select **Done** to exit.

11 When done, if all fixtures go to high level, tap ✓.

Repeat this procedure to set the scene levels for each IR receiver and wall control.



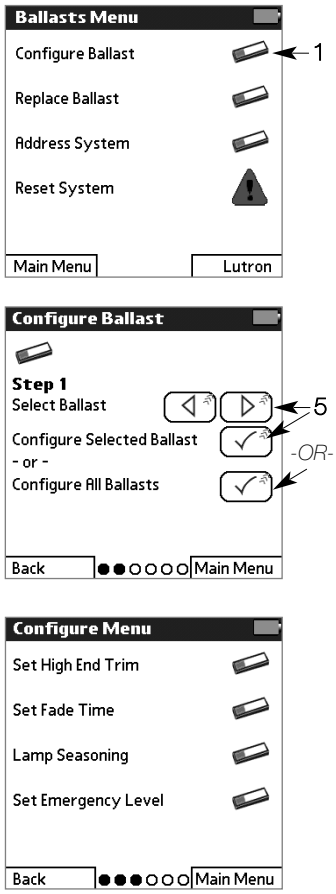
Configuring Ballasts

The factory default settings for ballasts are: high level = 100%, emergency setting = 100%, and fade time = 2 seconds. Each of these settings can be customized to meet specific lighting needs.

1. From the Main Menu, tap Ballasts and then Configure Ballast.
2. Read the instructions, then tap ✓ to continue.
3. Point the programmer at any IR control device, then tap ✓ to begin communication.
4. If the fixture connected to the control device flashes and other fixtures go to minimum brightness, tap ✓.
5. Scroll to a specific ballast (its fixture will flash). Tap ✓ to select it.

   - OR -

   To configure all the ballasts, select Select All Ballasts.
6. If selected ballasts go to full brightness and other fixtures go to minimum brightness, tap ✓.



Refer to the following topics to:

- Set high end trim
- Set the fade time
- Set the emergency level
- Season lamps

Setting a Ballast's High End Trim

A ballast's high end trim setting controls the maximum light level for a dimming fixture. The factory default high level = 100%. This setting can be customized to meet specific lighting needs.

1 From the Configure Menu, tap Set High End Trim.

NOTE: For procedures on how to to select one or all ballasts and then display the Configure menu, refer to page 28.

2 Tap ✓ to begin setup.

3 If selected ballasts flash and go to their high level, tap ✓.

4 Tap a light level. Then, if needed, use the arrow keys to adjust the selected level incrementally.

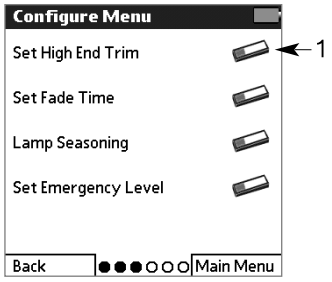
5 Tap ✓ when done.

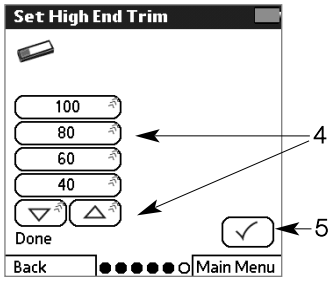
6 If the ballast(s) flash once, tap ✓.

7 Depending on what you want to do next, select:

- Continue Configuration of Current Ballast(s)
- Configure Different Ballast(s)
- Done

8 When done, if the last configured ballast(s) flash and go to their high level, tap ✓.





Setting a Ballast's Fade Time

Fade time is the number of seconds it takes for a ballast to fade when dimmed. The default fade time = 2 seconds. This setting can be customized as needed.

1 From the Configure Menu, tap Set Fade Time.

NOTE: For procedures on how to to select one or all ballasts and then display the Configure menu, refer to page 28.

2 Tap ✓ to begin setup.

3 If selected ballasts flash and go to their high level, tap ✓.

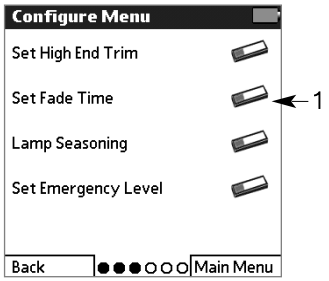
4 Tap a fade time, then tap ✓.

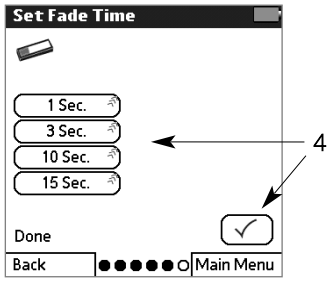
5 If the ballast(s) flash once, tap ✓.

6 Depending on what you want to do next, select:

- Continue Configuration of Current Ballast(s)
- Configure Different Ballast(s)
- Done

7 When done, if the last configured ballast(s) flash and go to their high level, tap ✓.





Setting a Ballast's Emergency Level

The emergency setting controls a ballast's light level in case of an emergency (for example, a power outage or fire). The default emergency setting is the ballast's high level.

1 From the Configure Menu, tap Set Emergency Level.

NOTE: For procedures on how to to select one or all ballasts and then display the Configure menu, refer to page 28.

2 Tap ✓ to begin setup.

3 If selected ballasts flash and go to their emergency level, tap ✓.

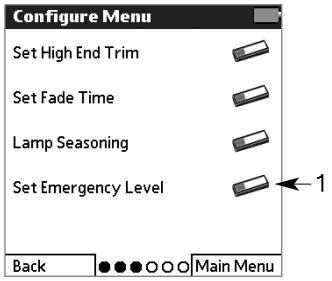
4 Tap an emergency light level, then tap ✓.

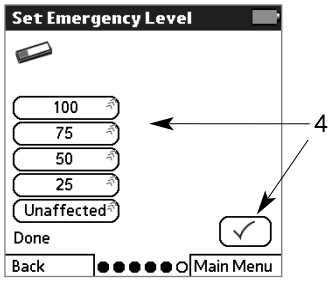
NOTE: The intensity will change as you make your selection. If Unaffected, the ballast's light level will not change in an emergency.

5 Depending on what you want to do next, select:

- Continue Configuration of Current Ballast(s)
- Configure Different Ballast(s)
- Configuration Done

6 When done, if the last configured ballast(s) flash and go to their high level, tap ✓.





Seasoning New Fluorescent Lamps

When EcoSystem is first installed, program ballasts to season all new lamps. As lamps are added or replaced, program the seasoning process only for those specific ballasts.

1 From the Configure Menu, tap Lamp Seasoning.

NOTE: For procedures on how to to select one or all ballasts and then display the Configure menu, refer to page 28.

2 Select Start Lamp Seasoning. Otherwise, select Cancel Lamp Seasoning.

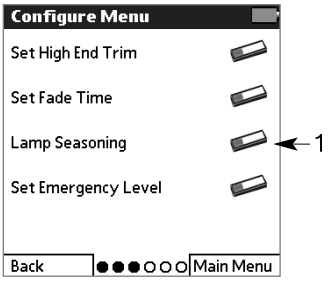
NOTE: To temporarily pause the seasoning process (e.g., to make programming adjustments), select Pause Lamp Seasoning.

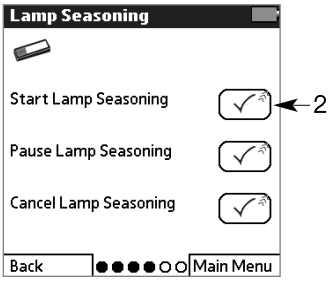
3 If selected ballast(s) flash and go to their high level, tap ✓.

4 Depending on what you want to do next, select:

- Continue Configuration of Current Ballast(s)
- Configure Different Ballast(s)
- Done

5 When done, if the last configured ballast(s) flash, tap ✓.



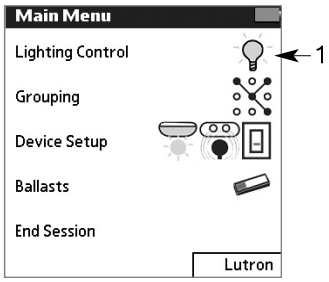


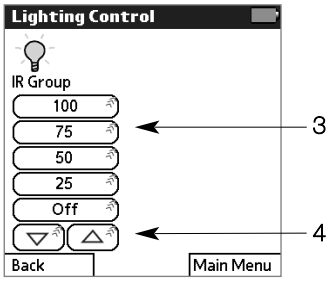
Manually Adjusting the Light Level

The light level can be manually adjusted for all fixtures in an IR receiver group. The adjusted light level remains in effect until one of the following occurs:

- An emergency situation occurs
- A daylight sensor lowers the fixture to compensate for natural lighting
- The room becomes unoccupied, or
- A user manually adjusts the level again

1 From the Main Menu, tap Lighting Control.
2 Read the instructions, then tap ✓ to continue.
3 Point the programmer at the IR receiver whose group fixture(s) are to be adjusted, then tap a light level.
4 If needed, use the arrow keys to adjust the selected level incrementally up or down.
5 Tap Main Menu to exit.





Addressing New Ballasts

If new ballasts are added to an existing EcoSystem, the ballasts must be addressed using the EcoSystem programmer. This enables the programmer to communicate with the ballasts and program their settings.

NOTES:
To address all ballasts (for example, when a new EcoSystem is installed), refer to page 12.

To address a replacement ballast, refer to page 35.

1 From the Main Menu, tap Ballasts and then Address System.

2 Tap Address New Ballasts.

3 Read the instructions, then tap ✓ to continue.

4 Confirm that ballasts are powered, then point the programmer at any IR control device and tap ✓ to begin addressing.

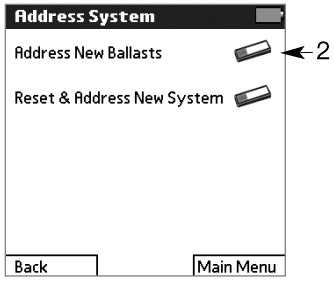
5 If all fixtures flash, tap ✓.

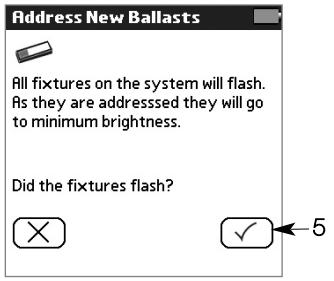
Fixtures will go to minimum brightness as they are addressed.

6 If all fixtures are at minimum level, tap ✓.

Caution! *Do not tap ✓ until all fixtures flash and are at their minimum level.*

7 If all fixtures go to their high level, tap ✓.





Replacing Ballasts

If a ballast needs to be replaced, program the old and new serial numbers so that the system can automatically apply the settings from the old ballast to the replacement ballast. This eliminates the need for reprogramming.

1 From the Main Menu, tap **Ballasts** and then **Replace Ballast**.

2 Read the instructions, then tap ✓ to continue.

3 Point the programmer at any IR control device, then tap ✓.

4 If fixtures for a receiver flash and others go to minimum brightness, tap ✓.

5 Use the keypad to enter the serial number of the old (replaced) ballast, then tap ✓.

NOTE: To backspace, tap ◁.

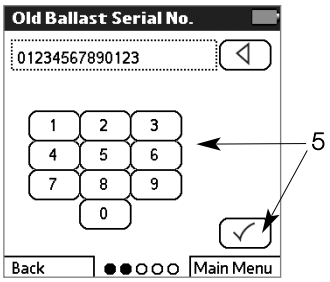
6 Enter the serial number of the new ballast. Then tap ✓.

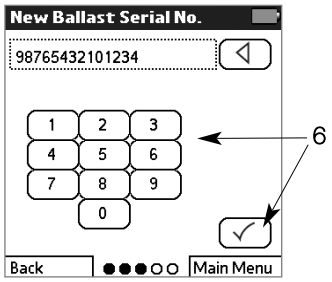
7 If the old and new serial numbers are entered correctly, tap ✓.

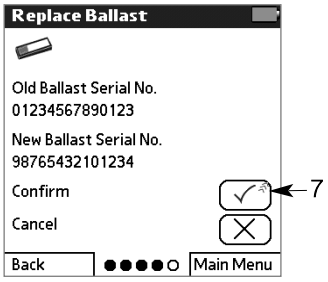
8 If the new ballast flashes and goes to its high level, tap ✓.

9 Select **Done Replacing Ballasts** to exit. Or select **Replace Another Ballast** to enter additional serial numbers.

10 When done, if all ballasts flash and go to their high level, tap ✓.







Resetting the Entire System to Factory Defaults

If needed, all EcoSystem ballasts can be reset to their factory defaults.

1 From the Main Menu, tap Ballasts and then Reset System.

2 To reset all ballasts, tap Reset Entire System.

3 Read the instructions, then tap ✓ to continue.

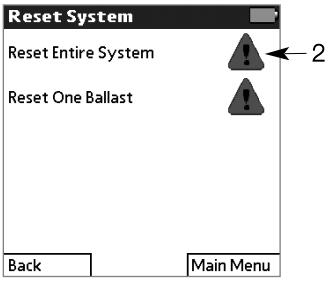
NOTE: To reset a single ballast, refer to page 37.

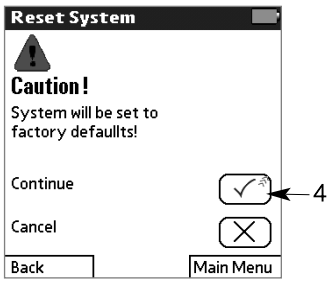
Caution! *Resetting ballasts deletes their programmed settings and returns them to their factory defaults.*

4 Tap ✓ to confirm the reset. (Or tap ✕ to Cancel.)

5 If all ballasts flash 3 times, tap ✓ .

6 If the reset ballast(s) flash 3 times, tap ✓.





Resetting a Ballast to Factory Defaults

If needed, a single ballast can be reset to its factory default settings.

1 From the Main Menu, tap Ballasts and then Reset System.

2 Tap Reset One Ballast.

NOTE: To reset the entire system, refer to page 36.

3 Point the programmer at any IR control device and tap ✓ to begin.

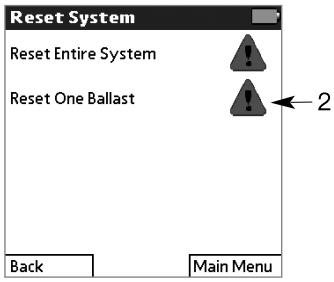
4 If the fixture with an IR receiver or wall control flashes and other fixtures go to minimum brightness, tap ✓.

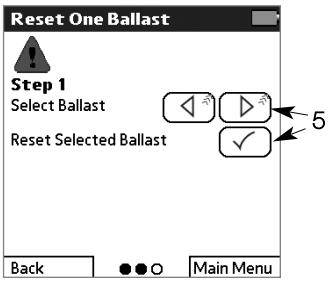
5 Scroll to find the ballast to be reset (its fixture will flash). Then tap ✓ to reset it.

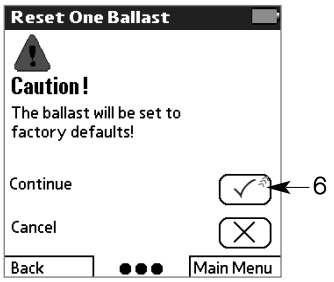
Caution! *Resetting a ballast deletes its programmed settings and returns it to the factory defaults.*

6 Tap ✓ to confirm the reset. (Or tap ✕ to Cancel.)

7 If the reset ballast flashes 3 times and then all fixtures go to high level, tap ✓.







How an EcoSystem Prioritizes Inputs

When programming an EcoSystem, it is important to understand how the ballasts prioritize inputs:

1. Emergency command (typically lights to full on). The ballast's first priority is to ensure that no emergency exists in the building. If an emergency exists, all emergency fixtures are automatically set to their emergency level and all manual lighting adjustments are ignored. If an emergency does not exist, the ballast proceeds to the next level of priority.
2. Programming commands. The second priority is to respond to a user programming the ballast. If programming commands are being sent, the ballast responds to the commands, but ignores any sensor or control device input. If no programming commands are being sent, the next priority is queued.
3. Occupant sensor input. The third priority is input from occupant sensors. If no person is in the room, fixtures go to their unoccupied setting and all other sensor and control device inputs are ignored. If someone is in the room the ballast checks the next priority.
4. Daylight sensor input. The fourth priority is input from daylight sensors. The daylight sensors are checked to set the "high level" or the maximum light level the ballasts can be manually set to.
5. Personal control through IR remote or wall control. After checking the daylight sensor, the ballast waits for a manual control change created by a user dimming the lights up or down with a wall control or IR remote.

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LUTRON

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EcoSystem® | a revolution in light control

Design guide

LUTRON®

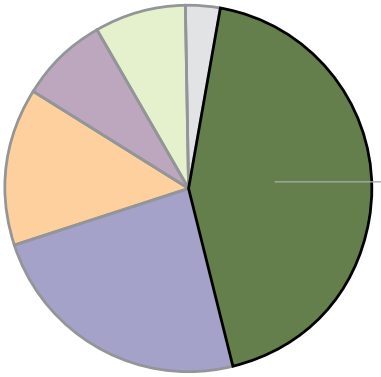
EcoSystem is a lighting control system comprised of digital dimming ballasts, controls, and environmental sensors. Working together, these components:

- **save energy from 40% to 70%**
- **increase space flexibility**
- **increase occupant comfort and productivity**
- **reduce maintenance costs**

EcoSystem is designed for office spaces and K-12/university classrooms, where lighting accounts for 30% to 44% of electricity usage. These applications benefit from EcoSystem's unparalleled energy savings through personal controls including wallstations and infrared remote controls, and environmental sensors such as daylight and occupancy/vacancy sensors.

In addition to providing energy savings, EcoSystem creates a more flexible workspace where lighting fixtures with EcoSystem ballasts are individually addressed. These ballasts are programmed, instead of wired, to work individually or as a group, creating flexibility in a space that adjusts to the shifting needs of any building.

Finally, EcoSystem reduces lighting system maintenance. All of the environmental sensors and personal controls connect directly to any ballast – eliminating interfaces, power packs, and control devices – that on other systems require more parts, programming and maintenance.



Annual electricity use in office buildings [1]

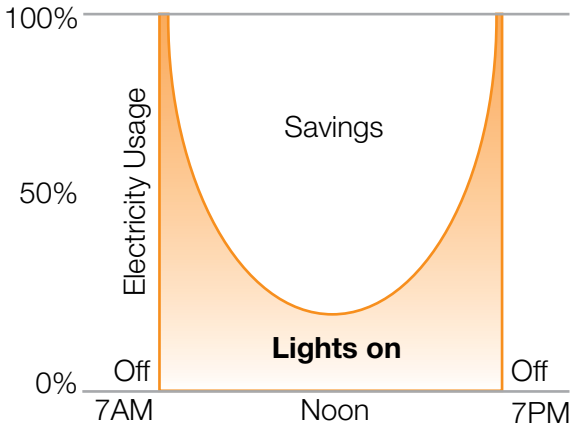
44%	**Lighting**
24%	Office equipment
14%	Space cooling
8%	Ventilation
8%	Other
3%	Space heating

1 Source: Energy Information Administration Office, 1995. Commercial Buildings Energy Consumption Survey, released September, 2000.

EcoSystem® design guide

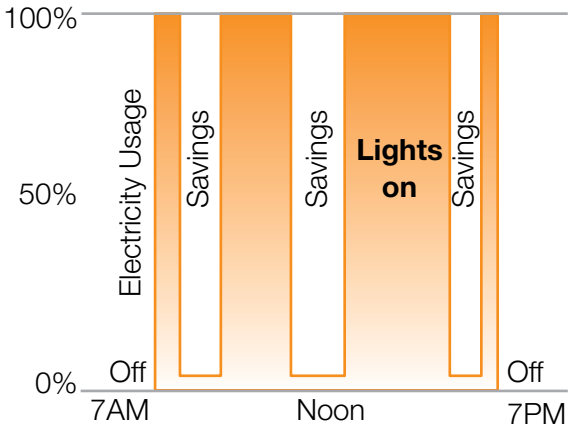
Energy savings

Efficient lighting control offers a significant energy-saving opportunity. Despite the fact that most lighting is energy-efficient fluorescent, **the number-one source of energy consumption in any building is still lighting**.



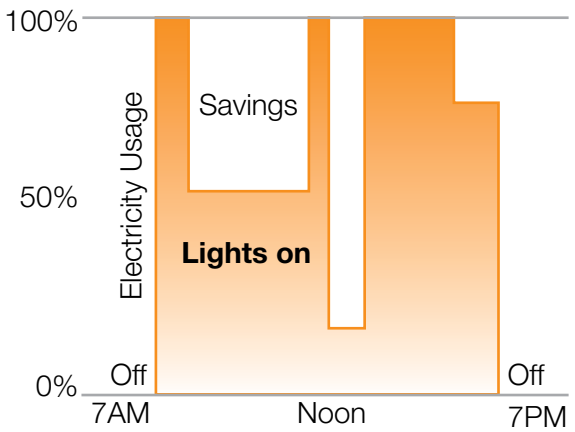
Daylight harvesting saves energy
Take advantage of available natural light. Adjust electric lighting smoothly, unobtrusively and continuously.

Best applied in areas with large windows or skylights, such as perimeter offices, classrooms, malls, and atria.



Occupancy/Vacancy sensing saves energy
Slowly dim lights to low level or turn lights off when space is unoccupied; turn lights on when someone enters.

Best applied in enclosed areas such as meeting rooms, offices, classrooms, and corridors.



Manual dimming control saves energy
Provide personal choice and control of light levels to adapt spaces for different tasks and activities. Permit dimming from multiple locations. Allow the ability to turn lights on and off.

Best applied in areas such as meeting rooms, offices, and classrooms.

Increased productivity

Occupant comfort
The cost of an employee (including salary and benefits) far exceeds the energy costs in any building. That's why **ergonomic lighting** — lighting that supports the physical and psychological needs of the people in buildings — pays big dividends for corporations today.

Studies by the Light Right Consortium™ and other researchers show that ergonomic lighting leads to positive effects such as improved productivity, reduced health complaints, and increased occupant satisfaction.

Effects of daylight
Heschong Mahone Group has confirmed that classrooms are more effective learning environments with greater amounts of daylight. [1] Likewise, office environments and employee productivity can be improved with the proper balancing of daylight and electric light. When the amount of daylight is increased, the amount of electric light must be reduced proportionately, to maintain proper luminance levels.

1 "Daylighting in Schools", Heschong Mahone Group, August 20, 1999.

Compliance with building codes and guidelines

Energy efficiency is the design requirement of the new millennium. Many states and cities have already adopted specific energy-saving guidelines and more will soon follow suit.

ANSI/ASHRAE/IESNA Standard 90.1-2004
ANSI/ASHRAE/IESNA Standard 90.1-2004 encourages the use of energy-efficient lighting controls in design practice for both interior and exterior lighting. Most states have energy codes based on the standard.

LEED® (Leadership in Energy and Environmental Design)
LEED is a rating system managed by the United States Green Building Council (USGBC) that provides a national standard for what constitutes a green building. Efficient lighting controls may contribute to obtaining up to 20 points in LEED for New Construction and Major Renovations (LEED-NC) credit categories, and up to 12.5 points in LEED for Commercial Interiors (LEED-CI) credit categories.

Title 24
California's building efficiency code has saved more than $36 billion in electricity and natural gas costs since 1978. EcoSystem components help meet strict Title 24 guidelines and all devices are California Energy Commission (CEC) Listed.

IECC (International Energy Conservation Code)
The IECC, created by the International Code Council, is a building construction requirement for energy efficiency. Compliance solutions for the IECC are to follow ANSI/ASHRAE/IESNA Standard 90.1-2004 or pass performance-based evaluations. These standards are being adopted around the world.

© Photo by Nic Lehoux

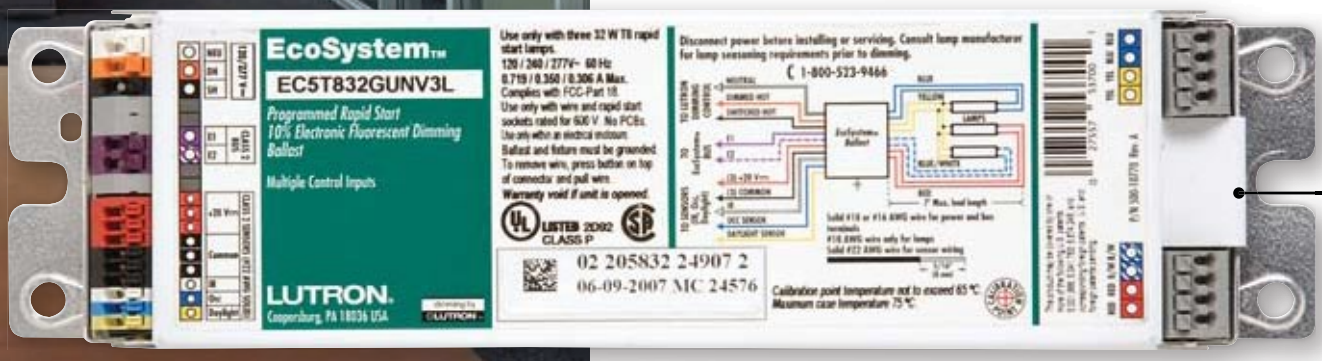
EcoSystem

EcoSystem lighting control starts with one simple, but essential building block—the EcoSystem ballast—which replaces the non-dim ballast in a fixture.

This single fixture is now the centerpiece of an efficient lighting system, in which a variety of environmental sensors or wallstations can be connected directly to the ballast.

Depending on the type of room or facility, any combination of environmental sensors or wallstations can be used to control the fixture.

EcoSystem fluorescent dimming ballasts



www.lutron.com/ecosystem **Lutron World Headquarters:** 1.610.282.3800

Use any standard
3-wire control if desired

Connect to other EcoSystem®
ballasts and bus supply

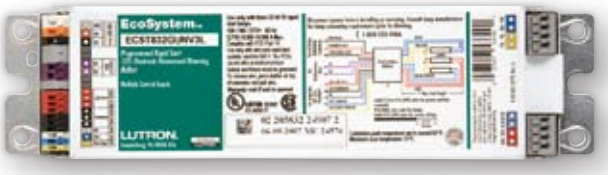
Connect Class 2 environmental
sensors and wallstations as needed

Ballast Dimensions
L:18.00" (457mm)
W: 1.18" (30mm)
H: 1.00" (25mm)
Mounting center: 17.70" (450mm)

Ballast Dimensions
L:9.50" (241mm)
W: 2.38" (60mm)
H: 1.00" (25mm)
Mounting center: 8.90" (226mm)

Step 1 ballast selection

A Determine number of fixtures that will be connected to EcoSystem.
B Classify the type of ballast in each fixture.



EcoSystem T8 digital ballast
pg. 08

EcoSystem T8, T5, T5HO, and T5 twin tube digital ballast
pg. 08

Step 2 module selection

Determine which additional lighting fixtures will be controlled via EcoSystem as a zone.

EcoSystem ballast module fixture-mounted (BMF)
pg. 09

Note: Not all lighting fixtures need an integral EcoSystem ballast. For some applications, a zone control module that can integrate dimming and non-dimming fixtures is beneficial.

EcoSystem zone control modules (BMJ and XPJ)
pg. 09

Step 3 sensor selection

Determine what sensors will be connected to EcoSystem.

Daylight sensor
pg. 10

Occupancy/Vacancy sensor
pg. 11

Step 4 control selection

Determine whether EcoSystem® controls are needed for a single room or an entire building.

1-button wallstation
pg. 12

4-scene wallstation
pg. 12

IR receiver and remote control
pg. 13

GRAFIK Eye® QS (optional preset control)
pg. 14

Quantum™ (optional entire building system)
pg. 16

Step 5 support components

A Include 1 EcoSystem programmer for configuration.
B Include 1 bus supply for each room or area, for up to 64 ballasts.

EcoSystem programmer
pg. 18

EcoSystem bus supply
pg. 19

Step 1 ballast selection

EcoSystem digital ballasts

Design statement: Specify an EcoSystem ballast to be installed in every light fixture that will be addressed and configured as part of an EcoSystem lighting control solution.

T8 digital ballast dimensions
L: 9.50" (241mm)
W: 2.38" (60mm)
H: 1.00" (25mm)
Mounting center: 8.90" (226mm)

T8, T5, T5HO, and T5 twin tube digital ballast dimensions
L: 18.00" (457mm)
W: 1.18" (30mm)
H: 1.00" (25mm)
Mounting center: 17.70" (450mm)

Flexibility

- Models available for T8, T5, T5HO, and T5 twin tube; use throughout an office, school, and/or healthcare buildings
- EcoSystem ballasts are digitally addressed and configured to work in zones after installation which can reduce zone definition and additional design steps
- Powers and responds to one daylight sensor, occupancy/vacancy sensor, and wallstation or IR receiver

Performance

- Universal voltage; operates at 120 V, 220/240 V, and 277 V, at 50/60 Hz
- Smoothly dims from 100 to 10%
- Strikes to any light level

Energy

- Saves energy as it dims
- Helps meet energy codes such as ANSI/ASHRAE/IESNA standard 90.1-2004, Title 24, and IECC

Models

For the latest information and model numbers visit www.lutron.com/ballasts, or refer to pg. 29.

For concept drawings, see pgs. 20–23

Step 2 module selection

EcoSystem® modules

Design statement: Not all lighting fixtures need an integral EcoSystem ballast. Specify an EcoSystem dimming or switching module if there are groups of lights that will be controlled as a zone.

Dimming module (BMF) dimensions
L: 9.30" (236mm)
W: 1.18" (30mm)
H: 1.00" (25mm)
Mounting center: 8.90" (226mm)

Dimming module (BMJ) dimensions
L: 7.80" (20mm)
W: 5.00" (130mm)
H: 2.50" (65mm)

Switching module (XPJ) dimensions
L: 7.80" (20mm)
W: 5.00" (130mm)
H: 2.50" (65mm)

Compatibility

- Control any light fixture as part of an EcoSystem solution
- Models available for fluorescent dimming and full-circuit switching
- Digitally addressed and configured in the field
- Powers and responds to one daylight sensor, occupancy/vacancy sensor, and wallstation or IR receiver

Performance

- Universal voltage; operates at 120 V, 220/240 V, and 277 V, at 50/60 Hz
- BMF easily mounts within fixtures, BMJ and XPJ modules mount on electrical junction boxes

Models

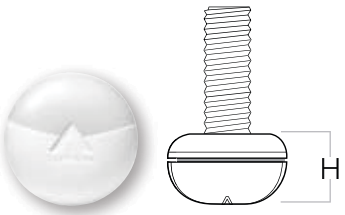
- **C5-BMF-2A** – dimming module rated for a maximum of 2A for Eco-10®, Hi-lume®, and Compact SE™ ballasts
- **C5-BMJ-16A** – 16A (full circuit) dimming module for Eco-10, Hi-lume, and Compact SE ballasts
- **C5-XPJ-16A** – 16A (full circuit) switching module uses Softswitch® – 1,000,000 cycle rated relay technology – for any light source

For concept drawings, see pg. 21

Step 3 sensor selection

EcoSystem daylight sensors

Design statement: Use one daylight sensor for each zone of sunlight (from windows and skylights). Wiring a daylight sensor to any one ballast enables daylight harvesting of multiple ballasts on any EcoSystem bus.



Daylight sensor dimensions
H: 0.69" (17mm)
D: 1.18" (30mm)
Stem Length: 1.25" (32mm)

Mounting on ceiling tile

Mounting on pendant fixture

Ease of installation

- Low profile for mounting on ceiling tiles or fixtures
- Class 2 low voltage enables simplified wiring and mounting

Performance

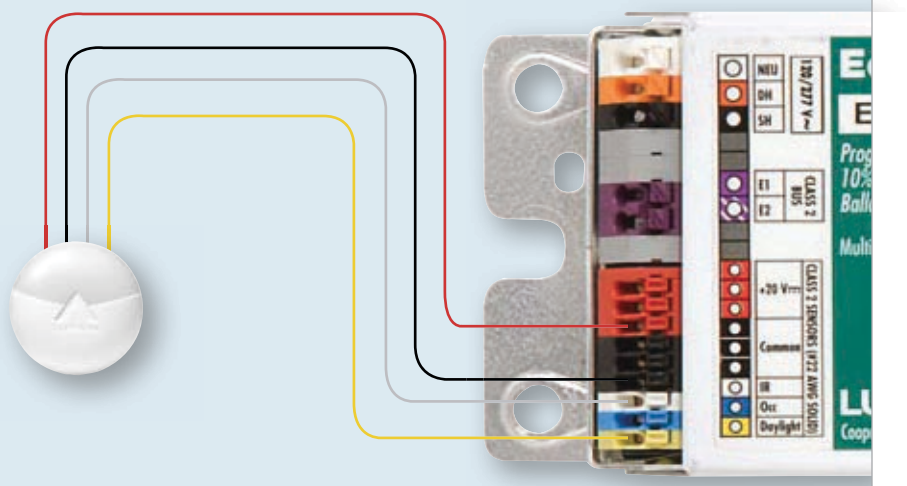
- Operates with the photopic response of the human eye
- Up to 16 daylight sensors may be used per EcoSystem bus

How it works

- EcoSystem daylight sensors detect incoming sunlight and communicate the sunlight level to the attached EcoSystem ballast
- EcoSystem ballast share the daylight information with each other and each dims appropriately
- The daylight sensor is suitable for internal ambient light levels between 0 and 500 fc

Models

- **C-SR-M1-WH** – IR daylight sensor



Step 3 sensor selection

EcoSystem® occupancy/vacancy sensors

Design statement: Occupancy/Vacancy sensors provide an automatic off for energy savings.

Ceiling-mounted occupancy/vacancy sensor dimensions
W: 6.12" (156mm)
H: 1.62" (41mm)
D: 2.31" (59mm)
Ceiling mounted: 0.75" (19mm) diameter hole for mounting post (Lutron-supplied)

Wall-mounted occupancy/vacancy sensor dimensions
W: 3.75" (95mm)
H: 5.50" (140mm)
D: 4.00" (102mm)

Ease of installation

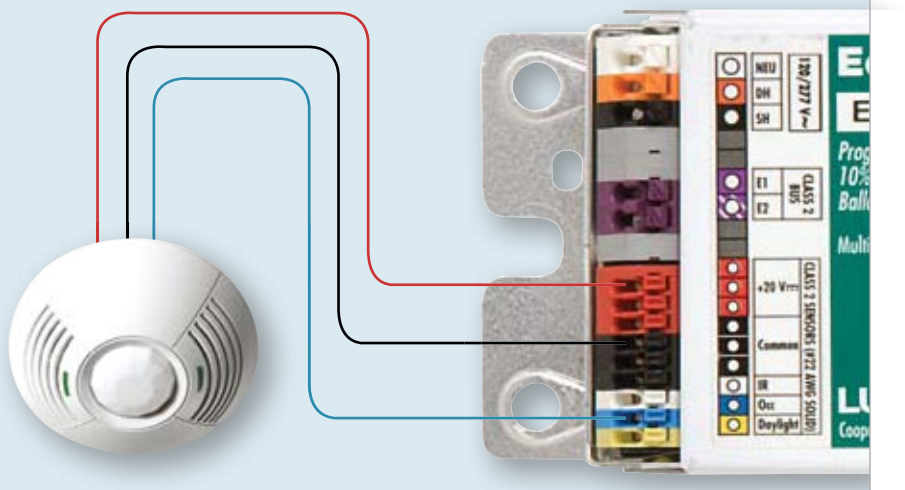
- No power pack required since power for the occupancy/vacancy sensor comes directly from the EcoSystem ballast
- Class 2 low voltage enables simplified wiring and mounting

Performance

- Broad range of models for offices to open spaces – 500 sq. ft. to 2000 sq. ft. spaces
- Wall-mounted and ceiling-mounted modules available
- Ultrasonic, infrared, and dual technology models available
- "-R" models provide auxiliary dry contact closure for easy integration with BMS (building management systems) and A/V systems
- Up to 64 occupancy/vacancy sensors may be used per EcoSystem bus

Models

- **LOS-CUS-(500, 1000, 2000)-WH** – Ultrasonic
- **LOS-CIR-(500, 1000, 2000)-WH** – Infrared
- **LOS-CDT-(500, 1000, 2000)-WH** – Dual technology
- **LOS-CCDT-(500R, 1000R, 2000R)-WH** – Dual technology with relay



Step 4 control selection

EcoSystem wallstations

Design statement: Add EcoSystem 1-button and 4-scene wallstations wherever needed for full-range lighting control.

1-button wallstation dimensions
W: 2.75" (70mm)
H: 4.56" (116mm)
D: 1.25" (32mm)

4-scene wallstation Dimensions
W: 2.75" (70mm)
H: 4.56" (116mm)
D: 1.25" (32mm)

Flexibility

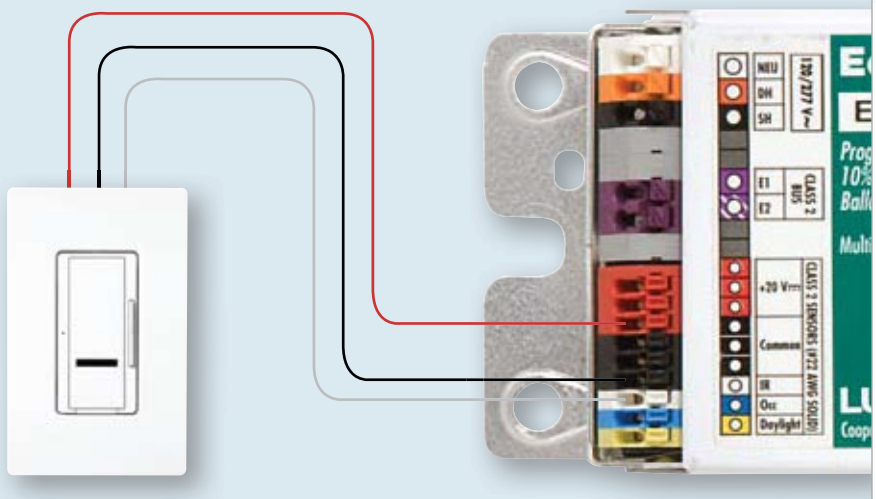
- Class 2 control wires directly to the ballast or EcoSystem power module
- Up to 64 ballasts to be controlled via any wallstation
- 4-scene wallstation recalls 4 preset scenes

Performance

- Smoothly dims from 100% to 10%
- Integral IR receiver for both programming and control of EcoSystem lighting
- Up to 64 wallstations (one per ballast) may be used per EcoSystem bus

Models

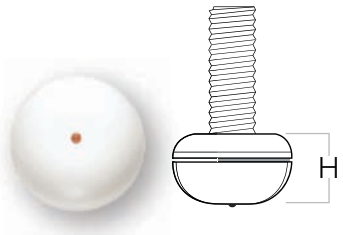
- **CC-1BRL-WH**–1-button control with toggle on/off and raise/lower
- **CC-4BRL-WH**–4-scene control for recall of all grouped lights to full, off, and presets 1-4



Step 4 control selection

EcoSystem® infrared receiver and remote control

Design statement: Add an EcoSystem IR receiver with remote to provide personal light control to any fixture on the EcoSystem bus.



IR receiver dimensions
H: 0.69" (17mm)
D: 1.18" (30mm)
Stem Length: 1.25" (32mm)

Remote control dimensions
W: 1.51" (38mm)
H: 4.63" (118mm)
D: 0.55" (14mm)

Ease of installation

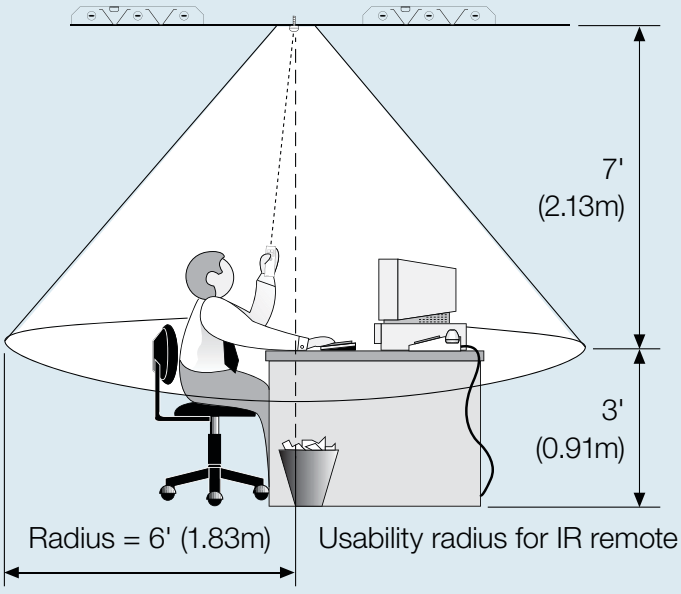
- Wires directly to the EcoSystem ballast that will be controlled
- Low profile for mounting on ceiling tiles or fixtures

Performance

- Personalized light levels
- Can control one fixture or a group of fixtures
- Integral LED indicates signal reception
- Up to 64 IR sensors may be used per EcoSystem bus

Models

- **C-R-M1-WH** – Receiver
- **C-FLRC-WH** – Remote control



Step 4 control selection

GRAFIK Eye® QS with EcoSystem

Design statement: GRAFIK Eye QS allows lights and shades to be programmed to desired levels and easily recalled for any task. GRAFIK Eye QS has an integral bus supply, eliminating the need for an EcoSystem bus supply for connected ballasts and modules.

GRAFIK Eye QS dimensions
W: 4.687" (119mm)
H: 9.375" (239mm)
D: 0.375" (10mm)
4-gang backbox adds 1.812" (46mm) to depth.

Performance

- Integrates EcoSystem light control with Sivoia® QS shades
- Easy to operate with one simplified information screen

Flexibility

- Program all necessary EcoSystem settings via integral LCD screen (beneath protective cover)
- Create lighting effects by assigning fluorescent lights to 6, 8 or 16 zones (By default, zones 1-3 are assigned to the three line-voltage outputs and zones 4 and higher are fixed as EcoSystem zones. However, the first three zones can be re-assigned to control EcoSystem zones instead of the line-voltage outputs if desired.)
- Integrate EcoSystem to touchscreens and other systems via RS232/Ethernet Interfaces and input/output devices
- 42 color options to coordinate with any décor

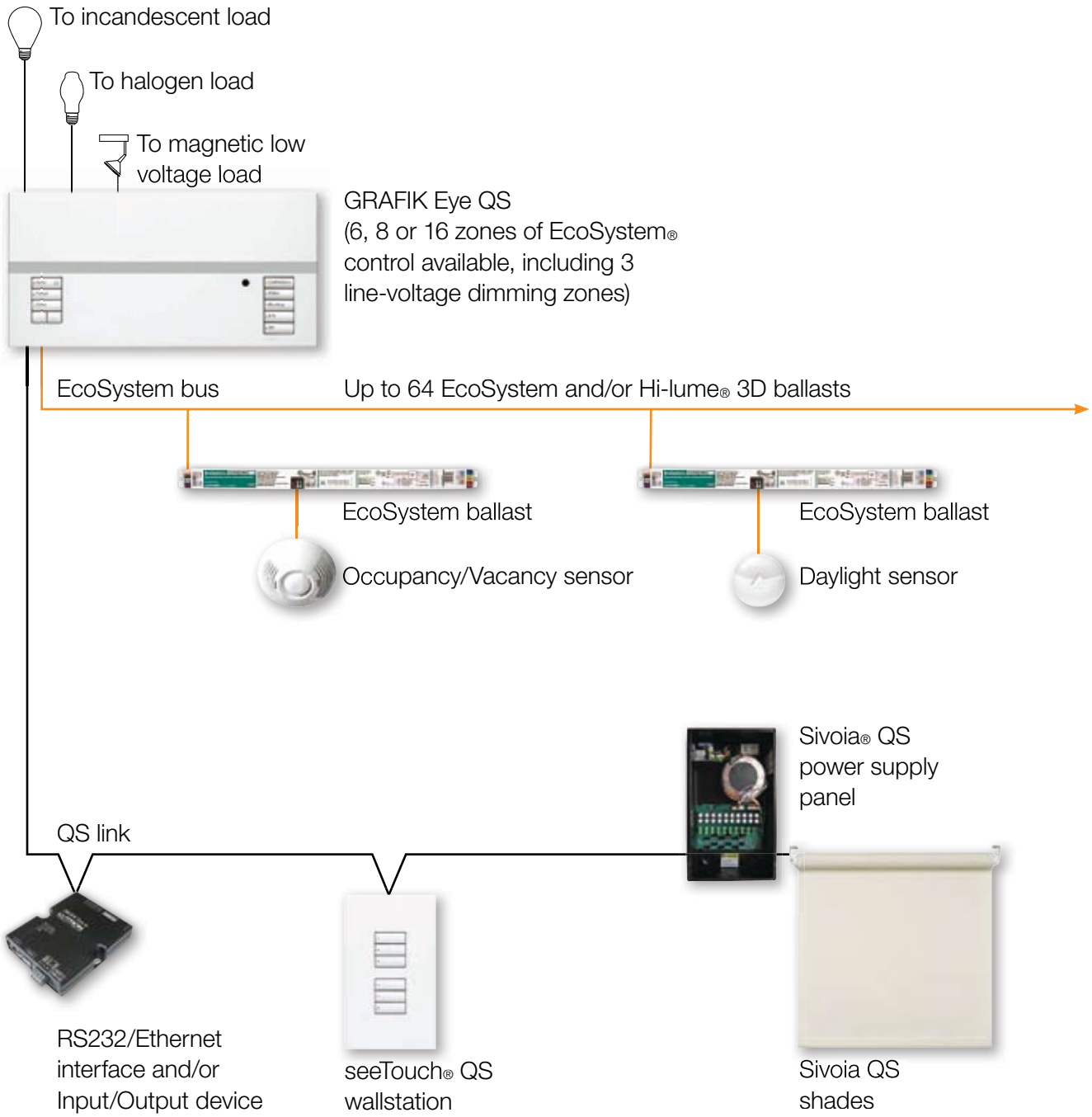
Models

- **QSG-6E120**–6 zone
- **QSG-8E120**–8 zone
- **QSG-16E120**–16 zone

www.lutron.com/grafikeyeqs

For concept drawings, see pgs. 22–23

Installation example



Step 4 control selection

Quantum™ total light management

Design statement: Quantum is a total light management system. It combines EcoSystem lighting controls with Sivoia® QS digital shades and lighting panels.

Q-Admin™ software

Benefits

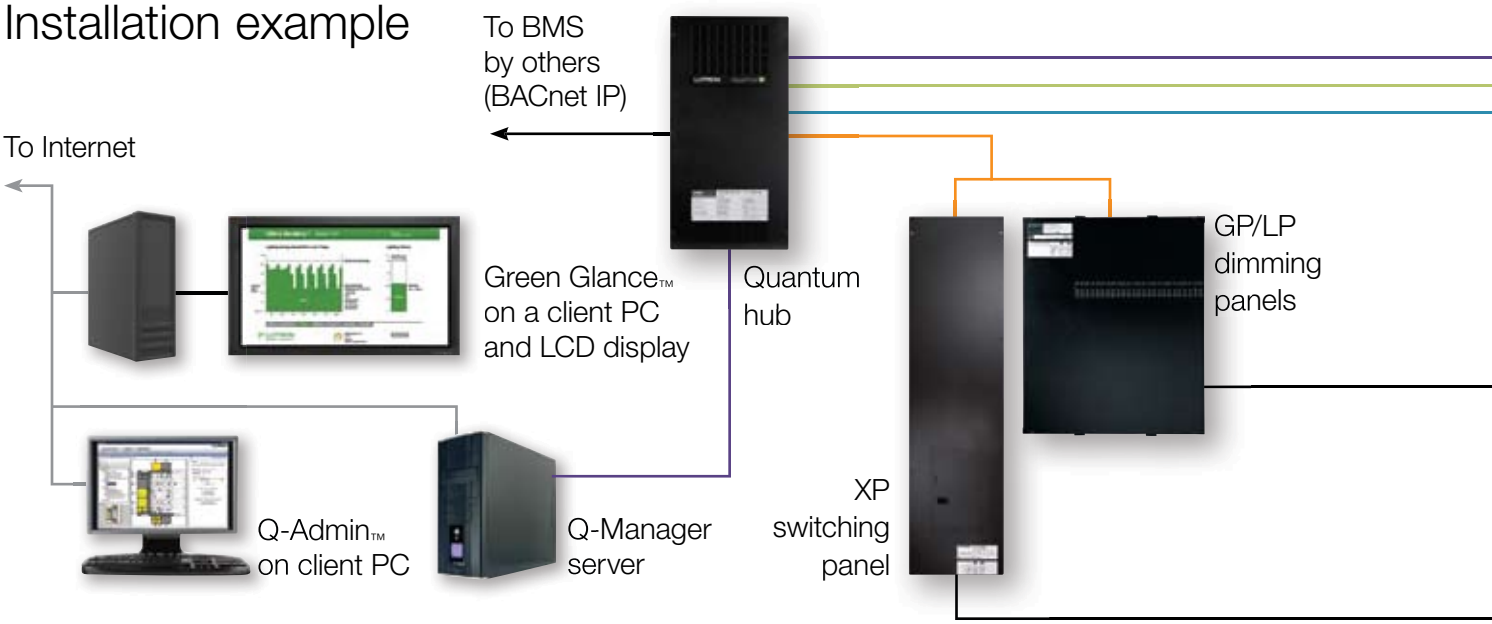
- Reduces greenhouse gases by eliminating unnecessary energy use
- Lowers operating costs and peak demand charges
- Lighting and shading zones can be re-configured without rewiring
- Makes occupants more productive and comfortable with preferred light levels and automated shade control

Performance

- Creates an energy-efficient environment by enabling centralized management, monitoring, and control
- Reduce cooling loads by dimming lights and controlling shades
- Reports lamp failures and monitors lamp hours to manage and reduce maintenance

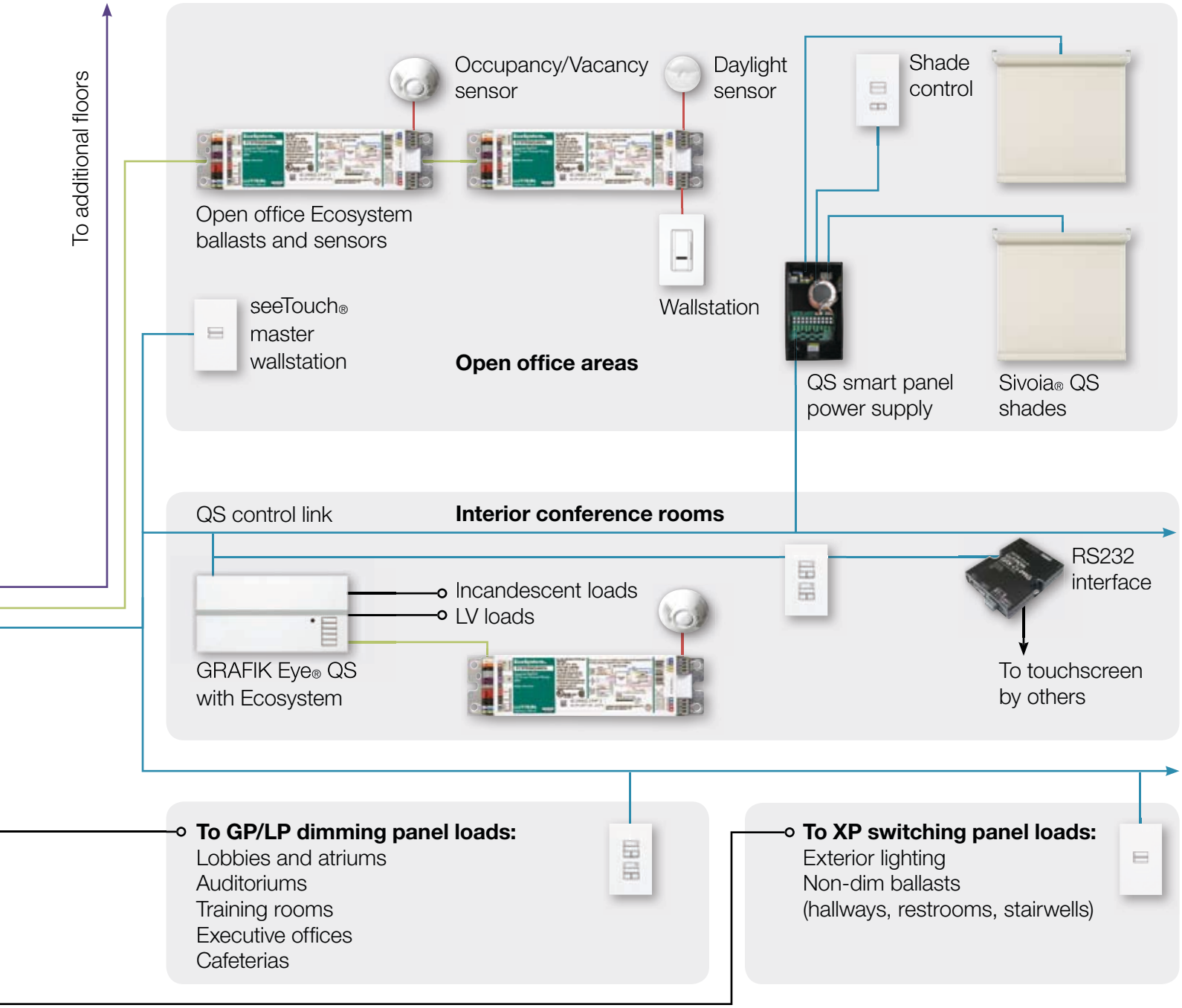
www.lutron.com/quantum

Installation example



Key

- Building intranet
- Interprocessor communication link
- QS link (RS-485)
- Power panel link (RS-485)
- EcoSystem® loop
- Sensor connection



Step 5 support components

EcoSystem programmer

Design statement: The EcoSystem wireless, hand-held programmer is designed with a graphic display for intuitive step-by-step system setup and maintenance.

Programmer dimensions
W: 3.00" (76mm)
H: 4.75" (121mm)
D: 0.50" (13mm)

Flexibility and performance

- Handles programming changes for all sensors and ballasts
- Transmits to any daylight sensor, occupancy/vacancy sensor, IR receiver, or wallstation
- Helpful on-screen directions make programming EcoSystem fast and easy

How it works

The EcoSystem programmer allows you to:

- Assign and group fixtures to wallstations and sensors
- Set up devices such as occupancy/vacancy sensors, daylight sensors and wallstations
- Address and configure ballasts; new or replacements

Note: When EcoSystem is controlled by Quantum™ or GRAFIK Eye® QS the EcoSystem programmer is not needed.

Models

- **C-PDA-CLR**–Wireless, hand-held programming device

Step 5 support components

EcoSystem® bus supply

Design statement: The EcoSystem bus supply is required for two or more ballasts (or modules) to work together. The bus supply powers the communication bus between ballasts.

Bus supply dimensions
W: 1.77" (45mm)
H: 3.56" (85mm)
D: 3.62" (92mm)

Performance

- Supports up to 64 ballasts or modules
- Maintains redundant non-volatile memory of programming for 10 years from power down to power restored

Wiring to an EcoSystem bus supply

- E1 and E2 wires are polarity insensitive
- Bus length is limited by the wire gauge used for E1 and E2 as follows:

Wire gauge	Max loop length
#12 AWG (2.05mm)	2,200' (670m)
#14 AWG (1.63mm)	1,400' (426m)
#16 AWG (1.29mm)	900' (274m)
#18 AWG (1.02mm)	550' (167m)

Contact closure

EcoSystem bus supplies have 2 configurable contact closure inputs.

To program these inputs you must:

1. Select mode of operation
   a. Load-shed (automatic reduction in light energy)
   b. Activate a preset scene
   c. Occupancy activation
2. Assign ballasts to respond to either one or both contact closures. From 1 to 64 ballasts can be assigned.

Activation of contact closures can be done with a maintained closure input from a BMS, A/V, or alarm system. For more information about contact closures please go to www.lutron.com/ecosystem or read the **Lutron Application Note 236**.

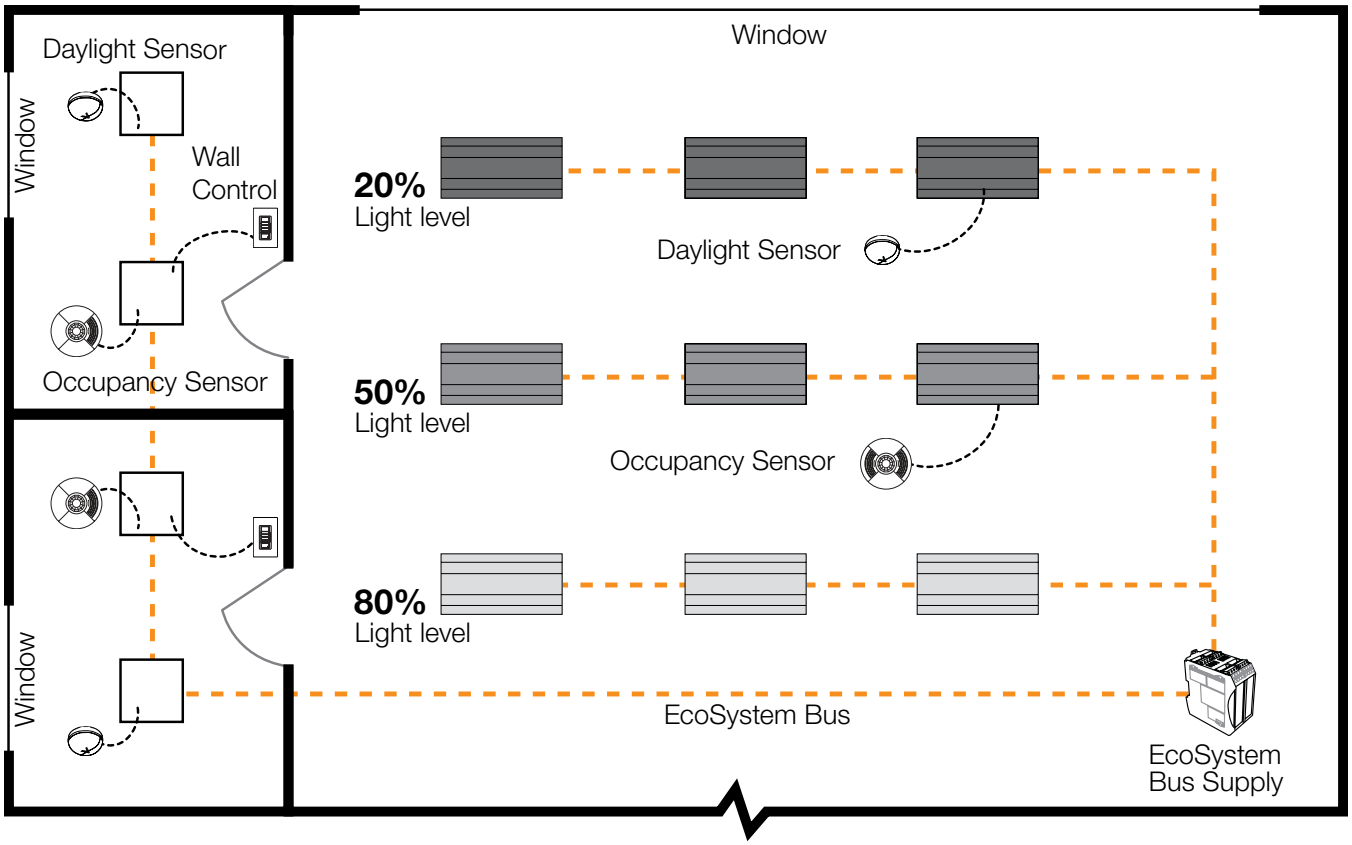
Models

- **CS-1L-CM** – Contractor mountable no enclosure
- **CS-1L-WM** – Wall mountable inside enclosure

Using EcoSystem ballasts to control all fluorescent lights in an office space*

Design statement: EcoSystem ballasts are used throughout an office space to provide individual fixture control, daylight harvesting, and occupancy sensing.

Perimeter offices



Legend

☐ 2' × 2' Fluorescent fixture with Lutron EcoSystem dimmable ballast

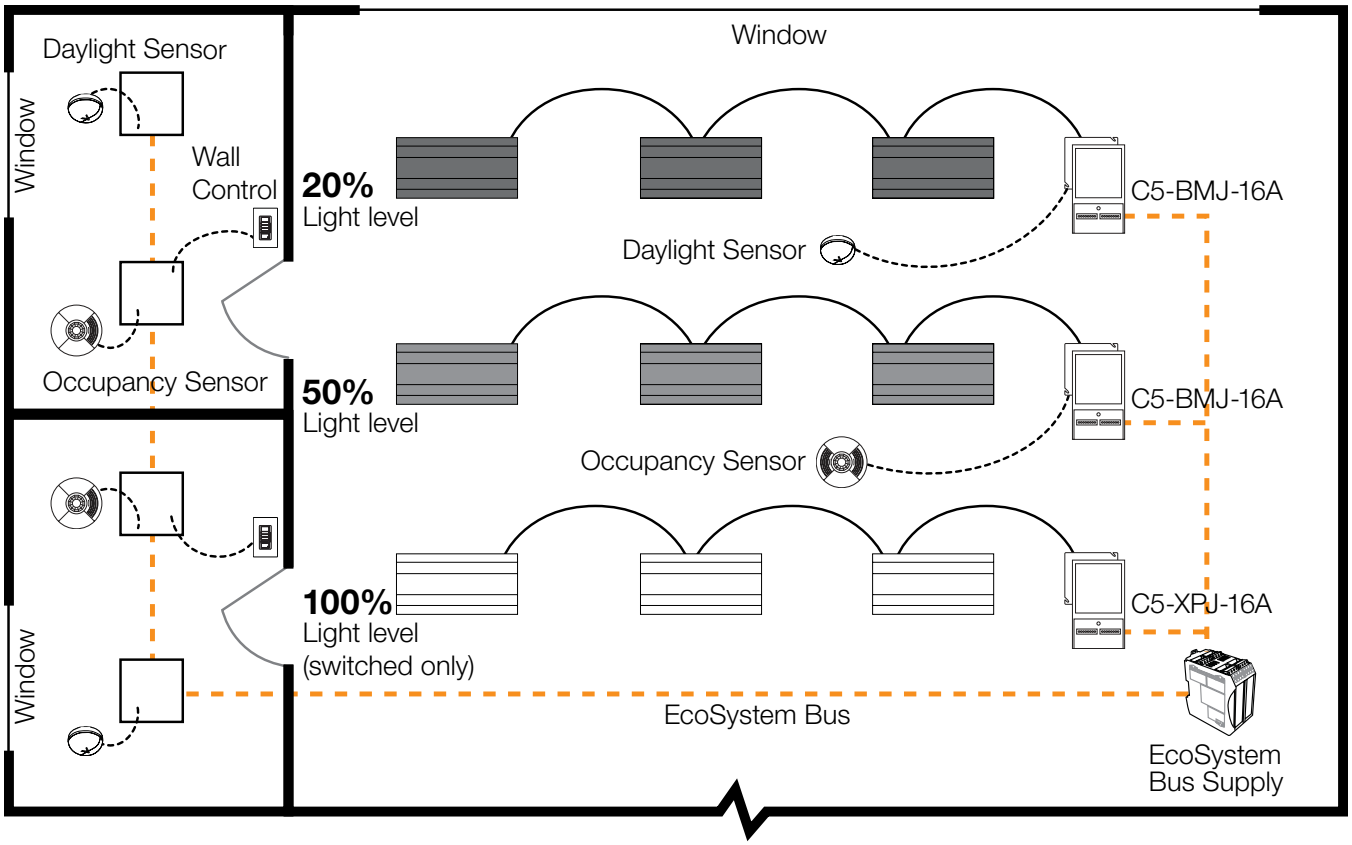
▭ 2' × 4' Fluorescent fixture with Lutron EcoSystem dimmable ballast

* Not drawn to scale.

Using a BMJ dimming module and an XPJ switching module to control fluorescent lights in an office space*

Design statement: Use a dimming module in conjunction with EcoSystem® ballasts where individual fixture control is not required but daylight harvesting is possible. Use a switching module in conjunction with EcoSystem ballasts to switch on/off light fixtures where dimming and rezoning are not required but automated control is.

Perimeter offices



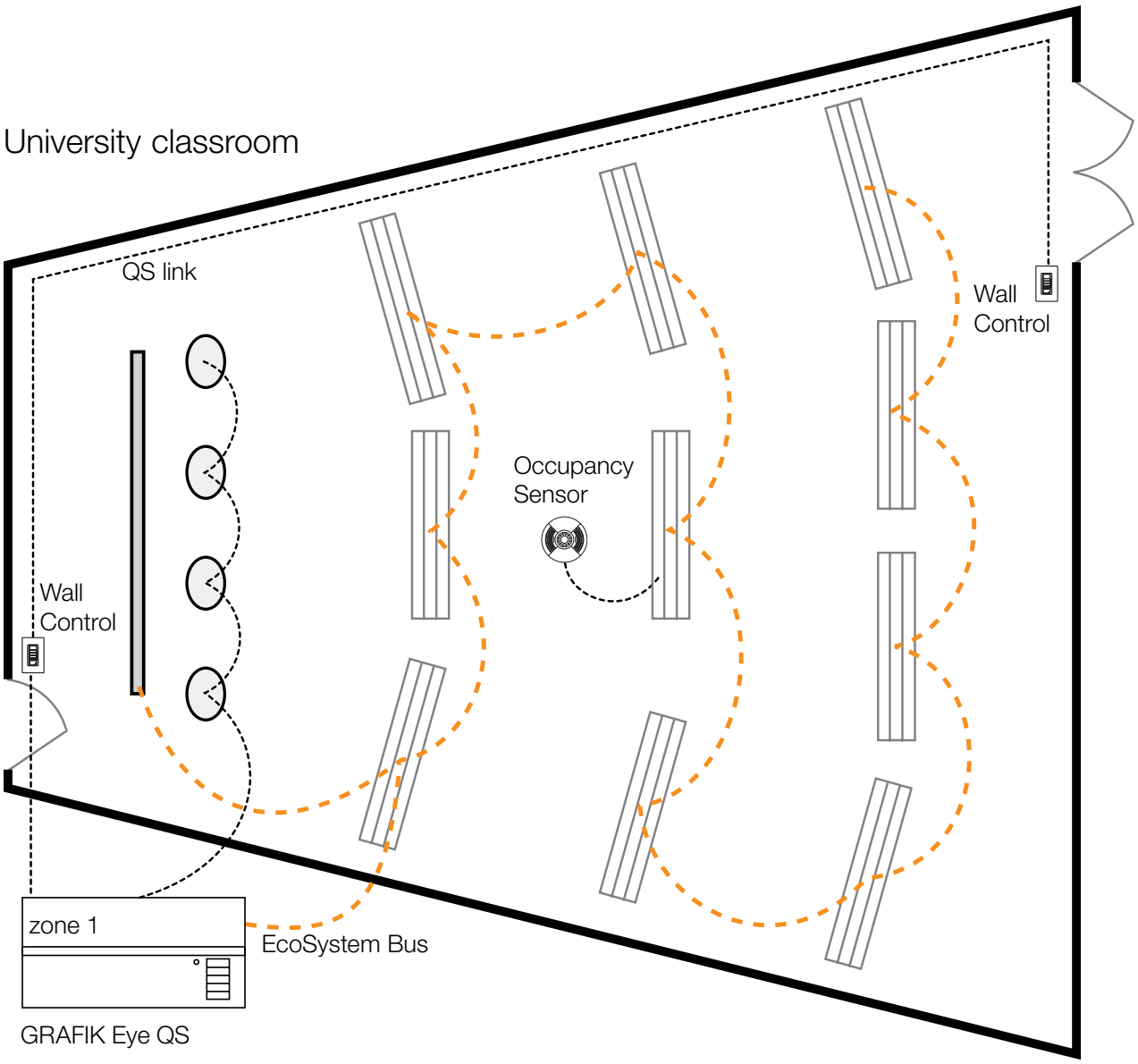
Legend

- 2' × 2' Fluorescent fixture with Lutron EcoSystem dimmable ballast
- 2' × 4' Fluorescent fixture with Lutron Eco-10® dimmable ballast controlled by EcoSystem dimming module C5-BMJ-16A
- 2' × 4' Fluorescent fixture with a fixed output ballast controlled by EcoSystem switching module C5-XPJ-16 A

* Not drawn to scale.

Using GRAFIK Eye® QS control within a university classroom*

Design statement: Both fluorescent fixtures and low voltage downlights are controlled within a classroom through GRAFIK Eye QS.



Legend

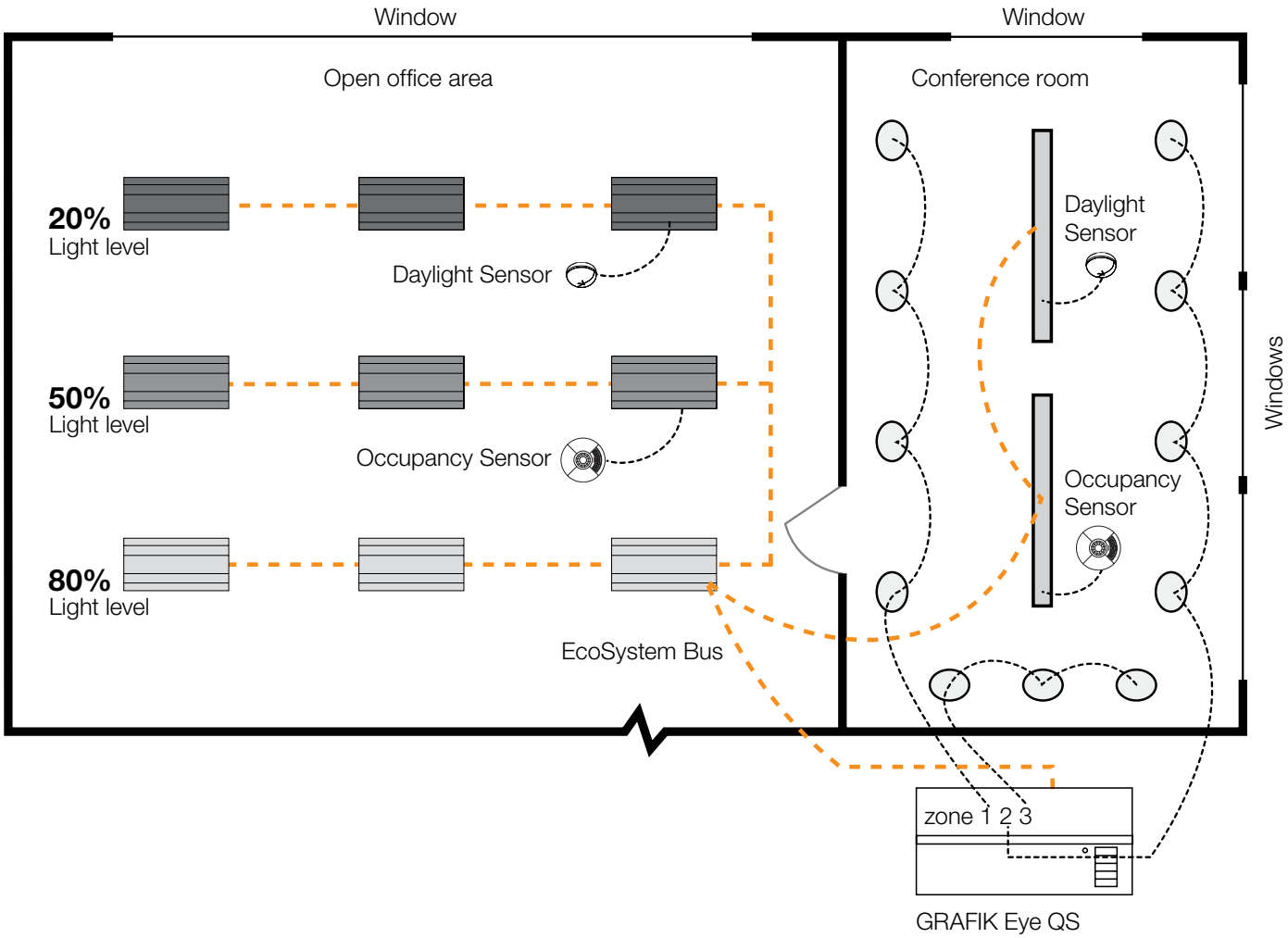
- 2' × 8' Suspended 2-lamp T8 fixture with Lutron EcoSystem dimmable ballasts
- 8' Suspended T5 fixture with Lutron EcoSystem dimmable ballasts
- Low-voltage downlights controlled as a power zone

* Not drawn to scale.

Using GRAFIK Eye QS control within an office building*

Design statement: GRAFIK Eye QS is used to control multiple types and zones of light within a conference room, and an open office area, maximizing control.

Open office with conference room



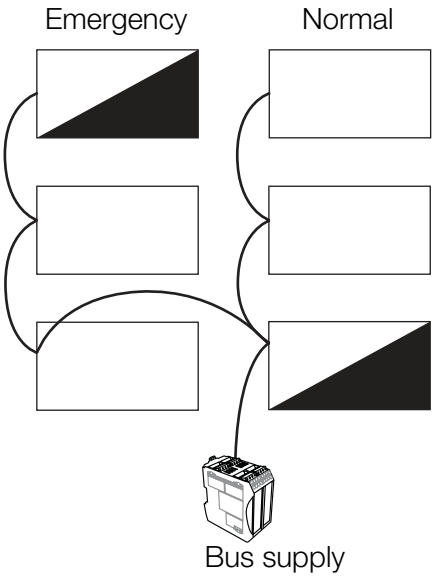
Legend

- 2' × 4' Fluorescent fixture with Lutron EcoSystem® dimmable ballast
- 4' Pendant fluorescent fixtures with Lutron EcoSystem dimmable ballast
- Low voltage down light fixtures

* Not drawn to scale.

Emergency system integration

Design statement: EcoSystem lighting control can be an integral part of an emergency lighting strategy. Several methods exist to achieve this:



Use emergency battery backup ballasts within an EcoSystem controlled fixture.

- In this case the fixture operates under EcoSystem control when normal power is present
- With loss of normal power the emergency battery back-up ballast drives the lamp(s)

Power EcoSystem ballasts via emergency/essential power and power the bus supply from normal power.

- Loss of normal power causes the EcoSystem bus to turn off
- This signals emergency powered EcoSystem ballasts to operate at their emergency levels (100% by default)

Note: For multi-phase lighting systems, or those requiring UL 924 compliance, EcoSystem can be used. In these applications the loss of any phase of normal power results in the emergency mode being activated. Ballasts will operate at their emergency light level until the fault is cleared.

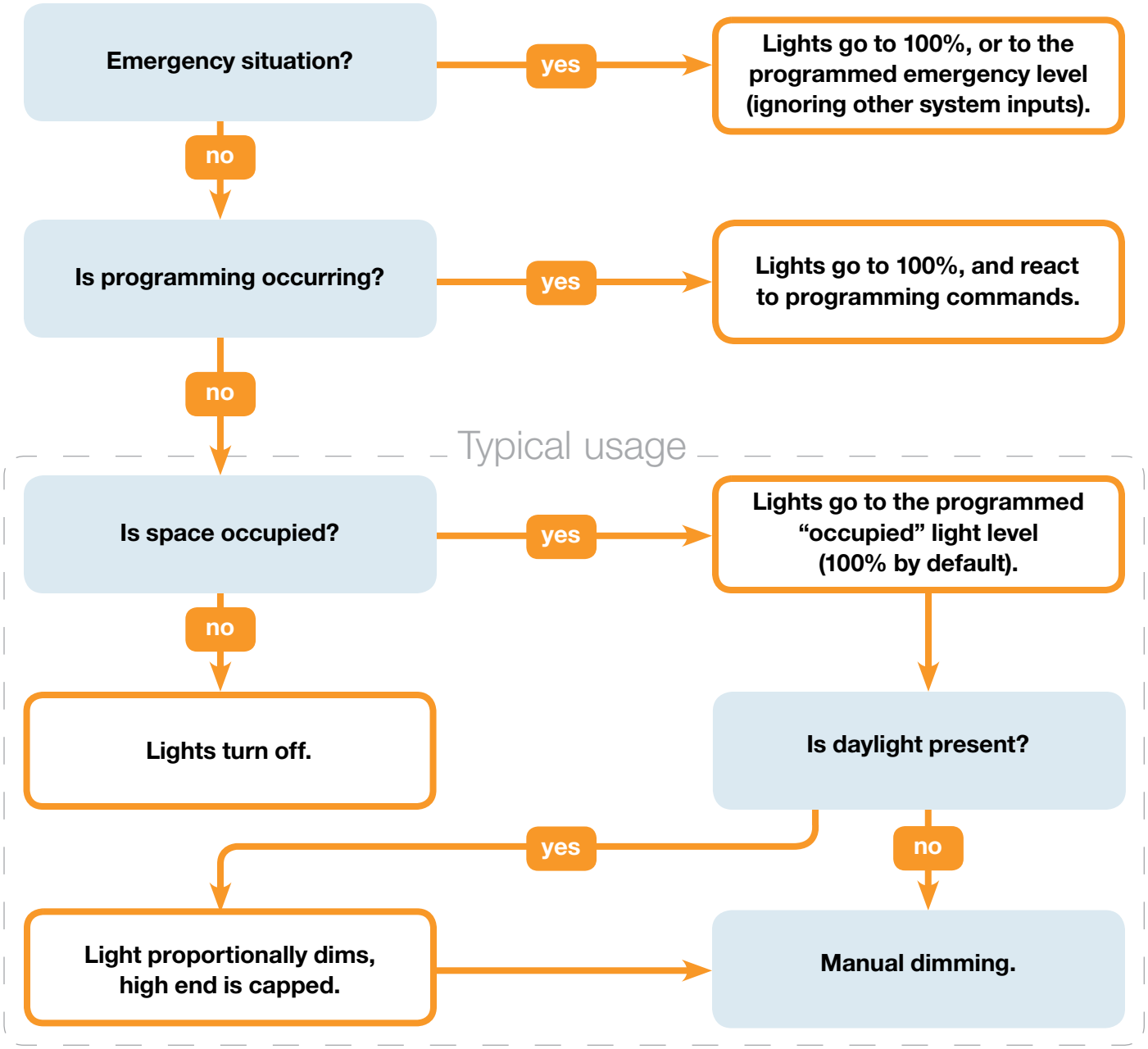
The following design consideration should be met to achieve this performance:

1. Power emergency fixtures with EcoSystem ballasts via emergency/essential power.
2. Power the bus supply and 24V DC power pack via emergency/essential power.
3. Install and connect LUT-ELI-3PH to the EcoSystem bus supply via installation instructions.

For more information please see **Lutron Application Note 140**.

System hierarchy

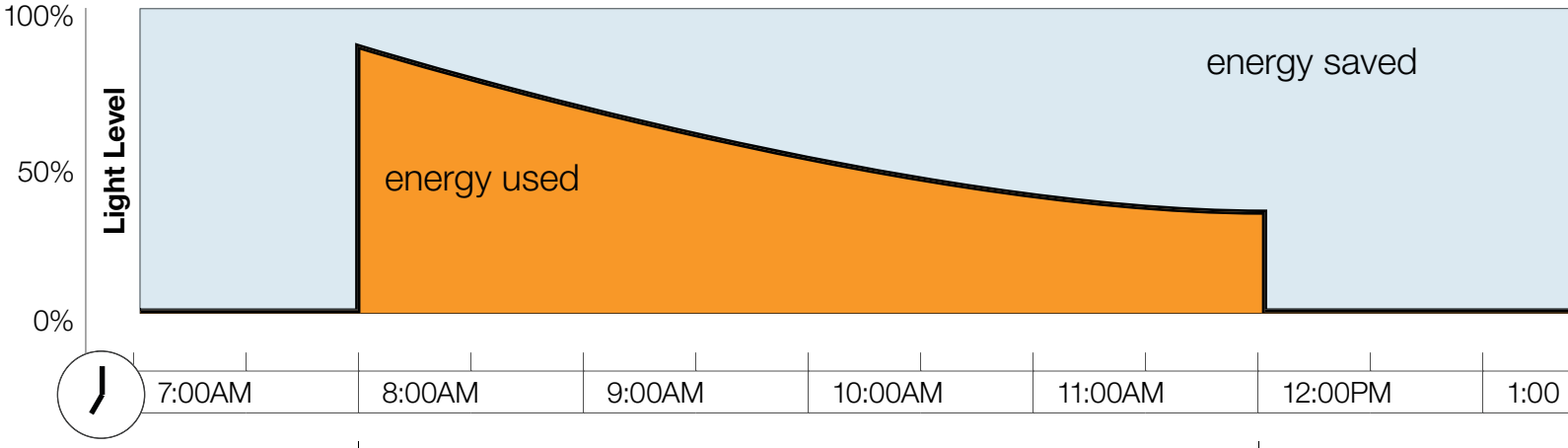
EcoSystem achieves coordinated integration of controls and sensors.
The flow chart below shows the hierarchy of the system.



A day in the life of an office with EcoSystem®

EcoSystem fixtures reduce electricity usage by 40% or more by using input from occupancy/vacancy sensors, daylight sensors, and/or manual controls.

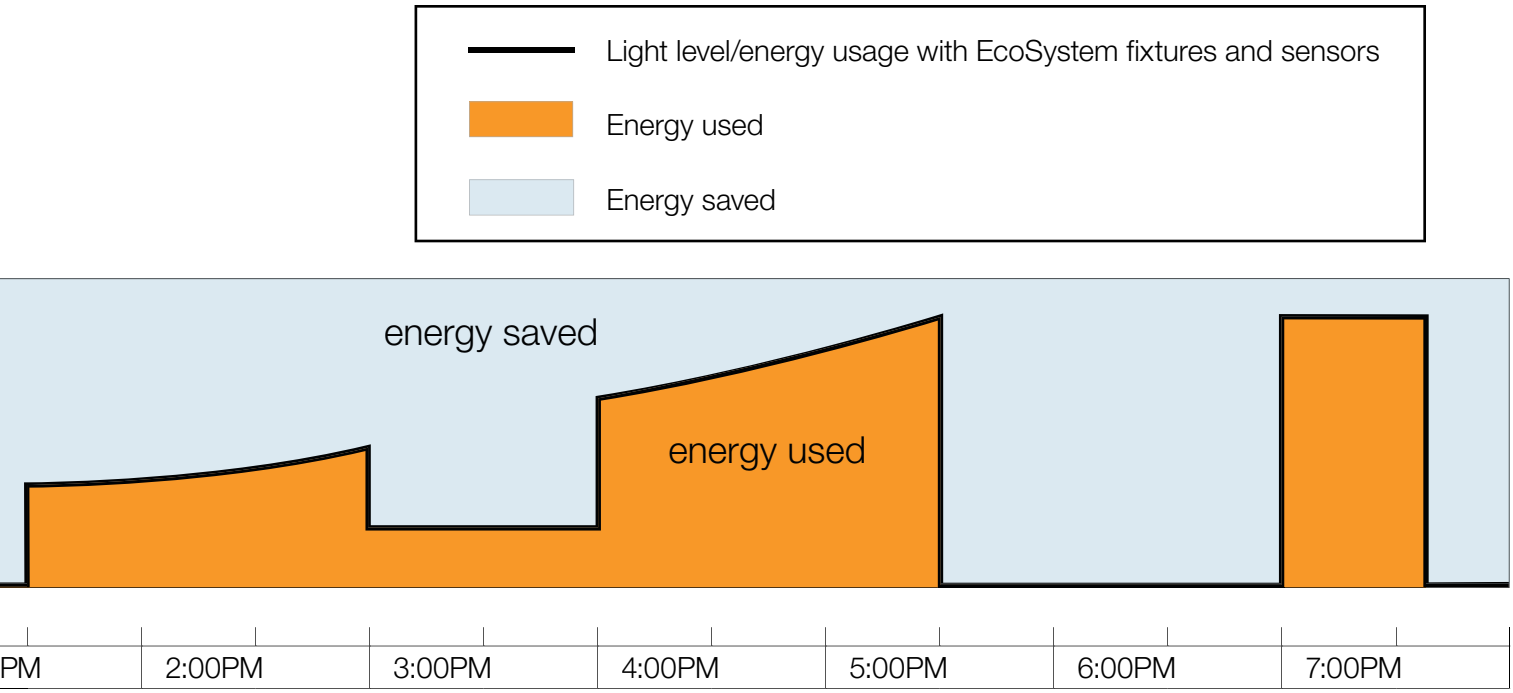
Energy use in a typical open office with EcoSystem



Office workers begin to arrive:
Workers arrive and the lights are automatically set to a tuned 90% light level to save energy and eliminate glare on computer screens. Daylight sensors automatically reduce the electric light levels in response to the available daylight. Workers are unaware of the smooth and slow light level changes.

Lunch:
Workers depart for lunch. Lights turn off automatically from occupancy/ vacancy sensing.

Lutron occupancy/vacancy and daylight sensors

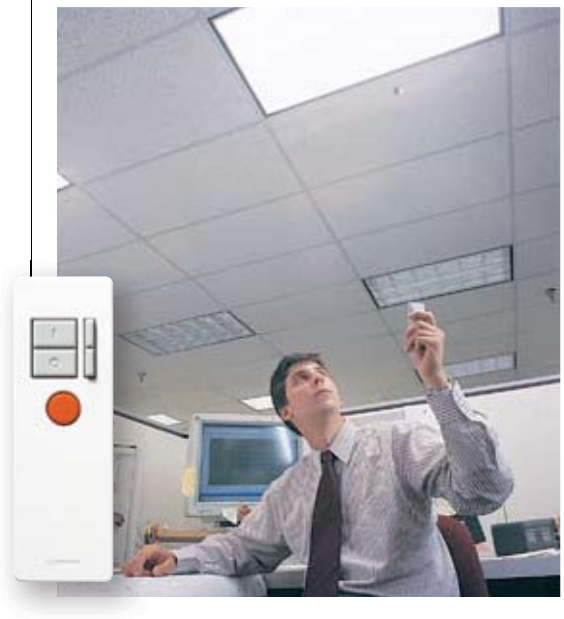


Workers return:
Lights automatically rise to occupied light level. As daylight decreases electric light levels increases.

Webinar:
Workers dim their lights with handheld remote controls or from their PCs to clearly view the webinar and have enough light to take notes.

Workers leave:
Lights turn off automatically from occupancy/ vacancy sensing.

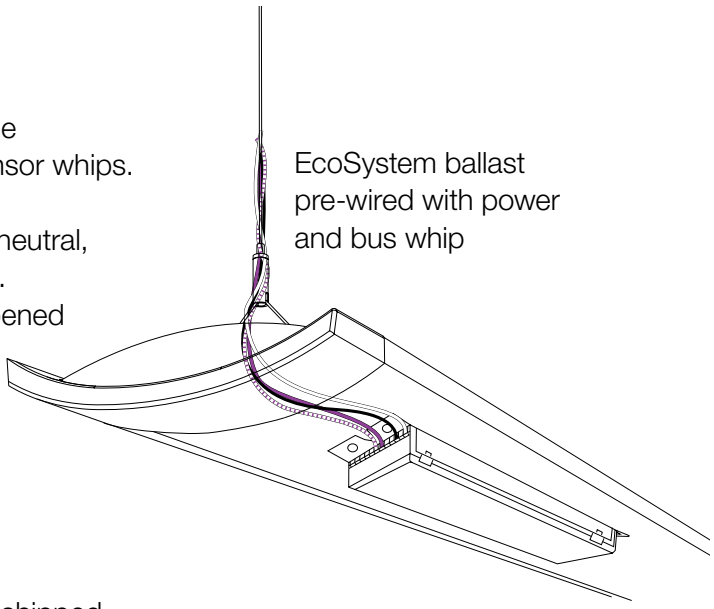
Cleaning:
Lights automatically turn on to a 90% light level for the cleaning staff. Lights automatically turn off when staff departs.



EcoSystem hand-held remote

Wiring considerations

An EcoSystem project can be simpler to install if the fixtures are pre-wired with EcoSystem bus and sensor whips.



EcoSystem ballast pre-wired with power and bus whip

Power and bus whips consist of 5 wires: power (neutral, hot, ground) and communication wires (E1 and E2). This means that the fixture does not need to be opened for connection of power and control wiring.

EcoSystem power and bus cables:
Standard: C-CBL-216-WH-1
Plenum Rated: C-PCBL-216-CL-1

Sensor whips are wires that are connected to the ballast's sensor inputs within the fixture before it is shipped. This means that the fixture does not need to be opened in order to connect EcoSystem sensors.

EcoSystem sensor cables:
Standard: C-CBL-522S-WH-1
Plenum Rated: C-PCBL-522S-CL-1

Visit www.lutron.com/ecosystem for more details and a specifications.

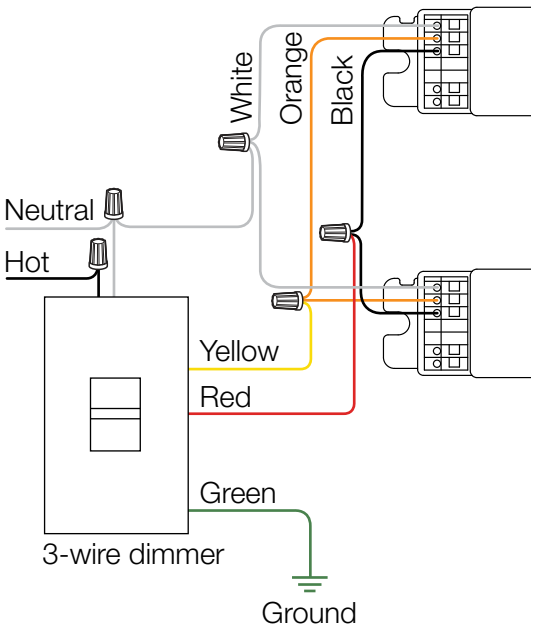
3-wire control

EcoSystem ballasts can be controlled from any of Lutron's 3-wire fluorescent dimmers. However, these ballasts must be hardwired to the control, and cannot be rezoned as they could when an EcoSystem digital control is used (CC-1BRL, CC-4BRL).

When 3-wire controls and the digital bus are used in conjunction on the EcoSystem ballast the following capabilities are enabled:

- **vacancy mode**–(manual on/automatic off) manual on is triggered easily via the 3-wire control
- **daylight harvesting**–the 3-wire dimmer operates just like a digital control, dimming the EcoSystem ballasts according to the existing daylight.

Note: If 3-wire and digital bus are used together, unique fixture wiring must be coordinated and specified.



Ballast model numbers

For the latest information and model numbers visit www.lutron.com/ballasts.

T8 Lamp	No. of Lamps	Case	Ballast Model Number*
F32T8 (48")	3	G	EC5 T832 G UNV 3
	2	G	EC5 T832 G UNV 2
		J	EC5 T832 J UNV 2
	1	J	EC5 T832 J UNV 1
F25T8 (36")	2	J	EC5 T825 J UNV 2
	1	J	EC5 T825 J UNV 1
F17T8 (24")	2	J	EC5 T817 J UNV 2
	1	J	EC5 T817 J UNV 1
T5 Lamp	**No. of Lamps**	**Case**	**Ballast Model Number***
F35T5 (57.1")	1	J	EC5 T535 J UNV 1
F28T5 (45.2")	2	J	EC5 T528 J UNV 2
	1	J	EC5 T528 J UNV 1
F21T5 (33.4")	2	J	EC5 T521 J UNV 2
	1	J	EC5 T521 J UNV 1
F14T5 (21.6")	2	J	EC5 T514 J UNV 2
	1	J	EC5 T514 J UNV 1
T5HO Lamp	**No. of Lamps**	**Case**	**Ballast Model Number***
F54T5 (45.2")	2	J	EC5 T554 J UNV 2
	1	J	EC5 T554 J UNV 1
F39T5 (33.4")	2	J	EC5 T539 J UNV 2
	1	J	EC5 T539 J UNV 1
F24T5 (21.6")	2	J	EC5 T524 J UNV 2
	1	J	EC5 T524 J UNV 1
T5 Twin Tube Lamp	**No. of Lamps**	**Case**	**Ballast Model Number***
FT55 (20.7")	2	J	EC5 T555 J UNV 2
	1	J	EC5 T555 J UNV 1
FT50 (22.5")	2	J	EC5 T550 J UNV 2
	1	J	EC5 T550 J UNV 1
FT40 (22.5")	2	J	EC5 T540 J UNV 2
	1	J	EC5 T540 J UNV 1
FT39/FT36 (15.5")	2	J	EC5 T536 J UNV 2
	1	J	EC5 T536 J UNV 1

* All EcoSystem® ballasts are UL listed for operation at 120 V, 220/240 V, and 277 V at 50/60 Hz.

LUTRON®

www.lutron.com/ecosystem

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EcoSystem™ | Bus Supply Installation Guide

ATTENTION: Please read this guide before installing

Contents

Ratings for all models:

- Input: 100 - 277 V~ 180 mA 50 / 60 Hz
- Output: 18 V⎓ 250 mA (per bus) max.
- Operating Environment: 0 - 40 °C (32 - 104 °F), < 90% relative humidity, non-condensing

Model Number Explanation

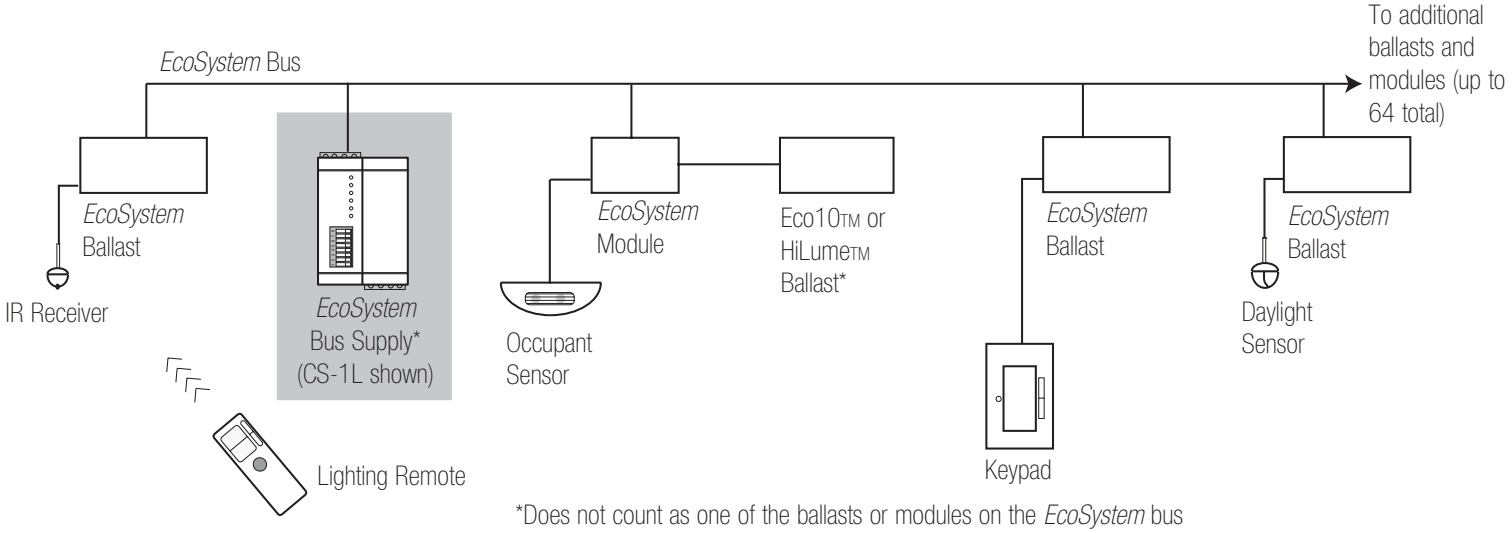
CS - ___ - ___

1L: Powers 1 *EcoSystem* Bus

2L: Powers 2 independent *Ecosystem* busses

CM: Unit not shipped with an enclosure

WM: Unit premounted in UL-listed 8 x 8 x 4 in. (203 x 203 x 102 mm) enclosure or larger



*Does not count as one of the ballasts or modules on the *EcoSystem* bus

English

Español

Français

EcoSystem™ | Bus Supply Installation Guide

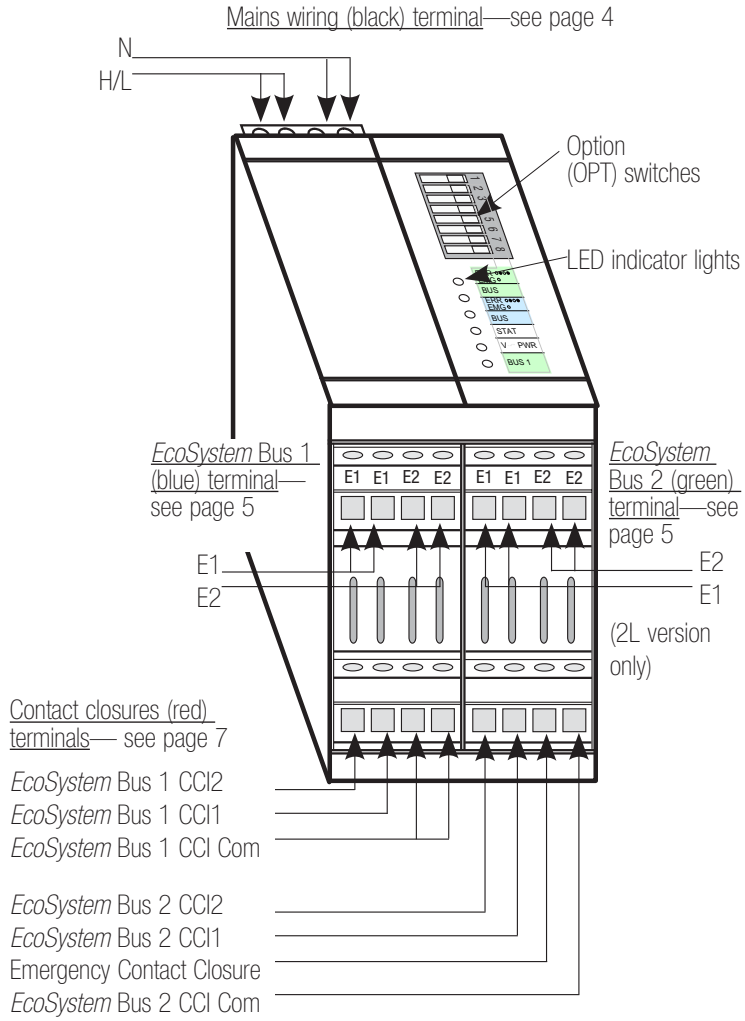
Overview

The *EcoSystem* Bus Supply powers one or two *EcoSystem* Buses and supports communication for a maximum of 64 ballasts and modules per Bus. An *EcoSystem* lighting network consists of a Bus Supply, ballasts, modules, sensors, and keypads. The diagram on the previous page shows a typical system topology.

All ballasts, modules, and the Bus Supply are powered by mains voltage (Hot/Live and Neutral) and require two additional wires for digital communication (E1 and E2). The *EcoSystem* Bus may be run in the same conduit as mains wiring or separated from mains wiring. The *EcoSystem* Bus can be wired with any topology: the *EcoSystem* Bus wires are non-polarized, and can be run as a daisy chain, T-tap, star pattern, or any combination. Only one *EcoSystem* Bus Supply is allowed per *EcoSystem* lighting network. Other limits to the *EcoSystem* lighting network:

- 64 total ballasts and modules
- 8 daylight sensors
- 64 occupant sensors
- 64 total keypads or infrared receivers

Refer to the following step by step guide for proper *EcoSystem* Bus Supply installation.

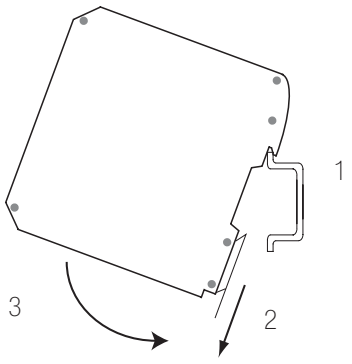


EcoSystem™ | Bus Supply Installation Guide

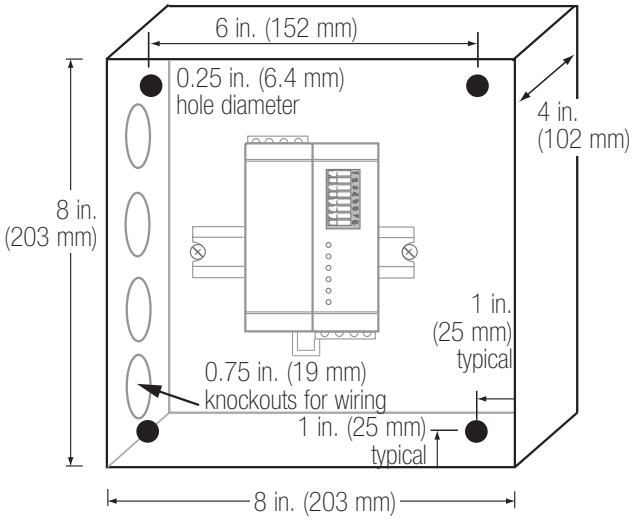
Step 1: *EcoSystem* Bus Supply and Enclosure Mounting
Note: Mount the *EcoSystem* Bus Supply in a location where it can be easily located and accessed if servicing or troubleshooting is necessary. The bus supply can be mounted in any orientation (if required).

A. Select a UL-listed NEMA Type 1 (or better) electrical enclosure with minimum dimensions of 8 in. x 8 in. x 4 in. (203 mm x 203 mm x 102 mm) (l x w x d) or mount the WM version using the mounting holes provided and skip to Step 2. *EcoSystem* Bus Supply external dimensions are shown in illustrations at right.
B. Mount UL-listed enclosure per enclosure's instructions.
C. Mount DIN rail (included with *EcoSystem* Bus Supply) horizontally near the center of the enclosure.
D. Clip the *EcoSystem* Bus Supply onto DIN rail:
   1. Hook the *EcoSystem* Bus Supply to the top of the DIN rail
   2. Using a screwdriver, pull the DIN rail clip out and away from the DIN rail
   3. Pivot the *EcoSystem* Bus Supply onto the DIN rail
   4. Release the DIN rail clip

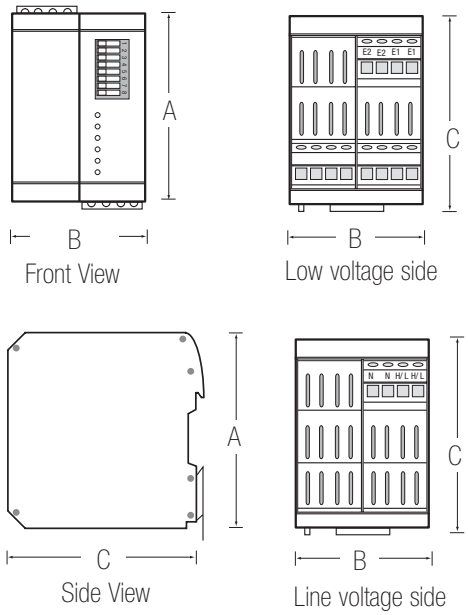
(The *EcoSystem* Bus Supply can be removed, if necessary, by reversing this procedure.)



Clip *EcoSystem* Bus Supply onto DIN Rail



Mounting Holes & Dimensions of CS-1L/2L-WM



A = 3.56 in. (85 mm)
B = 1.77 in. (45 mm)
C = 3.62 in. (92 mm)

Dimensions of CS-1L/2L-CM (CS-1L shown)

Step 2: Mains Voltage Wiring

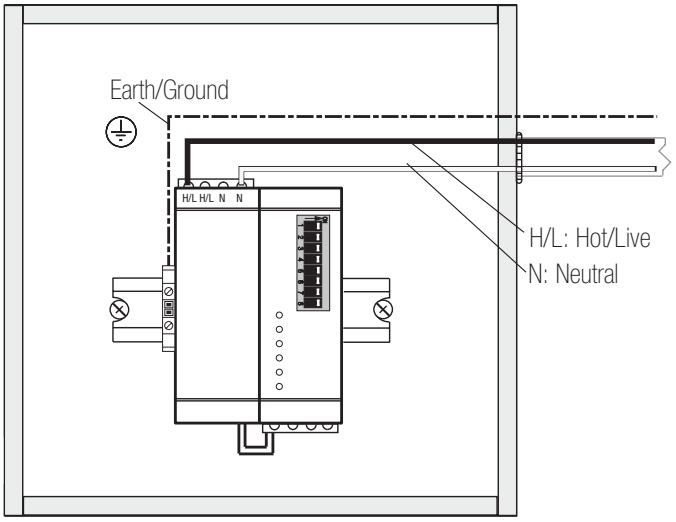
The *EcoSystem* Bus Supply operates at 100-277 V~. Use the following instructions to properly wire line voltage to the *EcoSystem* Bus Supply.

DO NOT WIRE LIVE! Interrupt power via circuit breaker before wiring or servicing the *EcoSystem* Bus Supply.

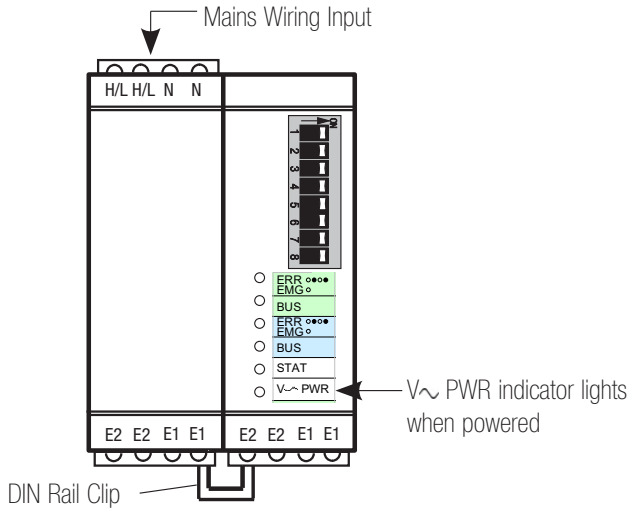
A. Use #12 to #18 AWG (2.5 to 1.0 mm²) conductors to feed mains wiring (100-277 V~). The device draws less than 120 mA.
B. Wire mains to the black terminals labeled N and H/L. Four terminals are provided, two for Neutral (N) and two for Hot/Live (H/L). Redundant terminals provide for easy wiring of mains to other modules if needed.
C. The *EcoSystem* Bus Supply is grounded via the DIN rail through clips on the bottom of the module. Attach ground wire to DIN rail via the green terminal block (provided on WM version only) or to DIN rail mounting screw.
D. Turn on circuit breaker to energize the *EcoSystem* Bus Supply. V~ PWR indicator on the *EcoSystem* Bus Supply will light green when properly energized. If the indicator does not light, verify line voltage wiring.

Emergency Lighting: When the power to the *EcoSystem* Bus Supply is removed, the *EcoSystem* Bus Supply signals to ballasts and modules powered by emergency/essential power to go to their programmed emergency light level (100% by default). For this reason, the *EcoSystem* Bus Supply should not be powered via an emergency/essential lighting circuit.

Note: If additional wiring space is necessary, the *EcoSystem* Bus Supply can be removed from the DIN rail while wiring. Follow the instructions in Step 1: *EcoSystem* Bus Supply and Enclosure Mounting for details.



Mains Wiring to *EcoSystem* Bus Supply
(CS-1L-WM shown)



Front View of *EcoSystem* Bus Supply
(CS-2L version shown)

Step 3: *EcoSystem* Bus Wiring

EcoSystem Bus wiring may be considered NEC® Class 1 or PELV (Class 2: USA).

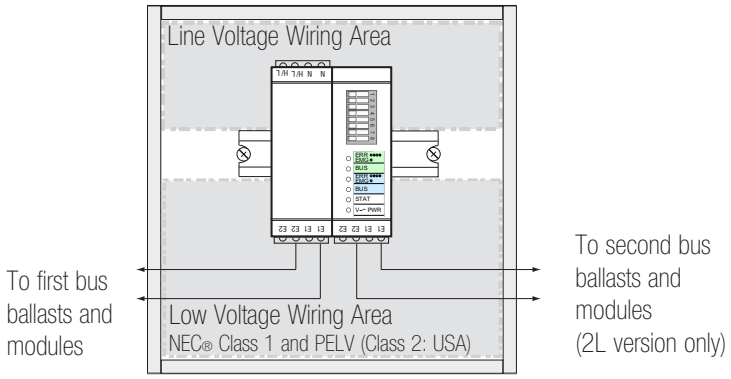
- NEC® Class 1: Low voltage *EcoSystem* Bus wiring may be run in the same conduit as mains voltage wiring to fixtures.
- PELV (Class 2: USA): Low voltage *EcoSystem* Bus wiring must be separated from all mains and NEC® Class 1 wiring.

  Consult applicable national and local codes for compliance.

  Lutron recommends using two different colors for E1 and E2 (*EcoSystem* Bus) wires. This will prevent wiring mistakes in junction boxes where several different *EcoSystem* Bus wires combine. Use the following instructions for wiring the *EcoSystem* Bus.

DO NOT WIRE LIVE! Interrupt power via circuit breaker before wiring and servicing the *EcoSystem* Bus Supply. V~ PWR indicator will be off when power is off.

A. Use the wire size chart that follows to determine which wire size to use based on the length of the *EcoSystem* Bus.
B. Wire the *EcoSystem* Bus from terminal E1 and terminal E2 to all ballasts and modules.
C. Separate low-voltage wiring from the mains wiring. If wiring the *EcoSystem* Bus as PELV (Class 2: USA), maintain proper separation from mains and NEC® Class 1 wiring.
D. Turn on circuit breaker to energize. V~ PWR indicator lights green when energized.
E. *EcoSystem* Bus Supply outputs 17 V⎓ +/- 1 V⎓ (maximum) between E1 and E2. Use a voltage meter to confirm this voltage between E1 and E2 terminals. Confirm that there is no voltage from E1 to earth/ground or from E2 to earth/ground. Otherwise, a wiring fault is present, which must be cleared before continuing.



***EcoSystem* Bus Wiring to *EcoSystem* Bus Supply**
Note separate areas for different voltage wiring

Note: If 17 V⎓ +/- 1 V⎓ is not present between E1 and E2, check *EcoSystem* Bus wiring. A short between E1 and E2 will cause the *EcoSystem* Bus supply to stop providing voltage on the bus and will cause the corresponding ERR indicator to flash. Removing the short between E1 and E2 will automatically allow the *EcoSystem* Bus Supply to operate properly.

Wiring Size and Bus Length

EcoSystem Bus wires E1 and E2 are not polarity sensitive. *EcoSystem* Bus length is limited by the wire gauge used for E1 and E2 as follows:

Wire Gauge	Maximum *EcoSystem* Bus Length
#12 AWG (4.0 mm²)	2200 ft (671 m)
#14 AWG (2.5 mm²)	1400 ft (427 m)
#16 AWG (1.5 mm²)	900 ft (275 m)
#18 AWG (1.0 mm²)	570 ft (175 m)

Step 4: Emergency Input

The Emergency Input on the *EcoSystem* Bus Supply is compatible with an external normally-closed contact closure output. Normally closed means that the contact is closed when normal power is present. The contact is open when normal power is lost.

When the input to CCI-EMERG (terminal Em) is not connected to CCI-COM (terminal C) and OPT Switch 5 (Emergency Disable) is in the Off position, the entire *EcoSystem* Bus is in Emergency mode. When in Emergency mode, all ballasts and modules will be at their programmed emergency output (100% light by default). Also, all control and programming of a ballast or module will be disabled while it is in Emergency mode.

If using a 2L version, there is only one Emergency input; it affects both busses.

Emergency Input Wiring (if used)

The *EcoSystem* Bus Supply is compatible with fire alarms and security systems that have a normally-closed (NC) contact closure output. Contact closure input may be dry contact closure or open collector (NPN). To use the Emergency input with an external normally-closed relay, follow these steps:

DO NOT WIRE LIVE! Interrupt power via circuit breaker before wiring and servicing the *EcoSystem* Bus Supply. V~ PWR indicator is off when power is off.

A. Wire the alarm system's normally-closed contactor between CCI-COM (terminal C) and CCI-EMERG (terminal Em) on the red terminal block. Use #12 AWG to #18 AWG (2.5-1.0 mm^2) between the *EcoSystem* Bus Supply and contactor terminals. See the diagram on the next page.
B. Ensure that OPT Switch 5 (Emergency Disable) is in the Off position.
C. Turn on circuit breaker to energize. V~ PWR indicator on the *EcoSystem* Bus Supply glows green when energized.

Step 5: Optional Contact Closure Inputs

Contact closure inputs (CCI) on the *EcoSystem* Bus Supply may be used for integrating a BMS system or occupant sensors with contact closure outputs (CCO) to an *EcoSystem* Lighting Network.

If the contact closure inputs on the *EcoSystem* Bus Supply are not used, skip to Step 6: Testing and Troubleshooting.

If using a 2L version, there is one set of contact closure inputs per bus. The contact closure inputs for each bus are located beneath the corresponding *EcoSystem* Bus terminals.

Contact Closure Input 1 (CCI-1) and Contact Closure Input 2 (CCI-2) can be programmed to control two different groups of ballasts or modules (one group per CCI). CCIs force the assigned groups to an "Occupied mode" or "Unoccupied mode". Groups are assigned using the *EcoSystem* Programmer.

Occupied mode enables the system to operate normally: wall controls, daylight sensors, and infrared transmitters control ballasts as programmed. Unoccupied mode turns *EcoSystem* ballasts and modules off.

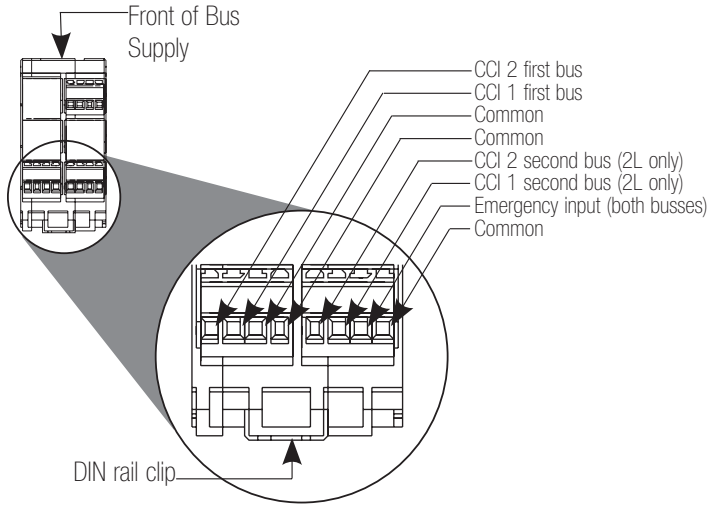
A ballast or module can be programmed to listen to a combination of occupant sensors (connected to ballasts on the *EcoSystem* Bus) and/or contact closure inputs (CCIs) on the *EcoSystem* Bus Supply. These programmable inputs determine whether a ballast or module is in occupied mode or unoccupied mode. A ballast or module will be in unoccupied mode if all occupant sensors or Bus Supply CCIs that are programmed to control the ballast and module are in the unoccupied state. If any occupant sensors or Bus Supply CCIs are in the occupied state, all ballasts or modules that they are programmed to control will be in the occupied mode.

Each Bus Supply CCI input may be configured as normally open (NO) or normally closed (NC) (see OPT Switches on page 8). Inputs may be dry contact closure or open collector (NPN) with the following specifications:

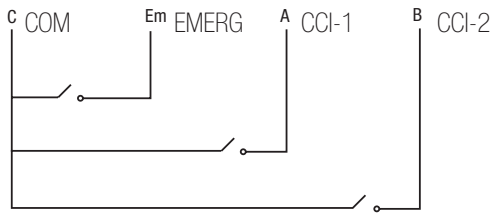
- On-state saturation voltage less than 2.0 V⎓
- Off-state leakage current less than 10 µA
- Minimum open circuit voltage rating 24 V⎓
- Minimum current rating 10 mA

PELV (Class 2: USA) Terminals

Terminal	Unit Label	Function
C	COM	Common
Em	CCI-EMERG	Emergency
A	CCI-1	Contact Closure 1
B	CCI-2	Contact Closure 2



Contact Closure Input Wiring



Contact Closure Input Wiring (if used)

Contact closures from a building automation system may be wired directly to the *EcoSystem* Bus Supply.

Contact Closure Inputs on the *EcoSystem* Bus Supply are programmed to control ballasts and modules through the *EcoSystem* Programmer.

Use the following instructions to wire external contact closure outputs to the *EcoSystem* Bus Supply. Distance from contact closures to the *EcoSystem* Bus Supply is limited to 200 feet (61 m). Wire may be #12 AWG to #22 AWG (2.5-0.5 mm²).

DO NOT WIRE LIVE! Interrupt power via circuit breaker before wiring and servicing. V~ PWR indicator is off when power is off.

A. Wire between the contact closure relay to CCI-1 (terminal A) or CCI-2 (terminal B) and COM (terminal C) on the red terminal.
If using a 2L version, wire to the A or B terminal beneath the bus terminal blocks you want to contact with that CCI.

B. Turn on the circuit breaker to energize the *EcoSystem* Bus Supply. V~ PWR indicator on the *EcoSystem* Bus Supply glows green when energized.

Contact closure inputs are PELV (Class 2: USA) circuits and cannot be run with mains wiring. Unless otherwise specified, the voltages do not exceed 12-35 V⎓. These circuits comply with the requirements of NFPA 70, National Electric Code (NEC®). Follow all applicable national and/or local wiring regulations.

Option (OPT) Switches

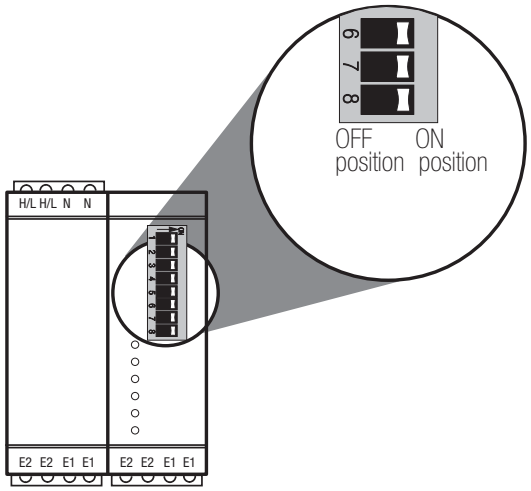
Switches on the *EcoSystem* Bus Supply configure how the *EcoSystem* Bus Supply responds to contact closures. The table below describes the switches.

Switch default position is "ON".

OPT Switch Function

OPT	Description	Function
1	First bus (green) CCI-1 Input type	ON = Normally open[1] OFF = Normally closed[2]
2	First bus (green) CCI-2 Input type	
3[3]	Second bus (blue) CCI-1 Input type	
4[3]	Second bus (blue) CCI-2 Input type	
5	Emergency disable	ON = Emergency contact closure input disabled (default) OFF = Emergency contact closure input enabled
6	Override/ Normal	See step 6 on next page
7		
8		

OPT Switches



[1]Normally open: Occupied = closed
Unoccupied = open

[2]Normally closed: Occupied = open
Unoccupied = closed

[3]Used in 2L models only

Step 6: Testing and Troubleshooting

To confirm proper operation of your *EcoSystem* lighting network, perform the following steps:

A. Place OPT Switches 7 and 8 into the OFF position. All ballasts and modules on the *EcoSystem* Bus should turn off (see the following table). If using a 2L version, both busses will be affected.
   – If some devices did not turn off, inspect *EcoSystem* Bus wiring at each location that did not turn off. Use a meter to determine that 17 V⎓ +/- 1 V⎓ is present between the E1 and E2 terminals at the device. Note that momentary voltage drops are normal and indicate good communication.
   – If none of the devices turn off, verify that the *EcoSystem* Bus Supply is powered (V~ PWR indicator is on) and that the *EcoSystem* Bus is properly connected to E1 and E2 on the *EcoSystem* Bus Supply. A meter should indicate 17 V⎓ +/- 1 V⎓ between terminals E1 and E2 on the *EcoSystem* Bus Supply. If this voltage is not present, a miswire (short circuit) is likely on the *EcoSystem* Bus.

B. After any miswires are corrected and Step A has been successfully completed, verify fixture wiring by selecting low-end override (OPT Switch 7 OFF, OPT Switch 8 ON; see table below). Leave fixtures at low end for five minutes. Verify that no lamps turn off or flash. If using a 2L version, both buses will be affected.
   – If any lamps turn off or flash, inspect ballast to lamp socket wiring. It is likely that the sockets are not properly wired. See Fluorescent Dimming Systems Technical Guide and ballast label for proper fixture wiring.

OPT 7	OPT 8	Function
ON	ON	Normal Operation (default)
ON	OFF	Override: High End
OFF	ON	Override: Low End
OFF	OFF	Override: Off

Burn-In

After the *EcoSystem* lighting network has been successfully tested, the fluorescent lamps must be burned-in for 100 hours to remove any impurities in the lamp that may prevent proper dimming. This can be done by turning off OPT Switch 8, or starting burn-in mode using the *EcoSystem* programmer. This will force all ballasts and modules on the link to their maximum light level.

Note: Omitting the burn-in step may cause premature lamp failure!

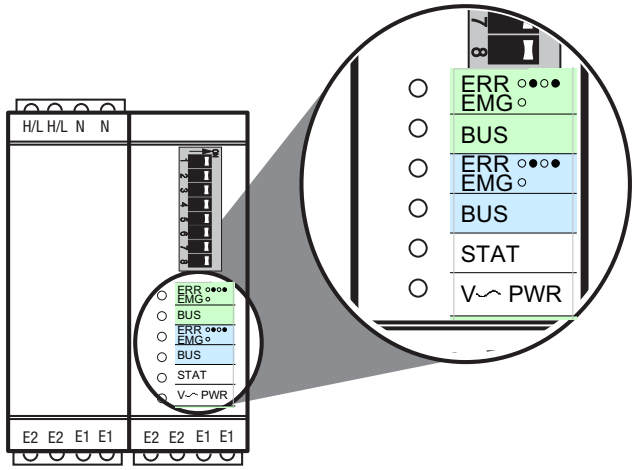
OPT Switch 6 Function

OPT Switch 6 is used to enable or disable programming via the *EcoSystem* Programmer. When OPT Switch 6 is OFF, programming is disabled. When OPT Switch 6 is ON (default position), programming is enabled via the *EcoSystem* Programmer. If using a 2L version, programming will be enabled or disabled on both buses.

OPT 6	Function
ON	Programming enabled via *EcoSystem* Programmer (default)
OFF	Programming disabled via *EcoSystem* Programmer

LED Indicators

The LEDs on the *EcoSystem* Bus Supply can be used to check for proper system operation, as described in the table below.



LED	Normal Operation	Problem Indicator / Probable Cause	
V~ PWR	On	Off	No Mains power
STAT	Steady flash	Off On	No Mains power or unit fault Unit fault
BUS	Intermittent flash or Off	On	Unit fault
ERR / EMG	Off	On Steady flash	Emergency contact closure is active Miswire detected on corresponding bus

CCI Troubleshooting Mode
When all eight OPT Switches are in the OFF position, the LEDs enter CCI troubleshooting mode, which shows the status of the contact closure inputs. CCI troubleshooting mode only affects the LED indicators, and does not affect the normal function of the OPT switches. Therefore, when in CCI troubleshooting mode, all ballasts and modules on the *EcoSystem* Bus will be in the override off state and programming will be disabled via the *EcoSystem* Programmer.

See the table below to determine the association between contact closure inputs and LEDs when in the CCI troubleshooting mode. The corresponding LED will turn ON when the corresponding contact closure is closed.

LED Indicator		Function in CCI Troubleshooting Mode
V~ PWR		ON = Mains voltage present (always on)
STAT		ON = CCI-EMERG closed
		OFF = CCI-EMERG open
Bus 2	BUS (green)	ON = CCI-2 closed
		OFF = CCI-2 open
	ERR/EMERG (green)	ON = CCI-1 closed
		OFF = CCI-1 open
Bus 1	BUS (blue)	ON = CCI-2 closed
		OFF = CCI-2 open
	ERR/EMERG (blue)	ON = CCI-1 closed
		OFF = CCI-1 open

EcoSystem™ | Bus Supply Installation Guide

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.

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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.

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P/N 032-187 Rev. A 7/07

EcoSystem™ Wallstations

Please Read

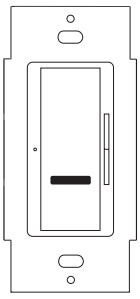
CC-1BRL 1-Button Wallstation
CC-4BRL 4-Button Wallstation

Low-Voltage PELV (Class 2: USA)
20 V⎓ 20 mA

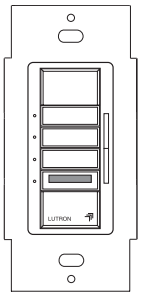
Overview
EcoSystem wallstations let you control a group of lights equipped with *EcoSystem* ballasts or ballast modules. The wallstation wires directly to the terminals of an *EcoSystem* ballast or ballast module for power and communication.

1-Button Functionality
The Tapswitch turns lights on and off. The Dimming Rocker fine-tunes the lighting level starting from any point.

4-Button Functionality
The wallstation can program and select four unique lighting scenes or levels, with the additional options of "All On" and "All Off" for a group of lights. The Dimming Rocker fine-tunes the lighting level for the entire group.

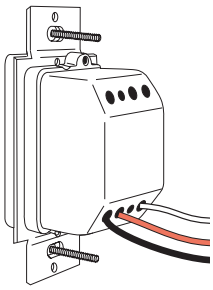


Front View
1-Button Wallstation



Front View
4-Button Wallstation

Caution! Wallstation circuits are PELV (Class 2: USA) circuits. Unless otherwise specified, voltages do not exceed 35 V⎓. These circuits comply with the requirements of NFPA 70, National Electric Code® (NEC®). When installing the wallstation, follow all applicable national and/or local wiring regulations.



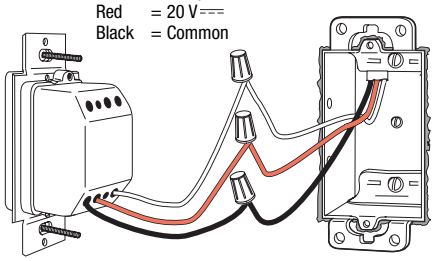
Rear View
1- and 4-Button Wallstations

Note: A wallstation cannot be wired to more than one ballast or ballast module. Control of multiple ballasts or ballast modules may be achieved through programming.

Wiring the Wallstation
- Make sure that the supply breaker to the lighting circuit (ballasts or ballast modules) is OFF, then connect the three wires.
- Connect IR wire from the ballast or ballast module to the white wire on the wallstation.
- Connect +20 V⎓ wire from the ballast or ballast module to the red wire on the wallstation.
- Connect Common wire from the ballast or ballast module to the black wire on the wallstation.

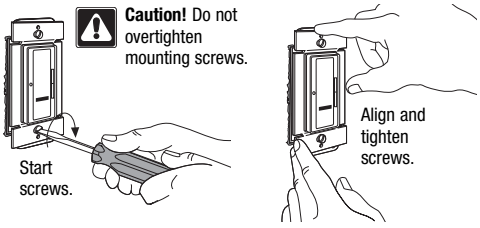
Note: When wiring between the wallstation and the ballast or ballast module, Lutron recommends three-conductor #22 AWG (0.5 mm²) solid cable.

Ballast Terminals
White = IR Input
Red = 20 V⎓
Black = Common



Note: Wire length from wallstation to ballast or ballast module must not exceed 50 ft. (15.2 m)

Mounting the Wallstation to the Wallbox
1) Form wires carefully into the wallbox.
2) Install wallstation and start screws.
3) Align wallstation with the wallbox.
4) Tighten screws until wallstation is firmly in place.
5) Install wallplate.



1-button shown; 4-button installs in the same manner.

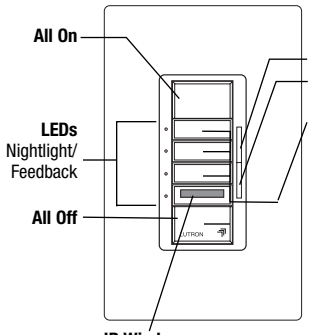
Operating the 4-Button Wallstation
Ensure power to the lighting circuit is ON.

Caution! The lighting circuit should be energized only when all wiring is complete and all persons are clear of fixtures/devices. Turn power ON only after checking that it is safe to do so.

The 4-button wallstation will initially control only the ballast or ballast module to which it is connected. LEDs should glow steady green. To control additional ballasts or ballast modules, the wallstation must be programmed. You must have an *EcoSystem* Bus Supply installed and operating before you can program the wallstation.

Note: All button presses will cause the LEDs to blink. This blink verifies that the signal was sent to the ballast or ballast module.

Normal Operation



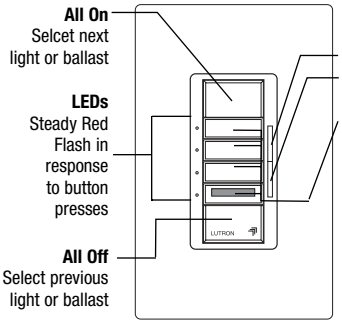
IR Window
Allows system programming via infrared commands from an *EcoSystem* Handheld Programmer. Not for use with personal remote controls.

Programming Mode: Grouping (4-button only)

1) Press and hold All On and Dimming Rocker up for 5 seconds to enter. LEDs will turn red. All fixtures on the *EcoSystem* link will dim and then fixtures assigned to the wallstation will go to full on.
2) Press All On or All Off to select the next fixture on the *EcoSystem* Bus. Selected fixture will flash.
3) Press any button (1-4) once to add the selected fixture to the group. Fixture will go to full on. Press any button twice quickly (double-tap) to remove the fixture from the group. Fixture will dim to low end.
4) Press and hold All Off and Dimming Rocker down for 5 seconds to exit. LEDs will turn green. All fixtures on the *EcoSystem* Bus will go to full on.

Note: Wallstation will exit programming mode after approximately two minutes of inactivity.

Group Programming

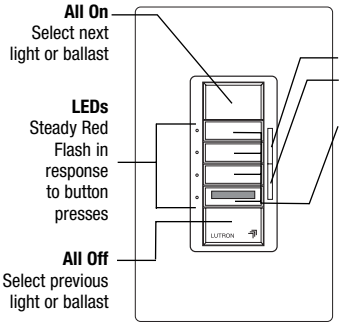


Programming Mode: Setting Scene Levels (4-button only)

1) Press and hold Button 1 and Dimming Rocker up for 5 seconds to program Scene 1. The LED next to Button 1 will turn red, and all other LEDs will remain green. The fixtures grouped to the wallstation will go to their Scene 1 setting, and all other lights on the link will go to full on.
2) Press All On or All Off to select the fixture in the group. The lights within the selected fixture will flash.
3) Press Dimming Rocker up or down to adjust lights to desired level.
4) Repeat the previous two steps until all lights are at desired level.
5) Press and hold All Off and Dimming Rocker down for 5 seconds to exit and save Scene 1 programming. The LED next to Button 1 will return to green, and all lights on the *EcoSystem* Bus will go to full on.
6) Repeat all steps for Scenes 2, 3, and 4.

Note: Wallstation will exit programming mode after approximately two minutes of inactivity.

Scene Programming



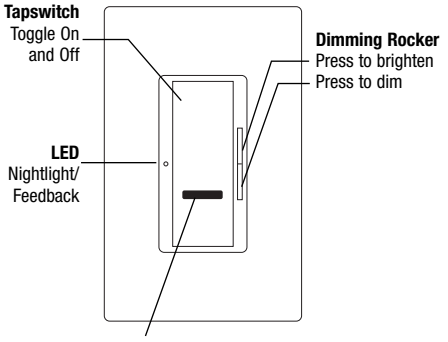
Operating the 1-Button Wallstation
Ensure power to the lighting circuit is ON.

Caution: The lighting circuit should be energized only when all wiring is complete and all persons are clear of fixtures/devices. Turn power ON only after checking that it is safe to do so.

The 1-button wallstation will initially control only the ballast or ballast module to which it is connected. LED should glow steady green. To control additional ballasts or ballast modules, the wallstation must be programmed. You must have an *EcoSystem* Bus Supply installed and operating before you can program the wallstation.

Note: All button presses will cause the LED to blink. This blink verifies that the signal was sent to the ballast or ballast module.

Normal Operation



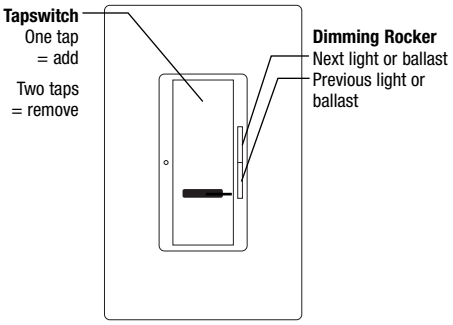
IR Window
Allows system programming via infrared commands from a handheld programmer. Not for use with personal remote controls.

Programming Mode: Grouping (1-button only)

1) Press and hold on Tapswitch and Dimming Rocker up for 5 seconds to enter. LED will turn red. All fixtures on the *EcoSystem* Bus link will dim and then fixtures assigned to the wallstation will go to full on.
2) Press Dimming Rocker up or down to select the next ballast or ballast module on the *EcoSystem* Bus. Fixtures selected will flash.
3) Press Tapswitch once to add the selected fixtures to the group. Fixture will go to full on. Press the Tapswitch twice quickly (double-tap) to remove the fixtures from the group. Fixture will dim to low end.
4) Press and hold off Tapswitch and Dimming Rocker down for 5 seconds to exit. LEDs will turn green. All lights on the *EcoSystem* Bus will go to full on.

Note: Wallstation will exit programming mode after approximately two minutes of inactivity.

Group Programming



Troubleshooting

If the LED or LEDs do not turn on:

- Verify the wallstation is receiving 20 V⎓ between the black and red wires.

If the lights do not respond to button presses:

- Verify that the ballasts and/or ballast modules are connected to an *EcoSystem* Bus supply.
- Verify that the *EcoSystem* Bus supply is receiving power. (Note: Bus supply is typically fed from a different circuit than the lights to which it is connected.)
- Verify the wallstation white wire is connected to the IR terminal on the ballast or ballast module.

If a problem persists, contact the Lutron Technical Support Center.

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.

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LUTRON®

Lutron Electronics Co., Inc.
Made and printed in U.S.A.
P/N 031-272 Rev. A 10/06

EcoSystem™

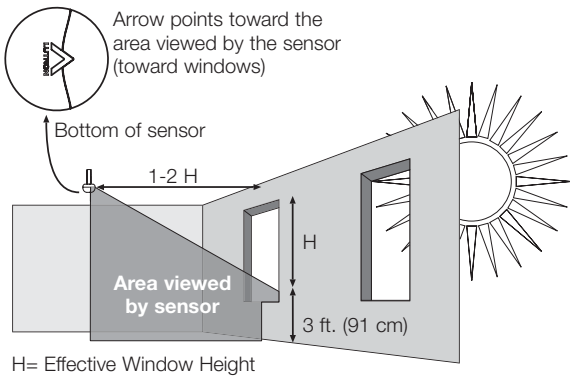
C-SR-M1
EcoSystem™ Daylight Sensor
Rated at 20 V⎓ 3 mA

Step 1: Determining the Daylight Sensor Mounting Location

Determine the proper location of the *EcoSystem* Daylight Sensor using the adjacent diagrams.

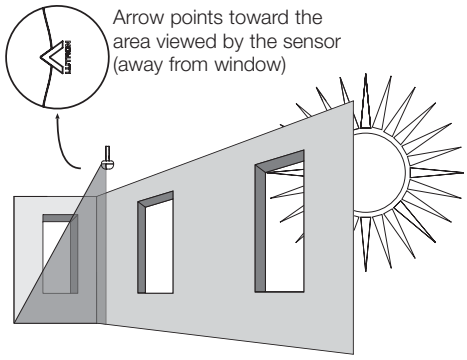
- The arrow on the daylight sensor points toward the area viewed by the sensor.
- Place the daylight sensor so its viewing area is centered on the nearest window at a distance from the window of between one and two times the effective window height, H.
- The effective window height, H, starts at the window sill or 3 feet (91 cm) up from the floor, whichever is higher, and ends at the top of the window.
- Ensure that the view of the daylight sensor is not obstructed.
- Do not position the daylight sensor in the well of a skylight or above indirect lighting fixtures.
- For narrow areas where the daylight sensor cannot be placed 1–2 H from windows, place sensor near window facing into the space.

C-SR-M1 location for average size areas



H= Effective Window Height

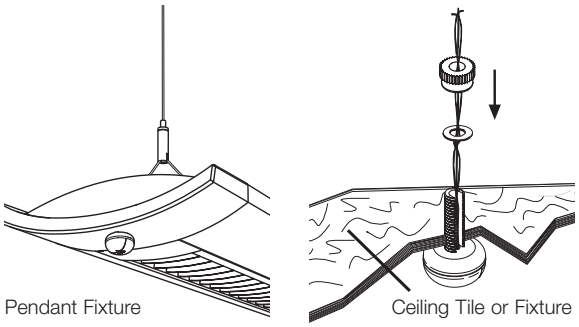
C-SR-M1 location for narrow areas (e.g. corridors, private offices)



Step 2: Mounting the Daylight Sensor

- Drill a 3/8" (10 mm) diameter hole in the ceiling tile or pendant fixture.
- Thread the wires through the hole.
- Install the *EcoSystem* Daylight Sensor into the hole.
- Secure the daylight sensor with the mounting hardware provided. (hand tighten only)

Note: If the stem of the daylight sensor must be shortened due to its location (for instance, in a pendant fixture) this should be done prior to wiring.



Step 3: Wiring the Daylight Sensor

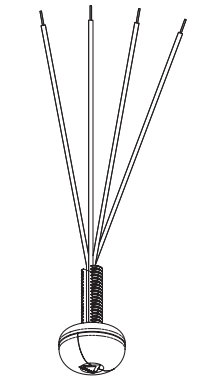
- Make sure that the supply breaker to the control system is OFF.
- Connect the four wires of the *EcoSystem* Daylight Sensor to the appropriate terminals of the *EcoSystem* Ballast or Ballast Module.

For additional wire between sensor and device, Lutron recommends four-conductor 22 AWG solid cable be used.

Daylight sensor circuits are Class 2 only. Unless otherwise specified, the voltages do not exceed 35 V⎓. These circuits comply with the requirements of NFPA 70, National Electrical Code® (NEC®). When installing the sensors, follow all applicable national and/or local wiring regulations.

Note: Only one daylight sensor can be wired to an individual ballast or ballast module. A sensor cannot be wired to more than one ballast or ballast module. Control of multiple ballasts or ballast modules may be achieved through programming.

Note: If IR Output is not required for device, white wire should be capped.



Red = 20 V⎓
Black = Common
Yellow = Daylight Output
White = IR Output

Note: Wire length between sensor and device must not exceed 100 ft.

Step 4: Testing the Daylight Sensor

- Ensure power to the lighting circuit is ON.
- Ensure the lighting control system is commissioned properly.

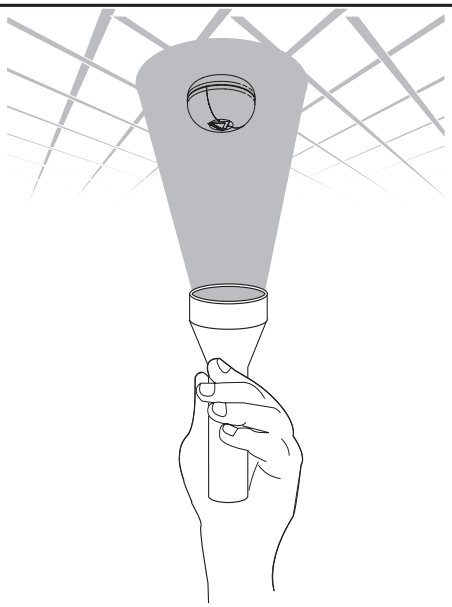
The lighting circuit should be energized only when all wiring is complete and all persons are clear of fixtures/devices. Turn power ON only after checking that it is safe to do so.

- Shine a flashlight directly onto the *EcoSystem* Daylight Sensor.
- Keep the light ON for at least 30-40 seconds. This should cause the lights connected or programmed to the sensor to dim.

If the lights do not dim, they may already be at a dimmed level due to daylight. If so, you may test the sensor by covering it for 30-40 seconds. This should cause the lights to get brighter.

If the lights do not dim or brighten:

- Double check the daylight sensor wiring.
- Verify the sensor is receiving 20 V⎓ between the black and red wires.
- Consult the lighting control system troubleshooting guide.
- Consult the ***Lutron Technical Support Center*** at +1-800-523-9466 (24 hours/7 days).



Limited Warranty

(Valid only in U.S.A., Canada, Puerto Rico, and the Caribbean.)

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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EXCLUSIONS AND RESTRICTIONS

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

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.

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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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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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.

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Technical and Sales Assistance

If you have questions concerning the installation or operation of this product, call the toll-free Lutron Technical Support Center. Please provide exact model number when calling.
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Our address on the web is http://www.lutron.com

Lutron Electronics Co., Inc., reserves the right to make improvements or changes in its products without prior notice. Although every attempt is made to ensure that this information is accurate and up to date, please check with Lutron to confirm product availability, latest specifications and suitability for your application.

LUTRON®

Lutron Electronics Co., Inc.
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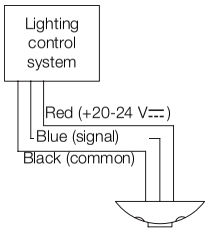
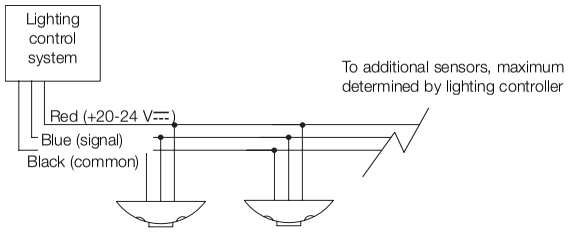
Made and printed in the U.S.A. 3/06 P/N 031-253 Rev. A

WIRING DIAGRAMS (continued)

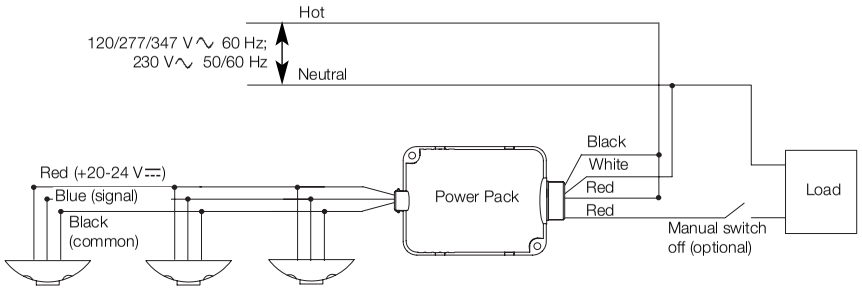
Single Sensor to System



2 or More Sensors to System

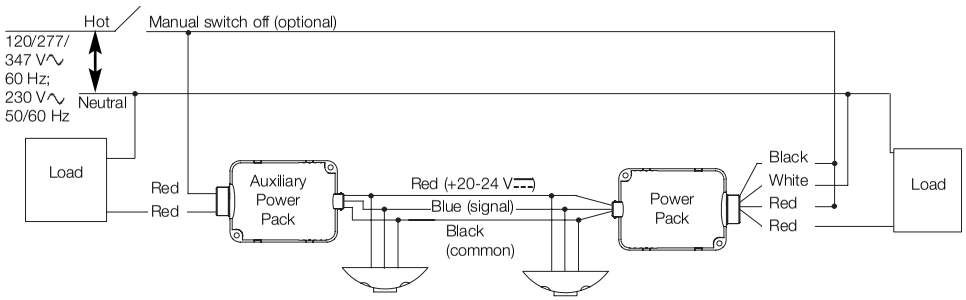


1 to 3 Sensors with Power Pack



Note: Maximum 3 occupant sensors.

Switching Multiple Loads with Auxiliary Power Packs



Note: Maximum of 3 devices total (occupant sensors and auxiliary power packs) can be connected to a power pack.

TROUBLESHOOTING

Problem	Possible Cause	Test	Result
Lights stay on	Air conditioning interference	Reduce both green and red knob by 15%	Move sensor; temporarily reduce sensitivity
Lights on too long	Timer setting too high	Check switch settings	Typical setting is 8 min.
Hallway traffic turns lights on	Sensor "sees" into hallway	Put in timer test mode; walk along hallway	Move sensor
Sensor not responding	Unit is locked up	--	Cycle power to sensor

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Made and printed in U.S.A.
P/N 031-260 Rev. A 6/05

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.

OCCUPANT SENSOR
LOS-C SERIES
Installation Instructions *Please Read*

LOS-CUS-500/1000/2000
LOS-CIR-450/1500
LOS-CDT-500/500R/1000/1000R/2000/2000R
Class 2 (PELV) Devices

English

DESCRIPTION

The LOS-C Series of ceiling-mounted sensors incorporate ultrasonics (CUS), infrared (CIR), and dual technologies (CDT). They integrate into Lutron systems or function as stand-alone controls using a Lutron power pack.

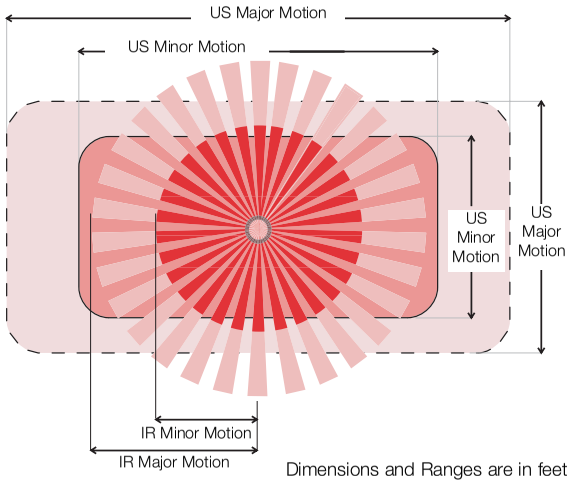
FEATURES

- Intelligent, continually adapting sensors
- 20-24V⎓, Class 2 (PELV) low voltage, 33 mA nominal
- 450 to 2000 sq.ft. coverage, as indicated in model number (when mounted on 8 ft. ceiling)
- Second dry contact closure available on R models
- LED indicators: Ultrasonic (US)-green, Infrared (IR)-red, Dual Tech (DT)-red and green
- For indoor use only

COVERAGE AND PLACEMENT

- The occupant sensor must have an unobstructed view of the room. Do not mount behind or near tall cabinets, shelves, hanging fixtures, etc.
- Keep the occupant sensor away from air flow.
- If installing a 180° occupant sensor, place the sensor on the same wall as the doorway so that hallway traffic will not affect the sensor; otherwise, place in center of room.
- Closely follow the diagrams for major and minor motion coverage.
- Decrease total coverage area by 15% for "soft" rooms (for example, heavy draperies or heavy carpeting).
- Indicated range is when unit is mounted on an 8 ft. ceiling.

Motion Detection Ranges



Dimensions and Ranges are in feet (m).

Model	US Minor Dims.	US Major Dims.	IR Minor	IR Major
CUS-500*	16 x 16 (4.9 x 4.9)	22 x 22 (6.7 x 6.7)	NA	NA
CUS-1000*	23 x 23 (7.0 x 7.0)	32 x 32 (9.8 x 9.8)	NA	NA
CUS-2000**	23 x 45 (7.0 x 13.7)	32 x 64 (9.8 x 19.5)	NA	NA
CIR-450**	NA	NA	6.5 (1.9)	12 (3.7)
CIR-1500**	NA	NA	12 (3.7)	22 (6.7)
CDT-500*	23 x 16 (7.0 x 4.9)	32 x 22 (9.8 x 6.7)	12 (3.7)	22 (6.7)
CDT-1000*	23 x 23 (7.0 x 7.0)	32 x 32 (9.8 x 9.8)	12 (3.7)	22 (6.7)
CDT-2000**	23 x 45 (7.0 x 13.7)	32 x 64 (9.8 x 19.5)	12 (3.7)	22 (6.7)

*180° field of view
**360° field of view

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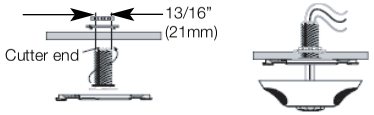
PRE-INSTALLATION

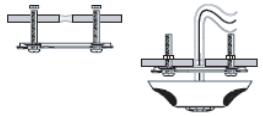
1. For installation by a qualified electrician in accordance with national and local codes and the following instructions.
2. For indoor use only.
3. **CAUTION: RISK OF ELECTRIC SHOCK. Disconnect power before installing. Never wire energized electrical components.**
4. **CAUTION: USE COPPER CONDUCTORS ONLY.**
5. **CAUTION: Do not connect this Class 2/PELV product to line voltage/mains cable.**
6. Check to see that the device type and rating is suitable for the application.
7. Do not install if product or lens have any visible damage.
8. If moisture or condensation is evident, allow the product to dry completely before installation.

INSTALLATION AND MOUNTING

Normal Mounting:
Twist and lock threaded mounting post onto cover plate. Drill through ceiling tile with assembly, using cutter end of the threaded mounting post. Secure with washer and nut.



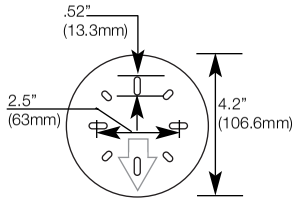
Mounting to Non-Standard Ceiling/Fixture:
Mount twist-lock cover plate using mounting screws, nuts, and washers (included). Drill/punch wire routing hole through ceiling tile at center of cover plate.



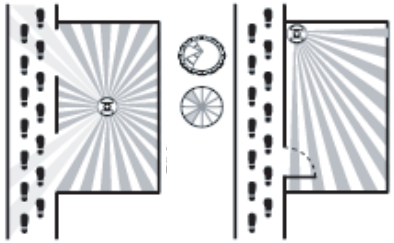
Wire Lengths (feet)

# Sensors	1	2	3	1	2	1
# Aux. PPs	0	0	0	1	1	2
22 AWG	750	375	250	375	250	250
20 AWG	1200	600	400	600	400	400
18 AWG	2400	1200	800	1200	800	800

Mounting Plate Dimensions



Using the Infrared Mask



Center Ceiling Mount (Mask blocks sensor seeing out doorway into hall)

Corner Ceiling Mount (No mask needed)

Typical Mask Patterns

Conference Room Mask

180° Mask

Full Mask

Rectangular Areas

Over the Door

Specific Areas You Wish to Mask

SENSOR ADJUSTMENTS

Override Settings

	Off (Default)	On
Auto/Manual	Automatic (Normal)	Manual on/off (Override)
Threshold	Auto Threshold Adjustment	High Sensitivity (Low turn-on threshold)
LED Motion Indicator	Lights indicate motion	Disable LED Indicator
Reset Learned Settings	Retain Settings (Normal)	Erase all learned settings, restart Learning (Toggle On)

	Off (Default)	On
Strong Airflow Compensation	Disable Compensation (Normal)	Enable Compensation
Over Doorway Installation	No (Normal)	Yes (Use increased turn-on threshold)
Timer Adjust	Adjust Timer Automatically	Use Manual Setting
Auto Sensitivity	Adjust Sensitivity Automatically	Adjust Sensitivity Manually

SENSOR ADJUSTMENTS

Timer Test Mode

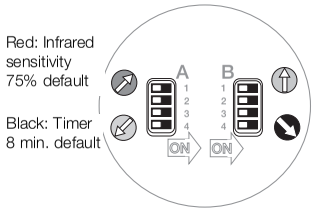
1. Remove the retainer cover.
2. Rotate the black timer adjustment knob to about midway (12 o'clock).
3. Return setting to minimum setting (full CCW).

Factory Settings | 12 o'clock | Full CCW

Note: The timer will remain in the 8-second test mode for 1 hour, then automatically reset to 8 minutes.

4. To manually take the timer out of the 8-second test mode, turn the timer adjustment approximately 1/16" clockwise to make the setting slightly above minimum (just above the 8-minute setting).

Factory Settings

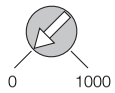


Recommendation: Leave sensitivity settings as shipped.
Note: Not all models have every knob.

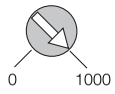
Adjusting the "Lights Not On" Level: LOS-CDT-xxxxR only

1. Ensure ambient light is at desired level.
2. Place sensor in Test Mode as indicated above.
3. Set photo cell: Turn the blue knob full clockwise (lights on no matter how bright the natural light is), then about 30 degrees counterclockwise.
4. Check for Lights-Out: Move from underneath the sensor, and remain still until the lights turn off. Move around normally to turn the light on.
5. Adjust to desired level: If lights turn on, adjust the blue knob another 30 degrees counterclockwise and repeat step 3 until the lights remain off.
   Note: Set blue knob to 100% to disable photo cell functionality and leave secondary dry contact closure output functionality intact.

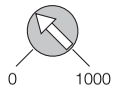
Control Settings (Blue Knob): LOS-CDT-xxxxR only



Minimum (low):
Lights will never come on, even though room is occupied.



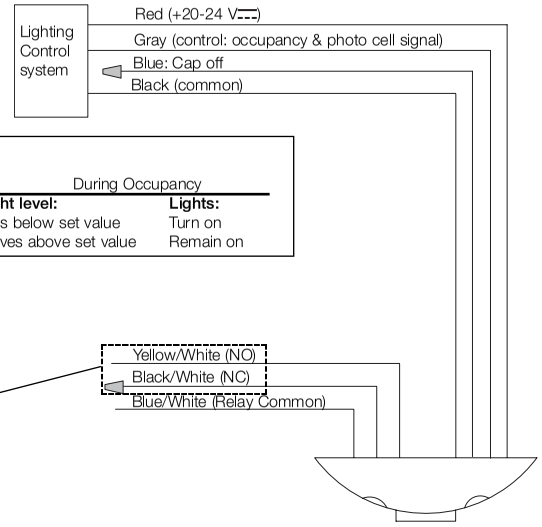
Maximum (high):
Photo cell has no effect on operation (factory setting).



Normal:
200 to 600 LUX is normal range.

WIRING DIAGRAMS

Relay Model Option: LOS-CDT-xxxxR only



Gray wire: logic with photo cell active:

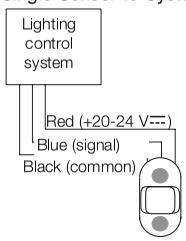
Room First Occupied		During Occupancy	
Light level:	**Lights:**	**Light level:**	**Lights:**
Below set value	Turn on	Falls below set value	Turn on
Above set value	Remain off	Moves above set value	Remain on

Choose wire based on functionality:
- Yellow/White: NO (normally open)
  Open: Unoccupied
  Closed: Occupied
- Black/White: NC (normally closed)
  Open: Occupied
  Closed: Unoccupied

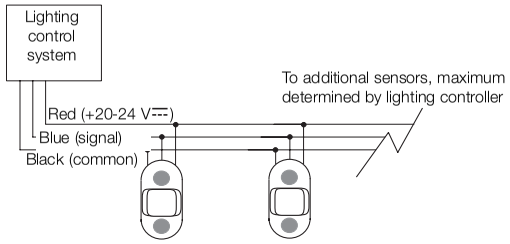
Cap off unused wire.

WIRING DIAGRAMS (continued)

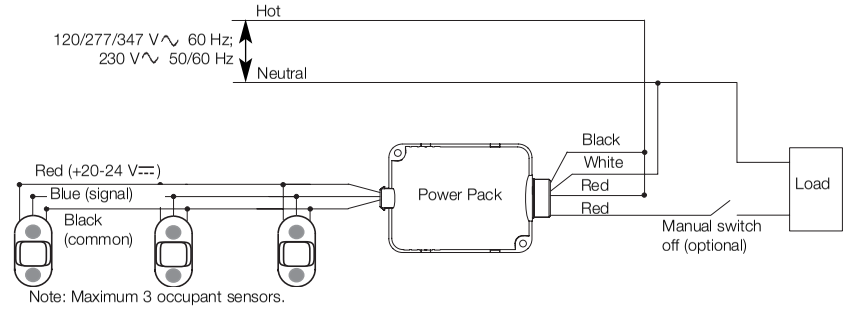
Single Sensor to System



2 or More Sensors to System

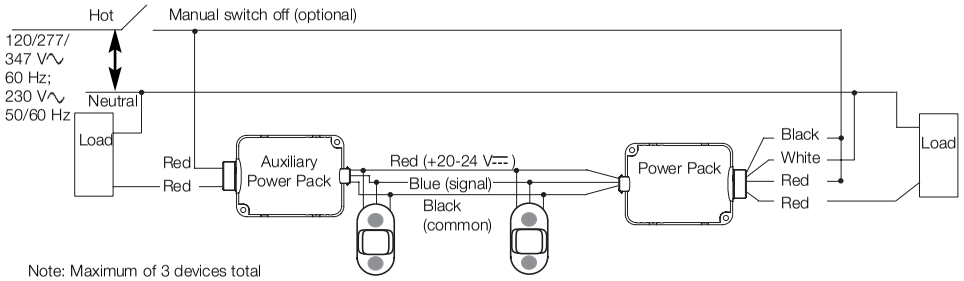


1 to 3 Sensors with Power Pack



Note: Maximum 3 occupant sensors.

Switching Multiple Loads with Auxiliary Power Packs



Note: Maximum of 3 devices total (occupant sensors and auxiliary power packs) can be connected to a power pack.

TROUBLESHOOTING

Problem	Possible Cause	Test	Result
Lights stay on	Constant noise	Reduce red knob by 15%; remove noise source	Move sensor
Lights on too long	Timer setting too high	Check switch settings	Typical setting is 8 min.
Hallway traffic turns lights on	Infrared sensor "sees" into hallway	Put in timer test mode; walk along hallway	Move sensor
Sensor not responding	Unit is locked up	--	Cycle power to sensor

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Lutron Electronics Co., Inc.
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P/N 031-259 Rev. A 6/05

LIMITED WARRANTY

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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.

OCCUPANT SENSOR
LOS-W SERIES
Installation Instructions *Please Read*

LOS-WIR
LOS-WDT
LOS-WDT-R
Class 2 (PELV) Devices

English

DESCRIPTION

The LOS-W Series of wall-mounted sensors incorporate infrared (WIR) and dual technologies--ultrasonic and infrared (WDT). They are used in spaces with pendant fixtures, ceiling fans, or high ceilings. They integrate into Lutron systems or function as stand-alone controls using a Lutron power pack.

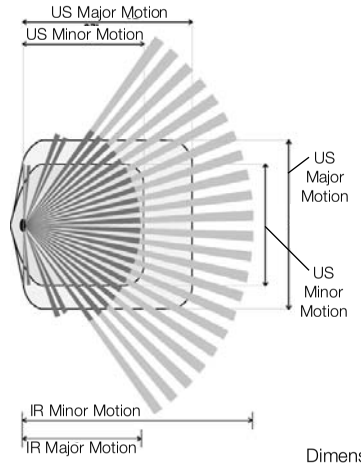
FEATURES

- Intelligent, continually adapting sensors
- 20-24 V⎓, Class 2 (PELV) low voltage, 33 mA nominal
- 1600 sq.ft. coverage
- Flexible mounting on wall or ceiling
- Second dry contact closure output available on R models
- LED indicators: Ultrasonic (US)-green, Infrared (IR)-red
- For indoor use only

COVERAGE AND PLACEMENT

- The occupant sensor must have an unobstructed view of the room entrance. Do not mount behind or near tall cabinets, shelves, indirect hanging fixtures, etc.
- Keep the occupant sensor away from air flow.
- Place the sensor on the same wall as the doorway so that hallway traffic will not affect the sensor.
- Closely follow the diagrams for major and minor motion coverage.
- Decrease total coverage area by 15% for "soft" rooms (for example, heavy draperies or heavy carpeting).
- Indicated coverage is when sensor is mounted at 8 ft. high.

Motion Detection Ranges



Dimensions and Ranges are in feet (m).

Model	US Minor Dims.	US Major Dims.	IR Minor	IR Major
WIR	NA	NA	20 (6.1)	40 (12.2)
WDT	23 x 23 (7.0 x 7.0)	32 x 32 (9.8 x 9.8)	20 (6.1)	40 (12.2)
WDT-R	23 x 23 (7.0 x 7.0)	32 x 32 (9.8 x 9.8)	20 (6.1)	40 (12.2)

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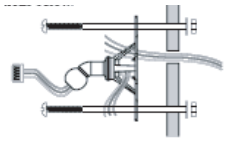
PRE-INSTALLATION

1. For installation by a qualified electrician in accordance with national and local codes and the following instructions.
2. For indoor use only.
3. **CAUTION: RISK OF ELECTRIC SHOCK. Disconnect power before installing. Never wire energized electrical components.**
4. **CAUTION: USE COPPER CONDUCTORS ONLY.**
5. **CAUTION: Do not connect this Class 2/PELV product to line voltage/mains cable.**
6. Check to see that the device type and rating is suitable for the application.
7. Do not install if product or lens have any visible damage.
8. If moisture or condensation is evident, allow the product to dry completely before installation.

INSTALLATION AND MOUNTING

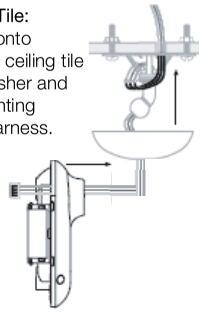
Mounting to Wall or Ceiling Tile:

Redrill wiring routing hole and (2) mounting holes using Mounting Bracket as template. Route wires through wall and mounting bracket. Secure mounting bracket to wall/ceiling tile using mounting screws, nuts, and washers (included).



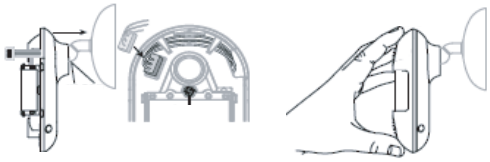
Mounting in Acoustic Ceiling Tile:

Twist threaded mounting post onto Mounting Bracket. Drill through ceiling tile with assembly. Secure with washer and nut. Route wiring through Mounting Bracket and connect to wire harness. Snap bracket cover in place to conceal wiring and bracket.



Either Method:

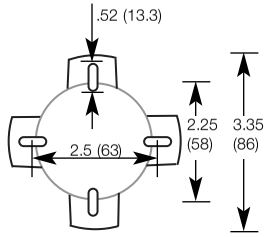
Feed wiring harness through the back of the sensor body and out the exit slot. Snap sensor onto mounting post. Plug wiring harness into connector on the left side (opposite exit slot) and place wiring under wire tabs. Align sensor and tighten position locking screw.



Wire Lengths (feet)

# Sensors	1	2	3	1	2	1
# Aux. PPs	0	0	0	1	1	2
22 AWG	750	375	250	375	250	250
20 AWG	1200	600	400	600	400	400
18 AWG	2400	1200	800	1200	800	800

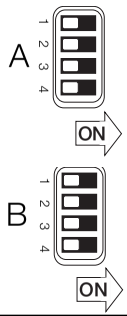
Mounting Plate Dimensions



Measurements are in inches (mm)

SENSOR ADJUSTMENTS

Override Settings

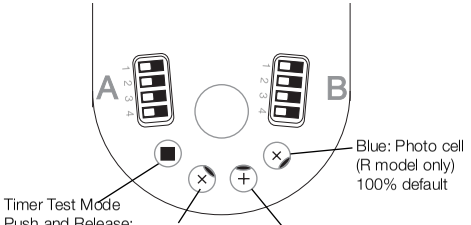


Off (Default)	On
Automatic (Normal)	Manual lights on (Override)
Not used	Not used
LED on (Normal)	LED off
Retain Settings (Normal)	Any change resets learned settings

Off				On			
OFF / OFF	8 min.	OFF / ON	4 min.	ON / OFF	15 min.	ON / ON	30 min.
Auto Timer Adjust On				Auto Timer Adjust Off			
Auto Sensitivity Adjust On				Auto Sensitivity Adjust Off			

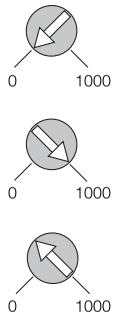
SENSOR ADJUSTMENTS

Factory Settings



Note: Not all models have every knob.

Control Settings (Blue Knob): LOS-WDT-R only



Minimum (low):
Lights will never come on, even though room is occupied.

Maximum (high):
Photo cell has no effect on operation (factory setting).

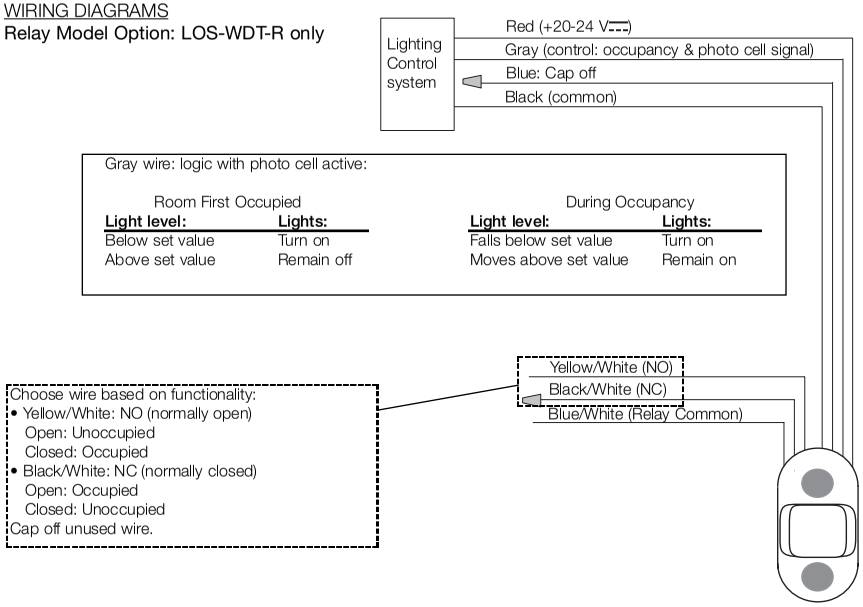
Normal:
200 to 600 LUX is normal range.

Adjusting the "Lights Not On" Level: LOS-WDT-R only

1. Ensure that the ambient light is at the desired level.
2. Place sensor in Test Mode: Press and release black pushbutton.
3. Set photo cell: Turn the blue knob full clockwise (lights on no matter how bright the natural light is), then about 30 degrees counterclockwise.
4. Check for Lights-Out: Move from underneath the sensor, and remain still until the lights turn off. Move around normally to turn the light on.
5. Adjust to desired level: If lights turn on, adjust the blue knob another 30 degrees counterclockwise and repeat step 3 until the lights remain off.
   Note: Set blue knob to 100% to disable photo cell functionality and leave secondary dry contact closure output functionality intact.

WIRING DIAGRAMS

Relay Model Option: LOS-WDT-R only



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English

Favorite Level Remote Control

Instructions **C-FLRC** 3 V⎓ 150 mA

Please read instructions prior to use.

Description

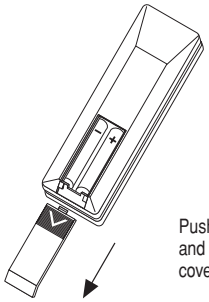
The Lutron Favorite Level Remote Control provides lighting control from the palm of your hand. Using infrared technology, the remote control allows you to adjust your lights from minimum to maximum, and set and recall a favorite level.

Battery Replacement

The Favorite Level Remote Control uses 2 AAA batteries that are pre-installed. For best results use alkaline batteries. Do not use NiCad batteries.

To replace batteries:

1. Remove the battery cover (see diagram).
2. Replace with 2 size AAA batteries as shown. **Note:** Incorrect installation will cause batteries to drain.
3. Replace the battery cover.



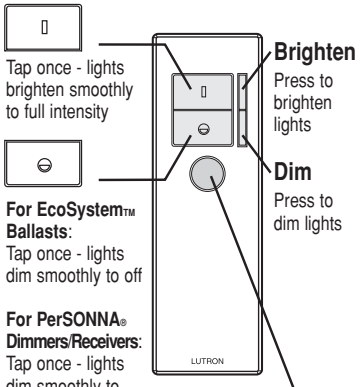
Push on arrow, slide and lift off battery cover.

Cleaning Instructions

To clean control, wipe with a clean damp cloth. **DO NOT** use any chemical cleaning solutions.

Operation

Aim the remote control at the receiver unit, then press the desired button.



Favorite Level Button

Tap once to recall your favorite light level.
To store your favorite light level, press and hold for about 3 seconds until lamps dim and return.

Troubleshooting

Problem	Causes	Remedies
Wireless remote control has no effect on receiver unit.	Receiver unit power is off.	Restore power.
	Drained, low, or no batteries in remote control.	Install fresh batteries in remote control.
	Remote control is too far away from receiver unit.	Move closer to receiving unit.
	Batteries installed incorrectly.	Install batteries per instructions.
	Unit has already received command.	Select another function.
	Remote control is not aimed at receiver.	Aim remote control directly at receiver.

Technical Assistance

If you need assistance, call the toll-free ***Lutron Technical Support Center.*** Please provide exact model number when calling.
+1-800-523-9466 (U.S.A., Canada, and the Caribbean)
Other countries call +1-610-282-3800
Fax +1-610-282-3090 Internet: www.lutron.com

Limited Warranty

(Valid only in U.S.A., Canada, Puerto Rico, and the Caribbean.)

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 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.

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LUTRON®

Español

Control Remoto de Nivel Favorito

Instrucciones **C-FLRC** 3 V⎓ 150 mA

Por favor lea las instrucciones antes de usar.

Descripción

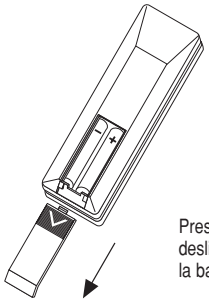
El Nivel Favorito del Control Remoto de Lutron brinda control de iluminación desde la palma de su mano. Utilizando tecnología infrarroja, el control remoto le permite ajustar sus luces desde el mínimo hasta el máximo, y graba y recuerda un nivel favorito.

Reemplazo de las Baterías

El Control Remoto de Nivel Favorito usa 2 baterías AAA que han sido previamente colocadas. Para obtener mejores resultados use baterías alcalinas. No utilice baterías de níquel cadmio.

Para cambiar las baterías:

1. Quite la cubierta de la batería (vea el diagrama).
2. Reemplace con 2 baterías AAA como se muestra. **Nota:** La instalación incorrecta provocará pérdidas en las baterías.
3. Vuelva a colocar la cubierta.



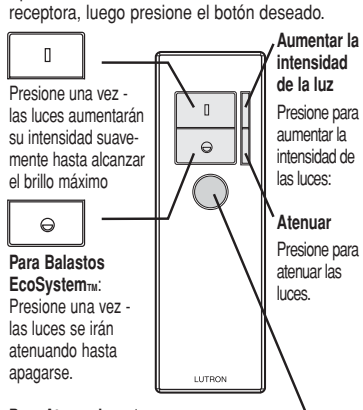
Presione en la flecha, deslice la cubierta de la batería y quítela.

Instrucciones para la Limpieza

Utilice un paño húmedo y limpio para limpiar el control. **NO** utilice soluciones de limpieza que contengan productos químicos.

Operación

Apunte el control remoto hacia la unidad receptora, luego presione el botón deseado.



Botón de Nivel Favorito

Presione una vez para activar su nivel de iluminación favorito. Para guardar su nivel favorito de luz, presione y mantenga durante unos 3 segundos hasta que las lámparas se atenúen y retornen al nivel.

Solución de problemas

Problema	Causas	Soluciones
El control remoto inalámbrico no tiene efecto en la unidad receptora.	La alimentación de la unidad receptora está desconectada.	Vuelva a alimentar el sistema.
	No hay baterías en el control remoto, o éstas están descargadas o con poca carga, en el control remoto.	Instale baterías nuevas en el control remoto.
	El control remoto está demasiado lejos de la unidad receptora.	Muévase más cerca de la unidad receptora.
	Las baterías están colocadas en forma incorrecta.	Instale las baterías según las instrucciones.
	La unidad ya ha recibido el comando.	Seleccione otra función.
	El control remoto no está apuntando al receptor.	Apunte el control remoto directamente al receptor.

Asistencia Técnica

Si necesita asistencia, llame a la línea gratuita del ***Centro de Soporte Técnico de Lutron.***
Cuando llame indique el número exacto del modelo.
+1-800-523-9466 (E.U.A., Canadá y el Caribe)
+1-888-235-2910 (México)
Desde otros países llame al: +1-610-282-3800
Fax +1-610-282-3090 Internet: www.lutron.com

Garantía Limitada

(Válido solamente en los E.U.A., Canadá, Puerto Rico, y el Caribe.)

Lutron, a discreción propia, reparará o reemplazará las unidades con fallas en sus materiales o fabricación dentro del año posterior a la compra de las mismas. Para obtener el servicio de garantía, remita la unidad al lugar donde la adquirió o envíela a Lutron, 7200 Suter Rd., Coopersburg, PA 18036-1299, con servicio postal prepago.

ESTA GARANTÍA REEMPLAZA A TODA OTRA GARANTÍA EXPRESA Y LA GARANTÍA IMPLÍCITA DE COMERCIABILIDAD ESTÁ LIMITADA A UN AÑO DESDE LA FECHA DE COMPRA. ESTA GARANTÍA NO CUBRE EL COSTO DE INSTALACIÓN, DE REMOCIÓN NI DE REINSTALACIÓN, NI LOS DAÑOS PROVOCADOS POR USO INCORRECTO O ABUSO NI LOS DAÑOS RESULTANTES DE UN CABLEADO O UNA INSTALACIÓN INCORRECTOS. ESTA GARANTÍA NO CUBRE DAÑOS INCIDENTALES O INDIRECTOS. LA RESPONSABILIDAD DE LUTRON ANTE UNA DEMANDA POR DAÑOS CAUSADOS POR O RELACIONADOS CON LA FABRICACIÓN, VENTA, INSTALACIÓN, ENTREGA O USO DE LA UNIDAD NO EXCEDERÁ EN NINGÚN CASO EL PRECIO DE COMPRA DE LA UNIDAD.

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