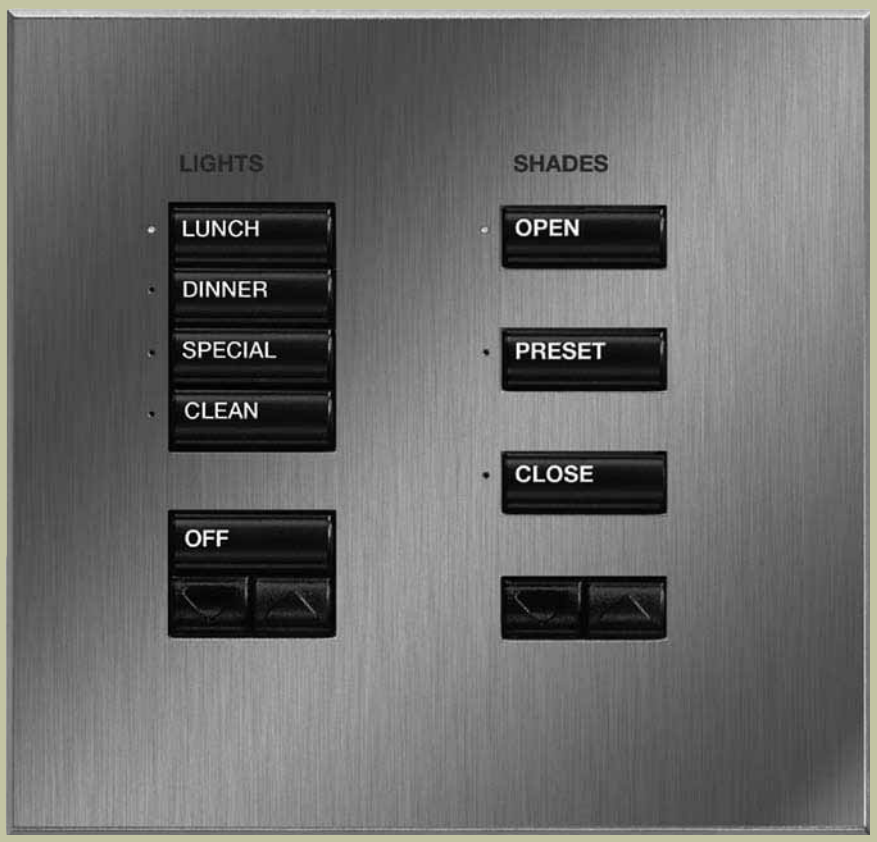
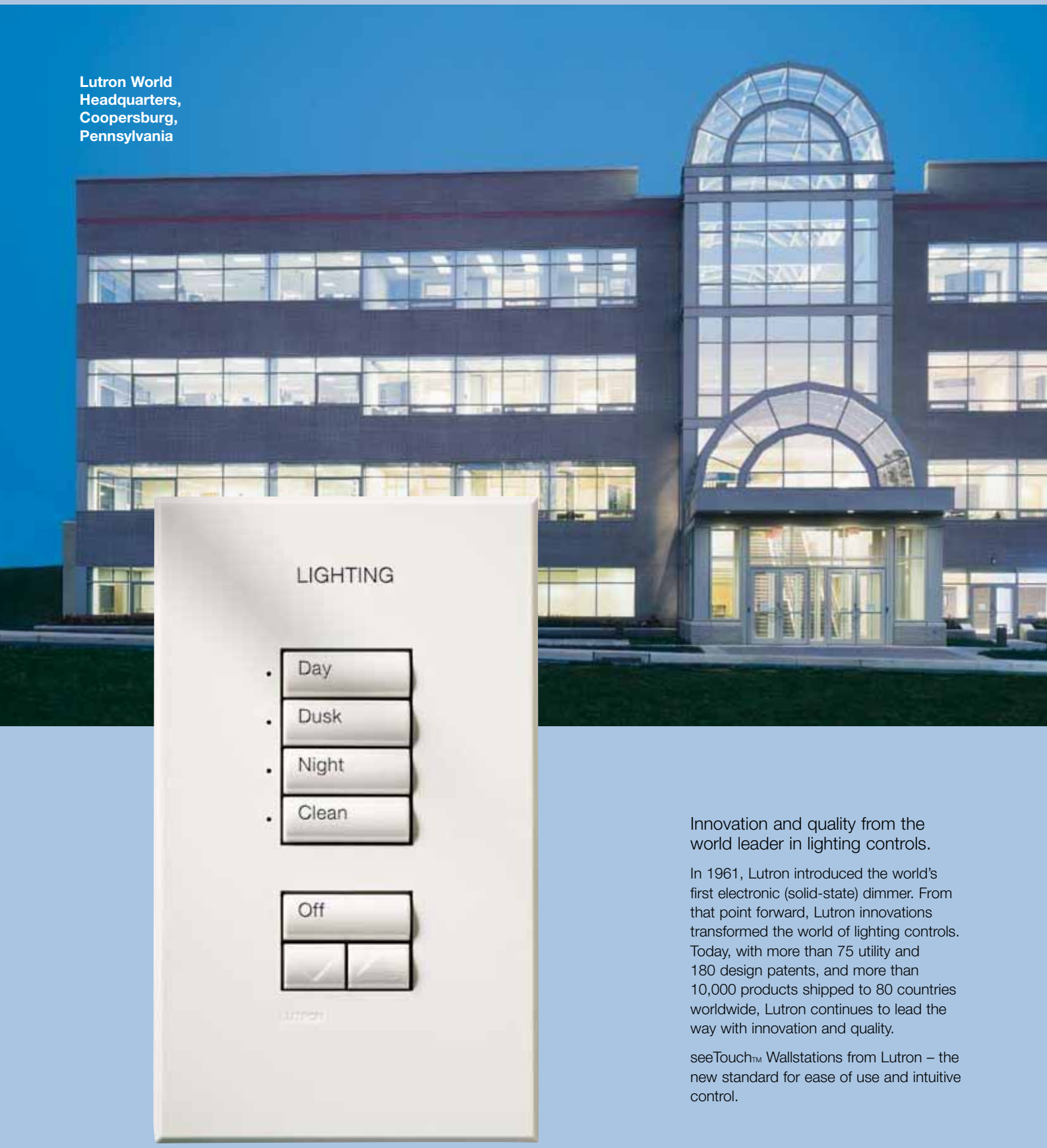
commercial systems technical guide

230 V (CE) and 220-240 V (non-CE)



LUTRON®



Lutron World Headquarters, Coopersburg, Pennsylvania

Innovation and quality from the world leader in lighting controls.

In 1961, Lutron introduced the world's first electronic (solid-state) dimmer. From that point forward, Lutron innovations transformed the world of lighting controls. Today, with more than 75 utility and 180 design patents, and more than 10,000 products shipped to 80 countries worldwide, Lutron continues to lead the way with innovation and quality.

seeTouch™ Wallstations from Lutron – the new standard for ease of use and intuitive control.

Lutron's first principle
is to take care of our customer.

Worldwide sales and service

The Lutron Team is here to support youwhenever you need us.

Customer service and technical support:

Asia	+852-2104-7733
France	0800-90-12-18
Germany	00800-5887-6635
Spain	0900-948-944
United Kingdom	0800-282-107

For the rest of Europe
Customer service +44-207-702-0657
Technical support +44-207-680-4481
Round the clock technical support is available at our U.S.headquarters.
+1-610-282-3800

Internet support:
www.lutron.com

Commitment to innovation

Lutron has been dedicated to producing innovative lighting controls for homes of every type and style since 1961. A dedication matched only by our commitment to quality, performance, value, and service for our customers.

World-class quality

Lutron quality is fueled by a relentless pursuit of the highest standards. Constant improvement activities include an integrated quality system, strict engineering guidelines, and world-class quality and manufacturing processes.

Comprehensive lighting control solutions for electric and natural light

Lutron is your comprehensive resource for lighting control solutions for any commercial or institutional application.

- Architectural dimming systems
- Theatrical dimming capabilities
- Low voltage switching systems
- Floorplan-based control software
- Integrated lighting automation systems
- Factory service plans

Please contact us for information on Lutron's residential lighting control products.

Commercial systems

GRAFIK Eye™ 3000/4000 series

Table of contents

Centralised lighting control system

Power panels

GRAFIK Eye 3000

Control unit

Wallstation

Preset architectural lighting control units with integral dimmers for scene-based control of several smaller-wattage lighting zones.

Low voltage wallstations may be added to provide additional points of control.

System maximums:

GRAFIK Eye 3000	
No. of zones	48
No. of control units	8
No. of control station devices	16

GRAFIK Eye 4000

Dimming panel

Similar to GRAFIK Eye 3000 Series with the addition of remote power panels for scene-based control of multiple larger-wattage lighting zones.

System maximums:

GRAFIK Eye	**4000**
No. of zones	64
No. of power panels	32
No. of control station devices	16

Centralised Lighting Control System

GRAFIK 5000™/6000™

LCD control

Wallstation

Processor

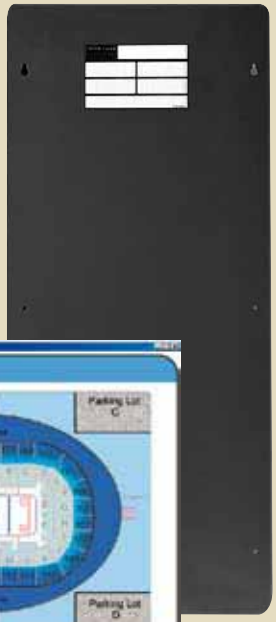
Similar to GRAFIK Eye 4000 Series with the addition of a central processor and optional LCD controls for scene-based control of many dimming and switching zones. Zoning is defined in system software. Optional LCD control provides local access to program, monitor, and operate every lighting zone and scene in the processor.

System maximums:

GRAFIK	5000	6000
No. of zones per processor	128	512
No. of control station devices per processor	32	96
No. of power panels	64	128

GRAFIK 7000™

LCD control



Floorplan software screen

Similar to GRAFIK 5000/6000 with the additional capability of controlling multiple central processors from one location. Optional floorplan software allows user to graphically navigate through the system to operate or modify lighting status of any area in the system.

System maximums:

GRAFIK	7000
No. of zones per processor	512
No. of processors	32
No. of control station devices per processor	192
No. of power panel	4,000

Use these pages to identify lighting control design elements that are required in the project. The page reference chart refers to the specific ordering pages for the products used to achieve that design element.

	GRAFIKEye™ 3000 Series	GRAFIK Eye 4000 Series	Centralised Lighting Control System
Preset scene control Create and recall lighting looks made from multiple lighting zones to attract attention, create drama, set a mood, or match an activity. Recall light levels automatically or at the touch of a button. *Ideal for spaces that require repeatable lighting looks on a regular basis.*	2.4	2.8	3.11
Wireless control Add control flexibility anywhere in the space from an Infrared Wireless Remote Control. Use radio frequency control if an additional Wallstation is necessary and wire installation is not convenient. *Ideal for lecture halls, conference rooms, and home theatres.*	2.11 2.14	2.11 2.14	3.10.16
Partitioning Adapt lighting controls to coordinate with the status of movable partition walls. Operate lighting zones in each "room" independently from others when partition walls are closed, and together when partition walls are open. *Ideal for hotels, conventions centres, ballrooms, and meeting rooms.*	2.10.4 2.10.7 2.12.3 2.12.5	2.10.4 2.10.7 2.12.3 2.12.5	3.12.4
Sequencing Create dynamic lighting effects by continuously cycling preset lighting scenes automatically. *Applications include retail displays, storefront windows, landscape lighting, artwork lighting, and museum exhibit lighting.*	2.12.4	2.12.4	3.4

	GRAFIK Eye 3000 Series	GRAFIK Eye 4000 Series	Centralised Lighting Control System
 **Local controls** Control the entire system from master locations or provide local control points throughout a space. Access preset light levels. Integrate lighting control wallstations under a common wallplate with other room function controls (e.g., audio etc.). *Typical wallstation locations include doorway entry/exits, A/V control booths, and podiums.*	2.10	2.10	3.10
 **Centralised graphical control software** Monitor and control the entire lighting system from one location. Integrate building management system to lighting control system from a single point of contact. *Applications include convention spaces, office buildings, casinos, and campus-wide control.*			3.7
 **Time scheduling** Turn lights on and off automatically based on a user-defined schedule. Base events on time of day or on sunrise and sunset. *Applications include office spaces, restaurants, retail spaces, and hotels.*	2.12.4	2.12.4	3.4
 **Improved security/enhanced life safety** Create uniform pathways of light to indicate exit routes Uniformly dim lights on emergency generators to reduce power demand while lighting more areas of the building. Detect and report unauthorised presence using occupant sensors. *Ideal for office buildings, hotels, and schools.*	2.12.2	2.12.2 4.8.3	4.8.3

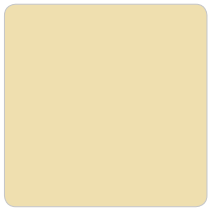
	GRAFIK Eye™ 3000 Series	GRAFIK Eye 4000 Series	Centralised Lighting Control System
DMX Integration Control DMX512, fibre optic, and LED fixtures (send DMX) when these fixtures are incorporated in an architectural lighting plan. Operate architectural lighting power panels from two data protocols simultaneously, one from Lutron® architectural control systems and the other from theatrical systems operated by DMX512 (receive DMX). Not available for GRAFIK Eye 3000 series. *Ideal for houses of worship, ballrooms, and convention spaces.*	2.12.6	2.12.6 4.3.2	3.13 4.3.2
Line voltage switching Control, monitor, and manage all non-dim fixtures in a project. Integrate to building management systems for control of lighting system from one location. Works seamlessly with Lutron dimming systems to provide total building lighting control solutions. *Ideal for office buildings, hotels, and convention centres.*		4.7 4.8.12	4.7 4.8.12
Integrated shading solutions Seamlessly integrate blinds, shades, and draperies with lighting control systems for control of natural and artificial light in any space. Control blinds, shades, and draperies independently with the same lighting control system using complementary-style controls, or use one control for both natural and artificial lighting. *Ideal for restaurants, hospitality spaces, conference areas, and classrooms.*	2.15	2.15	3.15
Daylighting controls Automatically adjust electric lighting in response to ambient daylight to achieve optimal light levels and energysavings. *Best suited for areas with large windows or skylights, such as atriums, perimeter offices, malls, and classrooms.*	2.12.7	2.12.7	3.12.5

	GRAFIK Eye 3000 Series	GRAFIK Eye 4000 Series	Centralised Lighting Control System
Occupant response Dim lights slowly to a low level, or turn lights off when space is unoccupied. Turn on lights automatically when someone enters the space. *Best suited for enclosed areas such as meeting rooms and offices.*	2.12.3 2.16.1	2.12.3 2.16.1	2.16.1 3.10.8 3.12.3
BMS integration Control lighting system through contact closures, PC or digital A/V equipment, RS-232 commands, BACnet (not for GRAFIK Eye 3000 series), ethernet. Select preset light levels, dim or brighten lights, monitor system status,and receive button feedback. Integrate with fire alarm and security systems. *Ideal for teleconferencing rooms and campus-wide total building system management.*	2.12	2.12	3.9.2 3.12

Matt Finishes

White WH

Beige BE


Ivory IV


Gray GR


Brown BR


Black BL

Gloss Finishes

White GWH


Ivory GIV


Almond GAL


Light Almond GLA

Metal Finishes


Satin Brass SB


Bright Brass BB


Bright Chrome BC


Antique Brass QB


Antique Bronze QZ


Satin Chrome SC


Satin Nickel SN

Bright Nickel BN


Gold Plated AU


Clear anod. Aluminium CLA


Black anod. Aluminium BLA


Brass anod. Aluminium BRA

Notes

- Gloss colours meet NEMA colour standards where standards exist.
- Wall controls and accessories with metal faceplates are supplied with black plastic inserts.
- Due to printing limitations, colours and finishes shown cannot be guaranteed to perfectly match actual product colours.
- All products may not be offered in all colours; see chart on next page.

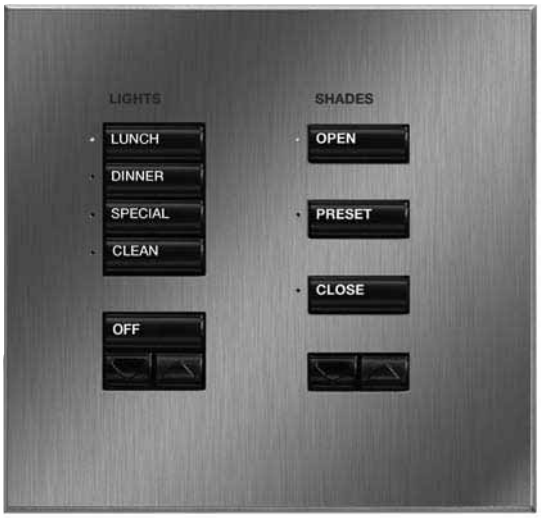
	Matt	Gloss	Metal
 **GRAFIK Eye™ control units** GRAFIK Eye 3000 Series, section 2.4 GRAFIK Eye 4000 Series, section 2.8 Centralised lighting control system, section 3.11	●	●	●
 **Viseo™** Centralised lighting control system, pg. 3.10.1	●		●
 **seeTouch™** GRAFIK Eye 3000/4000, pg. 2.10.2 Centralised lighting control system, pg. 3.10.4	●	●[1]	●
 **Architectural** GRAFIK Eye 3000/4000, pg.2.10.9 Centralised lighting control system, pg. 3.10.9	●		●
 **European Style** GRAFIK Eye 3000/4000, pg. 2.10.7 Centralised lighting control system, pg. 3.10.11	●[1]		●
 **Slim and Large button** GRAFIK Eye 3000/4000, pg. 2.10.11 Centralised lighting control system, pg. 3.10.13	●		●
 **ArchitraveTM** GRAFIK Eye 3000/4000, pg. 2.10.13 Centralised lighting control system, pg. 3.10.15			●[1]

[1]Not all products are available in all colours.
See listed product pages for specific colour information.

Customise controls to meet the unique requirements of any project.

Customised paint matching, engraving, logos, and personalised designs are available. Consult Lutron® for the right custom solution to match your personalised design.

Custom multigang and metal wallplates



Choose from 12 architectural metal finishes for a truly refined look.

- Consult Lutron customer service for pricing and delivery of metal wallplates
- Consult Lutron customer service to specify the colour of any plastic parts shipped with wallplates (sliders are always plastic)

Colour matching

With a swatch or sample, Lutron can perfectly colour-match your controls to your decor.

- Contact Lutron customer service to get started

Engraving

Add engraving to make your controls easier to use.

- Identify each control in a group
- Label preset scenes
- Fax an engraving schedule, pg. 3.17.5, to Lutron customer service to get started
- For engraving forms see www.lutron.com/engraving

Silk screening

Add your corporate or complement the decor with silk screen images.

- Full colour printing of the images you provide
- Contact Lutron customer service to get started

Custom controls

Lutron will create new designs integrating customer-supplied components.

Shown above: Bright Brass GRAFIK Eye scene selection control with thermostat by another manufacturer.

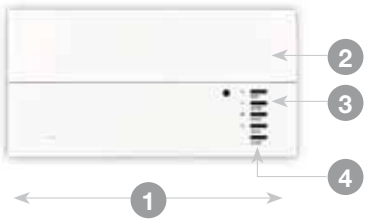
Custom combination panels

Lutron will create custom dimming/switching panels tailored to your project's requirements.

- Dimming modules for incandescent (tungsten)/halogen, magnetic low-voltage, neon/cold cathode, and Lutron ELV transformers
- Dimming modules for electronic low voltage sources
- Switching modules for all sources
- Control modules for operating 0-10V, DALI (broadcast only), or DSI loads
- Motor modules for 3-wire AC motorised window treatments

TVM Modules | LP Dimming Modules | 4A Adaptive Modules | ELV Dimming Modules | Motor Modules | XP Switching Modules

GRAFIK Eye™ control units replacement covers



Choose a finish and faceplate size:
For example: GRX-4GRC-T-WH-E

1 Faceplate size[1]:

2 = two-gang (2-zone control units)

3 = three-gang (3-zone control units)

4 = four-gang (4-, 6-, 8-, 16-, 24-zone control units)

2 Cover choice:

A = Opaque cover matches finish choice.

T = Translucent
Smoked gray translucent cover allows view of zone status LEDs when cover is closed.

Matt: A or T
Gloss: A only
Metal: T only

3 Finish choice:

For available colours and finishes, see pg.1.3.1.

4 Engraving:

Identify control unit function and scene control buttons.
See pg. 3.17.5 for engraving schedules.

Footnote,pg.1.4.2

1 For 230V (CE) applications, all GRAFIK Eye 3000 Series Control Units are four-gang units.

Warranties,commissioning and service

Prior to installation
Lutron's customer service and quotations specialists are involved from the beginning of the job process. We can help you select the right lighting control system for your needs, quote the job, and coordinate delivery and commissioning.

Lutron's Enhanced Laimited Warranty*
All factory-commissioned Lutron® products are covered by Lutron's Enhanced Limited Warranty, which covers Lutron labor, travel, parts. This warranty may also be purchased for non-commissioned products. It includes:
- Two-year system limited warranty
- Five-year limited warranty on ballasts,and
- Eight-year Replacement Parts Program (Lutron ballasts and servers not included) for credit against the purchase price upon return of the defective parts at the following rates:
  – 100% for the first 2 years of operation
  – 50% for years 3, 4, and 5 of operation
  – 25% for years 6, 7, and 8 of operation

- **Archived database**
  While commissioning the system, our field service engineer will download a copy of the system database to be stored in archives at Lutron. This allows Lutron to restore the full capabilities of your system in the event of data corruption, without time-consuming reprogramming.

- **Remote diagnostics**
  By dialing directly into your system, we can identify and repair system failures quickly and with minimal disruption (for those systems with dial-incapabilities). Remote access requires an analogue telephone line connection (provided by system owner).

2-Star and 3-Star factory commissioning
2-Star commissioning is standard with GRAFIK Eye™ 4000 Series: includes Lutron Enhanced Limited Warranty (described above), PLUS
- One Lutron factory commissioning visit to start up your Lutron system and conduct training. 3-Star commissioning is standard with Centralised Lighting Control System; includes all the benefits of 2-Star commissioning, PLUS
- Three separate job site visits by Lutron field service engineers to
  (1) conduct prewire inspection,
  (2) perform system start-up and install system software/database, and
  (3) train operator/end-user.

Lutron's Assured Performance Plans
Each Lutron Assured Performance Plan (APP) extends the annual warranty on your Lutron system and offers a variety of other services, training, and repair benefits. The price of each Lutron APP is based on the type of contract you choose, and the size and age of your previously commissioned Lutron lighting control system. Choose the plan that best suits your needs, or talk to us about a Custom Plan to meet your specific requirements.

Lutron Silver Service Contract
The factory 2-year system Enhanced Limited Warranty can be extended in one-year increments. This warranty extension can be purchased to provide coverage for up to 10 years from the date of commissioning. This guarantees long-term reliability, covering all of the parts and Lutron labour and travel costs that are usually associated with a non-warranty repair visit.

Lutron Gold 72: Warranty extension, training, and preventative maintenance
Includes all the benefits of Lutron Silver,PLUS

- **Annual comprehensive preventative maintenance**
  Comprehensive preventative maintenance will be performed on an annual basis to maximise the performance of your system and minimise system downtime. During the service check, software is upgraded to the most current version, where applicable.

- **Annual training and consultation visit**
  A Lutron field engineer will conduct training sessions with new and experienced employees to review the programming and utilisation of your system and update your staff on new capabilities or enhancements that can be added to your system.

- **Remote real-time programming**
  A Lutron programmer can dial in and make parameter changes in real-time with instructions from your authorised administrator.

Lutron Gold 24: Warranty extension, training, and preventative maintenance
Includes all the benefits of Gold 72, PLUS A GUARANTEED 24-hour response time

Annual service contracts backed by world-class field service engineers
Lutron service contracts ensure that annual service checks, training, diagnostics, and all other maintenance services will be performed regularly and exclusively by Lutron field service engineers. Service contracts are renewable each year for a maximum of 10 years from the date of original system commissioning.

*Call Lutron for complete warranty information

Worldwide sales and service

The Lutron team is here to support you whenever you need us.

Customer service and technical support:

Asia	+852-2104-7733
France	0800-90-12-18
Germany	00800-5887-6635
Spain	0900-948-944
United Kingdom	0800-282-107

For the rest of Europe

Customer service	+44-207-702-0657
Technical support	+44-207-680-4481

Round the clock technical support is available at our U.S.headquarters.

+1-610-282-3800

Internet support:

www.lutron.com

GLOBAL PRODUCTACCEPTANCE

Standards listed below apply to one or more products in the Lutron product line.
Consult factory for specific information.

HARMONIZED EUROPEAN STANDARD

DEMKO APPROVAL
DENMARK

CANADIAN STANDARDS ASSOCIATION
CANADA

UL "EMC-MARK"
FOR EUROPA

KEMA QUALITY B.V.
THE NETHERLANDS

NOM CERTIFICATION MARK
MEXICO

TUV RHEINLAND BAUART LICENSE
GERMANY

C-TICK MARK EMC STANDARDS
AUSTRALIA

"B"-MARK
POLOND

VDE TESTING AND CERTIFICATION INSTITUTE
GERMANY

S-MARK
ARGENTINA

COMPATIBILIDAD ELECTROMAGNÉTICA
GERMANY

UNDERWRITERS LABORATORIES INC.
UNITED STATES

LUTRON
Quality Systems
registered to ISO
9001:2000

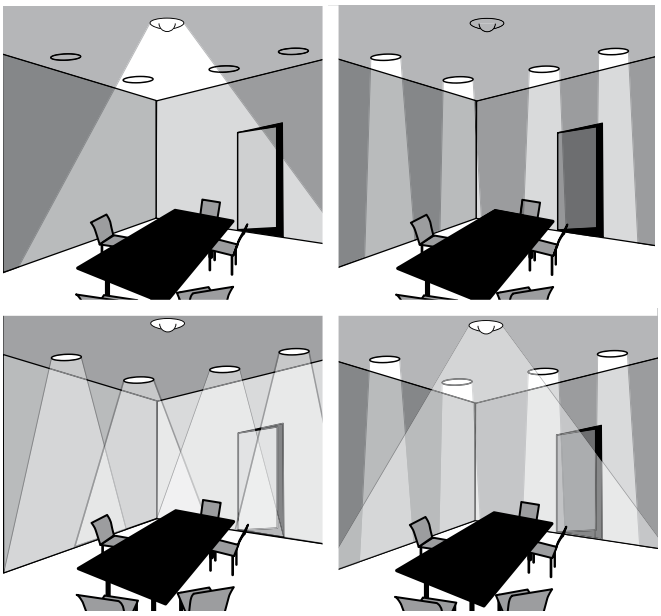
Section 2

Preset control units

Match an activity or mood to the visual environment.

The benefits

Recall preset scenes with the touch of a button.



Products

GRAFIK Eye 3000, GRAFIK Integrale™, GRAFIK Eye 4000

Recommended specifications

GRAFIK Eye 3000: Control shall provide 4 preset lighting scenes and 'off' for up to 6 control zones. Control shall be capable of storing an additional 12 preset lighting scenes which can be accessed via wallstations and/or control interfaces. Up to 48 zones may be tied together in one system.

GRAFIK Integrale: Control shall provide 4 preset lighting scenes and 'off' for up to 4 control zones. Control shall be capable of storing an additional 12 preset lighting scenes which can be accessed via wallstations and/or control interfaces. Up to 32 zones may be tied together in one system.

GRAFIK Eye 4000: Control shall provide 4 preset lighting scenes and 'off' for up to 24 control zones. Control shall be capable of storing an additional 12 preset lighting scenes which can be accessed via wallstations and/or control interfaces. Up to 64 zones may be tied together in one system.

Real Time Illumination Stability System (RTISS™)

Dimmers compensate for incoming line voltage variations such as changes in RMS (Root Mean Square) voltage, frequency shifts, harmonics, and line noise. See application note on pg. 4.8.6 for more information.

The benefits

Flicker-free dimming.

RTISS™
EQUIPPED

Products

GRAFIK Eye 3000, GRAFIK Integrale, GRAFIK Eye 4000

Recommended specifications

Dimmers shall have no visible flicker under the following conditions:
±2% change in RMS voltage per cycle
±2% rate of change in frequency per second

No interfaces

Lutron® has eliminated the need to use interfaces when controlling different types of lighting loads.

The benefits

Fewer components means faster installation times and lower installation costs.

One control for these load types

Incandescent
Magnetic low voltage
Electronic low voltage
Fluorescent
Neon/cold cathode

Products

GRAFIK Integrale

Recommended specifications

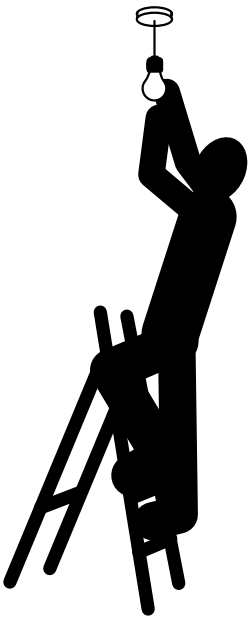
Preset dimming control shall be capable of operating the following sources/load types with a smooth continuous square law dimming curve without the requirement of an interface: electronic low voltage transformer, tungsten/halogen, magnetic low voltage, 0-10 V, DALI (broadcast only), and DSI signal-driven sources.

Air gap off

An air gap is provided in each control.

The benefits

Prevents leakage current of the dimmer from causing electrical shock when servicing lamps or starting a fire if a fixture or lamp source fails violently.



Products

GRAFIK Eye 3000, GRAFIK Integrale, GRAFIK Eye 4000

Recommended specifications

Preset dimming control shall incorporate an air gap switch relay that shall be accessible without removing the faceplate.

Surge protection

Special circuitry protects the electronics from surges.

The benefits

Protect your dimming equipment from power surges during a storm (or from within the building).

Products

GRAFIK Eye 3000, GRAFIK Integrale™, GRAFIK Eye 4000

Recommended specifications

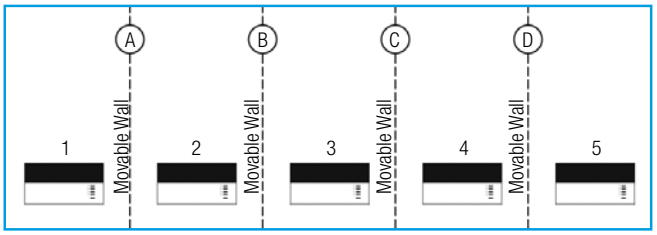
Controls shall meet IEEE standard c62.41, tested to withstand voltage surges of up to 6,000 volts and 3,000 amps.

Partitioning

The lighting control system adapts to complex environments.

The benefits

Automatically modify functionality based on the state of a partition.



Products

GRAFIK Eye 3000, GRAFIK Integrale, GRAFIK Eye 4000

Recommended specifications

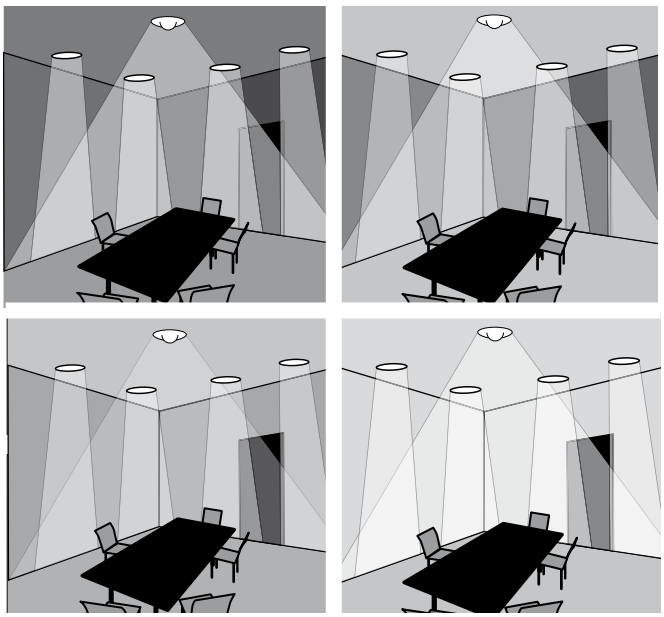
Lighting control system shall be capable of directing preset control units to operate independently or in concert to reflect partition status of moveable walls.

Sequencing

Automatically cycle preset lighting scenes.

The benefits

Create dynamic lighting effects.



Products

GRAFIK Eye 3000, GRAFIK Integrale, GRAFIK Eye 4000

Recommended specifications

Lighting control system shall be capable of sequencing.

Power failure memory

Lights always return to the previous state when power is restored.

The benefits

Minimises the inconvenience of power service interruptions and keeps building lights as you left them once power is restored.

Products

GRAFIK Eye 3000, GRAFIK Integrale, GRAFIK Eye 4000

Recommended specifications

Controls shall provide power failure memory. Should power be interrupted and subsequently returned, the lights must come back on to the same levels set prior to the power interruption without requiring any actions on the part of the user. Restoration to some other default level is not acceptable.

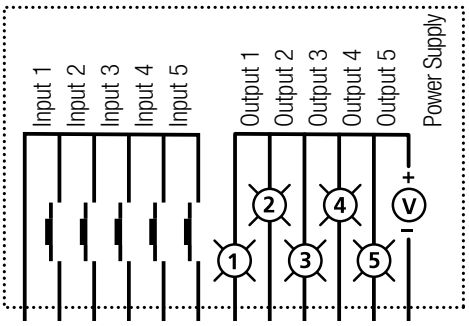
Integration

A wide variety of options are available to interface a Lutron® system with other equipment.

The benefits

Integrate with A/V equipment, theatrical equipment, other legacy lighting equipment, etc.

Customer supplied equipment



Products

GRAFIK Eye 3000, GRAFIK Integrale™, GRAFIK Eye 4000

Recommended specifications

- Control shall provide two-way interface between controls and dry contact closure devices.
- Control shall provide the ability to communicate via RS-232 serial communication.
- Control shall be capable of delivering up to 48 continuous DMX512 channels (64 channels with GRAFIK Eye 4000).
- Control shall automatically select preset light levels in response to ambient daylight.
- Control shall provide the ability to communicate via TCP/IP over Ethernet.

Robust data link protocol

Lutron's data link is designed specifically for lighting needs.

The benefits

Faster response times, longer distances between processor and controls, and no data collisions.

Products

GRAFIK Eye 3000, GRAFIK Integrale, GRAFIK Eye 4000

Recommended specifications

- Data link shall have a maximum length of 610 metres (2,000').
- Data link shall operate on an RS-485 bus.
- Data link shall operate at 32 kbaud.

Note

GRAFIK Eye 4000 is capable of extending to 2,400 metres (8,000') with repeaters.

Intuitive controls

Operate a sophisticated lighting control system with minimal training.

The benefits

Easy to program and operate.

Products

GRAFIK Eye 3000, GRAFIK Integrale, GRAFIK Eye 4000

Recommended specifications

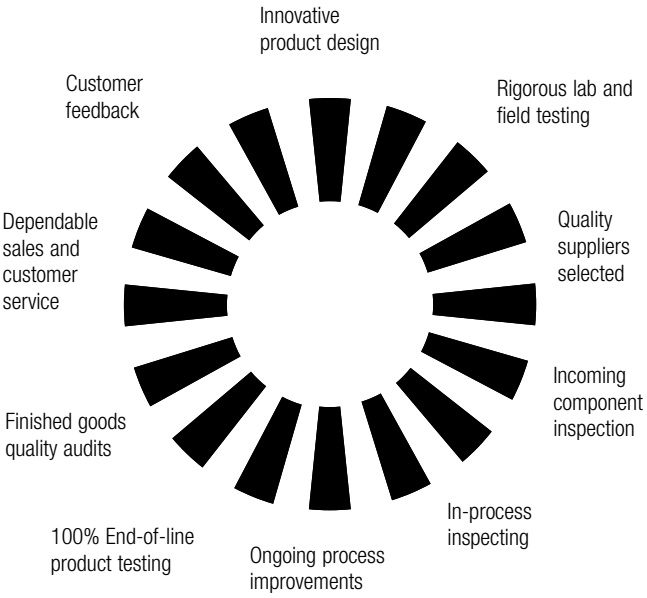
Programming of preset scenes shall be accomplished without the use of an ENTER or STORE button.

World-class quality process

For over 40 years, Lutron has designed, manufactured, and delivered quality lighting control products.

The benefits

Reliable product quality, dependable service, and continual innovation.



Products

All

Recommended specifications

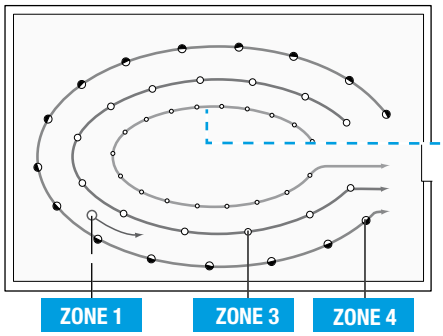
Manufacturer shall be at least ISO 9001:2000 registered.

Step 1

Determine number of zones and sources

A zone is a group of lights or shades that are always controlled together. GRAFIK Eye 3000 control units have the ability to dim most popular sources and to control several zones at one time from one button press. Important factors to consider when creating zones are flexibility of control and aesthetics.

Conference room reflected ceiling plan



ZONE 2 →

Zone	Description	Voltage	Feed Type (N,E)	Load Type	Fixture Load	No. of Fixtures	Watts/Volt-amps
1	Podium	230	N	INC	75	1	75
2	Table	230	N	ELV	50	13	650
3	Perimeter	230	N	MLV	50	8	400*
4	Accent	230	N	0-10	26	16	416

Key: N Normal; E Emergency; INC Incandescent; MLV Magnetic Low Voltage; ELV Electronic Low Voltage; 0-10, 0-10 Ballast

* Includes transformer losses

Design tips

- ☐ Dimming ballasts are required to dim fluorescent sources.
- ☐ Transformer loss: ballasts and transformers draw additional current beyond the lamp rating. For example, magnetic low voltage transformers typically draw an additional 20% of the lamp wattage.
- ☐ If integrating controllable window treatments with the lighting controls, dedicate a zone for each group of treatments.
- ☐ Blank load schedules are available. See pg. 3.17.2.

Step 2

Select GRAFIK Eye 3000 Series control units

Using the number of zones and load types determined in Step 1, select the appropriate type and size of control unit. GRAFIK Integrale™ control units are available with 4 zones and can control most lighting loads without interfaces. GRAFIK Eye 3000 series control units are available in 2-, 3-, 4-, and 6-zone configurations. Choose a 3500 model control unit if programming the system from a PC or saving light levels at 1% increments is required.

See section 2.4.

This project contains four zones, therefore a GRX-3104 is selected.

Design tips

- ☐ If your space requires more than 6 zones, link up to eight GRAFIK Eye 3000 Series control units together for control of up to 48 zones in one system.

  For example, for 10 zones in one room:

- ☐ Use a separate GRAFIK Eye 3000 control unit for each distinct room/space in a project.

Step 3

Select power boosters/interfaces

Specific zones require power boosters if load wattage exceeds maximum capacity per zone (max. capacity per zone found in section 2.4). GRAFIK Eye 3000 Series controls units can control incandescent, magnetic low voltage, neon/cold cathode, and Lutron® electronic low voltage transformer loads directly. When electronic low voltage or fluorescent loads need to be controlled, a load-specific power interface is required.

See section 2.5.

Design tips

- ☐ For incandescent, magnetic low voltage, and neon/cold cathode use up to two NGRX-PB power boosters to increase individual zone wattage capability (see pg. 2.5.2).
- ☐ Dimming electronic low voltage loads? Use an NGRX-ELVI electronic low voltage interface (see pg. 2.5.2) for GRAFIK Eye 3000 and to increase the zone capacity of a GRAFIK Integrale.
- ☐ Dimming 0-10 V fluorescent dimming ballasts? Use GRX-TVI, zero to ten volt interface (see pg. 2.5.2) for GRAFIK EYE 3000 and to increase the zone capacity of a GRAFIK Integrale.
- ☐ Switching non-dim loads? Use GRX-TVI (see pg. 2.5.2).

Step 4

Calculate total wattage for all zones; and verify that total wattage does not exceed total unit capacity

If total load for all zones added together is larger than maximum capacity for the GRAFIK Eye 3000 control unit (max. capacity per control unit is found in section 2.4), add additional power boosters/interfaces to higher wattage zones and recalculate total load. Repeat Step 3 until total load is less than or equal to maximum capacity for the control unit selected.

Compare total load to maximum capacity for control unit. For this example, total load is 525 W/VA. Zone 1 (75 W) + Zone 2 (power booster load = 25 W) + Zone 3 (400 W) + Zone 4 (power booster load = 25 W) = 525 W. Maximum capacity for a GRX-3104 at 230 V is 2,300 W/VA; therefore, no additional boosting is needed.

Design tips

- ☐ When a power booster/interface is added to a zone, the power booster/interface handles all of the wattage for that zone. Therefore, the load on the GRAFIK Eye 3000 control unit for that zone becomes 25 W/VA.

Step 5

Select and implement design elements

Identify additional control elements for the project (e.g. DMX integration, event scheduling, wireless control) and add appropriate control station devices to achieve strategies.

For design elements available, see section 1.2.

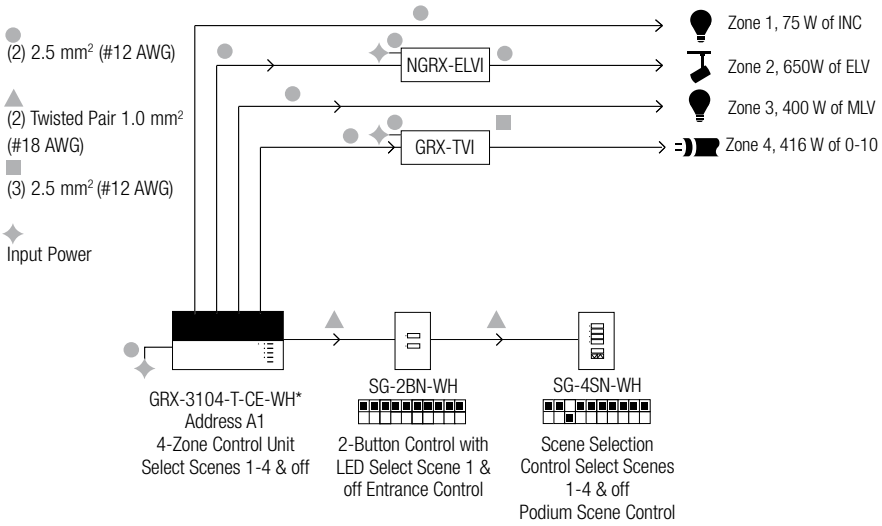
For this project, use an SG-2BN entrance control (see pg. 2.10.2) at the door and an SG-4SN scene control (see pg. 2.10.3), at the podium. For control from a touchscreen, integrate with the audio visual system using a GRX-CI-NWK-E (see pg. 2.12.3).

Design tips

- ☐ Up to three control station devices can be powered from a single GRAFIK Eye 3000 series or GRAFIK Integrale control unit. If additional control station devices (up to 16 total) a TU240-15DC-9-BL or TE240-15DC-9-BL (see pg. 2.13.1) 15 VDC power supply must be added.

Step 6

Support the design with one-line diagrams and written product specifications



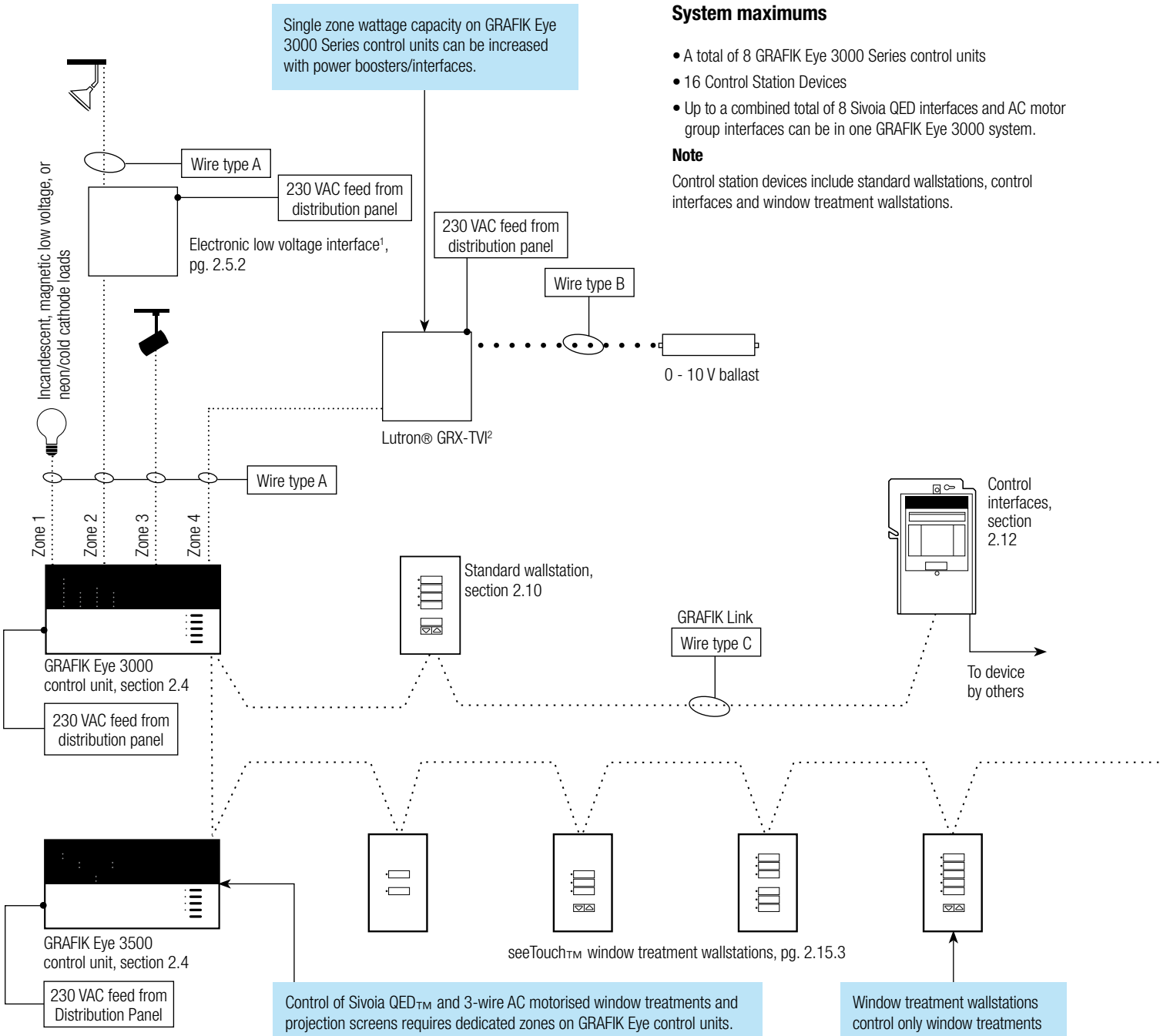
*No interfaces/power boosters would have been required if a GRAFIK Integrale were used.

Design tips

- ☐ Complete product specifications are available at www.lutron.com.

GRAFIK Eye Designer software

Lutron's GRAFIK Eye Designer software allows faster system design by automatically assigning the types of power boosters/interfaces required from zone load type and wattage information. The software generates a complete bill of materials, including wallstations and control interfaces, with DIP switch settings, and a one-line diagram that can be saved and exported as a .dxf file. GRAFIK Eye Designer software is available at www.lutron.com/designer.



System maximums

- A total of 8 GRAFIK Eye 3000 Series control units
- 16 Control Station Devices
- Up to a combined total of 8 Sivoia QED interfaces and AC motor group interfaces can be in one GRAFIK Eye 3000 system.

Note

Control station devices include standard wallstations, control interfaces and window treatment wallstations.

Wiring type key

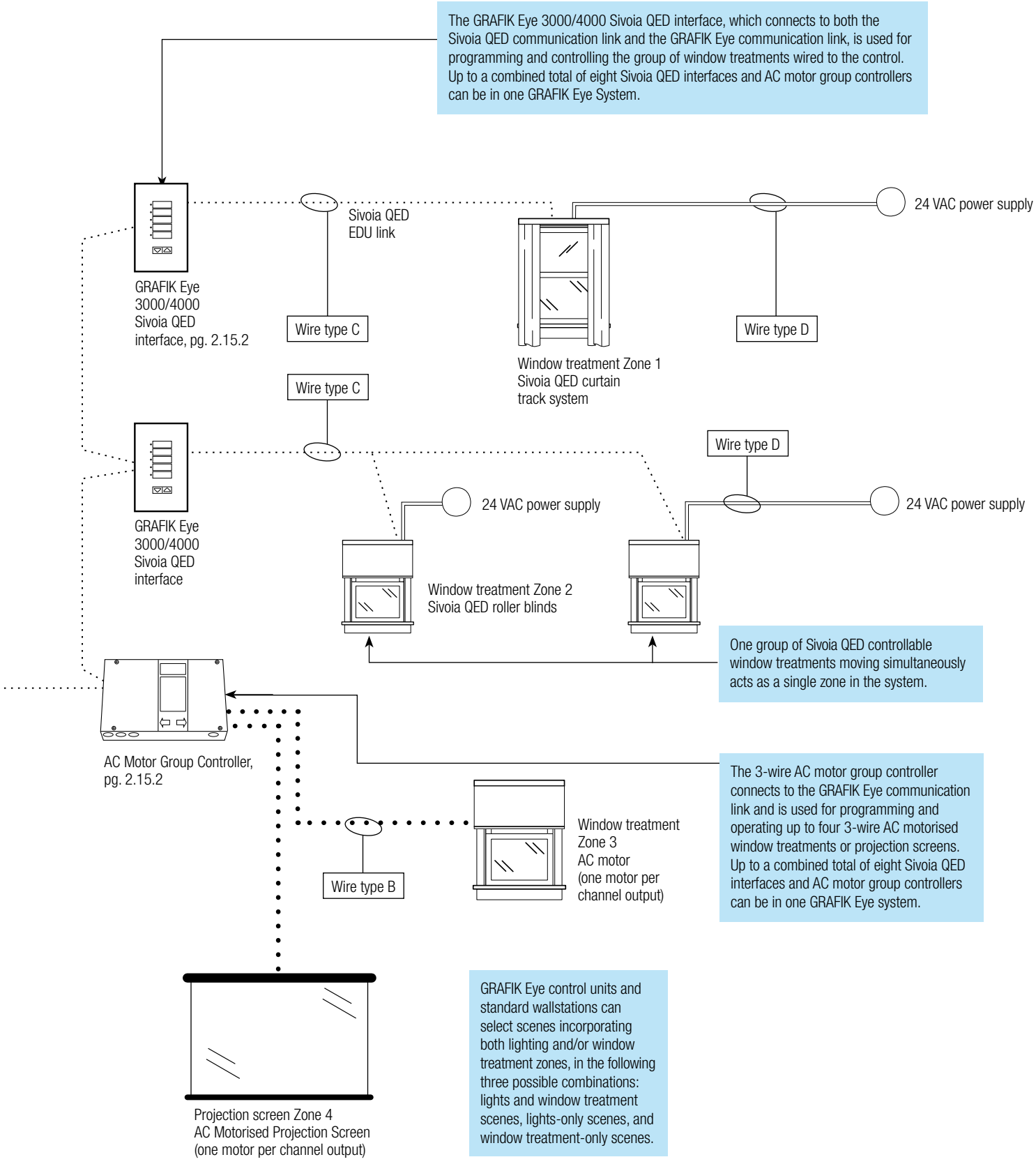
.....	Type A	1.5 mm² (#12 AWG) wires (230/240 V)
• • • • • • • •	Type B	1.5 mm² (#12 AWG) wires (230/240 V)
. . . . .	Type C	Four PELV (Class 2) conductors: (2) 1.0 mm² (#18 AWG) for power wires; plus (1) twisted, shielded 1.0 mm² (#22 AWG) pair for control wires (Available from Lutron®, GRX-CBL-346S-500, see pg. 2.13.1)
═══	Type D	(3) 1.5 mm² (#16 AWG) wires (24 VAC, plus earth ground)

Footnotes, pg. 2.3.1

1 If using a GRAFIK Integrale™ or Lutron ELV transformers, no interface required.

2 If using a GRAFIK Integrale, no interface required.

The GRAFIK Eye 3000/4000 Sivoia QED interface, which connects to both the Sivoia QED communication link and the GRAFIK Eye communication link, is used for programming and controlling the group of window treatments wired to the control. Up to a combined total of eight Sivoia QED interfaces and AC motor group controllers can be in one GRAFIK Eye System.



One group of Sivoia QED controllable window treatments moving simultaneously acts as a single zone in the system.

The 3-wire AC motor group controller connects to the GRAFIK Eye communication link and is used for programming and operating up to four 3-wire AC motorised window treatments or projection screens. Up to a combined total of eight Sivoia QED interfaces and AC motor group controllers can be in one GRAFIK Eye system.

GRAFIK Eye control units and standard wallstations can select scenes incorporating both lighting and/or window treatment zones, in the following three possible combinations: lights and window treatment scenes, lights-only scenes, and window treatment-only scenes.

Cover (shown open)

Control unit

Architectural-grade

- Provides continuously smooth, square law dimming of all lighting zones
- Controls incandescent, magnetic low voltage, neon/cold cathode, and Lutron® electronic low voltage transformers
- Contains Lutron's patented powerline stability circuitry (RTISS™—Real-Time Illumination Stability System) capable of maintaining constant light levels with no visible flicker under changing powerline conditions
- Provides positive air gap off for dimmers in each control unit
- Lightning surge protected to 6,000 V, 3,000 A
- Up to 8 GRAFIK Eye 3000 series control units can be linked for up to 48 zones
- Built-in infrared receiver/optional wireless remote control
- User-defined lockout options integral; locking covers available, pg. 2.13.1
- Offers simple programming for presets; no "store" button required

Compatible Lutron products

Remote controls section 2.11

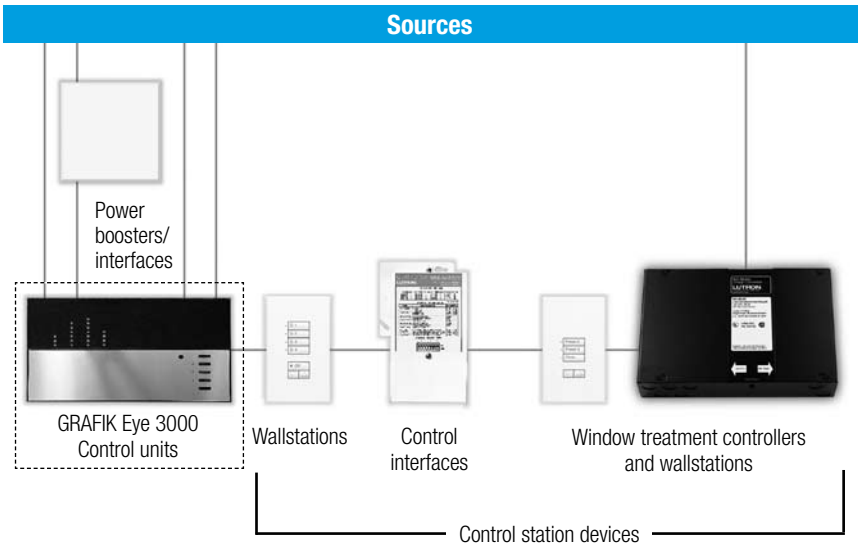
Wallstation controls section 2.10

Window treatment controllers section 2.15

Power boosters/ interfaces section 2.5

GRAFIK Eye 3000 system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 2.3.



Sources

	Incandescent
	Magnetic low voltage
	Electronic low voltage*
	Neon/cold cathode
	Fluorescent*
	High-intensity discharge (non-dim only)
	Controllable window treatments*

* Interface required to dim/control. Consult product pages for specifics.

Specifications

- Control unit requires a single feed
- Single zone capacity can be increased with power boosters/interfaces
- Load types controlled directly by control unit:
  - Incandescent, magnetic low voltage, neon/cold cathode, Lutron electronic low voltage transformers
- Load types controlled through power interfaces:
  - For control of fluorescent and electronic low voltage, use power boosters/interfaces, see section 2.5
  - For control of Sivoia QED™ window treatments, use SG-SVCN Sivoia QED interface, see section 2.15
  - For control of AC motorised window treatments, use GRX-4M-GC-CE AC motor group controller, see section 2.15
- Mounting:
  - 89 mm (3.50") depth strongly recommended, 69.9 mm (2.75") minimum
- Up to total of 8 Sivoia QED interfaces plus AC motor group controllers can be in one system with 8 GRAFIK Eye 3000 control units and 16 control station devices

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Dimensions 230 V

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

Source

Product

Model

Options

2-Zone Control Units[3,5] 230 V (CE)

GRX-3102-_-CE-_
GRX-3502-_-CE-_[2]

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[4]
- Directly switch HID
- 800 W/VA per zone, 1,600 W/VA per control unit

3-Zone Control Units[3,5] 230 V (CE)

GRX-3103-_-CE-_
GRX-3503-_-CE-_[2]

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[4]
- Directly switch HID
- 800 W/VA per zone, 2,300 W/VA per control unit

4-Zone Control Units[3,5] 230 V (CE)

GRX-3104-_-CE-_
GRX-3504-_-CE-_[2]

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[4]
- Directly switch HID
- 800 W/VA per zone, 2,300 W/VA per control unit

6-Zone Control Units[3,5] 230 V (CE)

GRX-3106-_-CE-_
GRX-3506-_-CE-_[2]

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[4]
- Directly switch HID
- 800 W/VA per zone, 2,300 W/VA per control unit

Electronic low voltage, fluorescent
Electronic low voltage and flourescent sources require an interface, see pg. 2.5.2. Interface is not required if using Lutron's ELV transformer[4].

Controllable window treatments
Sivoia QED and 3-wire AC motorised window treatments require controllers, see pg. 2.15.2 and dedicated zones on control units.

Footnotes, pg. 2.4.2

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 3500 Series control units can be programmed manually or from a PC and offer the precision of setting light levels in 1% increments.
3 Counts as one of eight total control units per system.
4. For more information about Lutron's ELV transformers, see application note on page 2.16.2.
5. Minimum load is 40 W/VA

Ordering example
GRX-3104-T-**CE**-WH
Add cover option and colour/ finish suffix to model #

Cover options
Opaque A
Cover and base will match
Translucent black T
Black translucent cover with base colour from below

Base colours

Matt finishes
Standard, ships in 48 hrs.
- Matt cover options: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes
Ships in 4-6 weeks.
- Gloss cover option: A only
- See pg. 1.3.1 for complete colour offering and suffixes.

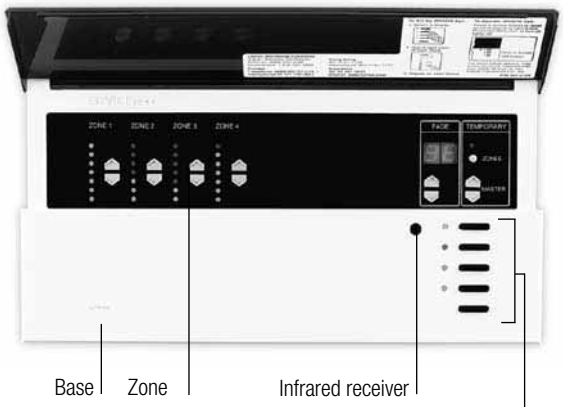
Metal finishes
Ships in 4-6 weeks.
- Metal cover option: T only
- See pg. 1.3.1 for complete colour offering and suffixes.

Satin finishes
Ships in 4-6 weeks.
- Satin cover option: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Customisation
Ships in 4-6 weeks.
- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers
- See pg. 2.13.1 for more information.

Cover (shown open)



Control unit

Architectural-grade

- Provides continuously smooth, square law dimming of all lighting zones
- Controls incandescent; magnetic low voltage; electronic low voltage; neon/cold cathode; 0-10 V, DSI, and DALI (broadcast only) dimmable ballasts
- Contains Lutron's patented powerline stability circuitry (RTISS™—Real-Time Illumination Stability System) capable of maintaining constant light levels with no visible flicker under changing powerline conditions
- Provides positive air gap off for dimmers in each control unit
- Lightning surge protected to 6,000 V, 3,000 A
- Up to 8 GRAFIK Integrale control units can be linked for up to 32 zones
- Built-in infrared receiver/optional wireless remote control
- User-defined lockout options integral; locking covers available, pg. 2.13.1
- Offers simple programming for presets; no "store" button required

Compatible Lutron® products

Remote controls section 2.11

Wallstation controls section 2.10

Window treatment controllers section 2.15

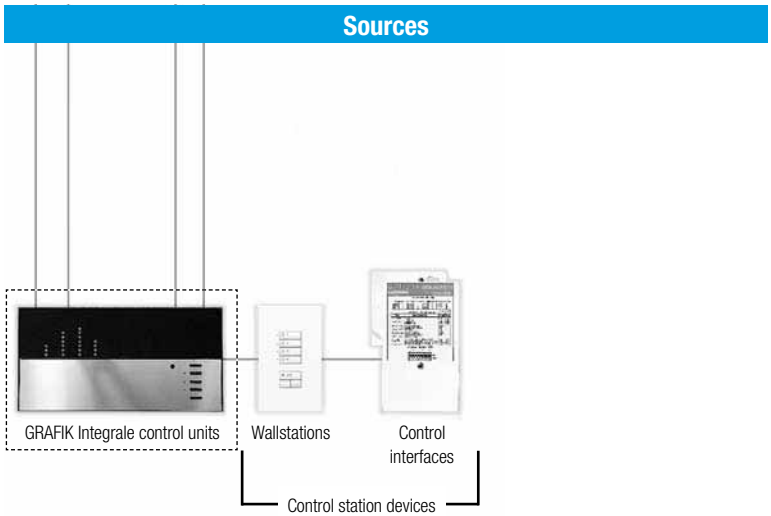
Power boosters/ interfaces section 2.5

GRAFIK Integrale mystem map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, section 2.3.

Sources

	Incandescent
	Magnetic low voltage
	Electronic low voltage
	Neon/cold cathode
	Fluorescent



Specifications

- Control unit requires a single feed
- Single zone capacity can be increased with power boosters/interfaces
- Load types controlled directly by control unit:
  - Incandescent; magnetic low voltage; electronic low voltage; neon/cold cathode; 0-10 V, DSI, and DALI (broadcast only) dimmable ballasts
- Mounting:
  - 89 mm (3.50") depth strongly recommended, 69.9 mm (2.75") minimum

Standards

Standards listed below apply to one or more products in the GRAFIK Integrale product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Source	Product	Model	Options

Dimensions 230 V

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 241400

W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

4-Zone Control Units[3,4] 230 V (CE)

GXI-3104-_-CE-_
GXI-3504-_-CE-_[2]

- Directly control incandescent; magnetic low voltage; electronic low voltage; neon/cold cathode; 0-10 V, DSI, and DALI (broadcast only) dimmable ballasts.
- Switching HID loads requires the use of an interface, see pg. 2.5.2
- 800 W/VA per zone, 2300 W/VA per control unit.
- If operating at 120 V, 400 W/VA per zone, 1200 W/VA per control unit.

Footnotes, pg. 2.4.4

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 3500 series control units can be programmed manually or from a PC and offer the precision of setting light levels in 1% increments.
3 Counts as one of eight total control units per system.
4 Minimum load is 10 W/VA

Ordering example

GXI-3104-T-**CE**-WH

Add cover option and colour/finish suffix to model #

Cover options

Opaque A
Cover and base will match
Translucent Black T
Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

- Matt cover options: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg. 1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg. 1.3.1 for complete colour offering and suffixes.

Satin finishes

Ships in 4-6 weeks.

- Satin cover option: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Cover (shown open)

Control unit

Architectural-grade

- Provides continuously smooth, square law dimming of all lighting zones
- Controls incandescent, magnetic low voltage, neon/cold cathode, and Lutron® electronic low voltage transformers
- Contains Lutron's patented powerline stability circuitry (RTISS™—Real-Time Illumination Stability System) capable of maintaining constant light levels with no visible flicker under changing powerline conditions
- Provides positive air gap off for dimmers in each control unit
- Lightning surge protected to 6,000 V, 3,000 A
- Up to 8 GRAFIK Eye 3000 series control units can be linked for up to 48 zones
- Built-in infrared receiver/optional wireless remote control
- User-defined lockout options integral; locking covers available, pg. 2.13.1
- Offers simple programming for presets; no "store" button required

Compatible Lutron products

Remote controls section 2.11

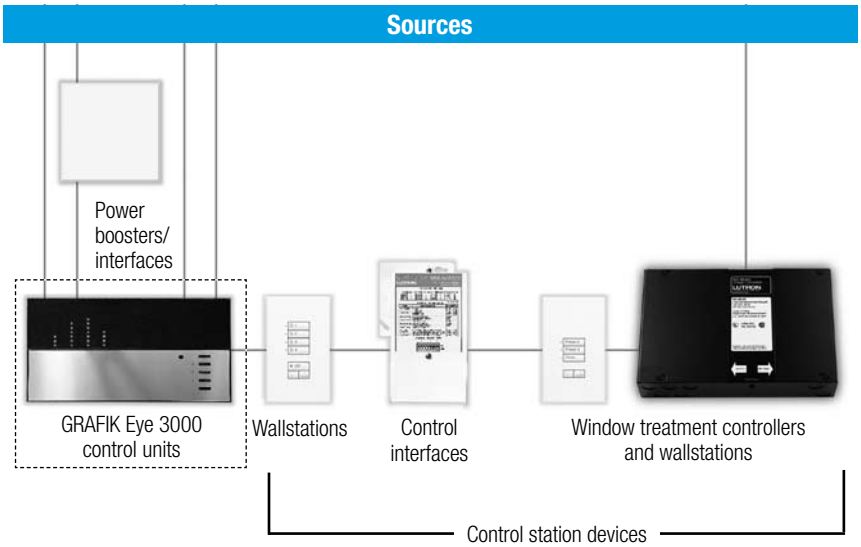
Wallstation controls section 2.10

Window treatment controllers section 2.15

Power boosters/ interfaces section 2.5

GRAFIK Eye 3000 system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 2.3.



Sources

	Incandescent
	Magnetic low voltage
	Electronic low voltage*
	Neon/cold cathode
	Fluorescent*
	High-intensity discharge (non-dim only)
	Controllable window treatments*

* Interface required to dim/control. Consult product pages for specifics.

Specifications

- Control unit requires a single feed
- Single zone capacity can be increased with power boosters/interfaces
- Load types controlled directly by control unit:
  - Incandescent, magnetic low voltage, neon/cold cathode, Lutron electronic low voltage transformers
- Load types controlled through power interfaces:
  - For control of fluorescent and electronic low voltage, use power boosters/interfaces, see section 2.5
  - For control of Sivoia QED™ window treatments, use SG-SVCN Sivoia QED interface, see section 2.15
  - For control of AC motorised window treatments, use GRX-4M-GC-CE AC Motor group controller, see section 2.15
- Mounting:
  - 89 mm (3.50") depth strongly recommended, 69.9 mm (2.75") minimum
- Up to total of 8 Sivoia QED Interfaces plus AC motor group controllers can be in one system with 8 GRAFIK Eye 3000 control units and 16 control station devices

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Source	Product	Model	Options

Dimensions 220-240 V
W: 141 mm (5.56")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 2 X 241218
W: 100 mm (4.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Dimensions 220-240 V
W: 184 mm (7.25")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 3 X 241218
W: 150 mm (6.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Dimensions 220-240 V
W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

Dimensions 220-240 V
W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

2-Zone Control Units[3, 5] 220-240 V (non CE)

GRX-3102-_-AU-_
GRX-3502-_-AU-_[2]

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[4]
- Directly switch HID
- 1,200 W/VA per zone, 1,600 W/VA per control unit

3-Zone Control Units[3, 5] 220-240 V (non CE)

GRX-3103-_-AU-_
GRX-3503-_-AU-_[2]

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[4]
- Directly switch HID
- 1,200 W/VA per zone, 2,400 W/VA per control unit

4-Zone Control Units[3, 5] 220-240 V (non CE)

GRX-3104-_-AU-_
GRX-3504-_-AU-_[2]

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[4]
- Directly switch HID
- 1,200 W/VA per zone, 3,000 W/VA per control unit

6-Zone Control Units[3, 5] 220-240 V (non CE)

GRX-3106-_-AU-_
GRX-3506-_-AU-_[2]

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[4]
- Directly switch HID
- 1,200 W/VA per zone, 3,000 W/VA per control unit

Electronic low voltage, fluorescent

Electronic low voltage and flourescent sources require an interface, see pg. 2.5.2. Interface is not required if using Lutron's ELV transformer[4].

Controllable window treatments

Sivoia QED and 3-wire AC motorised window treatments require controllers, see pg. 2.15.2 and dedicated zones on control units.

Footnotes, pg. 2.4.6

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 3500 Series control units can be programmed manually or from a PC and offer the precision of setting light levels in 1% increments.
3 Counts as one of eight total control units per system.
4 For more information about Lutron's ELV transformers, see application note on pg. 2.16.2.
5. Minimum load is 40 W/VA

Ordering example

GRX-3102-T- AU-WH

Add cover option and colour/ finish suffix to model #

Cover options

Opaque A

Cover and base will match

Translucent Black T

Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

- Matte cover options: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg. 1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg. 1.3.1 for complete colour offering and suffixes.

Satin finishes

Ships in 4-6 weeks.

- Satin Cover Option: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Power booster

Load interfaces

- Increases single-zone load capacity (as required)
- Models available to control fluorescent and electronic low voltage loads
- Switching relay provides 16 A switching capacity for non-dim loads

Compatible Lutron products

GRAFIK Eye 3000
control units pg. 2.4.1 and 2.4.5

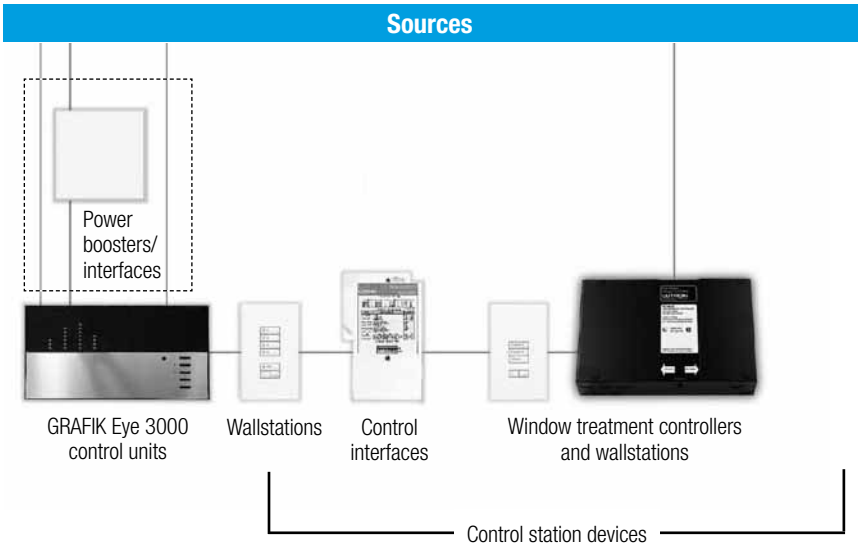
GRAFIK Integrale™
pg. 2.4.3

GRAFIK Eye 3000 system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 2.3.

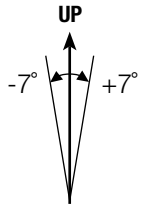
Sources

	Incandescent
	Magnetic low voltage
	Electronic low voltage
	Fluorescent
	Neon/cold cathode
	High-intensity discharge (non-dim only)



Specifications

- All voltages indicated are phase-to-neutral and will operate on 50 or 60 Hz power
- Require a circuit feed; load circuit feed is phase independent of control circuit from dimmer
- Are not plenum-rated; for indoor use only
- When mounting several units in vertical layout, allow 114 mm (4.5") between units for heat dissipation
- Must be mounted within 7° of true vertical
- Generate heat; mount only where ambient temperature will be 0-40°C (32°-104°F) with a non-condensing relative humidity <90%
- Common neutrals are not permitted; run separate neutrals for each load circuit
- Up to two power boosters/interfaces can be wired to a single zone for greater capacity



Mount booster/interface vertically

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Source	Product	Model	Options

Dimensions
W: 116 mm (4.56")
H: 116 mm (4.56")
D: 18 mm (0.69")3
Wallbox
P/N 241496
W: 105 mm (4.13")
H: 105 mm (4.13")
D: 40 mm (1.57")

Power Booster — **220-240 V (non-CE)** **NGRX-PB-AU-WH1,2**
2,400 W/VA
230 V (CE) **NGRX-PB-CE-WH1,2**
1,200 W/VA (with Wallplate)
1,840 W/VA (without Wallplate)

- Increases single GRAFIK Eye 3000 or GRAFIK Integrale zone wattage capacity
- Dims incandescent, magnetic low voltage and neon/cold cathode loads
- Can also be used to switch (non-dim) all of the sources mentioned above
- Up to two power boosters can be wired to a single zone
- Minimum load is 40 W/VA

Dimensions
W: 116 mm (4.56")
H: 116 mm (4.56")
D: 18 mm (0.69")3
Wallbox
P/N 241496
W: 105 mm (4.13")
H: 105 mm (4.13")
D: 40 mm (1.57")

Electronic Low Voltage Interface
220-240 V (non-CE) **NGRX-ELVI-AU-WH1,2**
230 V (CE) **NGRX-ELVI-CE-WH1,2**

- 1,200 W
- Allows dimming of electronic transformer-supplied low voltage lighting requiring reverse phase-control dimming
- Increases single GRAFIK Integrale zone wattage capacity
- Up to two interfaces can be wired to a single zone
- Minimum load is 40 W/VA

Dimensions
W: 116 mm (4.56")
H: 116 mm (4.56")
D: 18 mm (0.69")[3]
Wallbox
P/N 241496
W: 105 mm (4.13")
H: 105 mm (4.13")
D: 40 mm (1.57")

Lutron Fluorescent Dimming Ballast Interface
220-240 V (non-CE) **NGRX-FDBI-AU-WH1,2**

- 10 A
- Allows dimming of Lutron® Hi-Lume™ /Eco-10™ (ECO-Series) line voltage control electronic dimming ballasts only
- Not to be used for switching
- Up to two interfaces can be wired to a single zone

Dimensions
W: 155 mm (6.10")
H: 318 mm (12.50")
D: 84 mm (3.30")
Surface Mount

Zero to Ten Volt Interface
220-240 V, 230 V (CE) **GRX-TVI1,2**

- 16 A (same model number for all voltages)
- 0-10 V output rating: 10 µA-300 mA; sinks current only
- Up to five interfaces can be wired to a single zone

Dimensions
W: 155 mm (6.10")
H: 318 mm (12.50")
D: 84 mm (3.30")
Surface Mount

Switching Relay **220-240 V, 230 V (CE)** **GRX-TVI1,2**

- 16 A (same model number for all voltages)
- Switching relay (non-dim) ratings for all voltages
  16 A: incandescent, low voltage, neon/cold cathode, metal halide, fluorescent (capacitive), non-capacitive 1/2 hp: 240 V – motor

Footnotes, pg. 2.5.2
1 All voltages indicated are phase-to-neutral.
2 Load circuit feed is phase independent of control circuit from dimmer.
3 Depth is from wallplate to wall. Wallplate depth is 9 mm (0.35").

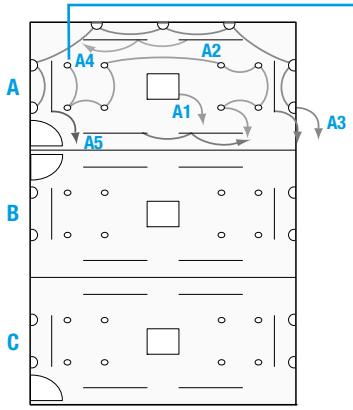
Ordering example
NGRX-PB-CE-WH
Ships in 48 hours

Step 1

Determine number of zones and sources

A zone is a group of lights or shades that are always controlled together. GRAFIK Eye 4000 controls have the ability to dim most popular light sources through power panels and to control several zones at one time from one button press. Important factors to consider when creating zones are flexibility of control and aesthetics.

Conference room reflected ceiling plan



Zone	Description	No. of Circuits	Voltage	Feed Type (N,E)	Load Type	Fixture Load	No. of Fixtures	Watts/Volt-amps
A-1	Chandelier	1	230 V	N	INC	1200	1	1200
A-2	North Track	1	230 V	N	ELV	20	4	88*
A-3	East Track	1	230 V	N	ELV	20	6	132*
A-4	West Track	1	230 V	N	ELV	20	6	132*
A-5	South Track	1	230 V	N	ELV	20	4	88*

Notes:
1. Chart is typical for each room: A, B, and C. Room A is shown.

Key: N Normal; E Emergency; INC Incandescent; MLV Magnetic Low Voltage; ELV Electronic Low Voltage; 0-10 0-10 V Dimming ballast

* Includes transformer losses

Design tips

- ☐ Multiple circuits can be controlled by one zone.
- ☐ Dimming ballasts are required to dim fluorescent sources.
- ☐ Transformer loss: ballasts and transformers draw additional current beyond the lamp rating. For example, magnetic low voltage transformers typically draw an additional 20% of the lamp wattage.
- ☐ If integrating controllable window treatments with the lighting controls, dedicate a zone for each group of treatments to be controlled on control units.
- ☐ Blank load schedules are available. See pg. 3.17.2.

Step 2

Select GRAFIK Eye 4000 Series control units

Using the number of zones determined in Step 1, select the appropriate size of control Unit. GRAFIK Eye 4000 series control units are available in 2-, 3-, 4-, 6-, 8-, 16-, and 24-zone configurations. Choose a 4500 model control unit if programming the system from a PC or saving light levels at 1% increments is required.

See section 2.8.

This project requires seven zones per room, therefore three GRX-4108 are selected.

Design tips

- ☐ If your space requires more than eight zones, link up to 8 GRAFIK Eye 4000 Series control units (addresses) together for control of up to 64 zones in one system.
- ☐ A 16-zone control unit counts as two control units and a 24-zone unit counts as three control units toward the eight control units maximum.
- ☐ Use a separate GRAFIK Eye control unit for each distinct room/space in a project that may be controlled separately.

For example, for 10 zones:

Step 3

Fill out dimming/switching panel schedule(s)

Separate circuits into power panel schedules by common voltages and feed type (N, N/E, E). Power panels can be located throughout a project close to the loads they are serving, then linked together through a low voltage communication link for seamless operation.

Design tips

- ☐ A separate panel or section is required for each voltage type and feed type (normal or emergency).
- ☐ Where emergency circuits are required, selected circuits should be placed in a separate panel schedule. Selected emergency circuits in Lutron® panels immediately go to a "full-on" condition when normal power fails. For more information, see pg. 4.8.5.
- ☐ Consider adding circuits into panel capacity for spare circuits if future growth is expected.
- ☐ In large projects, if more than 15% of project circuits are non-dim only, consider using an XP Softswitch™ panel (see section 4.7)

Step 4

Select power panels

Choose the power panel to support the number of circuits required by the project in the dimming/switching panel schedule(s) from Step 3.

Example shown in project for rooms A, B, and C. Process is similar for other voltages and feed types.

See section 4.

Normal – 230 V Dimming Panel Circuit Number	Zone	Load Type	Total Load Watts/Voltage
1	A-1	INC	1200
2	A-4	ELV	88
3	A-5	ELV	132
4	A-6	ELV	132
5	A-7	ELV	88
6	B-1	INC	1200
7	B-4	ELV	88
8	B-5	ELV	132
9	B-6	ELV	132
10	B-7	ELV	88
11	C-1	INC	1200
12	C-4	ELV	88
13	C-5	ELV	132
14	C-6	ELV	132
15	C-7	ELV	88
16	SPARE		

Note: This project requires one GP16-2304 IS-10CE dimming panel

Design tip

- ☐ Verify building system voltage/feed type (3Ø,4 W) and branch circuit size (where applicable).

Step 5

Select and implement design elements

Identify additional control elements for the project (e.g. DMX integration, time scheduling, wireless control) and add appropriate control station devices to achieve strategies.

See design elements, see section 1.2.

For this project, two elements are chosen – an SG-4SIRN infrared control (see pg. 2.10.3), and an SG-4PSN partitioning control (see pg. 2.10.4).

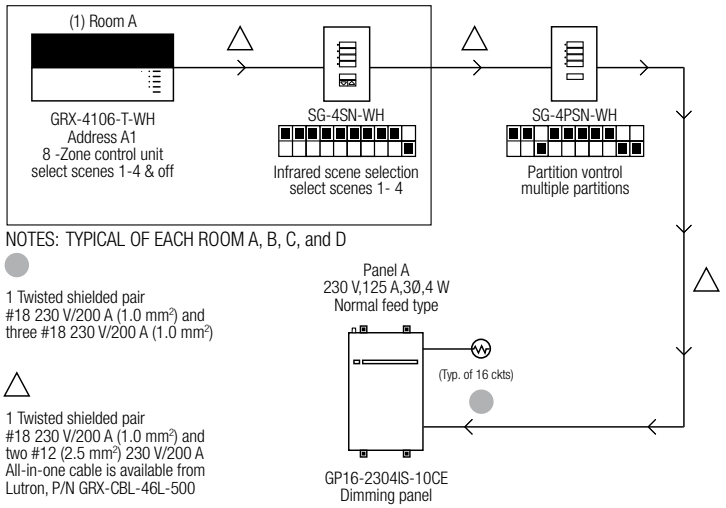
Design tips

- ☐ Up to 16 total control station devices can be added in one GRAFIK Eye 4000 series system.
- ☐ Coordinate partitioning function with audio visual system requirements.

Step 6

Support the design with one-line diagrams and written product specifications

Complete product specifications are available at www.lutron.com.



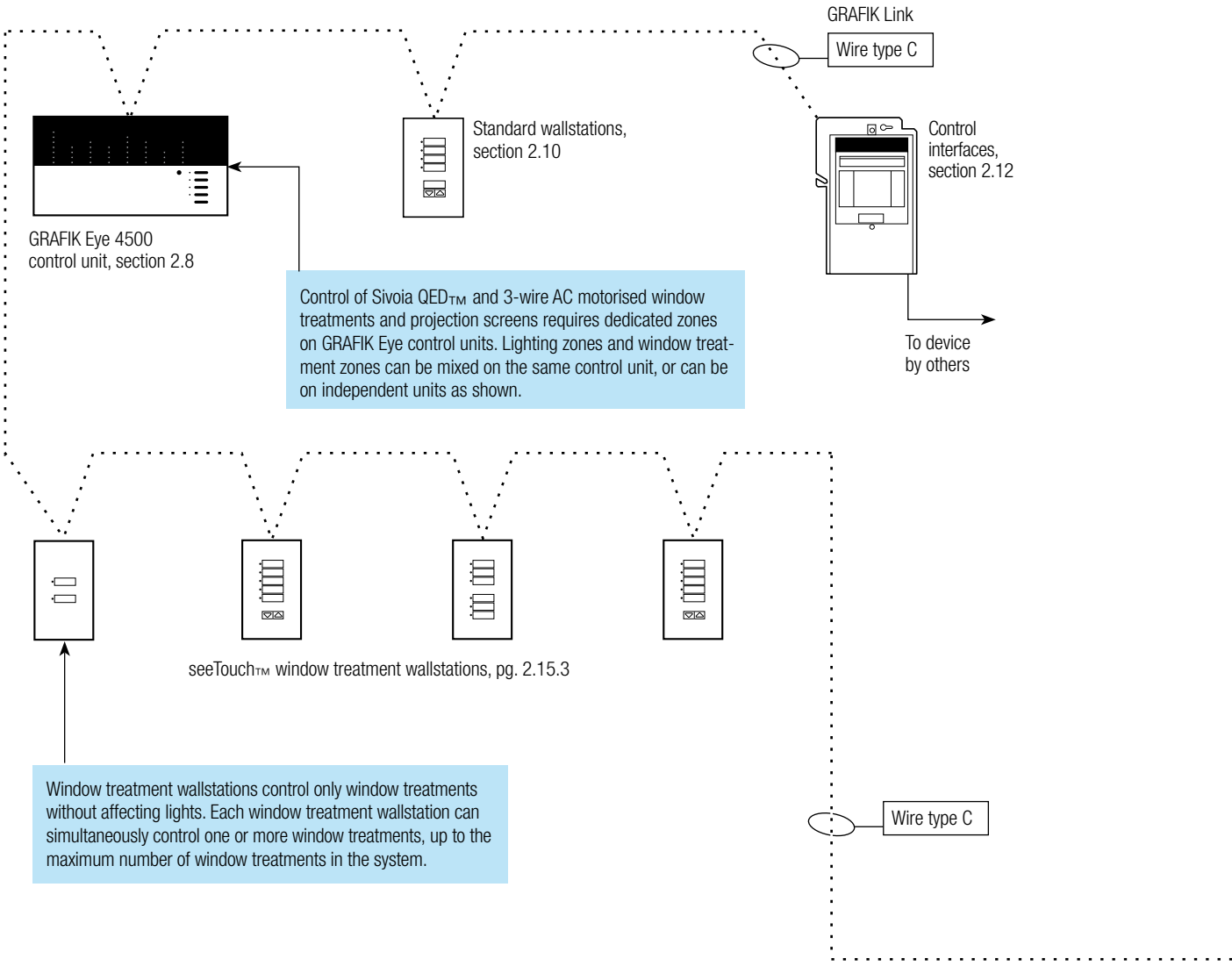
GRAFIK Eye Designer software

Lutron's GRAFIK Eye Designer software allows faster system design by automatically assigning the panel(s) required from zone load type and wattage information. The software generates a complete bill of materials, including wallstations and control interfaces, with DIP switch settings, and a one-line diagram that can be saved and exported as a .dxf file. GRAFIK Eye Designer information is available at www.lutron.com/designer.

System maximums

- A total of 8 GRAFIK Eye 4000 Series control units
- 16 control station devices
- 8 Sivoia QED™ interfaces and AC motor group controllers

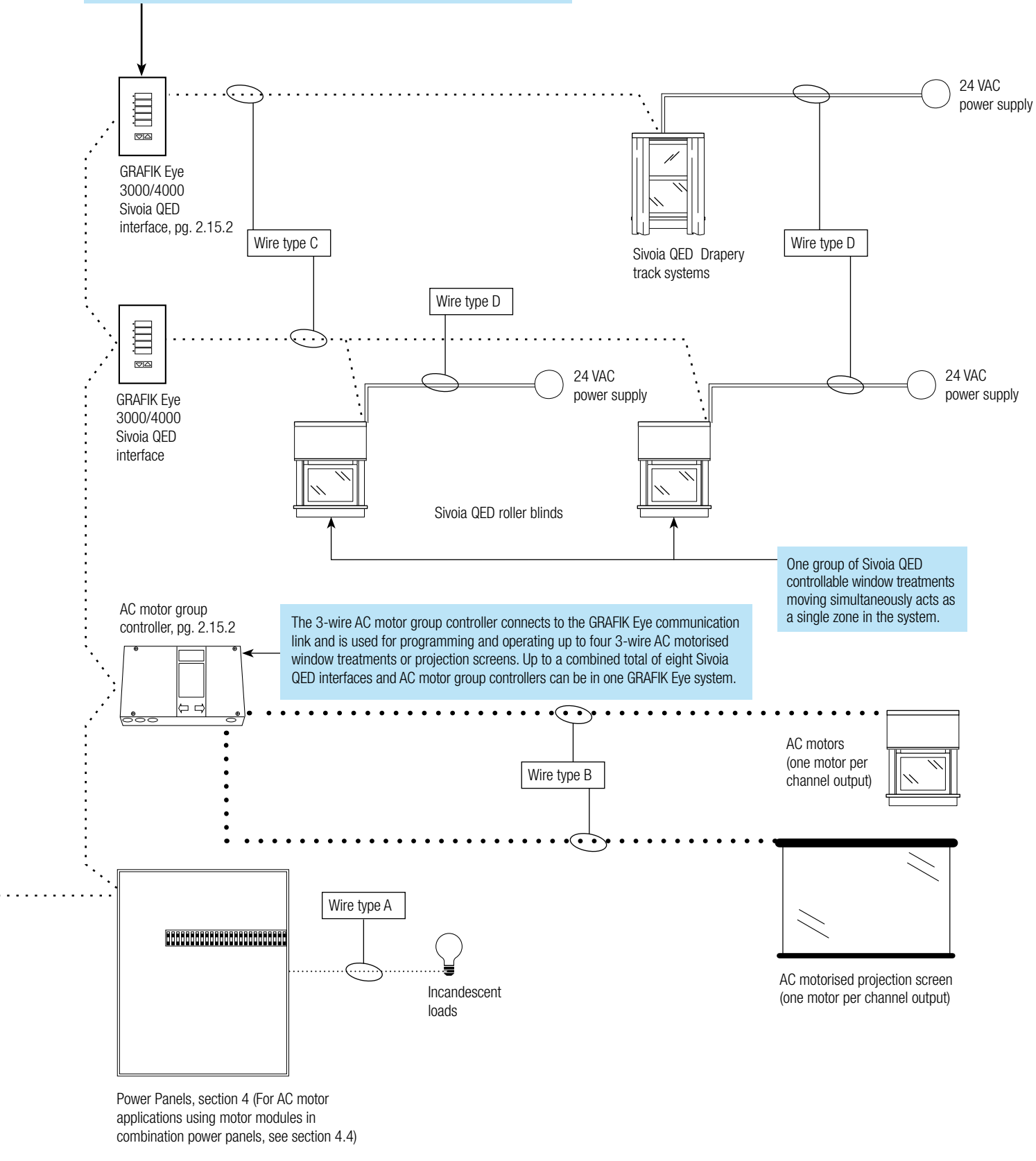
Note: control station devices include standard wallstations, control interfaces, and window treatment wallstations.



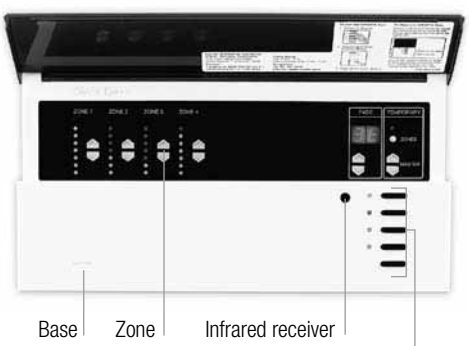
Wiring type key

·····	Type A	2.5 mm² (#12 AWG) wires (230/240 V)
• • • • • • • •	Type B	2.5 mm² (#12 AWG) wires (230/240 V)
· · · · · · · · · · · · · ·	Type C	Five PELV (Class 2) conductors: (2) 2.5 mm² (#12 AWG) for power wires; (1) twisted, shielded 1.0 mm² (#22 AWG) pair for control wires; plus (1) 1.00 mm² (#18 AWG) wire for the emergency sense line (Available from Lutron®; GRX-CBL-46L, see pg. 2.13.1)
═══════	Type D	1.5 mm² (#16 AWG) wires (24 VAC, plus earth ground)

The GRAFIK Eye 3000/4000 Sivoia QED interface, which connects to both the Sivoia QED communication link and the GRAFIK Eye communication link, is used for programming and controlling the group of window treatments wired to the control. Up to a combined total of eight Sivoia QED interfaces and AC motor group controllers can be in one GRAFIK Eye System.



Cover (shown open)



Control unit

Architectural-grade

- Provides continuously smooth square law dimming of all popular sources through dimming panels, and non-dim control for sources through switching panels; see Power Panels, section 4
- Dimming panels contain Lutron's patented powerline stability circuitry (RTISS™—Real-Time Illumination Stability System), capable of maintaining constant light levels with no visible flicker under changing powerline conditions
- Switching panels contain Lutron's patented XP Softswitch™ circuitry capable of withstanding inrush current 50 times operating current for full 16 A circuits of any source - resistive, inductive, or capacitive
- Average rated life of Lutron® relays are 1,000,000 cycles (on/off) at full load
- Provides positive air gap off for every circuit through power panels
- Up to 8 GRAFIK Eye 3000 series control units can be linked for up to 64 zones
- Built-in Infrared receiver/optional wireless remote control
- User-defined lockout options integral; locking covers available, pg. 2.13.1
- Offers simple program for scene light levels and fade times; no "store" button required

Compatible Lutron products


Wallstation controls section 2.10


Window treatment controllers section 2.15

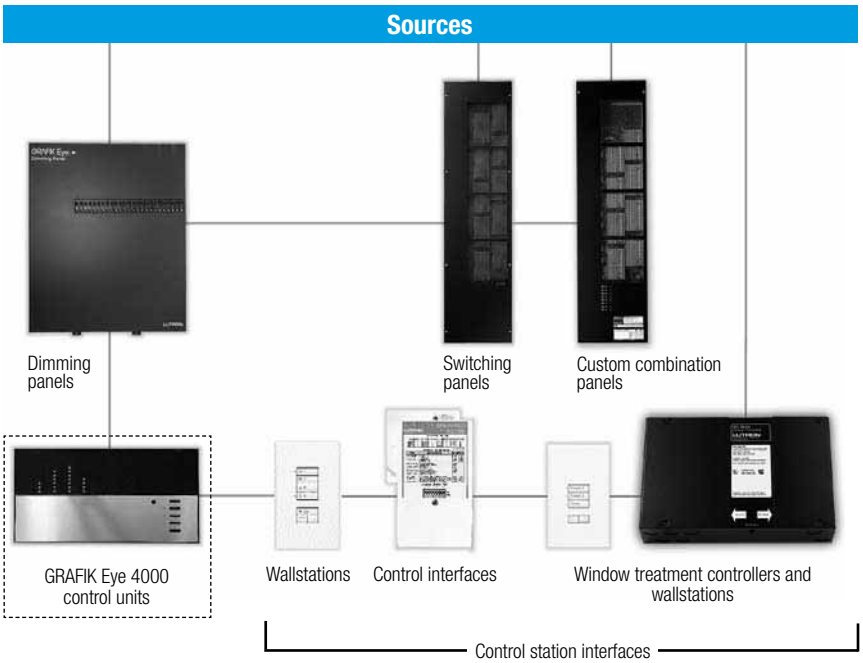

Dimming panels section 4


Switching panels section 4.7


Custom combination panels section 4.4

GRAFIK Eye 4000 system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 2.7.



Specifications

- Load types:
  - Controlled through power panels, see section 4
  - For control of Sivoia QED™ window treatments, use SG-SVCN Sivoia QED interface, see pg. 2.15.2
  - For control of AC motorised window treatments, use GRX-4M-GC-CE motor group controller, see pg. 2.15.2 and/or power panels with motor modules, see section 4.4
  - Sivoia QED and 3-wire AC motorised window treatments require dedicated zones on control units
- Power through power panels, see section 4
- Mounting:
  - Fits standard US wallboxes, 89 mm (3.50") deep strongly recommended, 64 mm (2.75") minimum
- Up to total of 8 Sivoia QED controllers plus AC motor group controllers can be in one system with 8 GRAFIK Eye control units and 16 control station devices

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Product	Model	Options

Dimensions

W: 141 mm (5.56")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 2 x 241218
W: 100 mm (4.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

2-Zone Control Units[3]

GRX-4102-_-_
GRX-4502-_-_[2]

- Sources controlled through dimming and XP Softswitch panels and window treatment controllers.
- For panel information, see section 4.
- For window treatment controllers, see section 2.15.

Dimensions

W: 186 mm (7.31")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 3 x 241218
W: 150 mm (6.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Zone Control Units[3]

GRX-4103-_-_
GRX-4503-_-_[2]

- Sources controlled through dimming and XP Softswitch panels and window treatment controllers.
- For panel information, see section 4.
- For window treatment controllers, see section 2.15.

Dimensions

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

4-Zone Control Units[3]

GRX-4104-_-_
GRX-4504-_-_[2]

- Sources controlled through dimming and XP Softswitch panels and window treatment controllers.
- For panel information, see section 4.
- For window treatment controllers, see section 2.15.

Dimensions

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

6-Zone Control Units[3]

GRX-4106-_-_
GRX-4506-_-_[2]

- Sources controlled through dimming and XP Softswitch panels and window treatment controllers.
- For panel information, see section 4.
- For window treatment controllers, see section 2.15.

Footnotes, pg. 2.8.2

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 4500 model control units can be programmed manually or from a PC and offer the precision of setting light levels in 1% increments.
3 Counts as one of eight total control units per system.

Ordering example

GRX-4102-T-WH

Add cover option and colour/finish suffix to model #

Cover options

Opaque A

Cover and base will match

Translucent Black T

Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

- Matt cover options: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg. 1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg. 1.3.1 for complete colour offering and suffixes.

Satin finishes

Ships in 4-6 weeks.

- Satin cover option: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Product	Model	Options

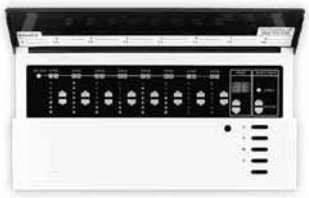
Dimensions
W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

8-Zone Control Units

GRX-4108-_-_
GRX-4508-_-_[2]

- Sources controlled through dimming and XP Softswitch™ panels and window treatment controllers.
- For panel information, see section 4.
- For window treatment controllers, see section 2.15.
- Counts as one of eight total control units per system.



(Shown with cover open)

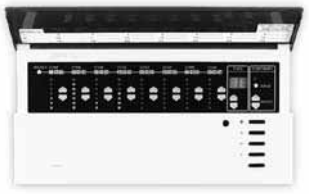
Dimensions
W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

16-Zone Control Units

GRX-4116-_-_
GRX-4516-_-_[2]

- Sources controlled through dimming and XP Softswitch panels and window treatment controllers.
- For panel information, see section 4.
- For window treatment controllers, see section 2.15.
- Counts as two out of eight total control units per system.



(Shown with cover open)

Dimensions
W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

24-Zone Control Units

GRX-4124-_-_
GRX-4524-_-_[2]

- Sources controlled through dimming and XP Softswitch panels and window treatment controllers.
- For panel information, see section 4.
- For window treatment controllers, see section 2.15.
- Counts as three out of eight total control units per system.

Footnotes, pg. 2.8.3

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").

2 4500 model control units can be programmed manually or from a PC and offer the precision of setting light levels in 1% increments.

Ordering example

GRX-4108-T-WH

Add cover option and colour/ finish suffix to model #

Cover options

Opaque A

Cover and base will match

Translucent Black T

Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

- Matt cover options: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg. 1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg. 1.3.1 for complete colour offering and suffixes.

Satin finishes

Ships in 4-6 weeks.

- Satin cover option: A or T
- See pg.1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg.1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Product	Model	Options

Dimensions
W: 186 mm (7.31")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 3 x 241218
W: 150 mm (6.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Zone Slider Control Units[2,3] — GRXSLD-4103-

- Serves as control unit for three zones of lighting
- Two scenes per slider control unit, expandable to 12 scenes with additional controls
- Master slider option available (uses one slider zone)
- No remote fine-tuning for individual zones available
- Built-in panic scenes

Dimensions
W: 186 mm (7.31")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 3 x 241218
W: 150 mm (6.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Zone Slider Control Unit[2,3] — GRXSLD-4104-

- Serves as control unit for four zones of lighting
- Two scenes per slider control unit, expandable to 12 scenes with additional controls
- Master slider option available (uses one slider zone)
- No remote fine-tuning for individual zones available
- Built-in panic scenes

Dimensions
W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

6-Zone Slider Control Unit[2,3] — GRXSLD-4106-

- Serves as control unit for six zones of lighting
- Two scenes per slider control unit, expandable to 12 scenes with additional controls
- Master slider option available (uses one slider zone)
- No remote fine-tuning for individual zones available
- Built-in panic scenes

Dimensions
W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

8-Zone Slider Control Unit[2,3] — GRXSLD-4108-

- Serves as control unit for eight zones of lighting
- Two scenes per slider control unit, expandable to 12 scenes with additional controls
- Master slider option available (uses one slider zone)
- No remote fine-tuning for individual zones available
- Built-in panic scenes

Footnotes, pg. 2.8.4
1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 Manual programming only. (No PC programming available).
3 Counts as one of eight total control units per system.

Ordering example
GRXSLD-4103-WH-
add colour/finish suffix to model #

Matt finishes
Ships in 4-6 weeks.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

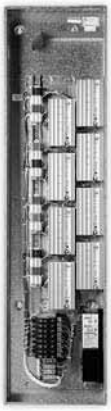
Metal finishes
Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ
Anodised Aluminium	
Clear	CLA
Black	BLA
Brass	BRA

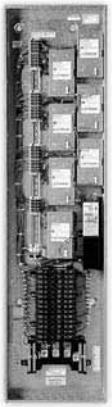
Customisation
Ships in 4-6 weeks.
- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers
- See pg. 2.13.1 for more information.

GP dimming panels



LP dimming panels



XP Softswitch panels with breakers

Custom combination panels

GP dimming panels
Lutron's highest performance architectural dimming panel for all applications.

LP dimming panels
Commercial dimming panel for handling numerous small loads.

XP Softswitch™ panels
Million-cycle switching panel employs Lutron's patented Softswitch technology.

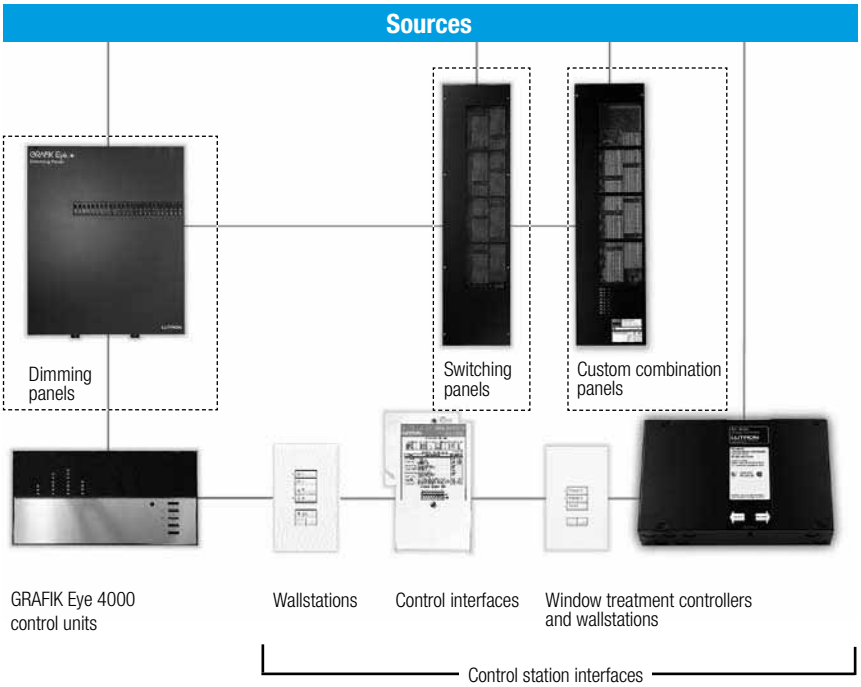
Custom combination panels
Custom dimming/switching panel tailored to your projects requirements.

GRAFIK Eye 4000 system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 2.7.

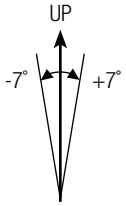
Sources

- Incandescent
- Magnetic low voltage
- Electronic low voltage
- Neon/cold cathode
- Fluorescent
- High-intensity discharge (non-dim only)
- Controllable window treatments



Specifications

- Prewired: Lutron® power panels are prewired at the factory. Wire feed and load wiring only. No other wiring or assembly required.
- Thermal magnetic breakers: Circuit breakers are UL-rated thermal magnetic.
- Lightning strike protection: Power panels meet ANSI/IEEE standard 62.41-1980 and can withstand voltage surges of up to 6,000 V and current surges of up to 3,000 A.
- No flicker: RTISS™ filter circuit technology compensates for incoming line voltage variations: No visible flicker with ±2% change in RMS voltage/cycle and ±2% Hz change in frequency/second.
- Air gap off switches: Ensures an open circuit when off function is selected.
- Arcless-relay: Eliminate arcing at mechanical contacts when loads are switched.
- Convection cooled: patented, ribbed aluminum heat sink base cools panel by convection. No fans.
- Enclosure: NEMA-Type 1 (Type 2 available upon request), IP-20 protection; #16 U.S. Gauge steel. Indoors only.
- Customisation: Panels can be customised to meet your needs, section 4.4.



Mount panel vertically

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Panel Type	GP	LP/Custom Combination Panels	XP Softswitch™
Choosing a panel			
Function	Lutron's highest performance architectural dimming panel for all applications	Commercial dimming panel for handling numerous small loads	Million-cycle switching panel employs Lutron's patented Softswitch
Voltage[1]	220-240 V (AU) or 230 V (CE) 50 or 60 Hz	220-240 V (AU) or 230 V (CE) 50 or 60 Hz	220-240 V (AU) or 230 V (CE) 50 or 60 Hz
Panel feed type	Feed-through isolator switch	Feed-through isolator switch	Feed-through
Number of circuits	3-24	4-32 lighting zones (1-8 dimming modules)	4-48
Thermal magnetic circuit breaker	1 per circuit	1 per module (4 lighting zones per module)	N/A
Load rating	16 A continuous/circuit 10 A 230 V (CE)	Varies by module type	16 A continuous/circuit
Load type[2]	inc, mlv, elv[3], fl[4], n, cc, nd	inc, mlv, elv[3], fl[4], n, cc, nd, motor[5]	All load types
Lamp noise suppression	Architectural	Commercial	Not required
RFI suppression	Highest-grade choke	High-grade choke	Switching only; no choke required
Ambient temperature	0º-40ºC (32º-104ºF)	0º-40ºC (32º-104ºF)	0º-40ºC (32º-104ºF)
Mounting	Surface mount	Surface mount or recessed mount	Surface mount or recessed mount

Footnotes, pg. 2.9.2

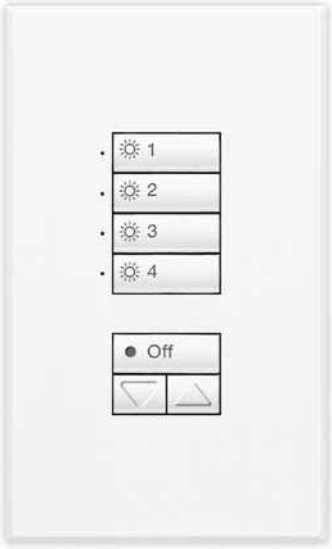
1 All voltages are nominal.

2 Load type key: inc=incandescent, mlv=magnetic low voltage, n=neon, cc=cold cathode, fl=fluorescent (magnetic and capacitive), elv=electronic low voltage, nd=non-dim, HID.

3 Contact Lutron technical support for a list of approved electronic low voltage transformers.

4 Ten volt module (option), see pg. 4.4.3.

5 3-wire AC motor types; motor module (option), see pg. 4.4.3.



seeTouch Wallstation

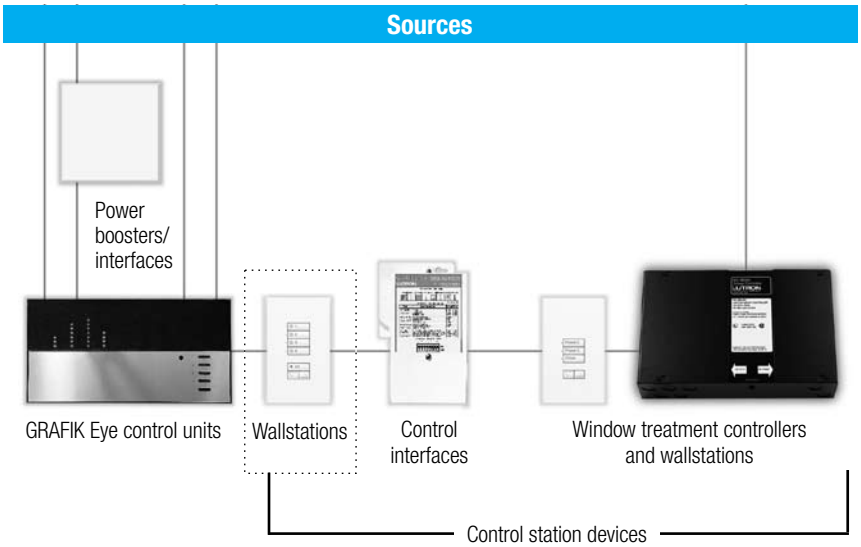
Wallstation features

- Provide additional control points throughout a space
- Up to 16 wallstations and control Interfaces can be added for a total of 24 control points in one system
- seeTouch™ wallstations offer:
  - Easy to use large, rounded buttons
  - User-changeable button and faceplate assemblies which make for easy customisation
  - On-button engraving angled up to the eye for easy reading
  - Backlit buttons for improved clarity in low light conditions

seeTouch pg. 2.10.1 | European Style pg. 2.10.5 | Architectural pg. 2.10.8 | Slim button pg. 2.10.11 | Large button pg. 2.10.12 | Architrave™ pg. 2.10.13

GRAFIK Eye 3000 system map (shown)

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see sections 2.3 and 2.7.



Specifications

- Wallstation and control interface maximums:
  - Per System: 16 (Class 2/PELV) (includes window treatment wallstations)
  - Three from each GRAFIK Eye 3000 Control Unit without external power supply; for Lutron® Power Supply, TU240-15DC-9-BL or TE240-15DC-9-BL see 2.13.1. (Does not apply to GRAFIK Eye 4000)
- Wiring specification & maximums per mystem:
  - GRAFIK Eye 3000: Four PELV (Class 2) conductors: (2) 1.0 mm^2 (#18 AWG) for power wires; plus (1) twisted, shielded 1.0 mm^2 (#22 AWG) pair for control wires (Available from Lutron, GRX-CBL-346S-500, see pg. 2.13.1)
  - GRAFIK Eye 4000: Five PELV (Class 2) conductors: (2) 2.5 mm^2 (#12 AWG) for power wires; (1) twisted, shielded 1.0 mm^2 (#22 AWG) pair for control wires; plus (1) 1.0 mm^2 (#18 AWG) wire for the emergency sense line (Available from Lutron, GRX-CBL-46L, see pg. 2.13.1)
  - Distance: 610 m (2,000'); for other cable distances, see GRAFIK Eye Application Notes available at www.lutron.com
  - Installation: daisy-chain (no home-run wiring)
  - Cable available from Lutron, see pg. 2.13.1
- Power: 12 VDC (From GRAFIK Eye 3000 Series control unit or TU240-15DC-9-BL or TE240-15DC-9-BL, see pg. 2.13.1); 24 VAC (From power panels for GRAFIK Eye 4000 Series)
- Configuration: Integral DIP switches determine function and can be configured in the field

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

seeTouch	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

2-Button Wallstation — SG-2BN-[2, 3, 4]

- Optional functions (can be selected in the field):
  - Turns lighting on (Scene 1) and off
  - Recalls preset light levels for two scenes (9/10 or 13/14)
  - Single partition status determines which GRAFIK Eye control unit(s) operate independently or in combination to reflect status for one moveable wall (two rooms)
  - Panic (Scene 16, lock out GRAFIK Eye manual control)
  - Sequencing (Selects scenes 5-16 sequentially)
  - Individual zone raise/lower
  - Zone lockout
- General engraving option (EGN) shown
- For seeTouch model guide, see section 3.16

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation — SG-4BN-[2, 3, 4]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16)
- Can be mounted with other wallstations in multigang faceplate for 8/12/16 scene option
- No off or fine-tuning of light levels
- General engraving option (EGN) shown
- For seeTouch model guide, see section 3.16

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Scene Wallstation with Off — SG-4NRLN-[2, 3, 4]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off
- General engraving option (EGN) shown
- For seeTouch model guide, see section 3.16

Footnotes, pg. 2.10.2

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 For insert version use I in place of last N in model number. See section 3.16 for more information.
3 PELV (Class 2) control wiring.
4 Counts as 1 of 16 maximum control station devices.

Ordering example

SG-2BN-WH-EGN

Add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs. (Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

seeTouch™	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Scene Wallstation with Off and Raise/Lower

SG-4SN-[2, 3, 4]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off
- Fine-tuning of light levels with master raise/lower buttons
- General engraving option (EGN) shown
- For seeTouch model guide, see section 3.16

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Scene Wallstation with Off, Raise/Lower, and Infrared Receiver

SG-4SIRN-[2, 3, 4]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off from keypad or four-scene wireless remote control (GRX-IT-WH, ordered separately)
- Recalls eight scenes (1-8, 5-12, 9-16, or 13-16/1-4) plus off from eight-scene Wireless Remote Control (GRX-8IT-WH, ordered separately)
- Fine-tuning of light levels from keypad or wireless remote control
- General engraving option (EGN) shown
- For seeTouch model guide, see section 3.16

Footnotes, pg. 2.10.3

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 For insert version use I in place of last N in model number. See section 3.16 for more information.
3 PELV (Class 2) control wiring.
4 Counts as 1 of 16 maximum control station devices.

Ordering example

SG-4SN-WH-EGN

Add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs. (Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

seeTouch	Product	Model	Options

Dimensions

W: 70 mm	(2.75")
H: 116 mm	(4.56")
D: 27 mm	(1.06")[1]

Wallbox:

P/N 241218

W: 50 mm	(2.00")
H: 100 mm	(4.00")
D: 63 mm	(2.50")

4-Scene Wallstation with Off, Raise/Lower, and Infrared Receiver Programming — SG-PRON-[2, 3, 4, 5]

- Enhanced infrared commands for scene programming, preset selection and individual zone control of each control unit from a PDA[2]
- Fine-tuning of light levels from keypad or wireless remote control
- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off from keypad or four-scene wireless remote control (GRX-IT-WH, ordered separately)
- Recalls eight scenes (1-8, 5-12, 9-16, or 13-16/1-4) plus off from eight-scene wireless remote control (GRX-8IT-WH, ordered separately)
- General engraving option (EGN) shown
- For seeTouch model guide, see section 3.16

Dimensions

W: 70 mm	(2.75")
H: 116 mm	(4.56")
D: 27 mm	(1.06")[1]

Wallbox:

P/N 241218

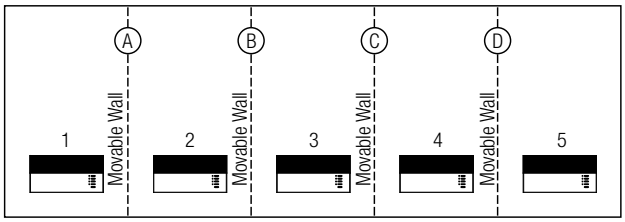
W: 50 mm	(2.00")
H: 100 mm	(4.00")
D: 63 mm	(2.50")

4-Movable Wall Status Wallstation — SG-4PSN-[3, 4, 5]

- Provides four buttons to determine which control unit(s) operate independently or in combination to reflect movable wall status for up to four moveable walls (five rooms)
- Last button resets all control units to independent operation
- General engraving option (EGN) shown
- For seeTouch model guide, see section 3.16

For example:

This button…	Toggles the status of…	To combine control units:
Button 1	Wall A	1 and 2
Button 2	Wall B	2 and 3
Button 3	Wall C	3 and 4
Button 4	Wall D	4 and 5



Dimensions

W: 70 mm	(2.75")
H: 116 mm	(4.56")
D: 27 mm	(1.06")[1]

Wallbox:

P/N 241218

W: 50 mm	(2.00")
H: 100 mm	(4.00")
D: 63 mm	(2.50")

4-Button Master Control Wallstation — SG-4MN-[3, 4, 5]

- Each of four buttons toggles selected control unit(s) between Scene1 and off
- Last button can be all on (Scene 1) or all off for selected control unit(s)
- General engraving option (EGN) shown
- For seeTouch model guide, see section 3.16

Footnotes, pg. 2.10.4

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 Requires a GRX 3500 or a GRX 4500 control unit
3 For insert version use I in place of last N in model number. See section 3.16 for more information.
4 PELV (Class 2) control wiring.
5 Counts as 1 of 16 maximum control station devices.

Ordering example

SG-PRON-WH

Add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs. (Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

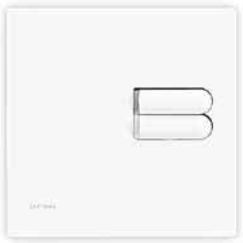
Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

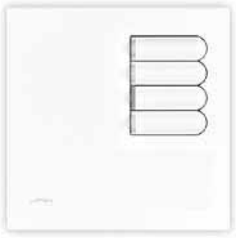
European Style	Product	Model	Options



Dimensions
W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

2-Button Wallstation — EGRX-2B-SL-[2, 3]

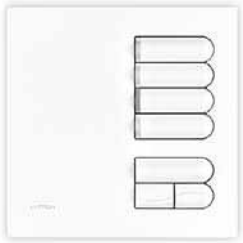
- Optional functions (can be selected in the field):
  - Turns lighting on (Scene 1) and off
  - Recalls preset light levels for two scenes (9/10 or 13/14)
  - Single partition status determines which control unit(s) operate independently or in combination to reflect status for one moveable wall (two rooms)
  - Panic (Scene 16, lock out manual control)
  - Sequencing (Selects Scenes 5-16 sequentially)
  - Individual zone raise/lower
- Mounts in European wallbox (Lutron® P/N 241683)
- On-button and wallplate engraving available



Dimensions
W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

4-Button Wallstation — EGRX-4B-[2, 3]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16)
- Mounts in European wallbox (Lutron P/N 241683)
- On-button and wallplate engraving available



Dimensions
W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

4-Scene Wallstation with Off and Raise/Lower — EGRX-4S-[2, 3]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off
- Fine-tuning of light levels with master raise/lower buttons
- Mounts in European wallbox (Lutron P/N 241683)
- On-button and wallplate engraving available

Footnotes, pg. 2.10.5

1 Depth includes wallplate and backbox. Wallplate depth is 12 mm (0.48"). Minimum wallbox depth is 25 mm.
2 PELV (Class 2) control wiring.
3 Counts as 1 of 16 maximum control station devices.

Ordering example

EGRX-8S-WH

Add colour/finish suffix to model number.

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

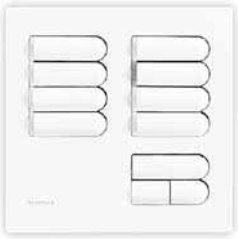
Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

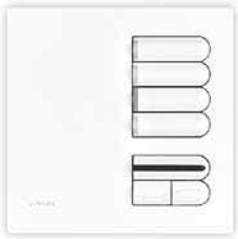
European Style	Product	Model	Options



Dimensions
W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

8-Scene Wallstation with Off and Raise/Lower — EGRX-8S-[2, 3]

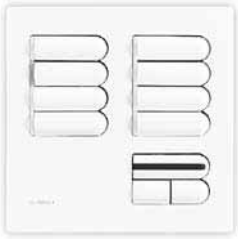
- Recalls preset light levels for eight scenes (1-8, 5-12, 9-16, or 13-16/1-4) plus off
- Fine-tuning of light levels with master raise/lower buttons
- Mounts in European wallbox (Lutron P/N 241683)
- On-button and wallplate engraving available



Dimensions
W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

4-Scene Wallstation with Off, Raise/Lower, and Infrared Receiver — EGRX-4S-IR-[2, 3]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off from keypad or four-scene wireless remote control (GRX-IT-WH, ordered separately)
- Recalls eight scenes (1-8, 5-12, 9-16, or 13-16/1-4) plus off from eight-scene wireless remote control (GRX-8IT-WH, ordered separately)
- Fine-tuning of light levels from keypad or wireless remote control
- Mounts in European wallbox (Lutron P/N 241683)
- On-button and wallplate engraving available



Dimensions
W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

8-Scene Wallstation with Off, Raise/Lower, and Infrared Receiver — EGRX-8S-IR-[2, 3]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off from four-scene wireless remote control (GRX-IT-WH, ordered separately)
- Recalls eight scenes (1-8, 5-12, 9-16, or 13-16/1-4) plus off from keypad or eight-scene wireless remote control (GRX-8IT-WH, ordered separately)
- Fine-tuning of light levels from keypad or wireless remote control
- Mounts in European wallbox (Lutron P/N 241683)
- On-button and wallplate engraving available

Footnotes, pg. 2.10.6

1 Depth includes wallplate and backbox. Wallplate depth is 12 mm (0.48"). Minimum wallbox depth is 25 mm.
2 PELV (Class 2) control wiring.
3 Counts as 1 of 16 maximum control station devices.

Ordering example

EGRX-8S-WH

Add colour/finish suffix to model number.

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

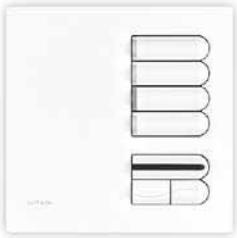
Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

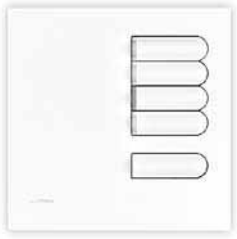
European Style	Product	Model	Options



Dimensions
W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

4-Scene with Off, Raise/Lower, and Infrared Receiver Programming — EGRX-PRO-[2, 3,4]

- Enhanced infrared commands for scene programming, preset selection, and individual zone control of each control unit from a PDA[2]
- Fine-tuning of light levels from keypad or wireless remote control
- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off from keypad or four-scene wireless remote control (GRX-IT-WH, ordered separately)
- Recalls eight scenes (1-8, 5-12, 9-16, or 13-16/1-4) plus off from eight-scene wireless remote control (GRX-8IT-WH, ordered separately)
- Mounts in European wallbox (Lutron® P/N 241683)
- On-button and wallplate engraving available



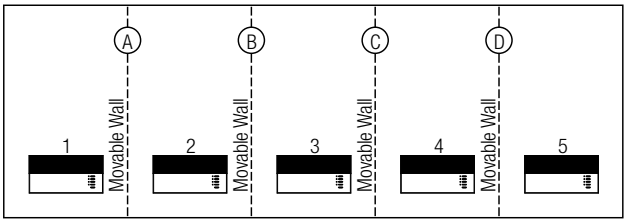
Dimensions
W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

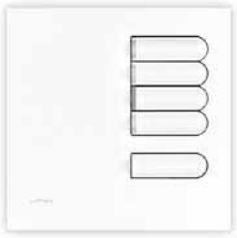
4-Movable Wall Status Wallstation — EGRX-4PS-[3,4]

- Provides four buttons to determine which control unit(s) operate independently or in combination to reflect movable wall status for up to four moveable walls (five rooms)
- Last button resets all control units to independent operation
- Mounts in European wallbox (Lutron P/N 241683)
- On-button and wallplate engraving available

For example:

This button…	Toggles the status of…	To combine Control Units:
Button 1	Wall A	1 and 2
Button 2	Wall B	2 and 3
Button 3	Wall C	3 and 4
Button 4	Wall D	4 and 5





Dimensions
W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

4-Button Master Control Wallstation — EGRX-4M-[3,4]

- Each of four buttons toggles selected control unit(s) between Scene 1 and off
- Last button can be all on (Scene 1) or all off for selected control unit(s)
- Mounts in European wallbox (Lutron P/N 241683)
- On-button and wallplate engraving available

Footnotes, pg. 2.10.7

1 Depth includes wallplate and backbox. Wallplate depth is 12 mm (0.48"). Minimum wallbox depth is 25 mm.
2 Requires a GRX 3500 or GRX 4500 control unit.
3 PELV (Class 2) control wiring.
4 Counts as 1 of 16 maximum control station devices.

Ordering example

EGRX-PRO-WH

Add colour/finish suffix to model number

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Architectural	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 43 mm (1.69")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

2-Button Wallstation with Status Light

NTGRX-2B-SL-[2, 3]

- Optional functions (can be selected in the field):
  - Turns lighting on (Scene 1) and off
  - Recalls preset light levels for two scenes (9/10 or 13/14)
  - Single partition status determines which control unit(s) operate independently or in combination to reflect status for one moveable wall (two rooms)
  - Panic (Scene 16, lock out manual control)
  - Sequencing (Selects Scenes 5-16 sequentially)
  - Individual zone raise/lower

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 43 mm (1.69")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Keyswitch

NTGRX-KS-[2, 3]

- Provides momentary keyswitch control for all functions of the NTGRX-2B-SL- (see above)

Footnotes, pg. 2.10.8

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Counts as 1 of 16 maximum control station devices.

Ordering example

NGTRX-2B-SL-WH

Add colour/finish and engraving suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Architectural	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 29 mm (1.13")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation — NTGRX-4B-[2, 3]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16)
- Can be mounted with other wallstations in multigang faceplate for 8/12/16 scene selection
- No off or fine-tuning of light levels

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 29 mm (1.13")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Scene Wallstation with Off and Raise/Lower — NTGRX-4S-[2, 3]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off
- Fine-tuning of light levels with master raise/lower button

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 29 mm (1.13")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Scene Wallstation with Off and Infrared Receiver — NTGRX-4S-IR-[2, 3]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off from keypad or four-scene wireless remote control (GRX-IT-WH, ordered separately)
- Recalls eight scenes (1-8, 5-12, 9-16, or 13-16/1-4) plus off from eight-scene wireless remote control (GRX-8IT-WH, ordered separately)
- Fine-tuning of light levels from wireless remote control

Footnotes, pg. 2.10.9

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Counts as 1 of 16 maximum control station devices.

Ordering example

NTGRX-4B-WH

Add colour/finish and engraving suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg.2.13.1 for more information.

Architectural	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 29 mm (1.16")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Scene Wallstation with Off, Infrared Receiver, and Switch Input — NTGRX-SI4S-IR-[2,3]

- Recalls preset light levels for four scenes (1-4 or 5-8 based on external contact closure) from keypad or wireless remote control (GRX-IT-WH ordered separately)
- Fine-tuning from wireless remote control only
- Ideal for two-room partitionable spaces
- Allows new scenes to accommodate function of two single rooms reoriented into one larger room

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 29 mm (1.16")[1]

Wallbox:

P/N 241218

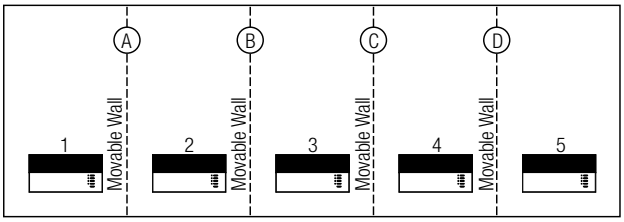
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Movable Wall Status Wallstation — NTGRX-4PS-[2,3]

- Provides four buttons to determine which control unit(s) operate independently or in combination to reflect movable wall status for up to four moveable walls (five rooms)
- Last button resets all control units to independent operation

For example:

This button…	Toggles the status of…	To combine Control Units:
Button 1	Wall A	1 and 2
Button 2	Wall B	2 and 3
Button 3	Wall C	3 and 4
Button 4	Wall D	4 and 5



Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 29 mm (1.16")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Master Control Wallstation — NTGRX-4M-[2,3]

- Each of four buttons toggles selected control unit(s) between Scene 1 and off
- Last button can be all on (Scene 1) or all off for selected control unit(s)

Footnotes, pg. 2.10.10

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Counts as 1 of 16 maximum control station devices.

Ordering example

NTGRX-SI4S-IR-WH

Add colour/finish and engraving suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Slim Button

Dimensions

W: 70 mm (2.75")
H: 114 mm (4.50")
D: 29 mm (1.13")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

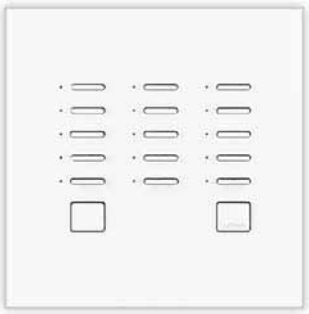
Dimensions

W: 70 mm (2.75")
H: 114 mm (4.50")
D: 29 mm (1.13")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")



Dimensions

W: 114 mm (4.50")
H: 114 mm (4.50")
D: 29 mm (1.16")[1]

Wallbox:

P/N 2 x 241218

W: 100 mm (4.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Product

4-Scene Wallstation with Off and Raise/Lower

NTGRX-KP5-[2, 3]

- Optional functions (Can be selected in the field)
  - Recalls preset light levels for four scenes (1-4 or 6-9) plus off with fine-tuning
    or
  - Recalls five scenes (1-5 or 6-10) plus off with full-on (Scene 16)
- Amber status LEDs standard

9-Scene Wallstation with Off and Raise/Lower

NTGRX-KP10-[2, 3]

- Optional functions (Can be selected in the field)
  - Recalls preset light levels for nine scenes (1-9 or 6-14) plus off with fine-tuning
    or
  - Recalls preset light levels for 10 scenes (1-10 or 6-15) plus off with full-on (Scene 16)
- Amber status LEDs standard

14-Scene Wallstation with Off and Raise/Lower

NTGRX-KP15-[2, 3]

- Optional functions (Can be selected in the field)
  - Recalls preset light levels for Scenes 1-14 plus off with fine-tuning
    or
  - Recalls preset light levels for Scenes 1-15 plus off with full-on (Scene 16)
- Amber status LEDs standard

Footnotes, pg. 2.10.11

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Counts as 1 of 16 maximum control station devices.

Options

Ordering example

NTGRX-KP5-WH

Add colour/finish and engraving suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Large Button	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 114 mm (4.50")
D: 29 mm (1.16")[1]

Wallbox:
P/N 241218
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

5-Scene Wallstation with Off — NTGRX-LB6-[2, 3]

- Recalls preset light levels for five scenes (1-5 or 9-13) plus off
- Amber status LEDs standard

Dimensions

W: 114 mm (4.50")
H: 114 mm (4.50")
D: 29 mm (1.16")[1]

Wallbox:
P/N 2 x 241218
W: 100 mm (4.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

8-Scene Wallstation with Off — NTGRX-LB9-[2, 3]

- Recalls preset light levels for eight scenes (1-8 or 9-16) plus off
- Amber status LEDs standard

Dimensions

W: 70 mm (2.75")
H: 114 mm (4.50")
D: 29 mm (1.16")[1]

Wallbox:
P/N 241218
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Scene Wallstation with Off and Raise/Lower — NTGRX-LB6-RL-[2, 3]

- Recalls preset light levels for three scenes (1-3 or 9-11) plus off with fine-tuning of light levels
- Amber status LEDs standard

Dimensions

W: 114 mm (4.50")
H: 114 mm (4.50")
D: 29 mm (1.16")[1]

Wallbox:
P/N 2 x 241218
W: 100 mm (4.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

6-Scene Wallstation with Off and Raise/Lower — NTGRX-LB9-RL-[2, 3]

- Recalls preset light levels for six scenes (1-6 or 9-14) plus off with fine-tuning of light levels
- Amber status LEDs standard

Footnotes, pg. 2.10.12

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Counts as 1 of 16 maximum control station devices.

Ordering example

NTGRX-LB6-WH

Add colour/finish and engraving suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Architrave™	Product	Model	Options

Dimensions

W: 44 mm (1.75")
H: 114 mm (4.50")
D: 41 mm (1.63")

Wallbox:

P/N 241399

W: 32 mm (1.25")
H: 97 mm (3.80")
D: 70 mm (2.75")

Slim-Button Architrave Wallstation — GRX-4S-DW-[1,2]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off
- Fine-tuning of light levels with master raise/lower button
- Mounts in Lutron®-supplied wallbox (P/N 241399)
- Standard finishes are bright brass (BB) and white (WH)
- Contact Customer Service for other finishes

Dimensions

W: 38 mm (1.50")
H: 131 mm (5.16")
D: 31 mm (1.99")

Wallbox:

P/N 241663

W: 32 mm (1.25")
H: 112 mm (4.40")
D: 70 mm (2.75")

Large-Button Architrave Wallstation — GRX-4SLB-DW-[1,2]

- Recalls preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off
- Fine-tuning of light levels with master raise/lower button
- Mounts in Lutron-supplied wallbox (P/N 241663)
- Standard finishes are bright brass (BB) and white (WH)
- Contact Customer Service for other finishes

Footnotes, pg. 2.10.13

1 PELV (Class 2) control wiring.
2 Counts as 1 of 16 maximum control station devices.
3 Depth includes wallplate and backbox. Wallplate depth is 3 mm (0.13").

Ordering example

GRX-4S-DW-WH

Add colour/finish and engraving suffix to model #

Metal finishes

Ships in 48 hrs.

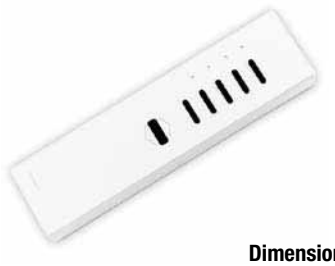
White WH
Bright Brass BB

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Infrared	Product	Model	Options

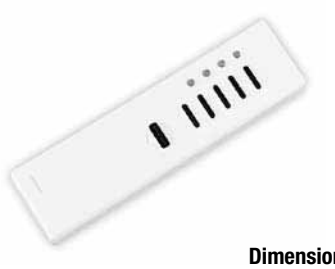


Dimensions

W: 38 mm (1.50")
H: 145 mm (5.69")
D: 22 mm (0.88")

4-Scene Wireless Infrared Remote Control — GRX-IT-WH

- Recalls preset light levels for four scenes plus off (scenes dependent on receiver settings)
- Fine-tuning of light levels with master raise/lower
- 15 m (50') line-of-sight range to receiver
- Does not count as 1 of 16 maximum control station interfaces
- Infrared frequency is 40 kHz
- Available in white (WH) only
- Engraving available. Add -E to end of model; see engraving schedule, pg. 3.17.5

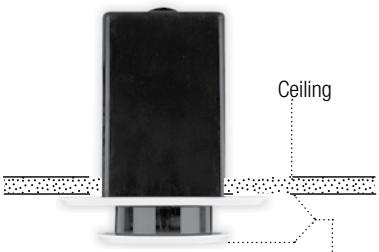


Dimensions

W: 38 mm (1.50")
H: 145 mm (5.69")
D: 22 mm (0.88")

8-Scene Wireless Infrared Remote Control — GRX-8IT-WH

- Recalls preset light levels for eight scenes plus off (scenes dependent on receiver settings)
- Fine-tuning of light levels with master raise/lower
- 15 m (50') line-of-sight range to receiver
- Does not count as 1 of 16 maximum wallstations/control Interfaces
- Infrared frequency is 40 kHz
- Available in white (WH) only
- Engraving available. Add -E to end of model; see engraving schedule, pg. 3.17.5



Dimensions

Diameter: 89 mm (3.50")
Depth: 76 mm (3.00")

Ceiling-Mounted Infrared Receiver — GRX-CIR

- Receives signal from Infrared wireless remote control
- Allows recall of preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off with four-scene wireless remote control (GRX-IT-WH)
- Recalls eight scenes (1-8, 5-12, 9-16, or 13-16/1-4) plus off with eight-scene wireless remote control (GRX-8IT-WH)
- Fine-tuning of light levels with wireless remote control
- 360º reception range, 15 m (50') line-of-sight range from wireless remote control to receiver
- Mounts in 56 mm (2.19") x 56 mm (2.19") collar provided by Lutron
- Available in white (WH) only
- PELV (Class 2) control wiring
- Counts as 1 of 16 maximum control station devices.

Ordering example

GRX-IT-WH
Ships in 48 hrs.

Engraving

Ships in 4-6 weeks.
- See pg. 3.17.5 for engraving schedules.

Ethernet interface

Control interface features

- Coordinate GRAFIK Eye 3000 Series control units with other systems:
  - Contact closures
  - Serial links
  - Infrared
  - Ethernet
- Automate lighting control with the astronomical time clock
- Provide energy savings by using a daylight control and photosensor or by connecting an occupancy sensor to the system
- Programming tools simplify system installation
- Coordinate lighting and controllable window treatments
- Simple on/off entrance controls use standard 2-way wiring

Contact closures pg. 2.12.3

Infrared partition sensor pg. 2.12.5

Theatrical controls pg. 2.12.6

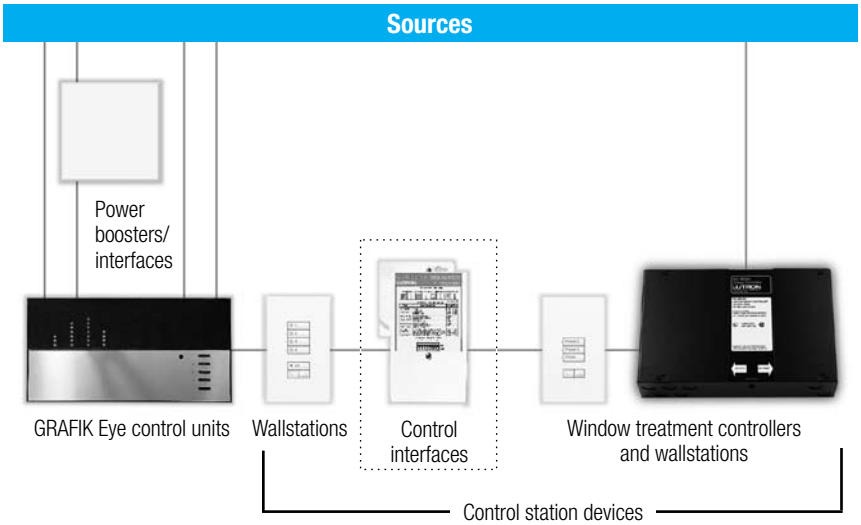
Daylighting sensor pg. 2.12.7

Accessories section 2.13

Wireless interface section 2.14

GRAFIK Eye 3000 system map (shown)

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see sections 2.3 and 2.7.



Specifications

- Wallstation and control interface maximums:
  - Per System: 16 (Class 2/PELV) (includes window treatment wallstations)
  - Three from each GRAFIK 3000 control unit without external power supply; for Lutron® power supply, TU240-15DC-9-BL or TE240-15DC-9-BL, see pg. 2.13.1 (Does not apply to GRAFIK 4000)
- Wiring specification & maximums:
  - GRAFIK Eye 3000: Four PELV (Class 2) conductors: (2) 1.0 mm^2 (#18 AWG) for power wires; plus (1) twisted, shielded 1.00 mm^2 (#22 AWG) pair for control wires (Available from Lutron, GRX-CBL-346S-500, see pg. 2.13.1)
  - GRAFIK Eye 4000: Five PELV (Class2) conductors: (2) 2.5 mm^2 (#12 AWG) for power wires; (1) twisted, shielded 1.0 mm^2 (#22 AWG) pair for control wires; plus (1) 1.0 mm^2 (#18 AWG) wire for the emergency sense line (Available from Lutron, GRX-CBL-46L-500, see pg. 2.13.1)
  - Distance: 610 m (2,000'); for other cable distances, see GRAFIK Eye Application Notes available at www.lutron.com
  - Installation: daisy-chain (no home-run wiring)
- Power: 12 VDC (From GRAFIK 3000 Series control unit or TU240-15DC-9-BL or TE240-15DC-9-BL, see pg. 2.13.1); 24 VAC (From Power Panels for GRAFIK 4000 Series)
- Configuration:
  - Integral DIP switches determine function and can be configured in the field

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Features/functions	Ethernet	Contact closures		Serial links	Infrared
					
	GRX-CI-NWK-E pg. 2.12.3	GRX-AV pg. 2.12.3	GRX-CCO-8 pg. 2.12.3	GRX-CI-RS232 pg. 2.12.4	GRX-IRI pg. 2.12.4
Preset scene control					
Select Scene	●	●		●	●
Scene Status Feedback	●	●		●	
Security/life safety					
Initiate "Panic-on" mode – Selects Scene 16 and locks control unit to prevent manual changes and returns to previous scene when closure is removed		●			
Occupant response					
Inputs turn selected control units on to Scene 1 or off based on occupancy		●			
Sequencing					
Initiate a sequence loop	●	●		●	
Lockout					
Zone Lock – Prevent intensity changes on selected control unit(s)	●	●		●	
Scene Lock – Disables scene buttons on selected control unit(s)	●	●		●	
Partition status					
Return status of movable walls		●			
Scheduling					
Astronomical time clock – 4 schedules with 60 events per schedule					
External time clock – Scene selection through contact closure inputs		●			
Zone control					
Independent zone raise/lower	●				●
Zone on/off status	●		●	●	
Button Feedback	●				
Window treatments					
Open/Close	●		●	●	
Open/Close/Stop	●		●	●	

Product	Model	Options

Dimensions
W: 95.3 mm (3.75")
H: 26.9 mm (1.06")
D: 133.6 mm (5.26")

Ethernet Interface — GRX-CI-NWK-E[1,2]

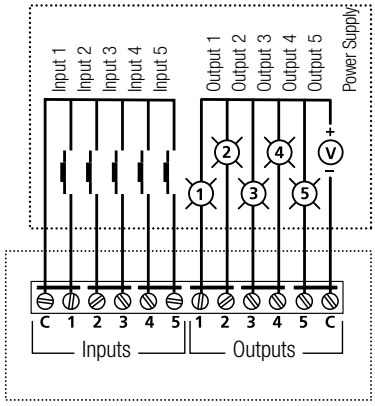
- Integrates control unit(s) with user-supplied PC or A/V equipment (touchscreen) using TCP/IP over Ethernet
- Enables control of scene selection, scene lock, sequencing, zone lock, zone raise/lower
- Can provide status monitoring through button feedback and scene-status updates
- Rack mount option available using LUT-19AV-1U[3]
- A 12-24 VDC external power supply is required; TU240-15DC-9-BL or T240-15DC-9-BL, see page 2.13.1.

Dimensions
W: 127 mm (5.00")
H: 197 mm (7.75")
D: 64 mm (2.50")
Mounts on:
P/N 241496
W: 105 mm (4.13")
H: 105 mm (4.13")
D: 40 mm (1.57")

Contact Closure Interface — GRX-AV[1,2]

- Provides two-way interface between control units and contact closure devices
- Product functions (selected in the field)
  - Recall four scenes (1-4, 5-8, 9-12, or 13-16) plus off
  - Enable/disable panic, scene lockout, or zone lockout modes
  - Turn lights on (Scene 1) or off based on occupancy (control up to five individual rooms), see occupancy sensors, pg. 2.16.1
  - Initiate scene (1-4 or 5-16) sequence loop
  - Inputs determine which control unit(s) operate independently or in combination to reflect partition status for up to five moveable walls (six rooms)
- Five inputs and five outputs
- Inputs and outputs can be momentary or maintained
- Output requires external relay and power supply (30 VDC maximum) by others for contact closure
- Input specification:
  - Input must be dry contact closure or open collector (NPN):
  - On-state saturation voltage less than 2.0 VDC
  - Off-state leakage current less than 10 µA
  - Open circuit voltage 36 VDC maximum
  - Short circuit current 4.0 mA maximum
- Output specification:
  - 38 VDC maximum
  - 200 mA maximum
  - Open collector (NPN) output
  - On-state saturation voltage 1.0 VDC maximum
  - Off-state leakage current 0.1 µA maximum

Customer supplied equipment



Dimensions
W: 146 mm (5.75")
H: 273 mm (10.75")
D: 50 mm (2.00")
Surface mount

Contact Closure Output — GRX-CCO-8[1,2]

- Provides eight dry contact closure outputs
- For integration to third-party controllable window treatments or A/V equipment
- May be set to normally open (NO) or normally closed (NC)
- May be set to momentary or maintained contacts
- Depending on configuration the outputs indicate:
  - Current scene (1-8, 9-16)
  - Zone on/off for eight zones
  - Open/close window treatments (four shades)
  - Open/close/stop window treatments (two shades)
- Output ratings: 0-30 VDC, 1.0 A and 30-42 VDC, 0.5 A

Ordering example
GRX-AV
Ships in 48 hrs.

Footnotes, pg. 2.12.3
1 PELV (Class 2) control wiring.
2 Counts as 1 of 16 maximum control station devices.
3 Holds up to 4 control interface units.

Product	Model	Options

Dimensions

W: 95.3 mm (3.75")
H: 26.9 mm (1.06")
D: 133.6 mm (5.26")

RS-232 Interface — GRX-CI-RS232[1]

- Integrates control units with user-supplied PC or A/V equipment (touchscreen) using RS-232 serial communication
- Enables control of scene selection, scene lock, sequencing, zone lock, zone raise/lower
- Can provide status monitoring through button feedback and scene-status updates
- Must be located within 15 m (50') of RS-232 source
- Rack mount option available using LUT-19AV-1U[2]

Ordering example

GRX-CI-RS232

Ships in 48 hrs.

Dimensions

W: 45 mm (1.75")
H: 105 mm (4.10")
D: 23 mm (0.90")

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Infrared Interface — GRX-IRI[1]

- Integrates control unit(s) with user-supplied infrared transmitter
- Enables control of scene selection and zone raise/lower
- Recalls preset light levels from wireless remote control (GRX-IT-WH or GRX -8IT-WH, ordered separately, see section 2.11)

Footnotes, pg. 2.12.4

1 Counts as one of 16 maximum control station devices.
2 Holds up to 4 control interface units.

Partitioning	Product	Model	Options

Infrared Movable Wall Sensor — GRX-IRPS-WH

- Infrared sensor provides contact closure based on status of sensor
- Can be used with GRX-AV (GRAFIK Eye 3000/4000 Series), pg. 2.12.3 or OMX-AV (Centralised lighting control system), pg. 3.12.3 for partitioning; GRX-AV or OMX-AV ordered separately
- Includes transmitter and receiver; (2 units as shown)
- Requires either TU240-15DC-9-BL or TE240-15DC-9-BL for power, see pg. 2.13.1
- Transmitter and receiver are white
- Fits in 241218 backbox, mounted front side down, on either side of partition wall, near ceiling surface
- Consult factory for additional details when being used with switch input control NTGRX-SI4S-IR, pg. 2.10.10

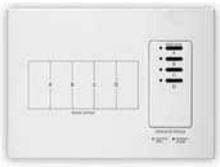
Dimensions

W: 161 mm (6.32")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 3 x 241218

W: 150 mm (6.00")
H: 100 mm (4.00")
D: 63 mm (2.50")



Dimensions

W: 161 mm (6.32")
H: 116 mm (4.56")
D: 29 mm (1.13")[2]

Wallbox:

P/N 3 x 241218

W: 150 mm (6.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Movable Wall Status Wallstations

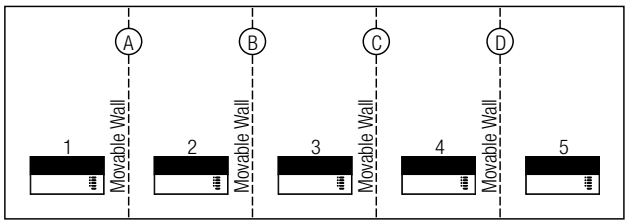
seeTouch™ — **SG-4PS-CF-**[3,4]

Architectural-Style — **NTGRX-4PS-CF-**[4]

- Provides four buttons to determine which GRAFIK Eye control unit(s) operate independently or in combination to reflect partition status for up to four movable walls
- Wallplate custom-engraved to match your floorplan
- Wallstations are available with control for 2-12 movable walls, (contact Lutron® customer service for more information)

For example:

This button…	Toggles the status of…	To combine control units:
Button 1	Wall A	1 and 2
Button 2	Wall B	2 and 3
Button 3	Wall C	3 and 4
Button 4	Wall D	4 and 5



Ordering example

SG-4PS-CF-WH

Add colour/finish suffix to model #

For choices see: www.lutron.com/seetouch

Infrared movable wall sensor

Ships in 1 week.

Movable wall status wallstations

Ships in 4-6 weeks.

- seeTouch colour offering, pg. 1.3.1.
- Architectural colour offering, pg. 2.91.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Footnotes, pg. 2.12.5

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
3 For insert version use I in place of last N in model number. See section 3.16 for more information.
4 Counts as 1 of 16 maximum control station devices.

Theatrical	Product	Model

Dimensions

W: 127 mm (5.00")
H: 197 mm (7.75")
D: 64 mm (2.50")

Mounts on:

P/N 241496

W: 105 mm (4.13")
H: 105 mm (4.13")
D: 40 mm (1.57")

DMX512 Interface — LUT-DMX[2]

- Converts Control Unit intensities to DMX512 Output
- Use to control:
  - Fibre optic lighting
  - LED-based lamps
  - Strobe lights
  - Fog machines
  - Moving fixtures
  - Animated characters
- DMX–send (output DMX intensities) only
- Visit www.lutron.com/onespec/applications/theatrical/details/lutdmx.html for more information

Multi-Channel Theatrical Console

12 Channels — LTC-12

24 Channels — LTC-24

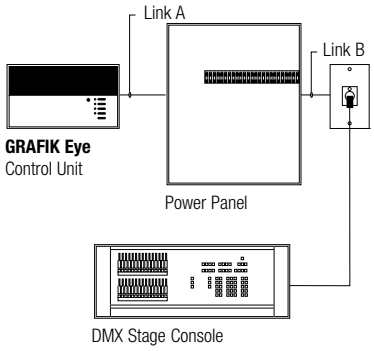
- Two-scene preset mode with 12 or 24 channels
- Dipless crossfade between manual scenes
- Preset scenes may be "piled on" in any combination
- Preview mode allows cues to be checked
- Preset memories: 48 or 96
- DMX Output: 5-Pin XLR
- Analog output: (2 each) 8-Pin CJ Male or (1 each) 27-Pin CJ Male
- Other models available, contact Lutron

Dimensions
12 Channel

W: 391 mm (15.41")
H: 73 mm (2.87")
D: 257 mm (10.13")

Dimensions
24 Channel

W: 644 mm (25.38")
H: 73 mm (2.87")
D: 257 mm (10.13")



Power Panel Option

- The 2Link™ power panel option provides two distinct control links inside each power panel.
- Each link — Link A and Link B — is capable of operating on any one of these systems – Lutron's GRAFIK Eye 4000, Lutron's centralised lighting control system, or USITT DMX512 protocol.
- Each system or protocol is unique, but the power panel is designed to automatically detect which one is present and operate accordingly.
- When ordering the appropriate panel, ask for the 2Link option.

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 51 mm (2.00")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Theatrical Receptacles[2]

- Receptacle provides standard pinout for DMX512 theatrical protocol
- PELV (Class 2) device; barriers must be provided when line-voltage and Class 2 controls are ganged together in the same wallbox
- DMX cable available from Lutron® P/N GRX-CBL-DMX

Stageboard Receptacle — NT-DMXJ-IN-WH

- Five-pin XLR-style male jack for connection to a theatrical stage board

Fixture Equipment Receptacle — NT-DMXJ-OUT-WH

- Five-pin XLR-style female jack for connecting LUT-DMX to a theatrical fixture equipment

Footnotes, pg. 2.12.6

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.

Daylighting | **Product** | **Model** | **Options**

Dimensions

W:	227 mm	(8.94”)
H:	116 mm	(4.56”)
D:	57 mm	(2.25”)

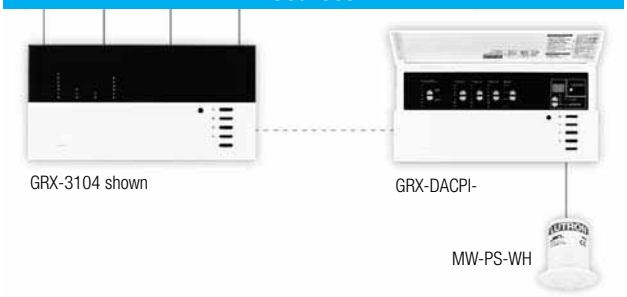
Wallbox:
P/N 241400

W:	200 mm	(8.00”)
H:	95 mm	(3.75”)
D:	75 mm	(3.00”)

Daylighting Control — GRX-DACPI-

- Automatically selects preset scenes in response to ambient daylight
- Enforce option assures photosensor overrides manual control for energy savings
- Use up to three Lutron® photosensors (MW-PS-WH) in parallel or one 0-10 V photosensor by others
  NOTE: Photosensors ordered separately (see next page)
- PELV (Class 2) control wiring
- Counts as 1 of 16 maximum wallstations/control interfaces

Sources



Ordering example

GRX-DACPI-T-WH

Add cover option and colour/finish suffix to model #

Cover options

Opaque A

Cover and base will match

Translucent Black T

Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

- Matt cover options: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg. 1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg. 1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Product	Model	Options

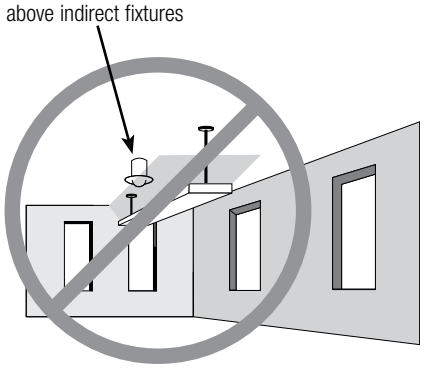
Dimensions
Diameter: 66 mm (2.59")
Depth: 55 mm (2.16")
Ceiling mounted; 50 mm (2.16") diameter bracket (Lutron supplied)

Photosensors:

- The notch on the photosensor defines the viewing direction
- Place photosensor so its viewing area does not extend out of the window
- Do not position the photosensor in the well of a skylight or above indirect fixtures
- Ensure the view of the photosensor is not obstructed

Mounting considerations

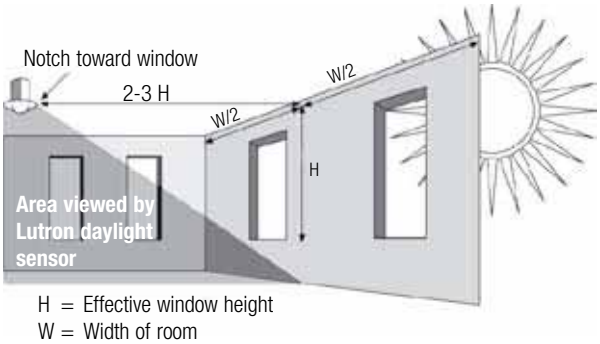
Do not position photosensor above indirect fixtures



microPS™ Ceiling-Mounted Photosensor — MW-PS-WH

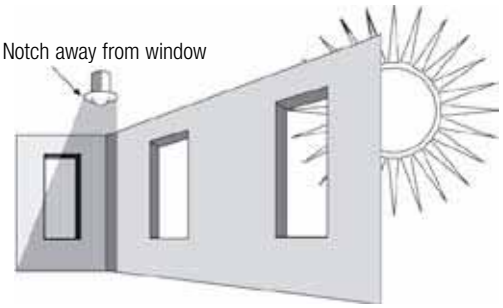
- Responds to daylight and automatically lowers/adjusts light levels
- Linear response from 0 to 500 footcandles
- Easily calibrated at OMX-DACPI
- Available in white (WH) only
- Does not count as one of wallstations/control interfaces

Photosensor location for average size area

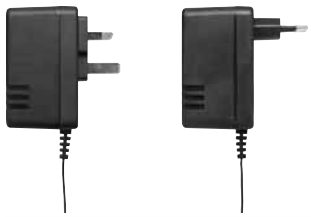


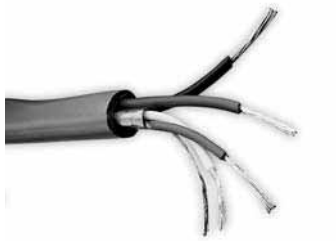
H = Effective window height
W = Width of room

Photosensor location for narrow area



Ordering example
MW-PS-WH





Accessories	Product		Model
Lockable Covers	Single-gang		GRX-1GLC
	Two-gang		GRX-2GLC
	Three-gang		GRX-3GLC
	Four-gang		GRX-4GLC

- Prevents tampering with GRAFIK Eye control units or wallstations
- Permits infrared operation
- Translucent smoked grey
- Cover slides left or right

Replacement Covers	Two-gang (AU models only)	GRX-2GRC-
	Three-gang (AU models only)	GRX-3GRC-
	Four-gang (Both AU and CE models)	GRX-4GRC-

- See section 1.3 or section 1.4 for cover options and base colours.
- For 230 V applications, all GRAFIK Eye 3000 Series control units are four-gang

External Power Supplies		
	UK plug style	TU240-15DC-9-BL
	European plug style	TE240-15DC-9-BL
GRAFIK Eye 3000 Low Voltage Cable[1,2]		
	150 m (500') spool	GRX-CBL-346S-500 (non-plenum) GRX-PCBL-346S-500 (plenum)

- Four PELV (Class 2) conductors: (2) 1.0 mm^2 (#18 AWG) for power wires; plus (1) twisted, shielded 1.00 mm^2 (#22 AWG) pair for control wires

GRAFIK Eye 4000, Centralised Lighting Control System[1,3]		
	75 m (250') spool	GRX-CBL-46L-250 (non-plenum) GRX-PCBL-46L-250 (plenum)
	150 m (500') spool	GRX-CBL-46L-500 (non-plenum) GRX-PCBL-46L-500 (plenum)

- Five PELV (Class 2) conductors: (2) 2.5 mm^2 (#12 AWG) for power wires; (1) twisted, shielded 1.00 mm^2 (#22 AWG) pair for control wires; plus (1) 1.00 mm^2 (#18 AWG) wire for the emergency sense line

Footnotes, pg. 2.13.1

1 For information on cable size and distance, see "Application Note W14" on http://www.lutron.com/onespec/cutsheets/appnotes/grx/grxwire.pdf.

2 See the application note on pg. 2.16.3 for more information.

3 See the application note on pg. 2.16.4 for more information.

Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 42 mm (1.67")[1]

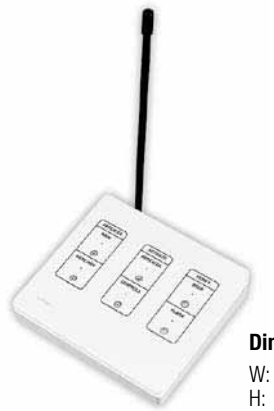
Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

RF/GRAFIK Eye Interface — RB-GRXI-

- Allows GRAFIK Eye preset lighting controls to be controlled by radio frequency
- GRAFIK Eye preset lighting scenes can be selected from any RF Master Control in the system
- Use one interface per room controlled by a GRAFIK Eye preset lighting control; do not link to multiple GRAFIK Eye Control Units in different rooms



Dimensions

W: 91 mm (3.57")
H: 82 mm (3.23")
D: 25 mm (0.96")

RF Signal Repeater — RB-REP-_-WH

- Required for system communication
- System communicates at 434 MHz
- System components must be within a 10 metre radius of the repeater
- For more information, contact Lutron®

RBMC-10TRL shown

Dimensions

W: 91 mm (3.57")
H: 82 mm (3.23")
D: 25 mm (0.96")

Master Controls

Tabletop — RBMC-5TRL- RBMC-10TRL- RBMC-15TRL-

Cordless — RBMC-10CRL-

Ordering example

RBMC-10TRL-UK-WH

Ships in 48 hours.

- Contact customer service about colours/finishes and customisation.

Plug styles

United Kingdom	UK
Europe	EU

Matt finishes

White	WH
Black	BL

Footnotes, pg. 2.14.1

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").

Sivoia QED interface

Window treatment controllers and wallstations

- Used to incorporate Sivoia QED™ and AC motorised blinds, projection screens, and curtains into scenes, or control independently from GRAFIK Eye control units or seeTouch™ wallstations
- Up to total of 8 window treatment controllers (Sivoia QED interfaces plus AC motor group controllers) can be in one system with 8 GRAFIK Eye control units and 16 control station devices (includes window treatment wallstations)
- Requires a dedicated zone on the GRAFIK Eye control unit for each independent window treatment, screen, roller blind, or curtain zone

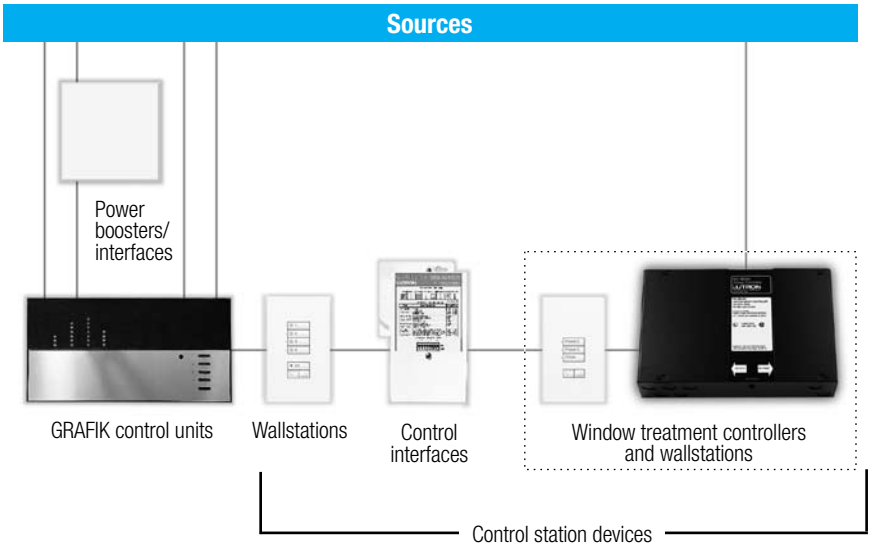
AC motor group controller

GRAFIK EYE 3000 system map (shown)

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see sections 2.3 and 2.7.

Source

Controllable window treatments



Specifications

GRAFIK Eye 3000/4000 Sivoia QED interface (SG-SVCN)

- Power: 24 VAC (Supplied by Sivoia QED electronic drive unit)
- Wiring Specifications: Connects to both GRAFIK and Sivoia QED communication links:
  - to GRAFIK Eye 3000 Series: Four PELV (Class 2) conductors: (2) 1.0 mm^2 (#18 AWG) for power wires; plus (1) twisted, shielded 1.0 mm^2 (#22 AWG) pair for control wires (Available from Lutron®, GRX-CBL-346S-500, see pg. 2.13.1)
  - to GRAFIK Eye 4000 Series: Five PELV (Class 2) conductors: (2) 2.5 mm^2 (#12 AWG) for power wires; (1) twisted, shielded 1.0 mm^2 (#22 AWG) pair for control wires; plus (1) 1.0 mm^2 (#18AWG) wire for the emergency sense line (Available from Lutron GRX-CBL-46L, see pg. 2.13.1)
  - to Sivoia QED EDU: (3) 1.0 mm^2 (#18 AWG) [24 VAC, plus earth ground] and (1) twisted, shielded pair 1.0 mm^2 (#22 AWG)
- Mounting: 241218; no derating required when multiganged AC motor group controller (GRX-4M-GC-CE)
- Power: 230 VAC, 50-60 Hz
- Channel capacity: 4 channels each at 5 A, 400W motor load per channel at 230 VAC; 10 A total input current
- Mounting: Must be accessible for programming and setup
  - Wall-mounted; allow 114 mm (4.5") between group controllers when mounting multiple units
  - Unit's relays will click in normal use; mount where this is acceptable

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Controllers and Interfaces	Source	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Sivoia QED Interface — SG-SVCN-[2, 3,4]

- Requires a dedicated zone on GRAFIK Eye control unit for each Sivoia QED zone.
- Provides programming and control of one group of Sivoia QED electronic drive units (EDUs); one SG-SVCN needed per group of Sivoia QED EDUs (up to 96) moving together.
- Provides capability to incorporate Sivoia QED into lighting scenes.
- Sivoia QED zones may be set to Open, Close, Preset 1, Preset 2, Preset 3, or Unaffected in each and every lighting scene, including the Off scene.
- Can control Sivoia QED independent of lighting scenes.
- Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement.
- Pressing Preset 1, 2, or 3 once will cause the window treatments to move to that preset level; if that Preset button is pressed again while the window treatments are moving, the window treatments will stop.
- Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button again while the window treatments are closing will stop their movement.
- Pressing the Raise/Lower buttons will cause the window treatments to Open/Close while the button is pressed.
- The LEDs next to each button are used during programming and provide feedback of the current Sivoia QED preset.
- Interfaces the GRAFIK Eye link to the Sivoia QED link, see wiring diagram, pgs. 2.3.1 and 2.7.1.
- For seeTouch model guide, see section 3.16.

Dimensions

W: 305 mm (12.00")
H: 200 mm (7.90")
D: 70 mm (2.75")[1]

Surface mount

AC Motor Group Controller — GRX-4M-GC-CE[3]

- Requires a dedicated zone on GRAFIK Eye control unit for each channel in group controller.
- 4 channels each at 5 A, 400W motor load per channel at 230 VAC; 10 A total input current.
- Provides capability to incorporate AC motorised window treatments or projection screens into lighting scenes.
- Window treatment zones may be set to Open, Close, or Unaffected for each and every lighting scene, including the Off scene.
- Can control AC motorised window treatments independent of lighting scenes.
- Provides dry contact closure inputs for control by low-voltage, dry contact closure devices in addition to communications link.
- Provides Open, Close, and Stop terminals for contact closure input; stop function may also be accomplished by applying Open and Close simultaneously.
- Provides LED indication of last position of AC window treatments (Open, Close, Stop).
- Integrates seamlessly with GRAFIK Eye 3000/4000 controls units; wires directly into GRAFIK Eye communications link.
- Separates low voltage and line voltage wiring for ease of installation.

Footnotes, pg. 2.15.2

1 Depth includes wallplate and backbox. Wallplate depth is 12 mm (0.48").
2 PELV (Class 2) control wiring.
3 Counts as 1 of 8 maximum window treatment devices.
4 For insert version use I in place of the last N in model number. See section 3.16 for more information.

Ordering example

SG-SVCN-WH

Add colour/finish and engraving suffix to model #.

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs. (Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.12.1 for more information.

Window Treatment Wallstations

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

2-Button Window Treatment Wallstation — SG-2WN-[2, 3]

- Use with Sivoia QED™ Interface (SG-SVCN) or AC motor group controller (GRX-4M-GC-CE), see pg. 2.15.2.
- Used to control one or more window treatment zones simultaneously on GRAFIK Eye 3000/4000 control units.
- Can control Sivoia QED and AC motorised window treatments.
- Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement.
- Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button again will stop their movement.
- Standard text engraving option (E01) shown.
- For seeTouch™ model guide, see section 3.16.

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Button Window Treatment Wallstation — SG-3WN-[2, 3]

- Use with Sivoia QED Interface (SG-SVCN) or AC motor group controller Controller (GRX-4M-GC-CE), see pg. 2.15.2.
- Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement.
- Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button again will stop their movement.
- Pressing Stop will stop the movement of the window treatments.
- Standard text engraving option (E01) shown.
- For seeTouch model guide, see section 3.16.

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Button Window Treatment Wallstation with Raise/Lower — SG-3WRLN-[2, 3]

- Use with Sivoia QED interface (SG-SVCN) or AC motor group controller (GRX-4M-GC-CE), see pg. 2.15.2.
- Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement.
- Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button again will stop their movement.
- Pressing Stop will stop the movement of the window treatments.
- Pressing and holding the Raise/Lower buttons will cause the window treatment to open/close to a new position.
- Standard text engraving option (E01) shown.
- For seeTouch model guide, see section 3.16.

Footnotes, pg. 2.15.3

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 For insert version use I in place of last N in model number. See section 3.16 for more information.
3 Counts as 1 of 16 maximum control station devices.

Options

Ordering example

SG-2WN-WH-E01

Add colour/finish and engraving suffix to model #.

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs.
(Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.12.1 for more information.

Window Treatment Wallstations	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Button Dual Window Treatment Wallstation — SG-3WDN-[2, 3]

- Use with Sivoia QED Interface (SG-SVCN) or AC motor group controller (GRX-4M-GC-CE), see pg. 2.15.2.
- Used to control one or more window treatment zones simultaneously on GRAFIK Eye 3000/4000 Control Units.
- Provides control for two separate groups of window treatments from one wallstation.
- Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement.
- Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button again will stop their movement.
- Pressing Stop will stop the movement of the window treatments.
- Standard text engraving option (E01) shown.
- For seeTouch model guide, see section 3.16.

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

5-Button Preset Sivoia QED Wallstation with Raise/Lower — SG-5WRLN-[2, 3]

- NOTE: Only for use with Sivoia QED electronic drive units (EDUs).
- Used to simultaneously control one or more zones of Sivoia QED controllable window treatments from a GRAFIK Eye 3000/4000 control unit.
- LEDs provide feedback of the current Sivoia QED preset.
- Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement.
- Pressing Preset 1, 2, or 3 once will cause the window treatments to move to that preset level; if that Preset button is pressed again while the window treatments are moving, the window treatments will stop.
- Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button again will stop their movement.
- Pressing and holding the Raise/Lower buttons will cause the window treatment to open/close to a new position.
- Standard text engraving option (E01) shown.
- For seeTouch model guide, see section 3.16.

Footnotes, pg. 2.15.4

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 For insert version use I in place of last N in model number. See section 3.16 for more information.
3 Counts as 1 of 16 maximum control station devices.

Ordering example

SG-3WDN-WH-E01

Add colour/finish and engraving suffix to model #.

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs.
(Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

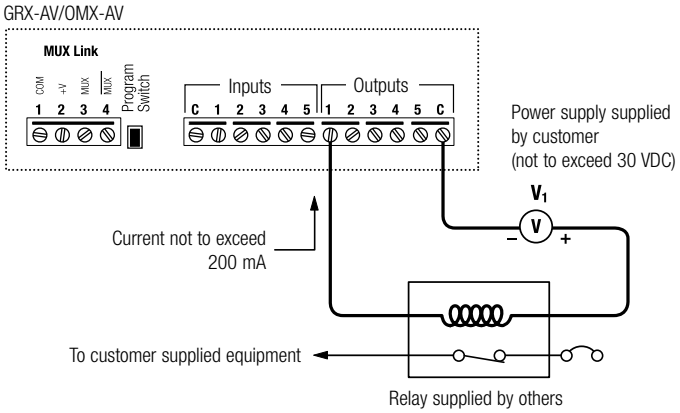
- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.12.1 for more information.

Interfacing other equipment with GRX-AV/OMX-AV

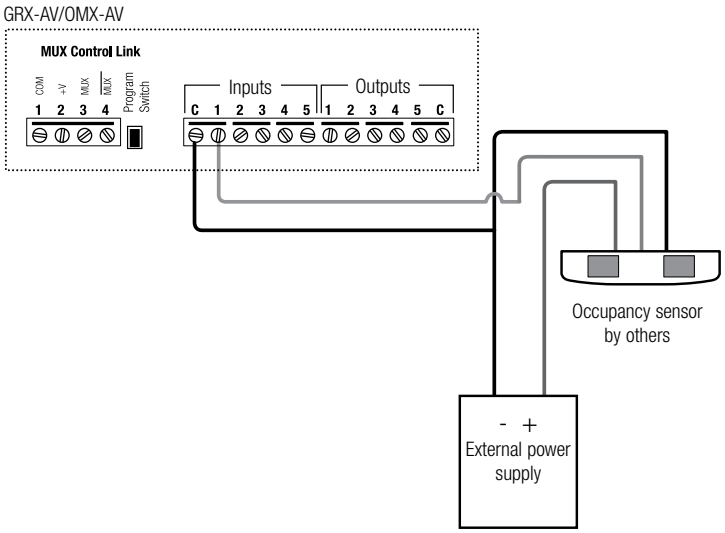
The ability to provide output closures from a system to interface with other equipment (A/V, security systems, building management, etc.) can be accomplished using a GRX-AV/OMX-AV contact closure interface. Outputs are open collector transistor outputs that sink current only. Refer to the diagram at right for set up.



Occupancy sensors by others

The ability to turn lights on when a room or space is entered and off when that space is unoccupied can be accomplished with an occupant sensor with a low voltage contact and a GRX-AV/OMX-AV.

The occupant sensor should provide maintained dry-contact closures to the GRX-AV/OMX-AV. One GRX-AV/OMX-AV can accept up to five occupant sensor inputs to control up to five different rooms or spaces.



Using the unaffected feature for individual zone control

Individual zone control from a second location can be accomplished through the use of an scene selector control, NTGRX-4S, or wireless remote control, GRX-8IT-WH, and the Unaffected feature of a control unit. GRAFIK Eye control unit zones can be set to-be “Unaffected” when a scene is selected. The Unaffected zone’s light levels remain unchanged when the new specified scene is selected, and the Unaffected zone(s) does not respond to master Raise/Lower commands. Several zones can be set up as Unaffected in a scene.

Function notes

- Each Scene (5-8) should be set up to have one zone adjustable; all others should be set up as Unaffected.
- Set the Fade Time to approximately one minute to avoid any sudden jumps in light intensity.
- To adjust an individual zone, press the corresponding scene button (5-8) on the NTGRX-4S or GRX-8IT-WH, and then use the master Raise/Lower button to fine-tune that zone. All zones set as Unaffected will not respond to the master Raise/Lower function, i.e., the Unaffected zone(s) light level will remain unchanged.

Operation

By pressing any of the Scene 1-4 buttons, the user gets four standard presets. By pressing any of the Scene 5-8 buttons, the user gets individual control of a zone. Once the Scene 5-8 button is pressed, the zone of lights can be adjusted using the Raise/Lower button, and the other zones will be unaffected. This series of events can be done one after the other to individually adjust all four zones.

Using electronic low voltage transformers with leading edge dimmers

Stating that an electronic low voltage transformer is compatible with leading edge dimmers is a very subjective statement. In virtually all cases the light source responds to the dimmer, and from a lighting viewpoint the two are compatible. However, other symptoms such as transformer noise, lamp noise, dimmer noise, and RF interference influence the end user's view of what is acceptable. Factors ranging from dimmer, transformer, and lamp design (or manufacture) to installation, placement, and application influence these symptoms. In many situations there is no end user compatibility issue; however, there have been instances where the various factors have combined unfavourably.

To obtain the best performance out of ANY electronic low voltage transformer, Lutron® recommends using a trailing edge dimmer (NTGRX-ELVI interface plus a GRAFIK Eye 3000 or a GRAFIK Integrale™).

In situations where using an electronic low voltage interface or GRAFIK Integrale is prohibitive Lutron has introduced an electronic low voltage transformer line to reduce end user compatibility issues.

Dimensions
L: 123 mm (4.84")
W: 38 mm (1.50")
H: 30 mm (1.18")

60 Watt Electronic Low Voltage Transformer

Terminal blocks on primary and secondary	**ELVXF-60-T10-CE**
One pair of leads on the secondary	**ELVXF-60-L11-CE**
Two pairs of leads (on the primary and secondary)	**ELVXF-60-L12-CE**

- Input Power: 230-240 VAC ± 10% 50/60 Hz, at 60 W, 0.28 A
- Output Power: 11.7 VAC 35 kHz, 10-60 W, SELV-Equivalent
- Short-circuit, thermal, and overload protection with self-resetting capabilities built in

Dimensions
L: 150 mm (5.91")
W: 42 mm (1.65")
H: 32 mm (1.26")

60 Watt Electronic Low Voltage Transformer

Terminal blocks on primary and secondary	**ELVXF-60-T20-CE**

- Loop-in/Loop-out terminals on the primary
- Three secondary terminals
- Input Power: 230-240 VAC ± 10% 50/60 Hz, at 60 W, 0.28 A
- Output Power: 11.7 VAC 35 kHz, 10-60 W, SELV-Equivalent
- Short-circuit, thermal, and overload protection with self-resetting capabilities built in

Dimensions
L: 150 mm (5.91")
W: 42 mm (1.65")
H: 32 mm (1.26")

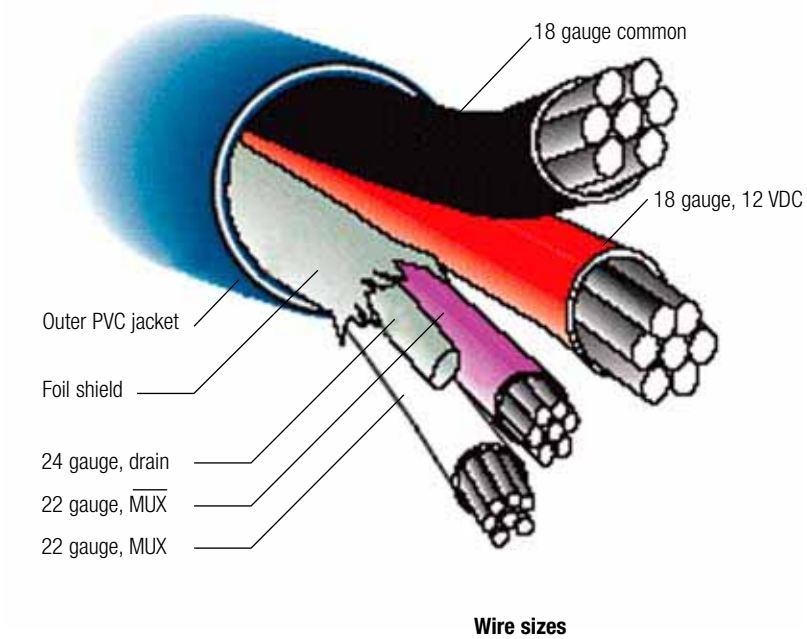
105 Watt Electronic Low Voltage Transformer

Terminal blocks on primary and secondary	**ELVXF-105-T20-CE**
One pair of leads on the primary	**ELVXF-105-L23-CE**

- Loop-in/Loop-out terminals on the primary
- Three secondary terminals
- Input Power: 230-240 VAC ± 10% 50/60 Hz, at 105 W, 0.45 A
- Output Power: 11.7 VAC 35 kHz, 36-105 W, SELV-Equivalent
- Short-circuit, thermal, and overload protection with self-resetting capabilities built in

4-Conductor Cable

GRX-CBL-346S



Wire sizes

mm²	AWG	Ohms/500 metres	Ohms/1,000 ft
0.823	18	10.7	6.5
0.326	22	27.0	16.4
0.205	24	43.0	26.2

Insulation

- 2,500 VAC dielectric strength between any one (1) layer of insulation
- 4,000 VAC dielectric strength between any two (2) layers of insulation

Capacitance

- Conductor to shield - 156 pF/m (48 pF/ft) maximum
- Conductor to conductor - 80 pF/m (25 pF/ft) maximum

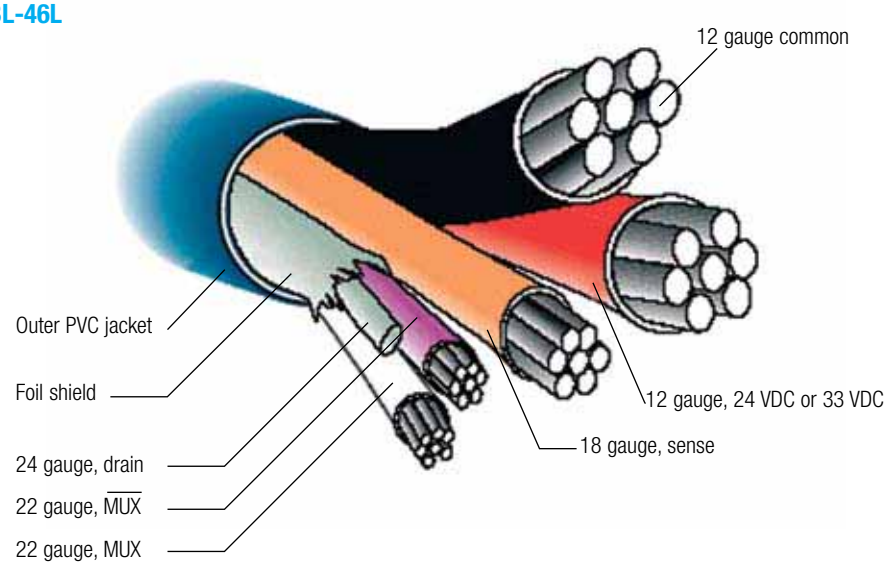
The two 0.326 mm² (22 AWG) wires are a twisted pair and must be completely covered by a foil shield with a 0.205 mm² (24 AWG) drain wire on the inner side of the shield. The number of twists should be greater than 12 per metre or 4 per foot.

Specification tradeoffs

1. The specifications shown on these pages will guarantee that the supply voltage and data lines will provide appropriate signal levels at distances up to 610 metres or 2,000 feet.
2. Using cable with smaller wire sizes will result in larger voltage drops on long wiring runs. As a result, the maximum wiring length rating will be less than 610 metres or 2,000 feet. For example, on the GRAFIK Eye 4000, GRAFIK 5000™, GRAFIK 6000™, and GRAFIK 7000™, the maximum voltage drop allowed on the supply lines is 12 VDC. The maximum supply current on a fully loaded supply is 1.8 A peak. When calculating total drop, the length of wire must include both the supply and return lines.
3. Using cable with higher capacitance will result in signal degradation over long distances. The capacitance per unit length may go up proportionately with the reduction in wire length. For example, if the total length of wire is reduced by half, the capacitance per unit length of the cable can be doubled.

5-Conductor Cable

GRX-CBL-46L



Wire sizes

mm^2	AWG	Ohms/500 metres	Ohms/1,000 ft
3.3	12	2.7	1.6
0.823	18	10.7	6.5
0.326	22	27.0	16.4
0.205	24	43.0	26.2

Insulation

- 2,500 VAC dielectric strength between any one (1) layer of insulation
- 4,000 VAC dielectric strength between any two (2) layers of insulation

Capacitance

- Conductor to shield - 156 pF/m (48 pF/ft) maximum
- Conductor to conductor - 80 pF/m (25 pF/ft) maximum

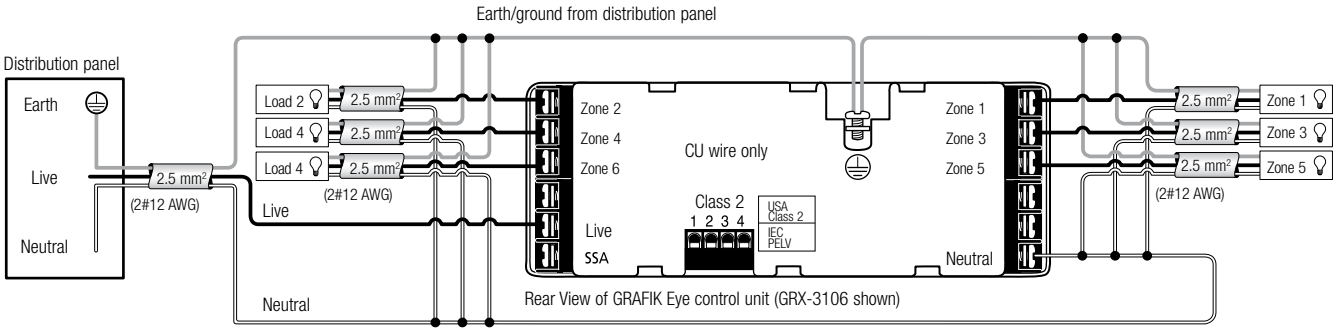
The two 0.326 mm^2 (22 AWG) wires are a twisted pair and must be completely covered by a foil shield with a 0.205 mm^2 (24 AWG) drain wire on the inner side of the shield. The number of twists should be greater than 12 per metre or 4 per foot.

Specification tradeoffs

1. The specifications shown on these pages will guarantee that the supply voltage and data lines will provide appropriate signal levels at distances up to 610 metres or 2,000 feet.
2. Using cable with smaller wire sizes will result in larger voltage drops on long wiring runs. As a result, the maximum wiring length rating will be less than 610 metres or 2,000 feet. For example, on the GRAFIK Eye 4000, GRAFIK 5000TM, GRAFIK 6000TM, and GRAFIK 7000TM, the maximum voltage drop allowed on the supply lines is 12 VDC. The maximum supply current on a fully loaded supply is 1.8 A peak. When calculating total drop, the length of wire must include both the supply and return lines.
3. Using cable with higher capacitance will result in signal degradation over long distances. The capacitance per unit length may go up proportionately with the reduction in wire length. For example, if the total length of wire is reduced by half, the capacitance per unit length of the cable can be doubled.

Wiring diagram #1

GRAFIK Eye 3000 series
Control unit power and load wiring

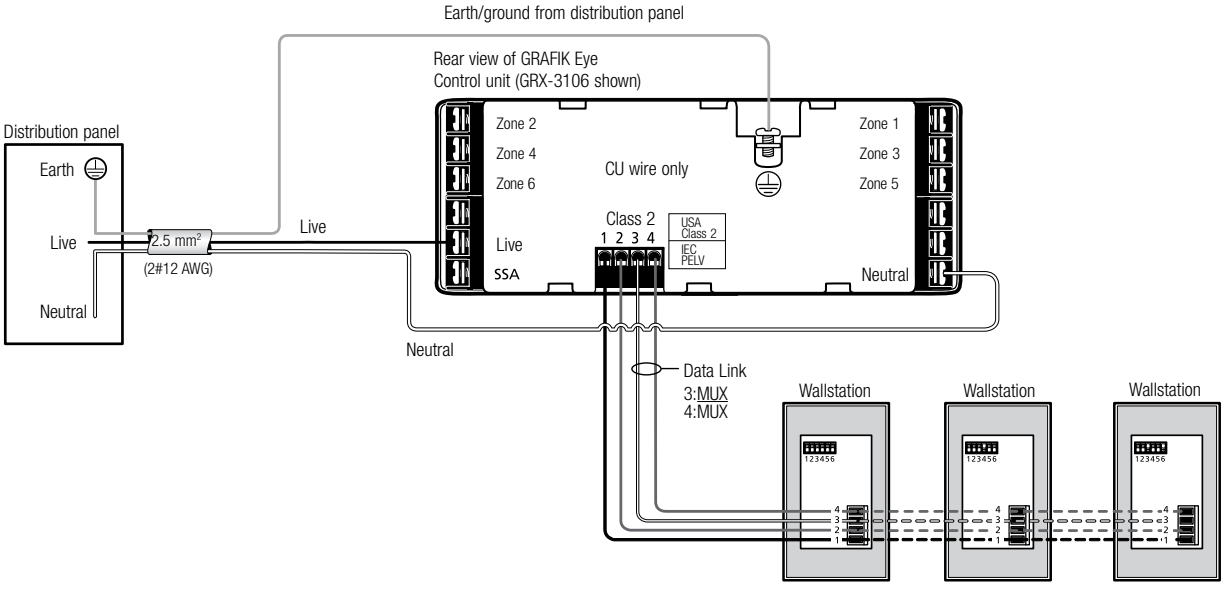


Notes:

1. Each line voltage terminal can accept up to (2) 2.5 mm² (#12 AWG) wires.
2. Each PELV (Class 2) terminal can accept up to (2) 1.0 mm² (#18 AWG) wires.
3. For load side emergency transfer wiring, see Application Notes, available at www.lutron.com.

Wiring diagram #2

GRAFIK Eye 3000 series
Control unit power to wallstation wiring

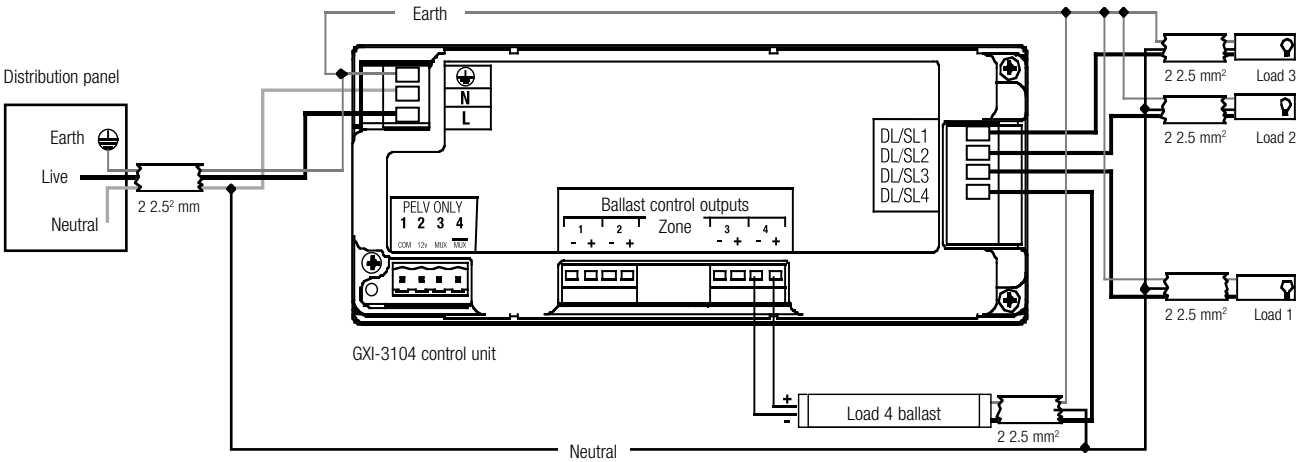


Notes:

1. Each control unit can power up to three PELV (Class 2) wallstations/control interfaces. If more than three need to be connected to one control unit, install an external power supply as shown in wiring diagram #5.
2 PELV (Class 2) cable (GRX-CBL-346S-500) is available from Lutron®.

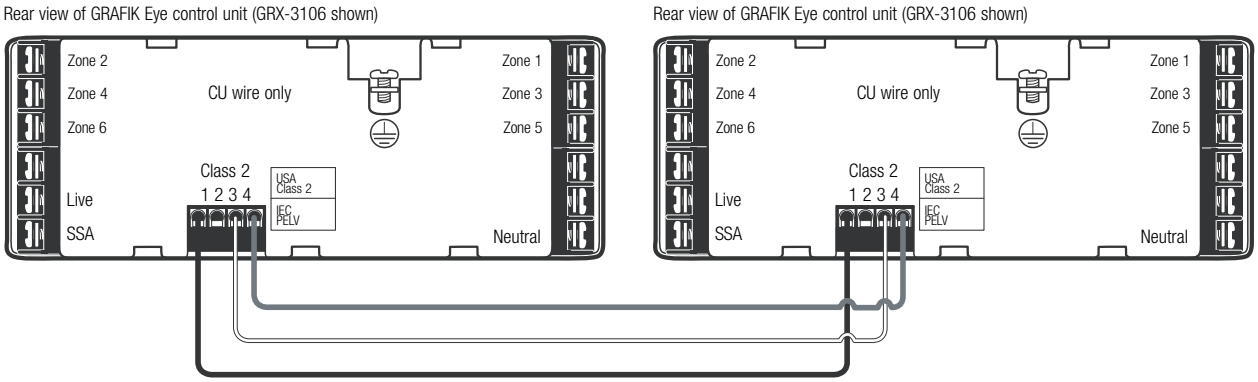
Wiring diagram #3

GRAFIK Integrale™
Control unit power and load wiring



Wiring diagram #4

GRAFIK Eye 3000 series
Control unit to control unit wiring

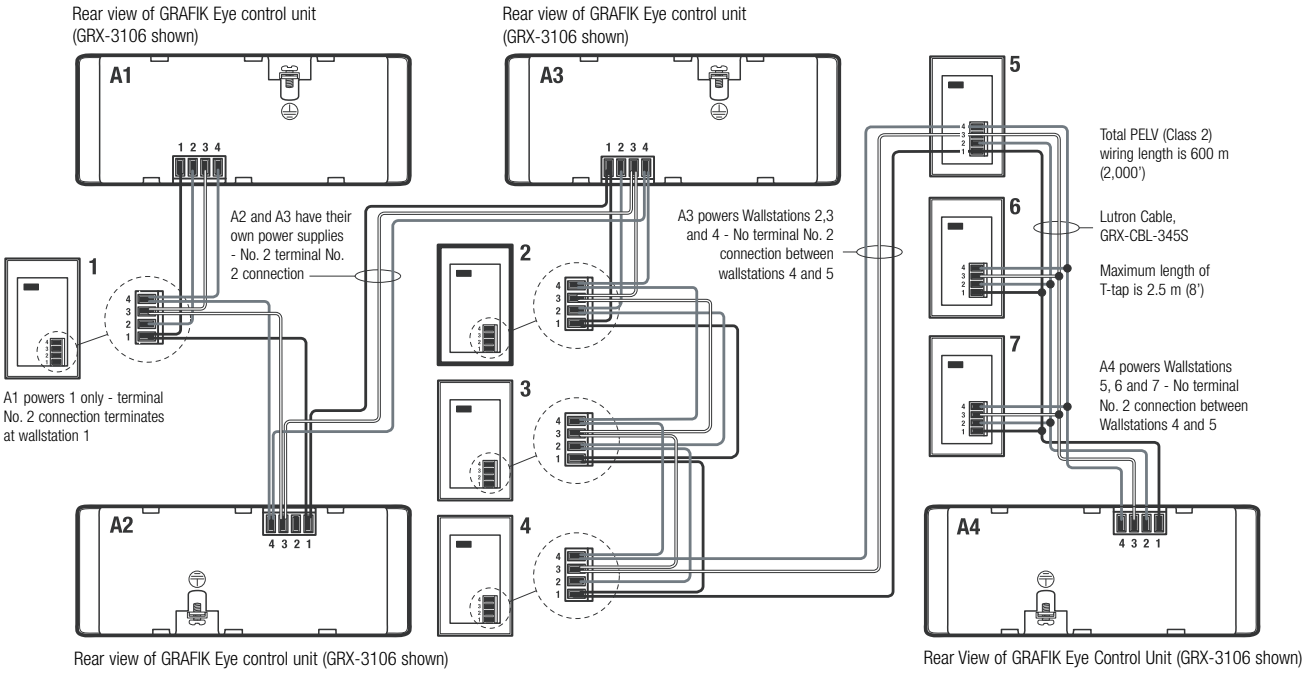


Notes:

1. Each control unit has its own power supply.
2. Do not connect terminal No. 2 when wiring between GRAFIK Eye 3000 series control units.
3. PELV (Class 2) cable (GRX-CBL-346S-500) is available from Lutron®.

Wiring diagram #5

GRAFIK Eye 3000 Series
System control wiring overview



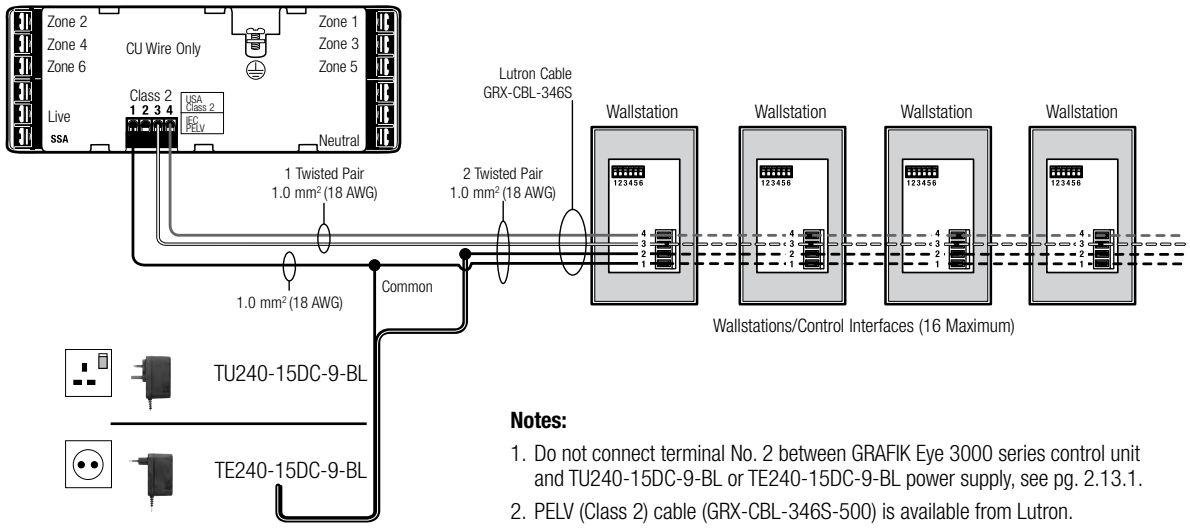
Notes:

1. Each control unit can power up to three PELV (Class 2) wallstations/control Interfaces. If more than three need to be connected to one control unit, install an external 12 VDC power supply, see pg. 2.13.1 as shown in wiring diagram #6.
2. Do not connect terminal No. 2 between GRAFIK Eye 3000 Series control unit and external TU240-15DC-9-BL or TE240-15DC-9-BL power supply, see pg. 2.13.1 as shown in wiring diagram #6.
3. Up to eight GRAFIK Eye 3000 Series control units and 16 wallstations/control Interfaces can be daisy-chained together in one system.
4. PELV (Class 2) cable (GRX-CBL-346S-500) is available from Lutron.

Wiring diagram #6

GRAFIK Eye 3000 Series
External wallstation power supply wiring

Rear View of GRAFIK Eye Control Unit (GRX-3106 shown)

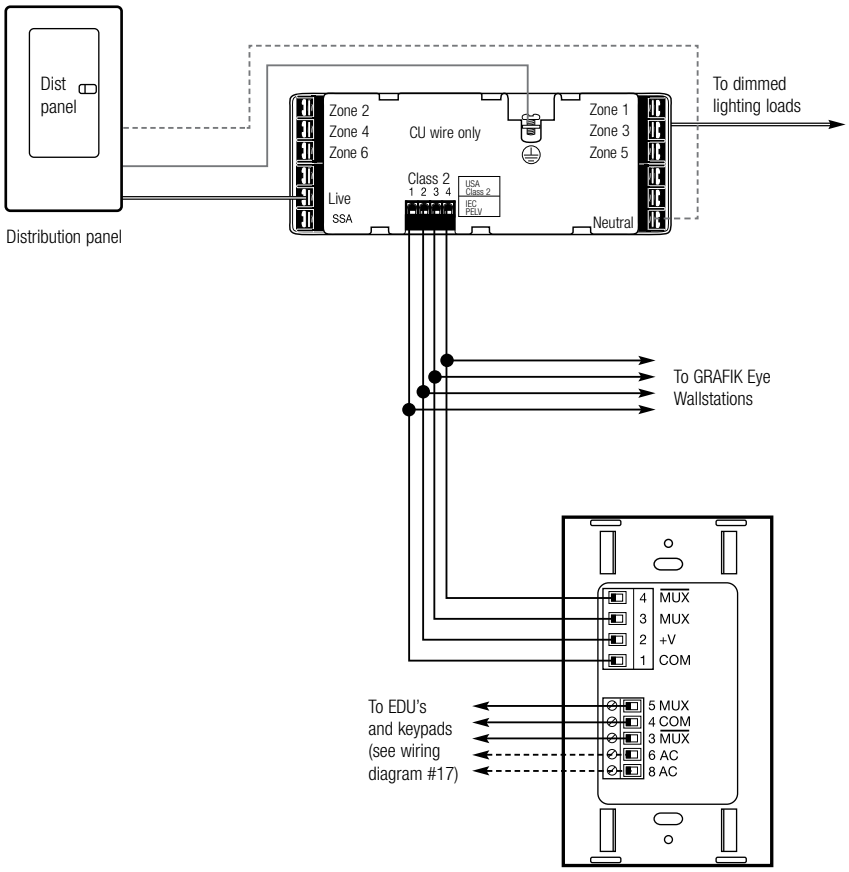


Notes:

1. Do not connect terminal No. 2 between GRAFIK Eye 3000 series control unit and TU240-15DC-9-BL or TE240-15DC-9-BL power supply, see pg. 2.13.1.
2. PELV (Class 2) cable (GRX-CBL-346S-500) is available from Lutron.

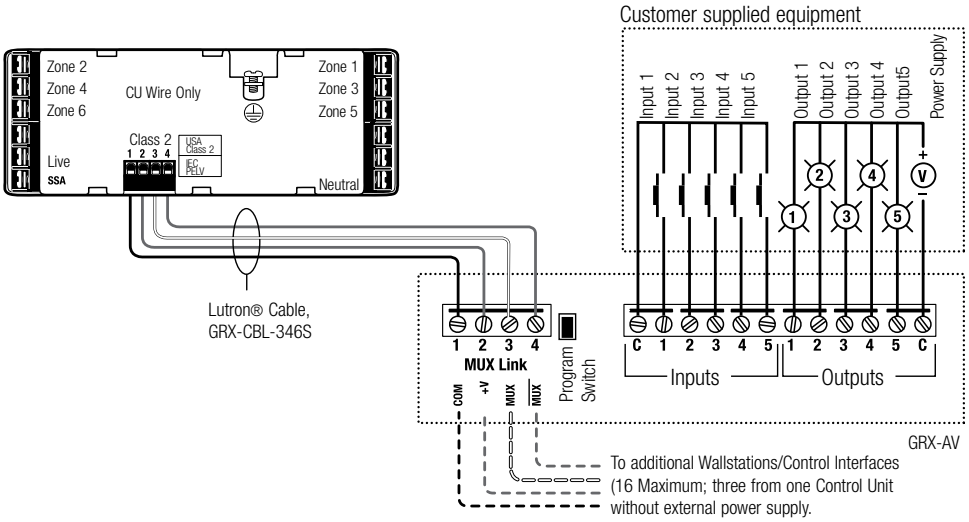
Wiring diagram #7

GRAFIK Eye 3000 Series
Sivoia QED™ interface wiring



Wiring diagram #8

GRAFIK Eye 3000 series
Contact closure interface (GRX-AV) wiring

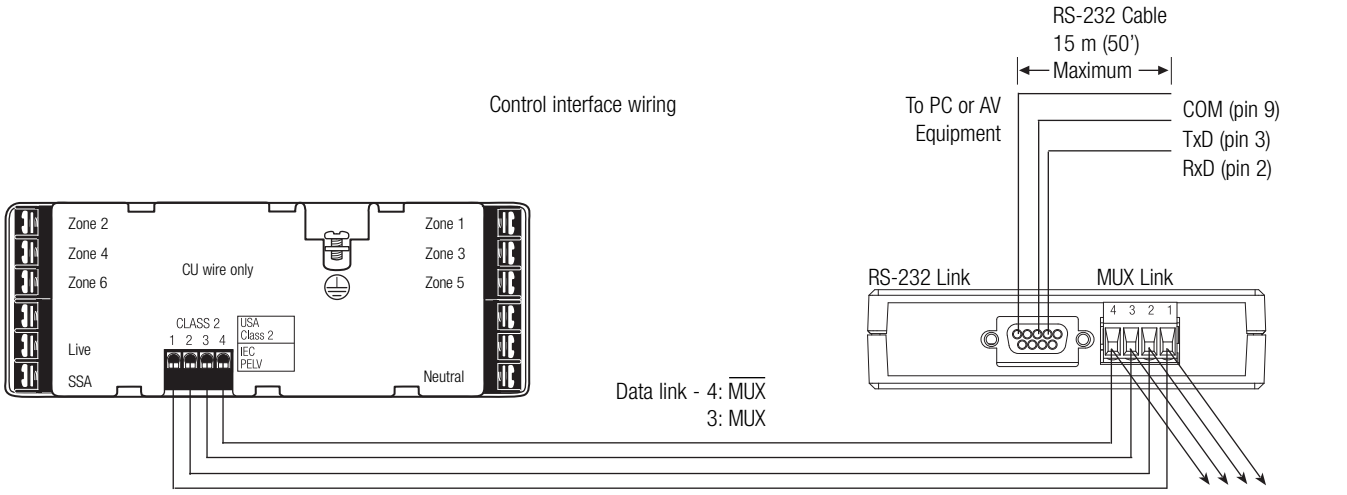


Notes:

For more information, see Application Notes pg. 2.16.1.

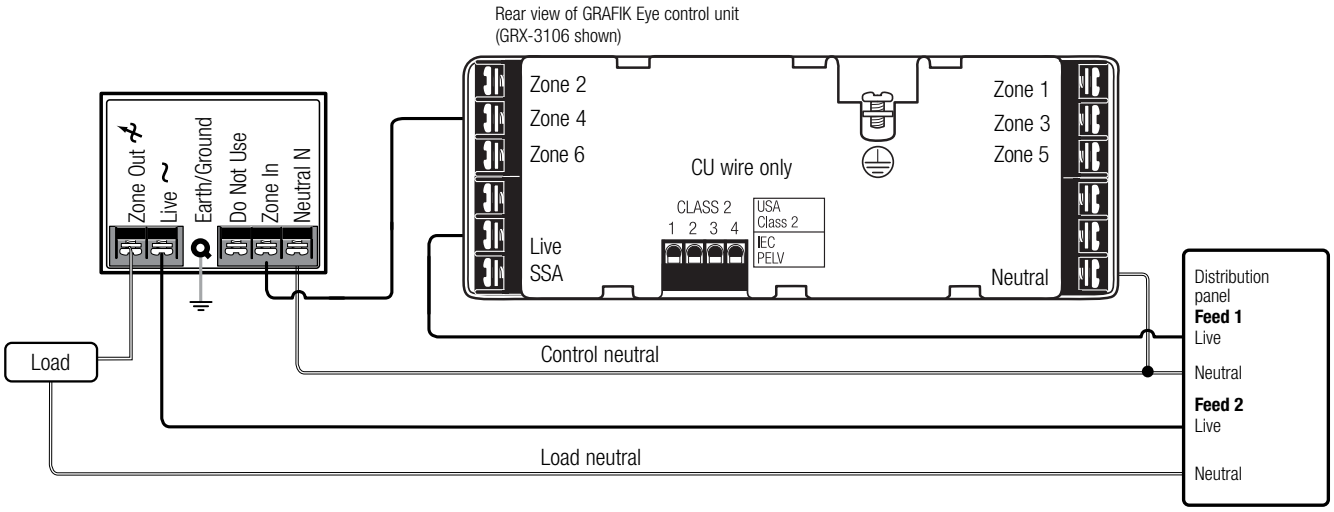
Wiring diagram #9

GRAFIK Eye 3000 Series
RS-232 Control interface (GRX-CI-RS232) wiring



Wiring diagram #10

GRAFIK Eye 3000 series
Power boosters/interfaces
Power booster/electronic low voltage interface wiring

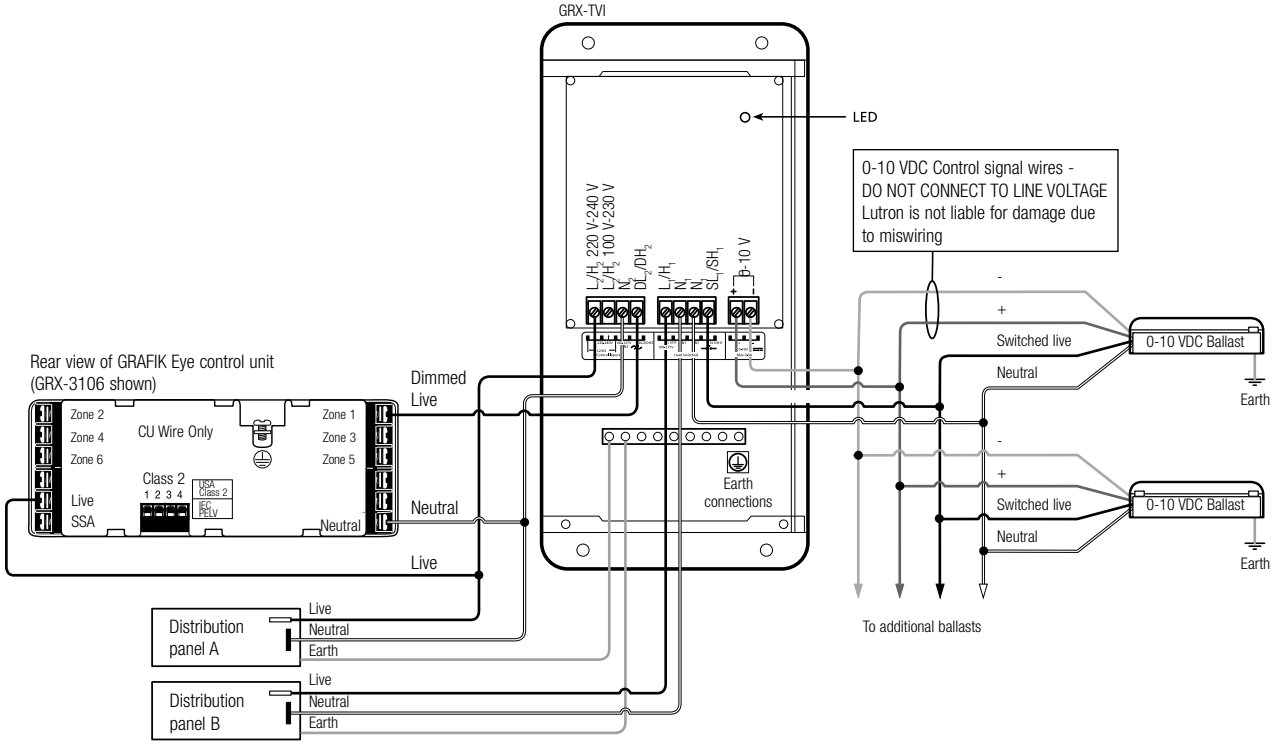


Notes:

1. Each terminal can accept up to (2) 2.5 mm^2 (#12 AWG) wires.
2. PB/ELVI Hot/Live can be on the same phase or different phase than the GRAFIK Eye 3000 series control unit Hot/Live.
3. Up to two PB/ELVI interfaces can be wired to a single zone.
4. Load neutral must be kept separate from control neutral.

Wiring diagram #11

GRAFIK Eye 3000 series
Power boosters/interfaces
0-10 V interface (GRX-TVI) wiring

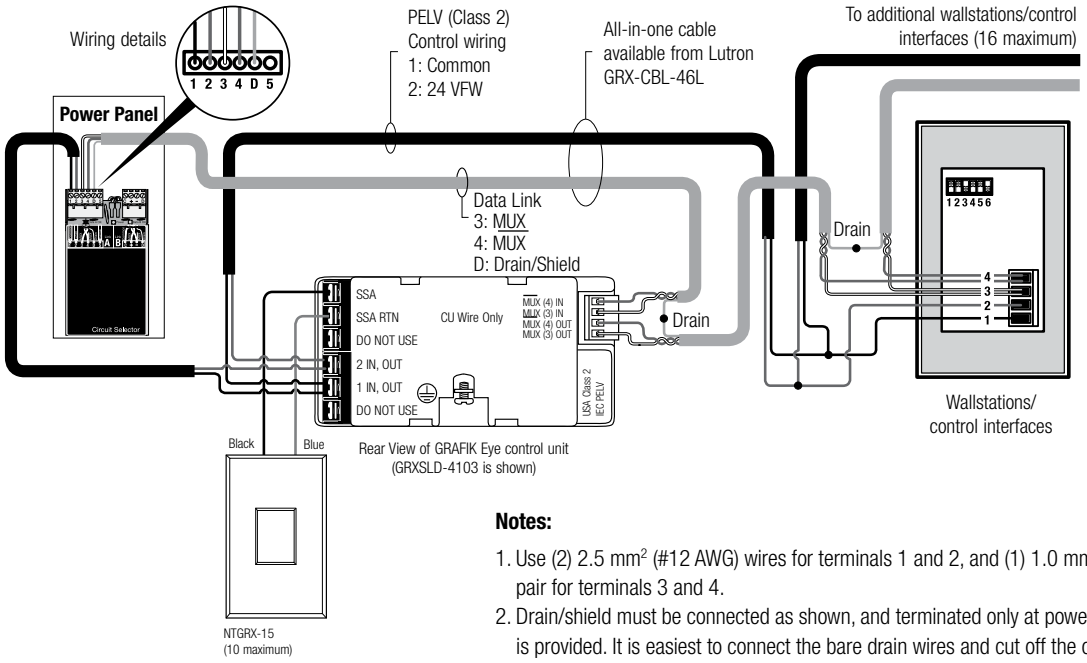


Notes:

Distribution panels can be different phases or voltages (230 VAC shown).

Wiring diagram #12

GRAFIK Eye 4000 series
System overview control wiring

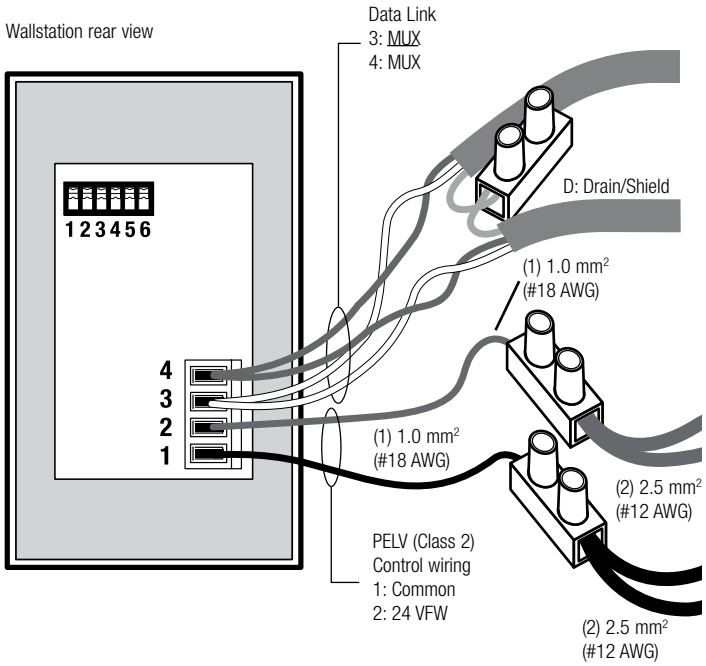


Notes:

1. Use (2) 2.5 mm² (#12 AWG) wires for terminals 1 and 2, and (1) 1.0 mm² (#18 AWG) twisted, shielded pair for terminals 3 and 4.
2. Drain/shield must be connected as shown, and terminated only at power panel if drain terminal is provided. It is easiest to connect the bare drain wires and cut off the outside shield throughout the control link.
3. Up to 8 GRAFIK Eye 4000 Series control units (addresses) and 16 wallstations/control interfaces can be daisy-chained together in one system.
   A 16-zone control unit requires two addresses;
   A 24-zone control unit requires three addresses.
4. PELV (Class 2) cable (GRX-CBL-46L) is available from Lutron, see pg. 2.13.1.

Wiring diagram #13

GRAFIK Eye 4000 Series
2.5 mm² (#12 AWG) to 1.0 mm² (#18) AWG wiring
for wallstations/control interfaces

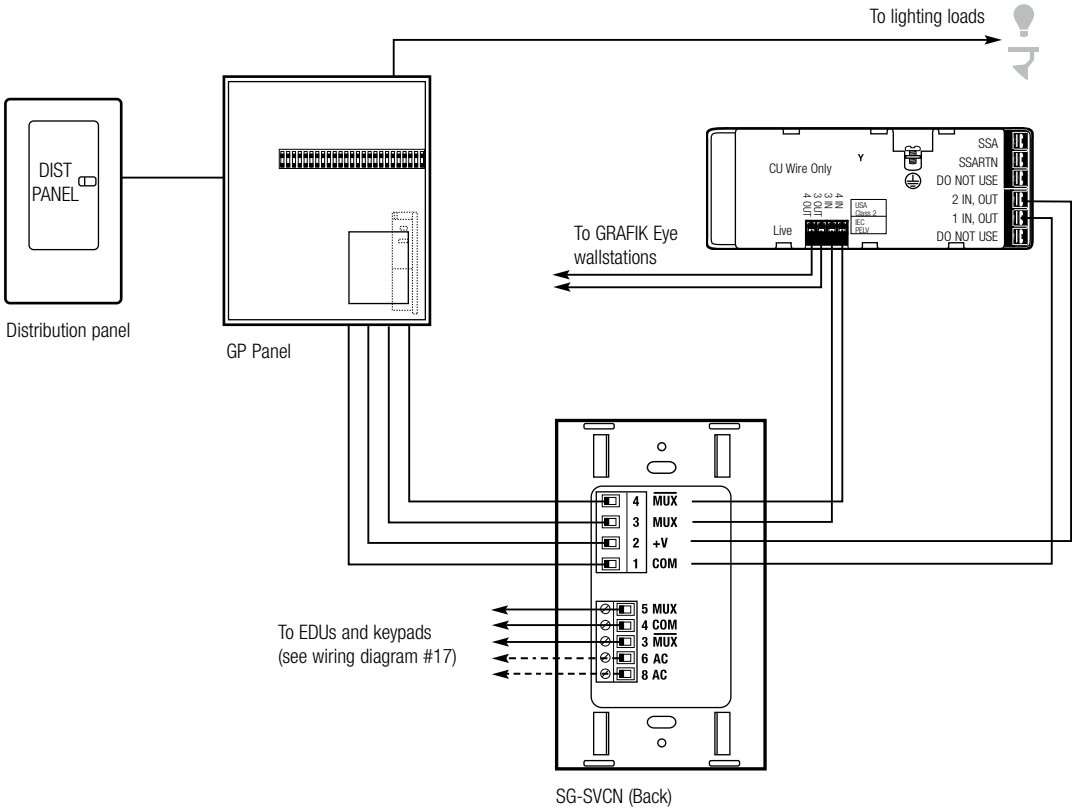


Notes:

1. Use (2) 2.5 mm² (#12 AWG) wires for terminals 1 and 2, and (1) 1.0 mm² (#18 AWG) twisted, shielded pair for terminals 3 and 4.
2. All control wiring is Class 2/PELV. Do not place any of these wires in with line-voltage (mains voltage) wiring.
3. (2) 2.5 mm² (#12 AWG) wires will not fit in the wallstations/control interfaces terminal blocks. Use the diagram shown here to make the connections in the wallbox. 2.5 mm² (#12 AWG) wiring is necessary to minimise voltage drop.
4. Drain/shield must be connected as shown. Do not connect to earth or wallstations/control interfaces. It is easiest to connect the bare drain wires and cut off the outside shield throughout the control link.
5. Make wire connections inside the wallbox and power panel or in a junction box (provided by others) within 2.4 m (8') of the terminals.
6. PELV (Class 2) cable (GRX-CBL-46L) is available from Lutron, see pg. 2.13.1.

Wiring diagram #14

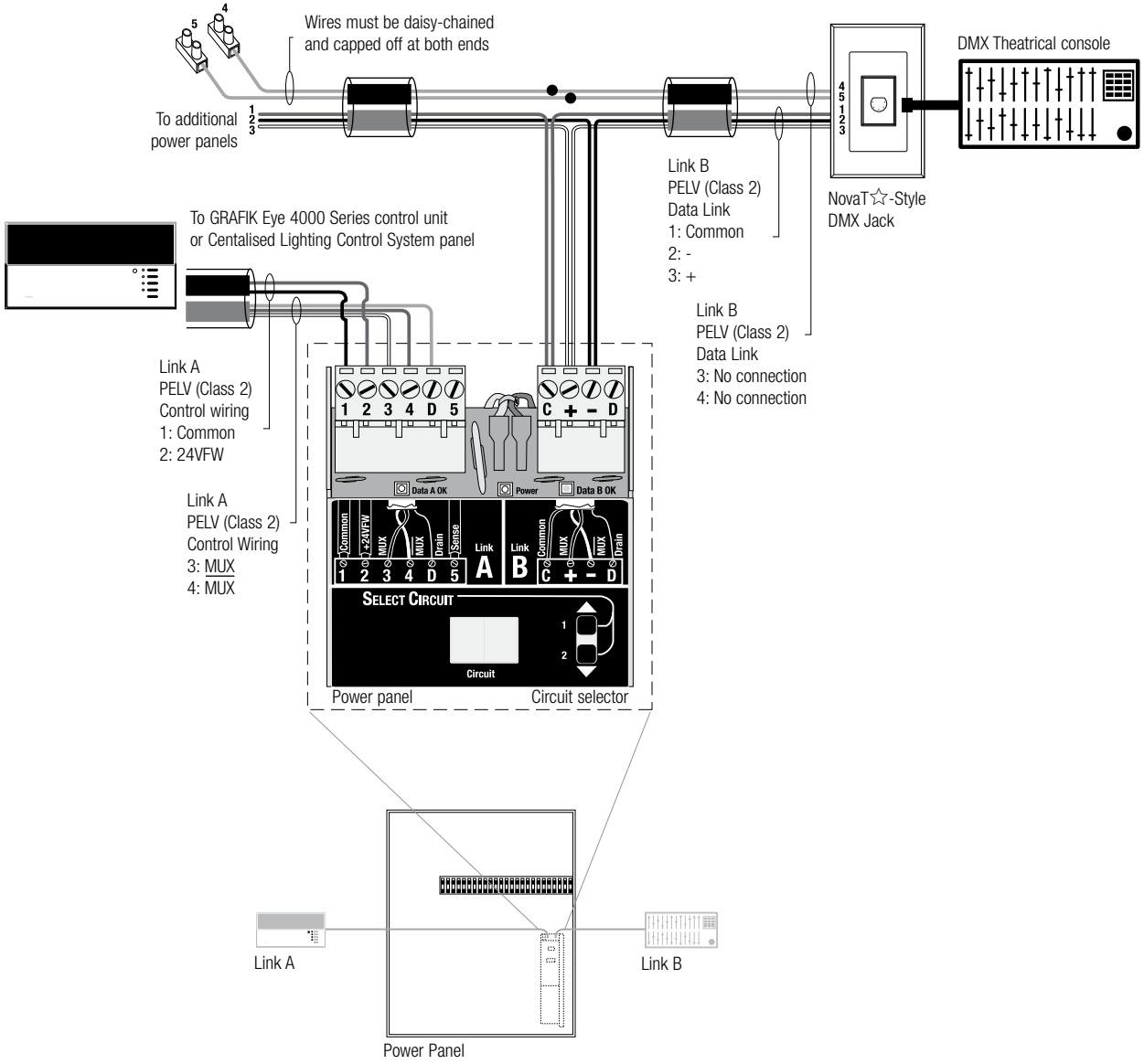
GRAFIK Eye 4000 series
Sivoia QED™ interface wiring



Wiring diagram #15

Wiring diagram #16

GRAFIK Eye 4000 series
2Link™ DMX512 wiring

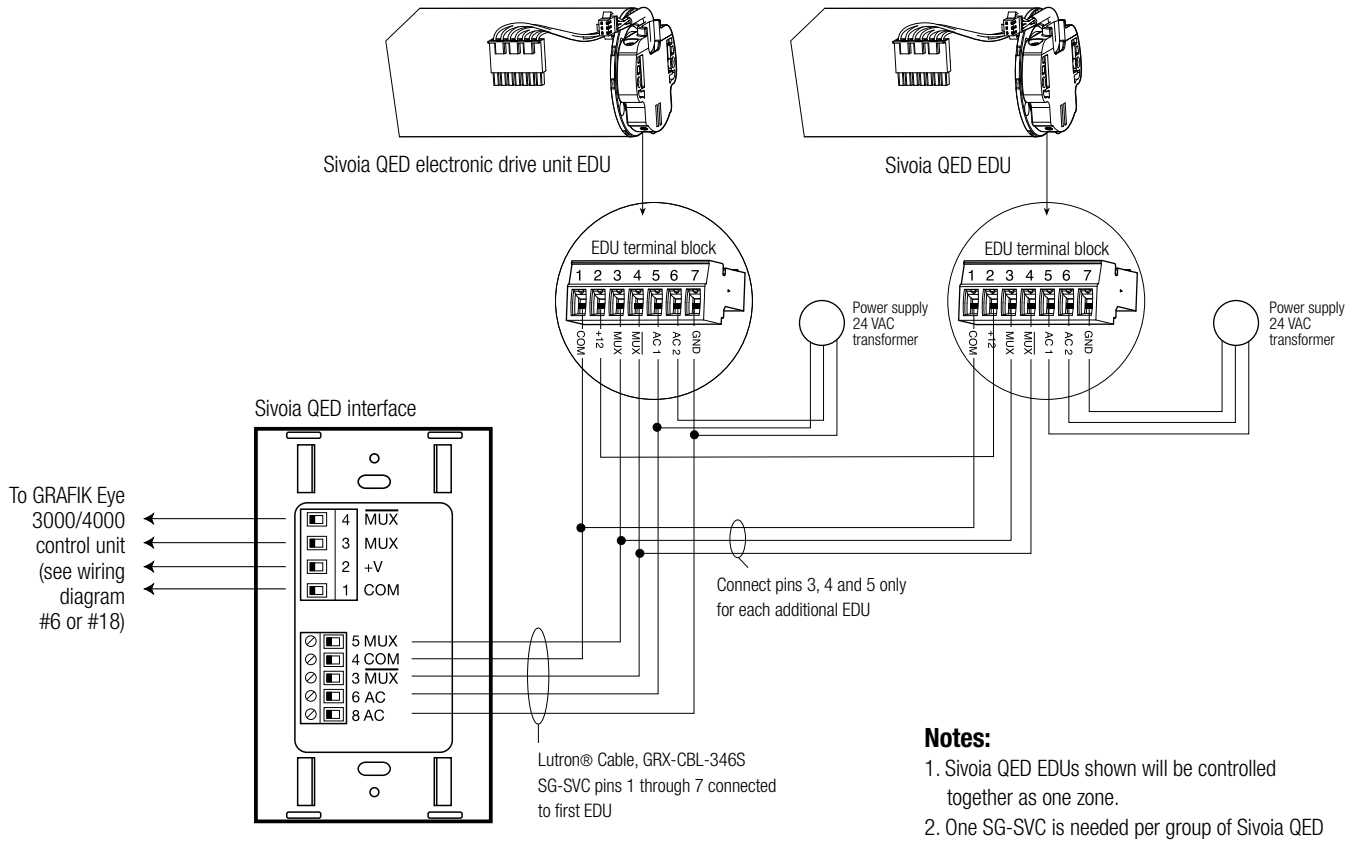


Notes

1. Use (2) 2.5 mm² (#12 AWG) wires for terminals 1 and 2, and (1) 1.0 mm² (#18 AWG) twisted, shielded pair for terminals 3 and 4.
2. An additional 1.0 mm² (#18 AWG) wire can be used as a "sense" line from terminal 5 of another panel. This sense line allows an Emergency (Essential) lighting panel to "sense" when Normal (Non-Essential) power is lost. For more information on Emergency, see application notes, pg. 4.8.3.
3. For panel to panel wiring, refer to power panel instruction sheet.
4. Centralised lighting control systems have separate power panel and control links. GRAFIK Eye 4000 series power panels connect to the same link as control units and wallstations/control interfaces.
5. PELV (Class 2) cable (GRX-CBL-46L) is available from Lutron®, see pg. 2.13.1.
6. DMX512 PELV (Class 2) cable (GRX-CBL-DMX) is available from Lutron in 75 m (250') and 150 m (500') lengths.

Wiring Diagram #17

GRAFIK Eye 3000/4000 series
Sivoia QED™ interface
(SG-SVCN) wiring

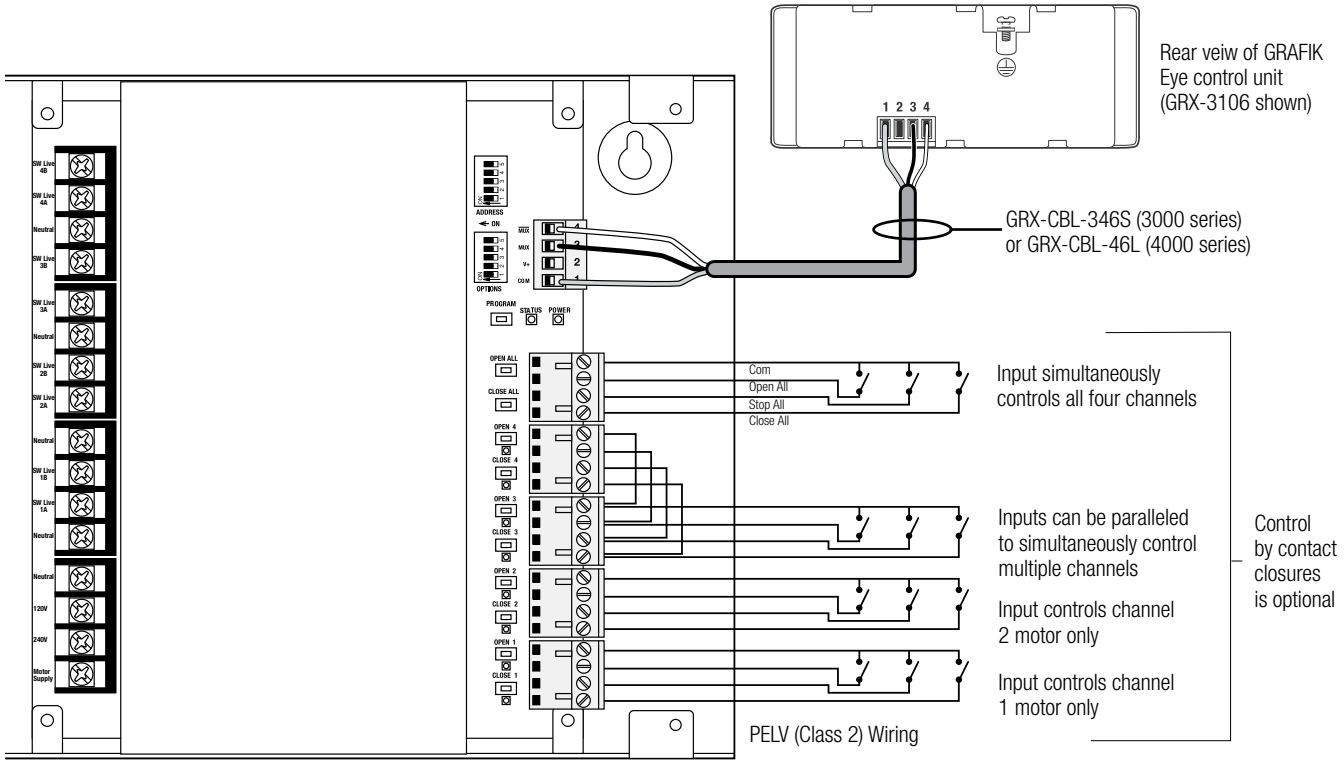


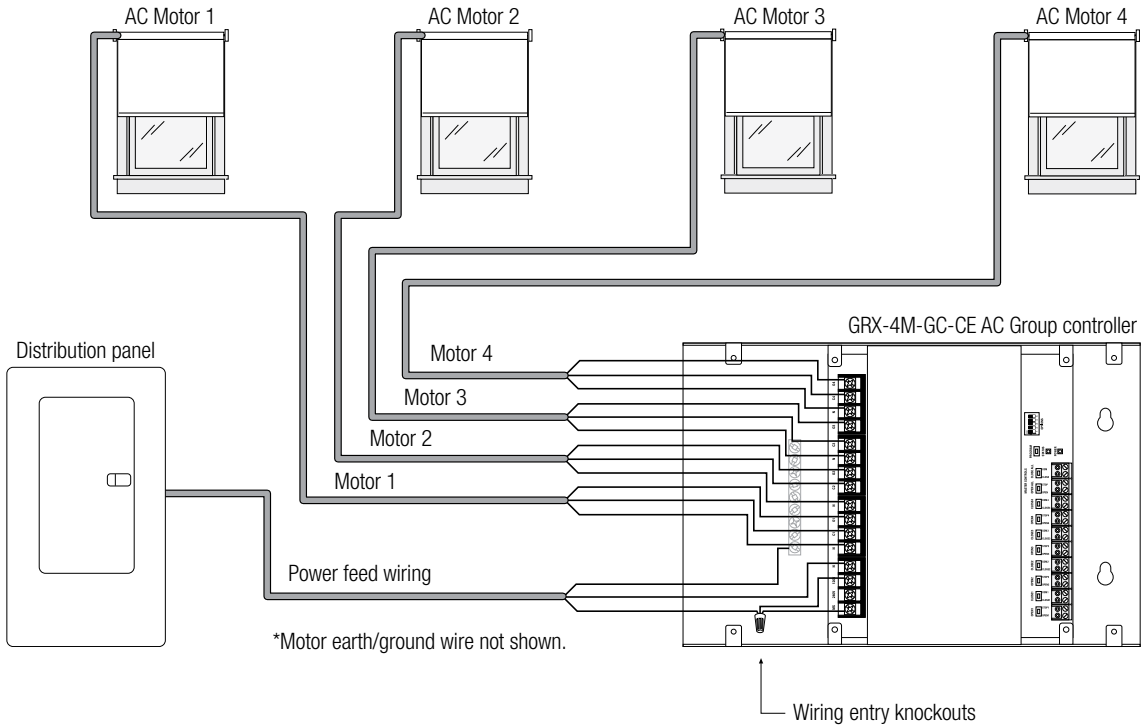
Notes:

1. Sivoia QED EDUs shown will be controlled together as one zone.
2. One SG-SVC is needed per group of Sivoia QED EDU's (up to 96) moving together.

Wiring diagram #18

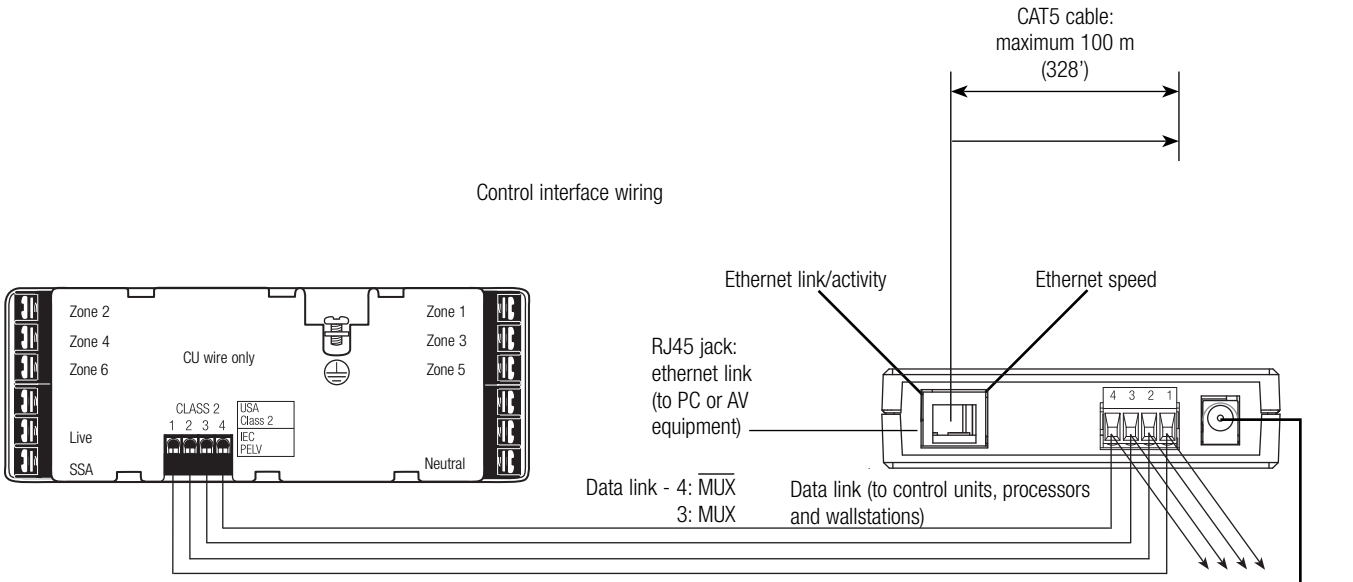
GRAFIK Eye 3000/4000 series
Four-motor AC group controller (GRX-4M-GC-CE) wiring





Wiring diagram #19

To PC or AV equipment. For ethernet link, use CAT5 cable provided to connect to auxiliary equipment. The ethernet link LED will light continuously when link is present and will flash when there is activity. Additional ethernet network equipment and cables provided by others.



Lutron cable, GRX-CBL-346S

PELV (Class 2)
control wiring
2: Power
1: Common

To additional wallstations/control interfaces (16 Maximum; three from one control unit without external 12 VDC power supply.

12V-32V DC to outlet (with optional transformer). Do not wire terminal 2 on data link when using optional transformer. To power separately from the data link, order the following Lutron® transformer model numbers:

120V: GRX-12VDC
240V: TE240-15DC-9-BL
240V(UK): TU240-15DC-9-BL

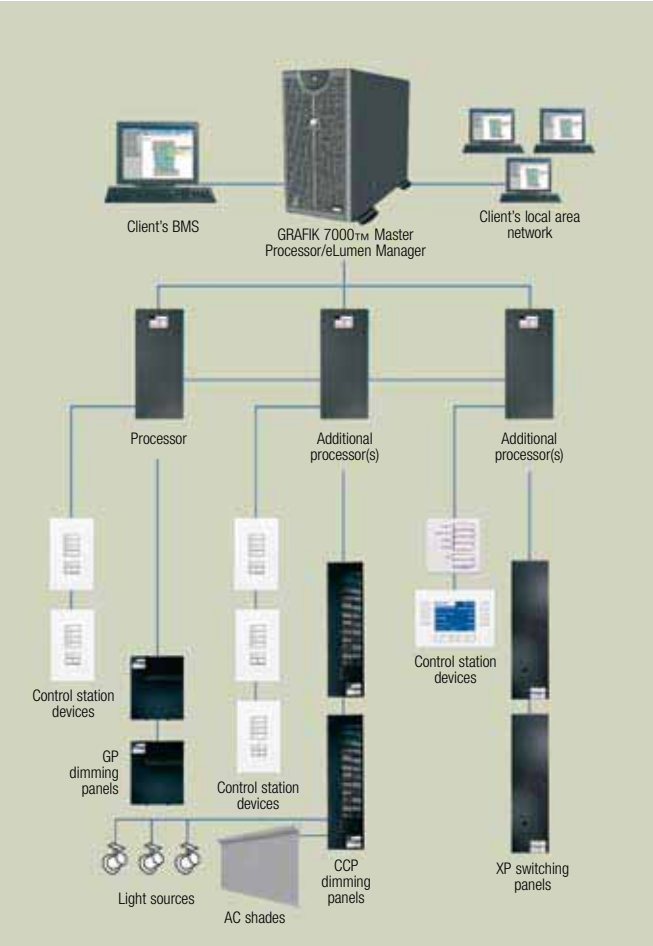
Section 3

Integration of shades, dimming, and switching

Combine control of motorised shades, dimmed light sources, and switched loads into a single system.

The benefits

Adjust shades, adjusts lights, and switch loads with a single button press or mouse click.



Recommended specifications

Central lighting control processor shall be capable of controlling motorised shades, dimmed light sources, and switched loads simultaneously.

Custom graphical user interface / floorplan control

Control of the lighting system is intuitive.

The benefits

- Easy to use
- Do not need trained operators
- Simple graphical presentation of complete control system

Recommended specifications

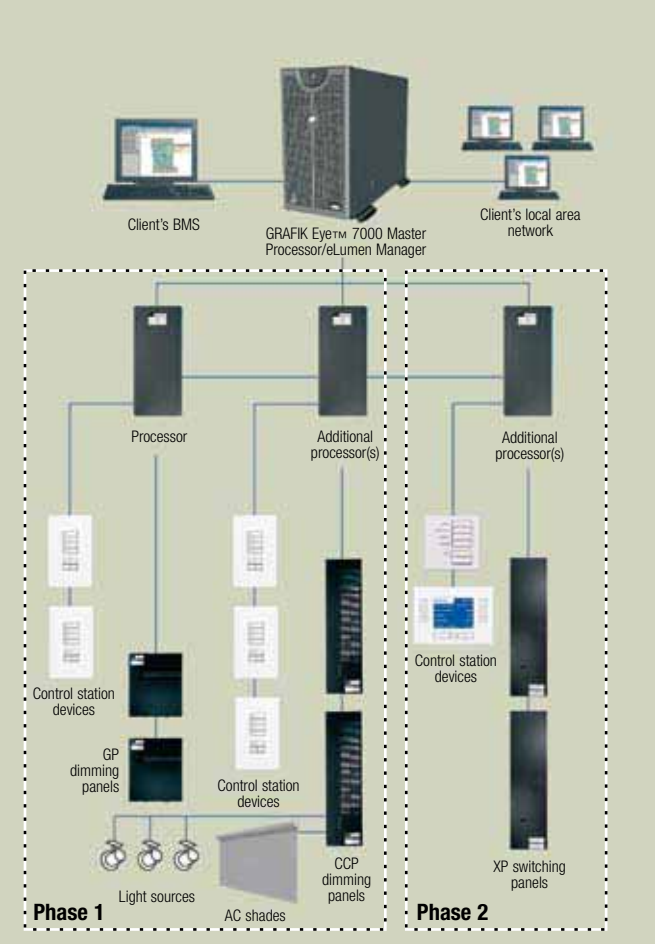
Graphical software shall allow the user to navigate from a general lighting plan to a specific area and provide the ability to control and/or monitor in real time all programmed components of the system.

Expandability

Easily add to an existing system.

The benefits

- The lighting system can grow with the business.
- Purchase only what is necessary.



Recommended specifications

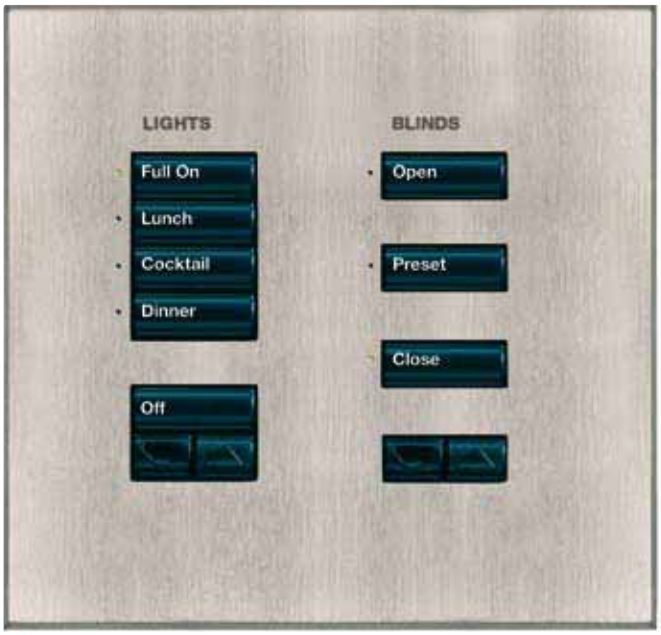
Central lighting control processor shall be capable of expanding to 16,384 zones; 6,144 control station devices; and 4,000 power panels when using multiple processors.

Customised button-by-button programming

Every control station device button and graphical user interface point can be customised to meet special needs.

The benefits

Configure button presses or mouse clicks based on need.



Recommended specifications

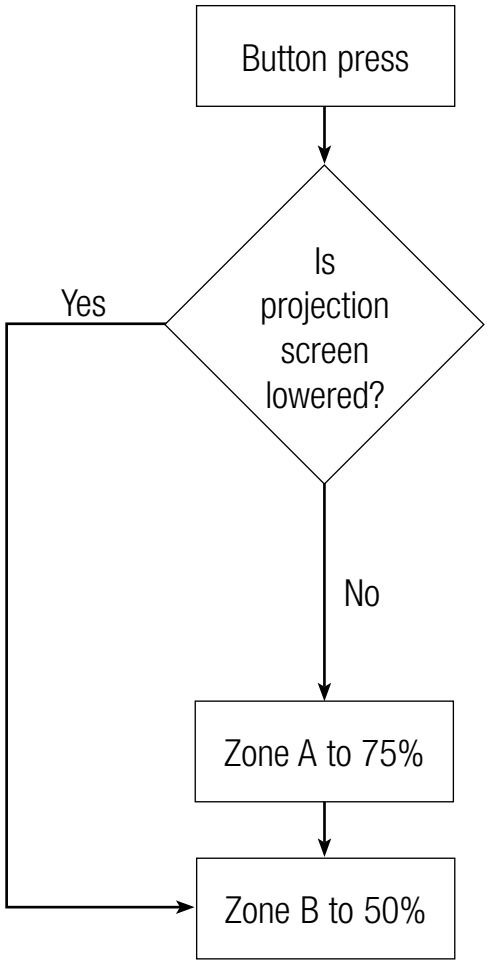
Functions of buttons on control station devices and interface points in the graphical user interface shall be fully programmable.

Conditional logic

Multiple system responses can be triggered depending on predefined conditions.

The benefits

If…Then…Else statements allow modification of system responses as needs change.



Recommended specifications

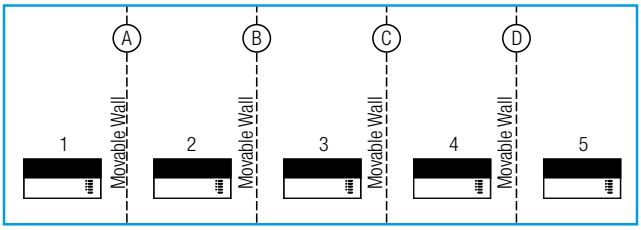
Central lighting control processor shall be capable of using conditional logic to alter any system response.

Partitioning

The lighting control system adapts to complex environments.

The benefits

Automatically modify functionality based on the state of a partition or moveable wall.



Recommended specifications

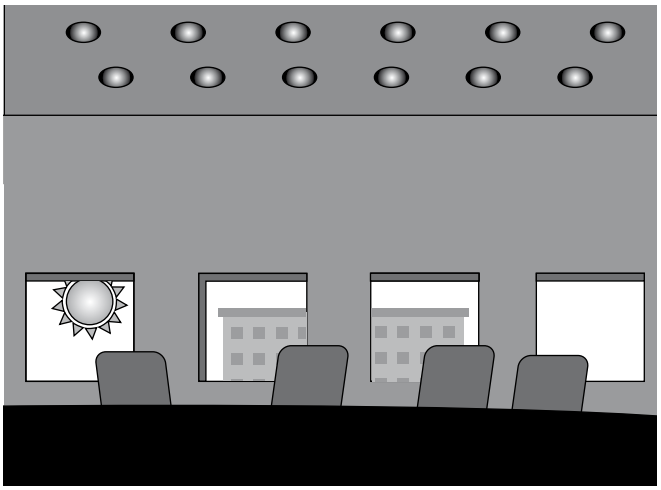
Central lighting control processor and controls shall be capable of directing preset control units to operate independently or in combination to reflect partition status of moveable walls.

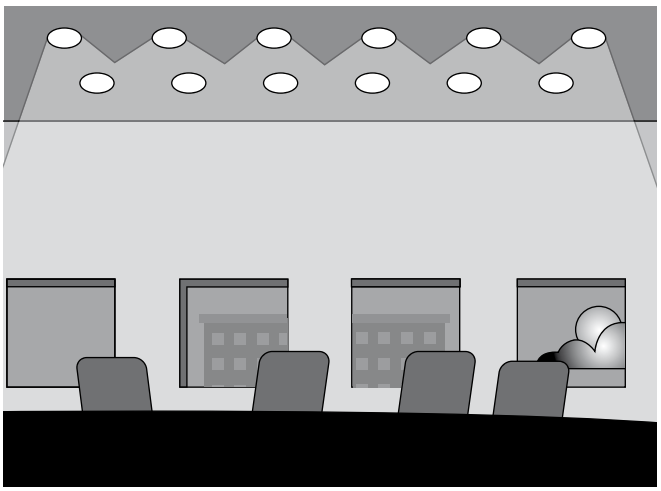
Astronomical time clock

The time of sunrise and sunset changes daily. An astronomical time clock allows events to be initiated around sunrise and/or sunset, whereas standard time clocks allow events to be initiated only at set times.

The benefits

Initiate events based on sunrise and sunset or at fixed times.





Recommended specifications

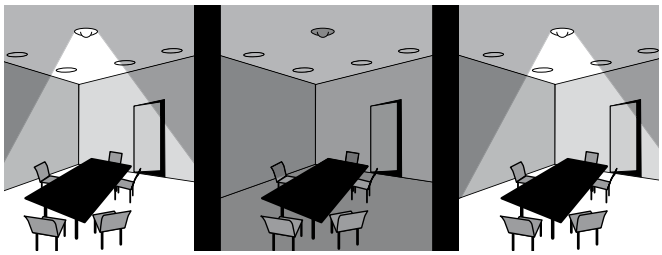
Central lighting control processor shall have an integral real and astronomical time clock.

Power failure memory

Lights always return to the previous state when power is restored.

The benefits

Minimises the inconvenience of power service interruptions and keeps building lights as you left them once power is restored.



Recommended specifications

a) Central lighting control processor shall provide power failure memory. Should power be interrupted and subsequently returned, the lights must come back on to the same levels set prior to the power interruption without requiring any actions on the part of the user. Restoration to some other default level is not acceptable.

b) Central lighting control processor shall have a full internal battery backup that can store all system memory for at least 1 year without power. It shall not be necessary to reboot the central lighting control processor manually nor use any tape or floppy disc/hard drive to restore the system after power outage; the system shall automatically return to its previous state.

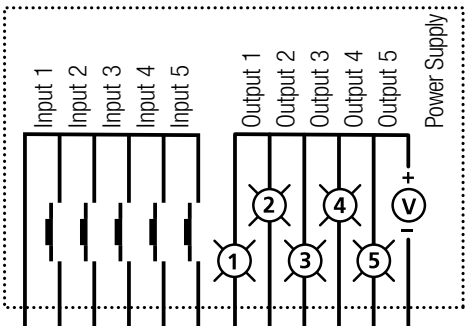
Integration

A wide variety of options are available to interface a Lutron® system with other equipment.

The benefits

Integrate with A/V equipment, theatrical equipment, a BMS, other legacy lighting equipment, etc.

Customer Supplied Equipment



Recommended specifications

- Control shall provide two-way interface between controls and dry contact closure devices.
- Control shall provide the ability to communicate via RS-232 serial communication.
- Control shall be capable of converting 32 Lutron zone intensities to 32 continuous DMX512 outputs.
- Control shall automatically select preset light levels in response to ambient daylight.
- Control shall provide the ability to communicate via BACnet IP or BACnet Ethernet communication.

Robust data link protocol

Lutron's data link is designed specifically for lighting needs.

The benefits

Faster response times, longer distances between processor and controls, and no data collisions.

Recommended specifications

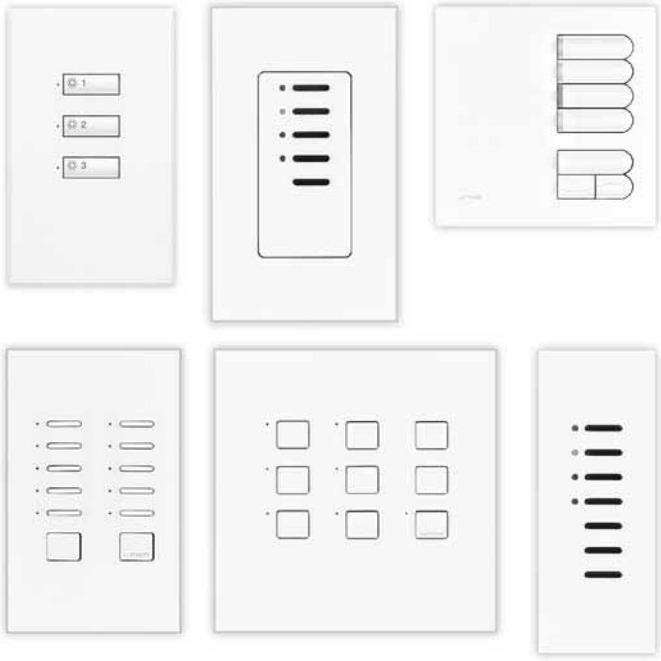
- Data link shall be capable of extending to 2,400 m (8,000') with repeaters.
- Data link shall operate on an RS-485 bus.
- Data link shall operate at 125 kbaud.

Elegant yet durable wallstations

Lutron's wallstations are designed to be both elegant and long-lasting.

The benefits

Superior controls.



Recommended specifications

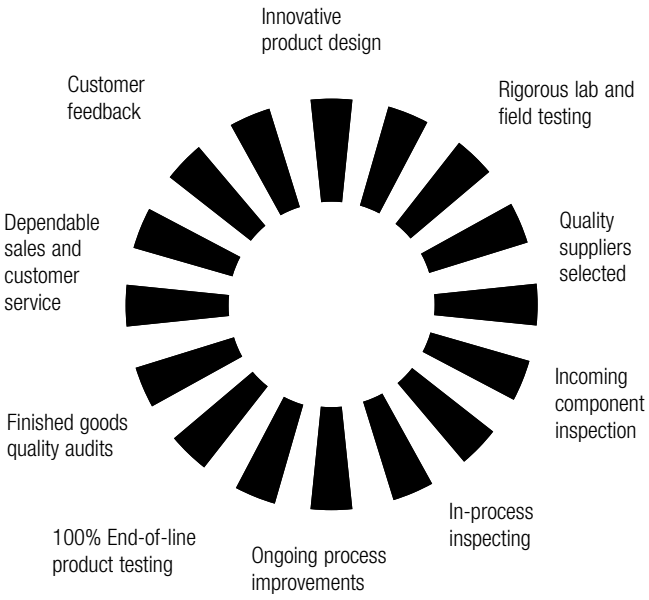
- Controls shall not be susceptible to damage or loss of memory due to 16 KV static discharges.
- To ensure a precise colour match between all plastic parts, colour variation of any control shall not exceed a delta E of 1.0, as defined in ASTM E 308-99.
- To ensure colours do not fade or yellow, visible parts of controls or wallplates shall exhibit ultraviolet stability as defined in ASTM D4674-89.

World-class quality process

For over 40 years, Lutron® has designed, manufactured, and delivered quality lighting control products.

The benefits

Reliable product quality, dependable service, and continual innovation.



Recommended specifications

Manufacturer shall be Lutron Electronics. Manufacturer shall be at least ISO 9001:2000 registered.

Step 1

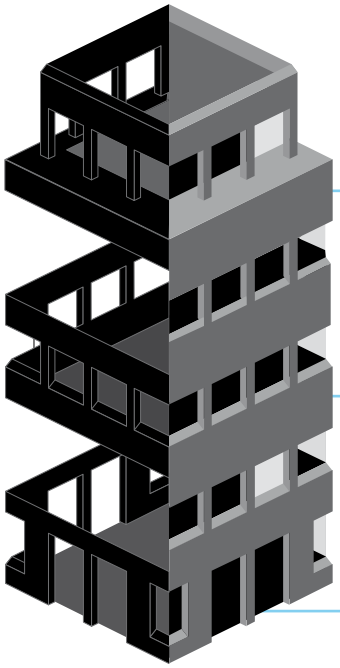
Determine number of zones and circuits, and select power panels

A zone is a collection of lights or shades that are always controlled together.

If the project requires up to 128 zones, a GRAFIK 5000™ system should be selected; up to 512 zones, a GRAFIK 6000™ is appropriate; and a GRAFIK 7000™ may be used for applications containing 64 to over 16,000 zones; for example, the second floor requires 90 zones and the first floor requires 120 zones. A GRAFIK 6000 should be used to accommodate the total number of zones, 210, for this project.

GRAFIK 7000 should be used for any application requiring graphical control, data logging, multiple processors, or control from multiple computers.

According to the summary of circuits in this example, the second floor has 63 dimming circuits, requiring two 24-circuit dimming panels plus one 20-circuit dimming panel. With 47 switched circuits, two 24-circuit Softswitch™ panels will accommodate the number of switched circuits for that floor.



	Room (Area)	Description	No. of Zones	No. of Circuits Dimmed	No. of Circuits Switched
2nd Floor	Room 1	Board Room	4	4	1
	Room 2	Open Office	9	7	2
	(through)				
	Room 31	Open Office	8	6	3
	Room 32	Executive Office	4	2	2
			Floor total=90	**Floor total=63**	**Floor total=47**
1st Floor	Room 1	Lobby	6	3	2
	Room 2	Cafeteria	8	7	1
	Room 3	Employee Lounge	6	6	2
	(through)				
	Room 31	Office	4	2	2
			Floor total=120	**Floor total=109**	**Floor total=70**

Design tips

- ☐ GP dimming panels are available with isolation switches.
- ☐ A separate power ppanel is required for each voltage type and feed type (Normal or Emergency).
- ☐ Multiple circuits can be controlled per zone.
- ☐ Dimming ballasts are required to dim fluorescent sources.
- ☐ Power panels can be distributed throughout the building to reduce wire runs.
- ☐ More than 512 zones requires a multiple processor GRAFIK 7000 System. GRAFIK 7000 should also be selected if graphical control is required.

Step 2

Select design elements

Identify additional control schemes for the project (e.g. DMX integration, time scheduling, wireless control) and add appropriate control station devices to achieve strategies.

For design elements available, see section 1.2.

For example, use wallstations in the board room and cafeteria for local lighting control.

Use occupancy sensors in the employee lounge for energy saving control.

Use photosensors in the lobby for daylight compensation and energy savings.

Use graphical control software to monitor, control, and navigate through the building and control the lighting system from single or multiple locations.

Step 3

Add local controls and control interfaces to implement design elements

For this example, an SO-4SN, four-button wallstation with Off and Raise/Lower, (see pg. 3.10.4), is chosen for the cafeteria to recall preset light levels.

An OMXSL-4-3G, slider wallstation, (see pg. 3.11.5), is placed in the boardroom as a local control.

An OMX-AV, contact closure Interface, (see pg. 3.12.5), is required to interface the dry contact closure from the occupancy sensor to the system in the employee lounge.

An OMX-DACPI-A-WH, a daylighting control, (see section 3.8), is used to integrate photosensors in the lobby for daylight compensation and energy savings.

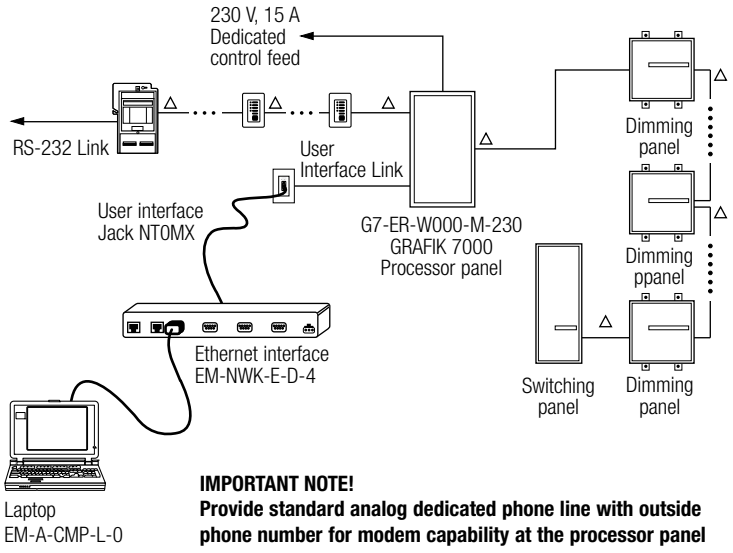
PictureIT™ Software, section 3.8, is used to manage the entire building's lighting system from the facility manager's office.

Design tips

- ☐ GRAFIK 5000 can accommodate up to 32 control station devices.
- ☐ GRAFIK 6000 can accommodate up to 96 control station devices.
- ☐ GRAFIK 7000 can accommodate up to 192 control station devices on a single processor. Up to 32 processors can be linked to control over 6,000 control station devices.
- ☐ Control station device functions are configured through software to perform a variety of functions. Make selection of wallstations based on style.
- ☐ The eLumen™ manager should be located in a securable area for setup and operation/monitoring of the system.
- ☐ A hand-held programmer can be used to set preset light levels within a space. Install hand-held programmer jacks throughout the project in areas where real-time programming is required. The hand-held programmer affects only the processor to which it is currently connected.

Step 4

Support the design through one-line diagrams and written product specifications



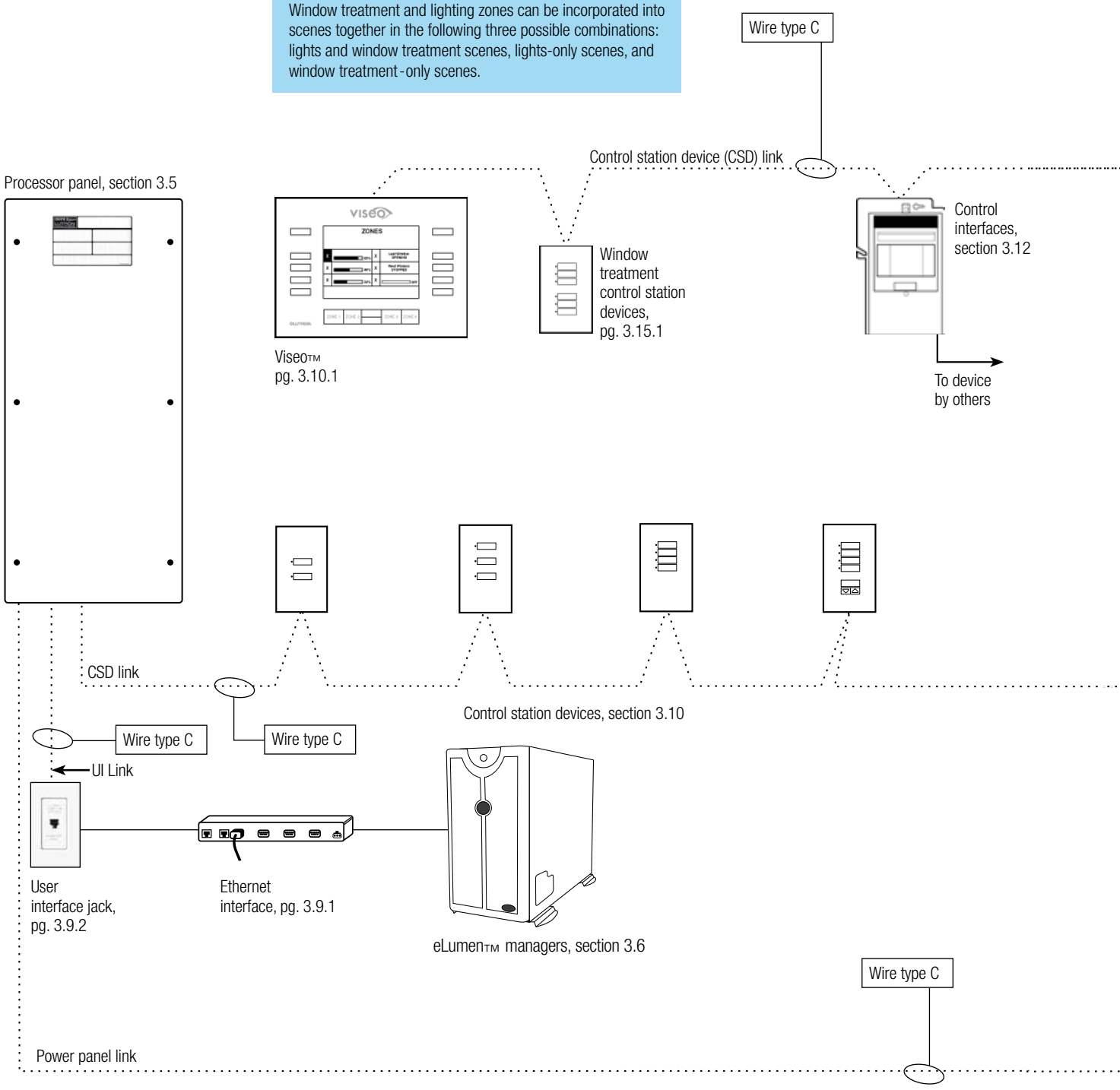
IMPORTANT NOTE!
Provide standard analog dedicated phone line with outside phone number for modem capability at the processor panel

Δ Control station device (CSD) and user interface (UI) links require five PELV (Class 2) conductors: (2) 2.5 mm^2 (#12 AWG) for power wires; (1) twisted, shielded 1.0 mm^2 (#22 AWG) pair for control wires; plus (1) 1.0 mm^2 (#18 AWG) wire for the emergency sense line (Available from Lutron®, GRX-CBL-46L, see pg. 3.14.2).

Design tip

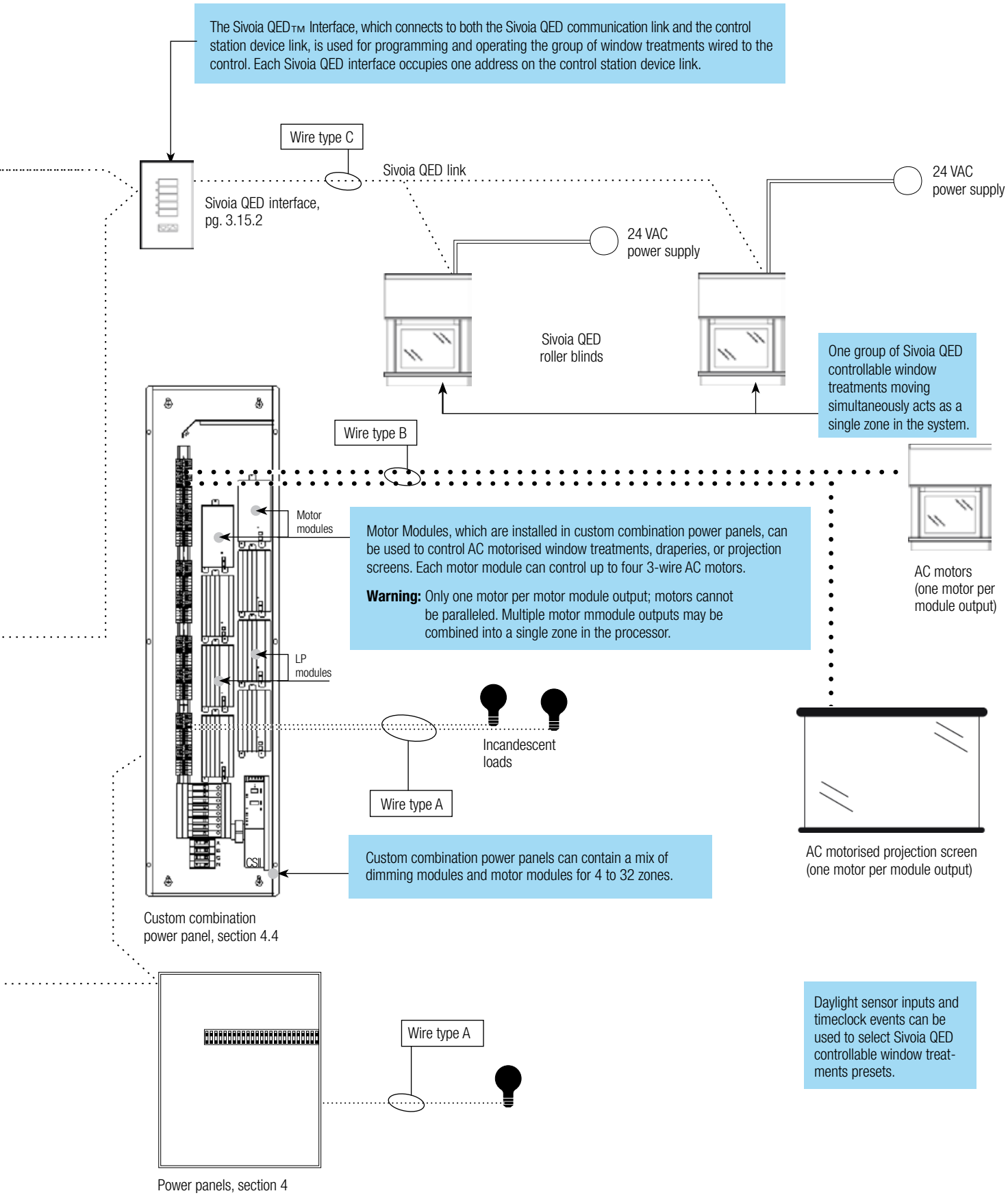
- ☐ Complete product specifications are available at www.lutron.com.

Window treatment and lighting zones can be incorporated into scenes together in the following three possible combinations: lights and window treatment scenes, lights-only scenes, and window treatment-only scenes.



Wiring type key

.....	Type A	(2) 2.5 mm² (#12 AWG) wires (220/240, 230 VAC)
• • • • • • • •	Type B	(3) 2.5 mm² (#12 AWG) wires (220/240, 230 VAC)
. . . . .	Type C	Five PELV (Class 2) conductors: (2) 2.5 mm² (#12 AWG) for power wires; plus (1) twisted, shielded 1.0 mm² (#22 AWG) pair for control wires; plus (1) 1.0 mm² (#18 AWG) wire for the emergency sense line (Available from Lutron®, GRX-CBL-46L, see pg. 3.14.2)


The Sivoia QED™ Interface, which connects to both the Sivoia QED communication link and the control station device link, is used for programming and operating the group of window treatments wired to the control. Each Sivoia QED interface occupies one address on the control station device link.
Wire type C
Sivoia QED link
Sivoia QED interface, pg. 3.15.2
24 VAC power supply
24 VAC power supply
Sivoia QED roller blinds
One group of Sivoia QED controllable window treatments moving simultaneously acts as a single zone in the system.
Wire type B
Motor modules
Motor Modules, which are installed in custom combination power panels, can be used to control AC motorised window treatments, draperies, or projection screens. Each motor module can control up to four 3-wire AC motors.
Warning: Only one motor per motor module output; motors cannot be paralleled. Multiple motor mmodule outputs may be combined into a single zone in the processor.
AC motors (one motor per module output)
LP modules
Incandescent loads
Wire type A
AC motorised projection screen (one motor per module output)
Custom combination power panels can contain a mix of dimming modules and motor modules for 4 to 32 zones.
CSII
Custom combination power panel, section 4.4
Wire type A
Daylight sensor inputs and timeclock events can be used to select Sivoia QED controllable window treatments presets.
Power panels, section 4

eLumen Manager

GRAFIK 7000™ processor panel

Architectural-grade lighting control systems

- Designed to manage all lighting in a building
- Easily interfaces with audio/visual equipment, stage, security, and building management systems
- eLumen™ Manager includes easy-to-understand, Windows®-based DesignIT™ for system design and setup
- Built-in astronomical time clock allows scheduling of events up to a year in advance
- Optional built-in modem and RS-232 Interface simplifies remote access and system integration
- Automatic sequencing
- Partitioned space control combines/separates lighting scene control to reflect the partition status of movable walls
- Conditional logic
- Button-by-button programming
- Groups and modes simplify programming of complex spaces
- Optional real-time, web-based ControlIT™ and PictureIT™ control software
- SecureIT™ allows the administrator to set user access rights

Compatible Lutron® products

Viseo™
Control Station Devices
pg. 3.10.1

Control station devices
section 3.10

Control interfaces
section 3.12

Power panels
section 4

Specifications

- Load types:
  - Controlled through Power Panels, see section 4
  - For control of Sivoia QED™ window treatments, use SO-SVC Sivoia QED interface, see pg. 3.15.2
  - For control of AC motorised window treatments, use power panels with motor modules, see section 4
- Power and wattage maximums:
  - Through power panels, see section 4
- System features:
  - Use a PC to control the system from anywhere (PC must have eLumen software)
- Control station device (CSD) links:
  - Up to 32 devices per link: wallstations, control interfaces, window treatment controllers, and Sivoia QED interfaces

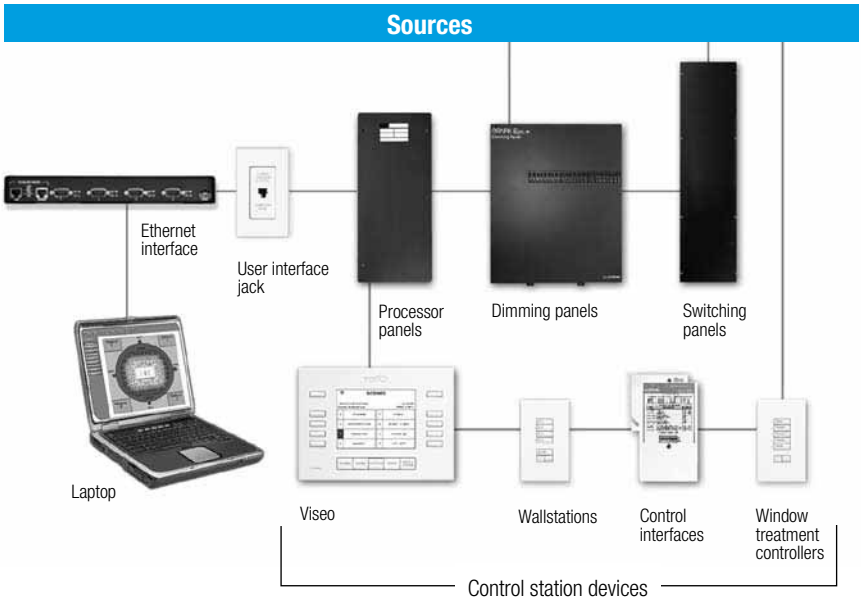
Standards

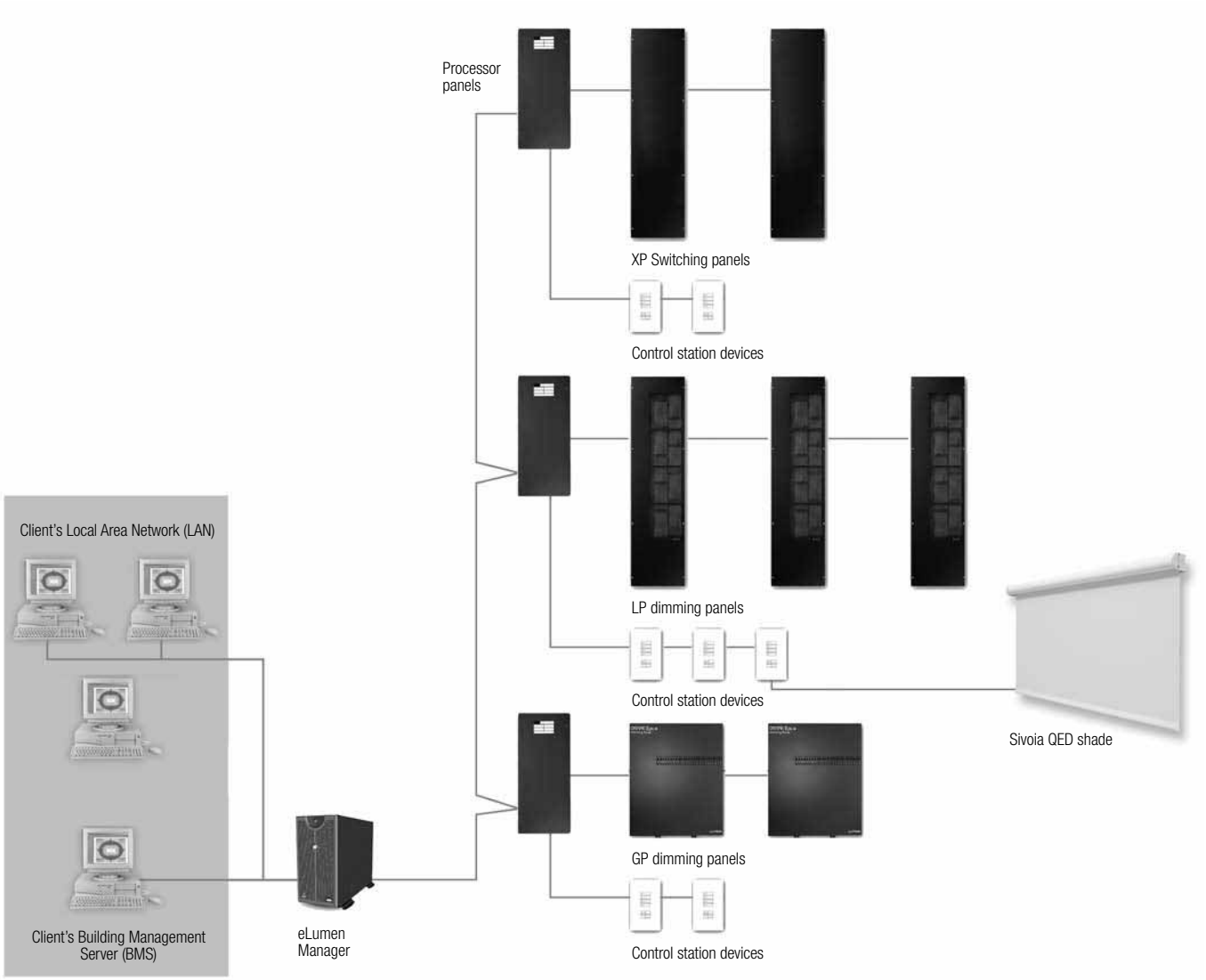
Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

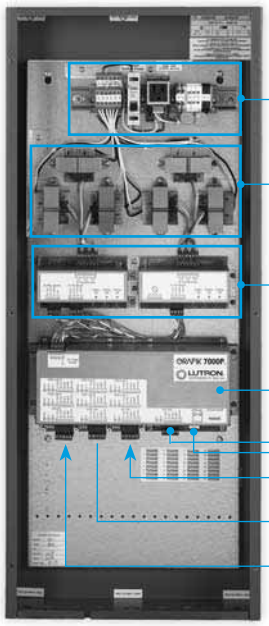
Centralised lighting control system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 3.3.





Product	Model



Dimensions

W: 365 mm (14.38")
H: 883 mm (34.75")
D: 99 mm (3.88")

Dimensions

W: 365 mm (14.38")
H: 883 mm (34.75")
D: 99 mm (3.88")

Centralised Lighting Control System

- Dedicated 230 VAC power feed to the system
- System power is distributed from these power supplies
- System processor stores system information including:
  - scenes
  - spaces
  - zones
  - time clocks
  - power panel levels
  - control station device functions
  - special functions
- Power panel link connects power panels to the system
- 10/100 BaseT ethernet link:
  - setup and download via eLumen™ manager
  - over ethernet, connect multiple processor panels (GRAFIK 7000™ only)
- Interprocessor link connects multiple processor panels (located under CSD Link – GRAFIK 7000 only)
- CSD links connect the control station devices to the system
- User interface link allows setup and download the database via RS-485 (located under CSD Link)

GRAFIK 5000™ System — G5-E-SYS-1

- Each GRAFIK 5000 System is comprised of the following:
  Processor panel
  - 128 zones
  - One processor panel per system

  Power panels:
  - Up to 64 power panels

  Control station devices:
  - Up to 32 (one link)

  DesignIT™ and ControlIT™ software

GRAFIK 6000™ System — G6-E-SYS-1

- Each GRAFIK 6000 System is comprised of the following:
  Processor panel:
  - 512 zones
  - One processor panel per system

  Power panels:
  - Up to 125 power panels

  Control station devices:
  - Up to 96 (three links)

  DesignIT and ControlIT software

GRAFIK 7000 Processor Panel — G7-E-R-__-_-230

- Each GRAFIK 7000 System is comprised of the following:
  Processor panels:
  - Up to 512 zones per processor panel
  - Up to 32 processor panels per system (up to 16,384 zones per system)
  - Includes 64 zones
  - Expandable as needed up to 512 zones with zone licenses, pg. 3.7.2

  Power Panels:
  - Up to 125 power panels per processor (up to 4,000 power panels per system)

  Control station devices:
  - Up to 192 per processor (six links) (up to 6,144 control station devices per system)

  Connect processors with RS-485 or 10/100 BaseT ethernet

Product	Model

Desktop — EM-A-CMP-D-0

- Use for setup, monitoring, and real-time operation of the centralised lighting control system
- Complete with monitor, internal modem, and pre-loaded Windows®-based Lutron® DesignIT™ and ControlIT™ software
- Software is multi-lingual

Laptop — EM-A-CMP-L-0

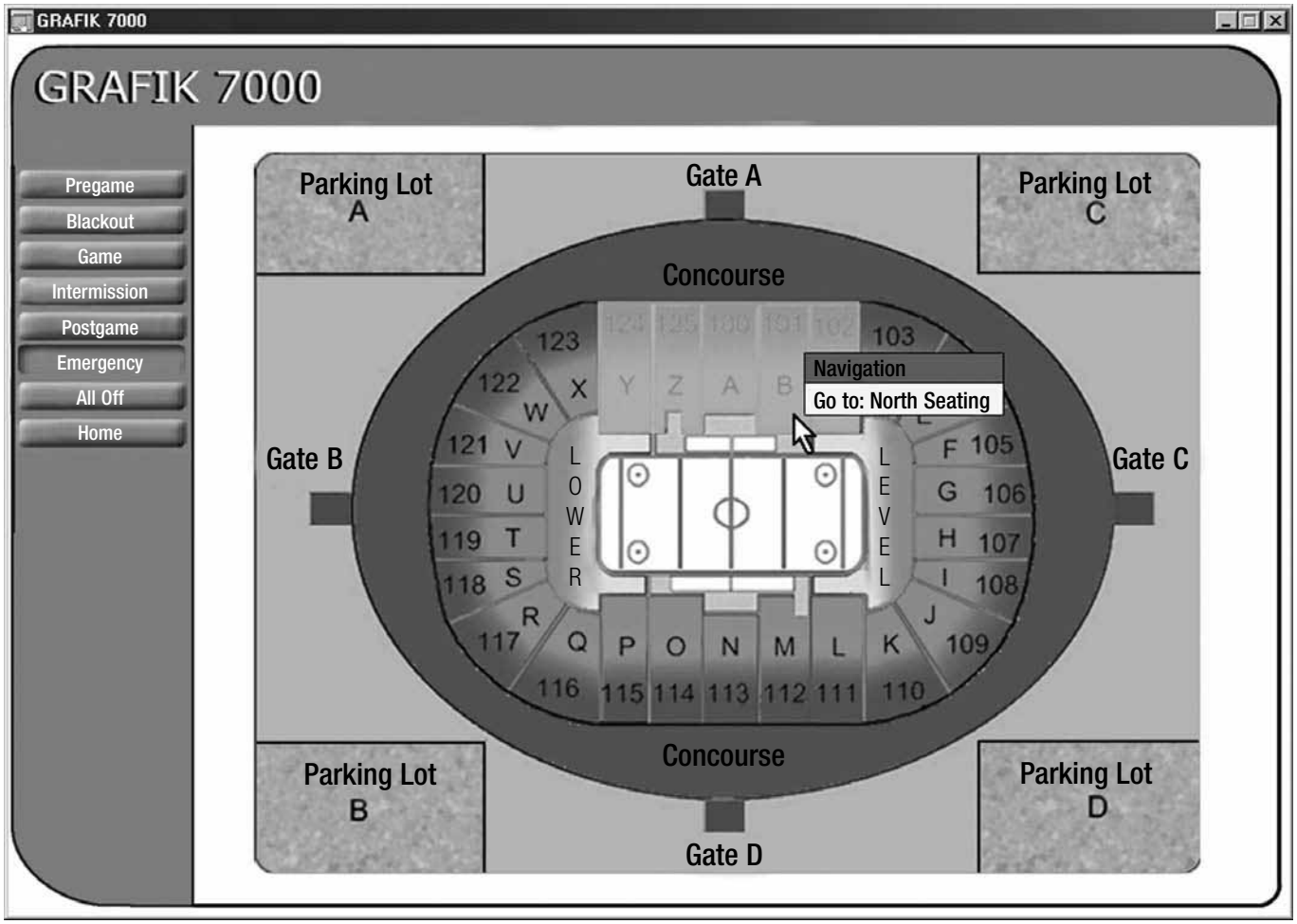
- Use for setup, monitoring, and real-time operation of the centralised lighting control system
- Complete with monitor, internal modem, and pre-loaded Windows-based Lutron DesignIT and ControlIT software
- Software is multi-lingual

Full-time eLumen Manager

eLumen Manager — **EM-A-CMP-S-0**
eLumen Manager with RAID — **EM-A-CMP-R-0**

- This full-time eLumen Manager is used with a GRAFIK 7000 lighting control system to allow the following:
  - Centralised, real-time control
  - Data logging
  - Energy profiling
  - Bridging the LAN and lighting control system
  - Web-based control
  - Interfacing to remote clients
- Full-time eLumen Manager must run at all times for proper operation of the system
- Complete with monitor, UPS, internal modem, and pre-loaded with Windows-based Lutron DesignIT, ControlIT, ScheduleIT™ and SecureIT™ software
- Software is multi-lingual
- Network compatible via LAN (Local Area Network) or dial-up networking
  - Connects to LAN from one of its RJ45 network jacks and to the lighting control system through the other RJ45 network jack
  - Ethernet connection provides dual speed capability at 10 mbit/sec or 100 mbit/sec (autosensing)
- RAID option
  - Uses an array of three or more hard drives to achieve transparent data redundancy. Drives are hot swapable and easily removable in the event of a single drive failure

eLumen software suite



Software benefits

Features

- eLumen software suite is a web-based, real-time lighting control tool that is easy to learn and operate
- Customers can choose any software combination to suit their needs
- Software capacity grows with system
- Secure, remote access (monitoring, control, and diagnostics) from anywhere at any time via Internet or LAN
- Personalised access and control in language of choice for all software

eLumen software suite	Product	Model

DesignIT™ — EL-SFT-DES

- Used to create, modify, and update the equipment in the facility
  Also used for creating zones, scenes, programming, timeclocks, groups, and modes
- Included with eLumen Managers
- Comes standard with GRAFIK 5000™ and GRAFIK 6000™ Systems
- Required on all systems to make database changes

ScheduleIT™ Software License — EL-SFT-SCH

- Allows you to schedule and implement temporary schedules for special lighting events, without affecting the existing schedules in the system
- Included with eLumen Managers
- eLumen Manager must be connected and powered for the temporary event to occur

ControlIT™ Software License — EL-SFT-CON

- Control and receive real-time feedback from lights, blinds, and other GRAFIK 7000™ controls
- Comes standard with GRAFIK 5000 and GRAFIK 6000 systems

PictureIT™ Software License — EL-SFT-PIC

- Allows control and feedback from GRAFIK 7000 system, through intuitive and interactive graphics
- Included with graphic design service

Zone License — EL-SFT-ZLIC-64

- Block of 64 additional zones for a GRAFIK 7000 processor
- Add zone licenses to the 64 zones that ship standard with the GRAFIK 7000 processor, up to the processor maximum of 512 Zones

Client License — EL-SFT-CLIC-5

- Additional 5 client access points for web-based, real-time control of the eLumen software system

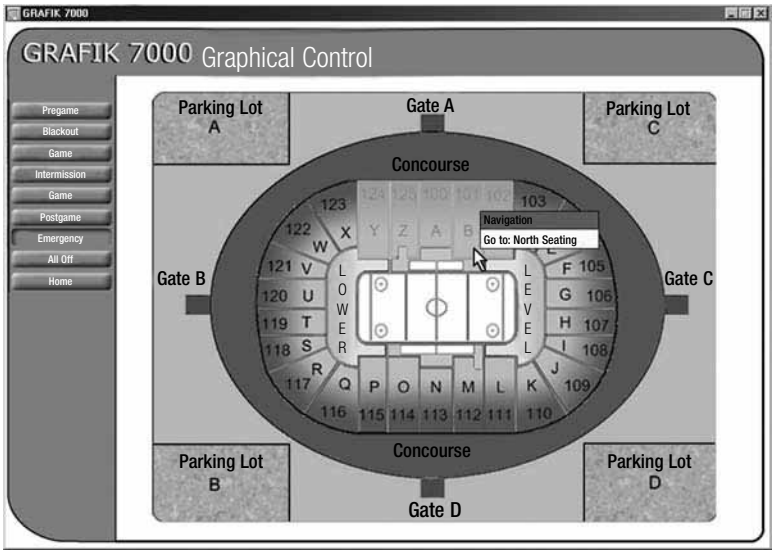
SecureIT™ Software License — EL-SFT-SEC

- 1 administration access point license
- Provides the ability to define user access rights to the eLumen software tools

ConfigureIT™ Software License — EL-SFT-CFG

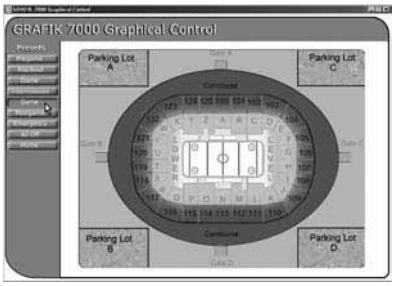
- Allows real time scene modification
- Allows new scene settings to be saved to either the processor or the processor and the database
- Allows easy identification of zones with a zone flash mode

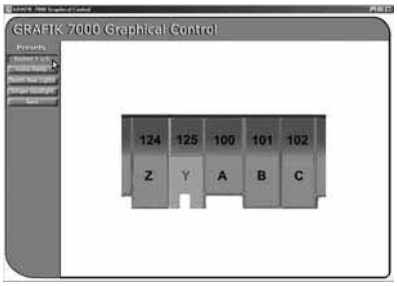
PictureIT™ Software

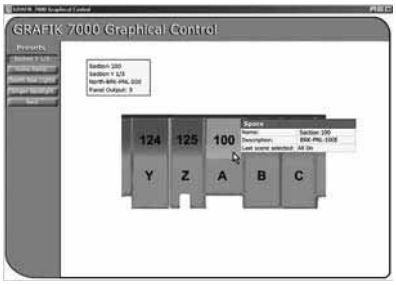


Customised software graphics for easy navigation and control

There are three options for graphical user interfaces that Lutron® can design for you.

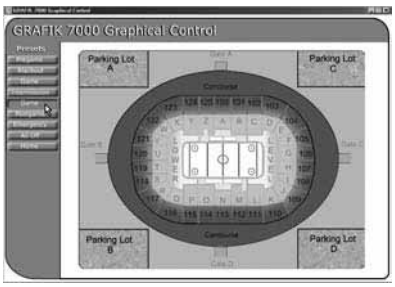






	Sidebar provides navigation and control	Graphical navigation	Graphical control and monitoring
Level one	✔		
Level two	✔	✔	
Level three	✔	✔	✔

Product	Model



Level One Graphics

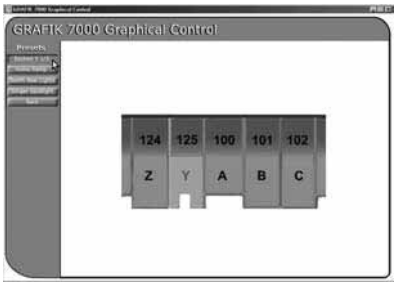
Simple buttons for you to control the lights in an area.

- Graphics are static
- 8 operational buttons per page

Level One Starter Pack — **EL-GRPH-L1-S**

- 8 custom-designed graphics pages
- PictureIT software license, EL-SFT-PIC

Each Additional Level One Page — **EL-GRPH-L1-P**



Level Two Graphics

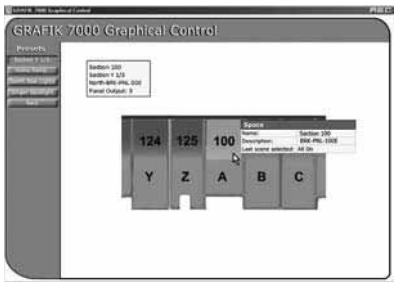
Simple buttons for you to control the lights in an area.
You can click on the selected area and control a new set of scenes via buttons.

- 8 operational buttons per page
- 8 navigation points per page

Level Two Starter Pack — **EL-GRPH-L2-S**

- 8 custom-designed graphics pages
- PictureIT software license, EL-SFT-PIC

Each Additional Level Two Page — **EL-GRPH-L2-P**



Level Three Graphics

In addition to Level One and Level Two graphics, you can view the lighting control feedback of the selected area. You can also control lights/shades and select scenes via a virtual wallstation at this level.

- 8 operational buttons per page
- 8 monitor points per page
- 8 control/navigation points per page

Level Three Starter Pack — **EL-GRPH-L3-S**

- 8 custom-designed graphics pages
- PictureIT software license, EL-SFT-PIC

Each Additional Level Three Page — **EL-GRPH-L3-P**

Product	Model

Dimensions

W: 137 mm (5.38")
H: 186 mm (7.31")
D: 54 mm (2.13")

Hand-Held Programmer — GR6-HHP

- Set scenes and make adjustments without the use of a PC
- Programs scenes on the processor to which it is connected
- Plug into hand-held programmer jack (NTOMX-HHPJ-) to set scenes or control lights locally
- Cord length is 8 m (25')

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 29 mm (1.13")[1]

Wallbox

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Hand-Held Programmer Jack — NTOMX-HHPJ-

- Connects to the hand-held programmer to a centralised lighting control system processor panel
- Connection point on the CSD link, does not count as a device on the control station device (CSD) link

Dimensions

4-Port Ethernet

W: 273 mm (10.75")
H: 160 mm (6.31")
D: 38 mm (1.50")[1]

Ethernet Interface — 4-Port EM-NWK-E-D-4; 8-Port EM-NWK-E-D-8

- Connects the eLumen™ Manager to the centralised lighting control system via ethernet

Footnote, pg. 3.9.1

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").

Product	Model	Options

Dimensions

W: 127 mm (5.00")
H: 197 mm (7.75")
D: 64 mm (2.50")

Mounts on

P/N 241496

W: 105 mm (4.13")
H: 105 mm (4.13")
D: 40 mm (1.57")

Power and Data Repeater 240V, 50/60 Hz — MX-RPTR-220/240

- Use every 610 m (2,000') to boost power and data signals
- Increase number of system power panels by 32
- Expand power panel or control station devices (CSD) link up to 2,400 m (8,000') using up to three power and data repeaters

Dimensions

W: 38 mm (1.50")
H: 145 mm (5.69")
D: 22 mm (0.88")

RS232 adapter — PJ62-ADPT-1

- Connects external RS-232 device to centralised lighting control system processor panel user interface link

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 29 mm (1.13")[1]

Wallbox

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

RS485 adapter jack — NTOMX-62J-

- Connects the RS-232 adapter to a centralised lighting control system processor panel

LON, EIB and BACnet Interfaces

- Consult Lutron® for further details

Footnote, pg. 3.9.2

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").

Ordering example-

NTOMX-62J-WH

Add colour/finish suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

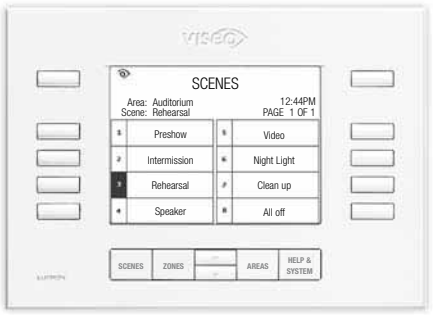
Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.



Viseo

Centralised lighting control system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 3.3.

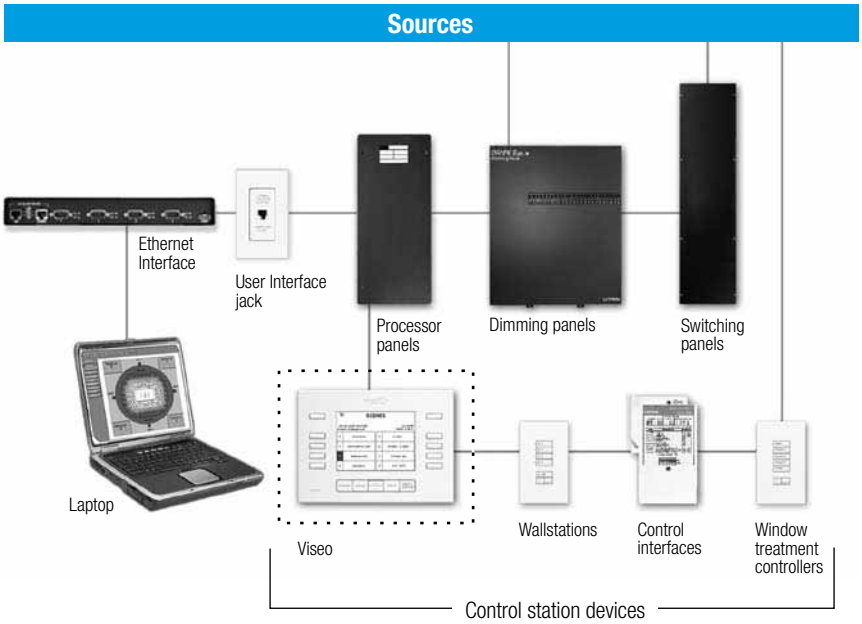
Standards

Standards listed below apply to one or more products in the Lutron® product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Viseo™

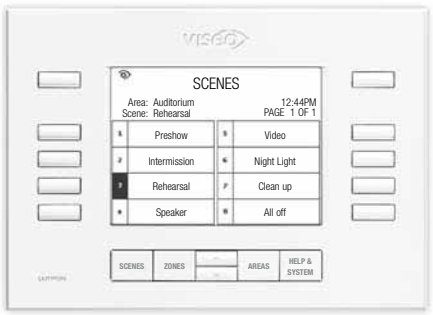
- Provides local access to the centralised lighting control system to program, monitor, and operate power panel zones and scenes of a space on the processor physically connected to the Viseo
- Works with centralised lighting control systems
- Enables a single view of the lighting and time clock status of all the spaces on a processor
- Allows control of any power panel zone in any space on the processor physically connected to the Viseo; fine-tune in 1% increments with graphic and numeric feedback
- Restrict set up and programming configuration options via numeric passcode
- Menus and help screens can be displayed in one of seven languages: English, French, German, Italian, Spanish, Portuguese, or Dutch



Specifications

- Multiple Viseo wallstations may be used; each takes one address on the control station device (CSD) link
- Viseo requires the power equivalent of four typical OMX wallstations; if the total power draw on the link is greater than 32 typical OMX wallstations, a MX-RPTR, pg. 3.9.2 is required
- Wire specification and maximums:
  - Five PELV (Class 2) conductors (2) 2.5 mm^2 (#12 AWG) for power wires, (1) twisted, shielded 1.0 mm^2 (#22 AWG) pair for control wires; plus (1) 1.0 mm^2 (#18 AWG) wire for the emergency sense line (Available from Lutron®, GRX-CBL-46L, see pg. 3.14.2)
  - Distance: 610 m (2,000'); 2400 m (8,000') with use of three MX-RPTR-220/240
  - Installation: daisy-chain (no home-run wiring)
- Power: 33 VDC (from centralised lighting control system processor panel)
- Configuration: Requires no programming; automatically downloads system information from processor
- Mounting: Lutron-supplied wallbox

Viseo

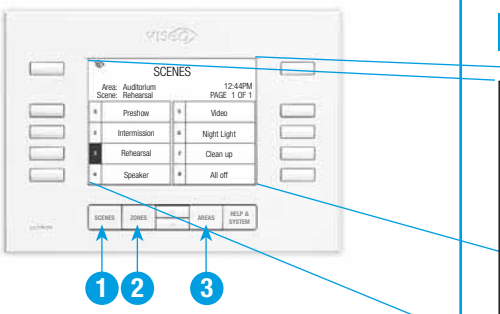


Dimensions

W: 229 mm (9.00")
H: 165 mm (6.50")
D: 57 mm (2.28")[1]

Wallbox supplied by Lutron

W: 194 mm
H: 133 mm
D: 76 mm



Product

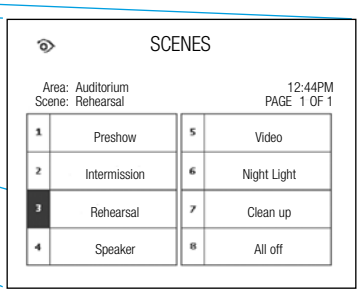
Viseo Wallstation Display Controller

High Contrast Blue/White Screen **OMX-VDC-LB-[2,3]**

Neutral Black/White Screen **OMX-VDC-LF-[2,3]**

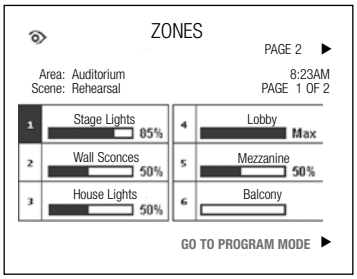
- Navigation buttons provide direct access to scenes, zones, and spaces in a single processor
- HELP & SYSTEM button accesses context-sensitive help screens
- Password-protected setup menus offer access to configuration and advanced features such as Area Setup, Unlock Areas, and Languages
- Mounts in Lutron®-supplied wallbox
- Requires power equivalent of four wallstations/control interfaces; use MX-RPTR-220/240, pg. 3.9.2 to boost power

Scenes page



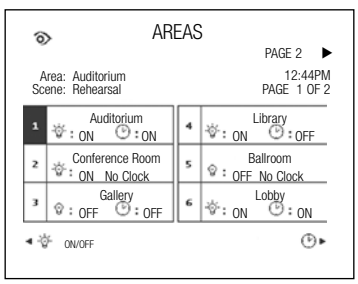
- Provides one-touch selection of preset lighting scenes

Zones page



- Change preset light levels temporarily by pressing a zone button and using Raise/Lower to adjust (permanent changes may be permitted or restricted)
- Off-line programming allows changes to preset light levels (including fade and delay times) for any area without affecting current lighting scene
- On-line programming allows for viewing of changes to preset light levels as they are being made

Areas page



- Each space in a single processor can be configured to one of four options: Hidden, Monitor Only, Change Scenes, or Programmable
- Unlock Spaces feature temporarily makes all scenes in all spaces on a processor programmable. Spaces restore to prior configuration at the touch of a button or after a "time out" period

Footnote, pg. 3.10.2

1 Depth includes wallplate and backbox. Wallplate depth is 10 mm (0.40").
2 Requires one address on the control station device (CSD) link.
3 Addressing range is 1-32.

Model

Ordering example

OMX-VDC-LB-WH

Add colour/finish suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

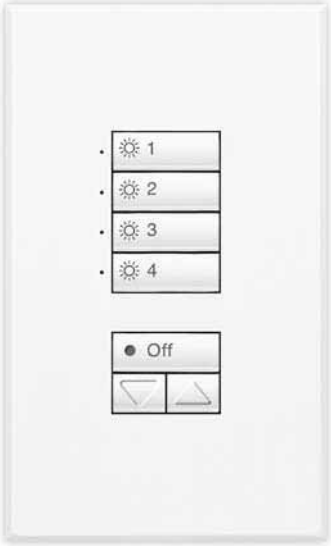
Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.



seeTouch control station device

Wallstation features

- Centralised lighting control system wallstations can be configured through software to perform a variety of functions for local control of system (e.g. select scenes, enable and disable wallstations, start and stop sequences, enable and disable system time clocks)
- seeTouch™ control station devices offer:
  - Large, rounded buttons that are easy to use
  - User-changeable button and faceplate assemblies which make for easy customisation
  - Optional engraving is angled up to the eye for easy reading
  - On-button engraving and backlit buttons for improved clarity of control functions in low light conditions
  - Three engraving options: general, standard text, and non-standard text engraving (Visit the website at www.lutron.com/seeTouch)


seeTouch
pg. 3.10.4


Architectural
pg. 3.10.9


European Style
pg. 3.10.11

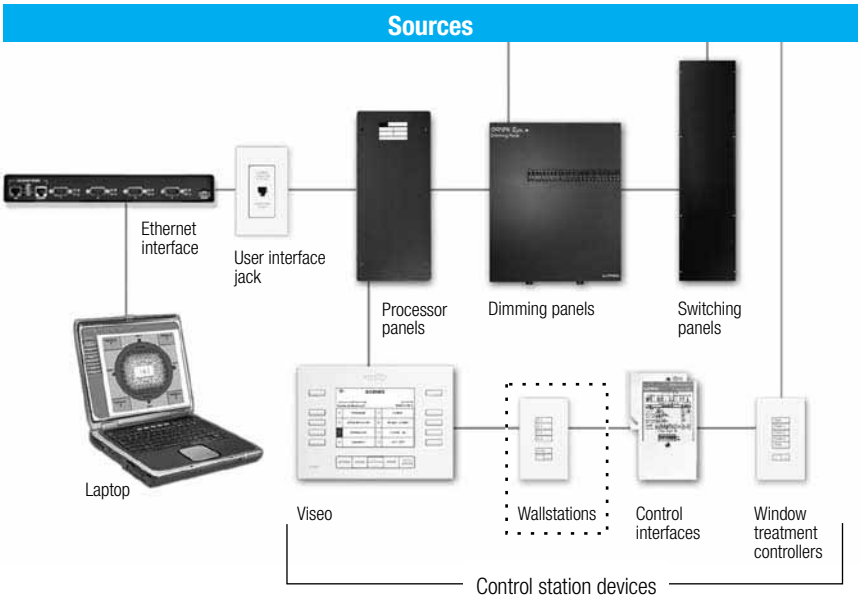

Slim button
pg. 3.10.13


Large button
pg. 3.10.14


Architrave™
pg. 3.10.15

Centralised lighting control system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 3.3.



Specifications

- Wire specification and maximums:
  - Five PELV (Class 2) conductors: (2) 2.5 mm² (#12 AWG) for power wires, (1) twisted, shielded 1.0 mm² (#22 AWG) pair for control wires; plus (1) 1.0 mm² (#18 AWG) wire for the emergency sense line (Available from Lutron®, GRX-CBL-46L, see pg. 3.14.2)
  - Distance: 610 m (2,000'); 2400 m (8,000') with use of three MX-RPTR-220/240, pg. 3.9.2
  - Installation: daisy-chain (no home-run wiring)
- Power:
  - 33 VDC (from Centralised Lighting Control System processor panel)
- Configuration:
  - Through DesignIT™ software
- Mounting:
  - No derating required when multiganged

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron® for specific information.

LUTRON Quality Systems registered to ISO 9001

seeTouch	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

2-Button Wallstation — SO-2BN-[2,3,4,5]

- Typical functions (configured through software):
  - Recall preset light levels for two scenes
  - Reflect partition status of two movable walls
  - Enable/disable control station devices
  - Start/stop one sequence
  - Enable/disable timeclock
  - Security override Scene 1
  - Fine-tune zones
- General engraving option (EGN) shown
- For seeTouch model number guide, see section 3.16
- Integrate with other manufacturer's equipment with two dry contact closure inputs, see pg. 3.10.8.
- Occupant sensor connection (power and contact closure input) available, see pg. 3.10.8.

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Button Wallstation — SO-3BN-[2,3,4,5]

- Typical functions (configured through software):
  - Recall preset light levels for three scenes
  - Reflect partition status of three movable walls
  - Select OMX-DACPI daylighting control bank of scenes
- General engraving option (EGN) shown
- For seeTouch model number guide, see section 3.16
- Integrate with other manufacturer's equipment with two dry contact closure inputs, see pg. 3.10.8.
- Occupant sensor connection (power and contact closure input) available, see pg. 3.10.8.

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation — SO-4BN-[2,3,4,5]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes
  - Reflect partition status of four movable walls
  - Select OMX-DACPI daylighting control bank of scenes
- General engraving option (EGN) shown
- For seeTouch MOdel number guide, see section 3.16
- Integrate with other manufacturer's equipment with two dry contact closure inputs, see pg. 3.10.8.
- Occupant sensor connection (power and contact closure input) available, see pg. 3.10.8.

Footnotes, pg. 3.10.4

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 For insert version use I in place of last N in model number. See section 3.16 for more information.
3 PELV (Class 2) control wiring.
4 Requires one address on the control station device (CSD) Link.
5 Addressing range is 1 - 64.

Ordering example

SO-2BN-WH-EGN

Add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs. (Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Satin finishes

Ships in 48 hrs.

- See pg. 1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

seeTouch™	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation with Off — SO-4NRLN-[2,3,4,5]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off
  - Start/stop one to four sequences
- General engraving option (EGN) shown
- For seeTouch model number guide, see section 3.16
- Integrate with other manufacturer's equipment with two dry contact closure inputs, see pg. 3.10.8
- Occupant sensor connection (power and contact closure input) available, see pg. 3.10.8

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation with Off and Raise/Lower — SO-4SN-[2,3,4,5]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off
  - Fine-tune light levels in selected scene using master raise/lower
- General engraving option (EGN) shown
- For seeTouch™ model number guide, see section 3.16
- Integrate with other manufacturer's equipment with two dry contact closure inputs, see pg. 3.10.8
- Occupant sensor connection (power and contact closure input) available, see pg. 3.10.8

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation with Off, Raise/Lower, and Infrared Receiver — SO-4SIRN-[2,3,4,5]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off with four-scene wireless remote control (GRX-IT-WH, ordered separately)
  - Recall light levels for eight scenes plus off with eight-scene wireless remote control (GRX-8IT-WH, ordered separately)
  - Fine-tune light levels in select scene from keypad or wireless remote control
- General engraving option (EGN) shown
- For seeTouch model number guide, see section 3.16
- Integrate with other manufacturer's equipment with two dry contact closure inputs, see pg. 3.10.8
- Occupant sensor connection (power and contact closure input) available, see pg. 3.10.8

Footnotes, pg. 3.10.5

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 For insert version use I in place of last N in model number. See pg. 3.16.1 for more information.
3 PELV (Class 2) control wiring.
4 Requires one address on the control station device (CSD) Link.
5 Addressing range is 1 - 64.

Ordering example

SO-2BN-WH-EGN

add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs. (Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Satin finishes

Ships in 48 hrs.

- See pg. 1.3.1. for complete colour offering and suffixes.

Customisation

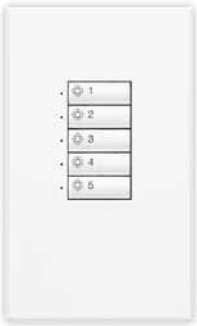
Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

seeTouch™	Product	Model	Options



Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

5-Button Wallstation

SO-5BN-[2,3,4,5]

- Typical functions (configured through software):
  - Recall preset light levels for five scenes
  - Reflect position status of five movable walls
- General engraving option (EGN) shown
- For seeTouch model number guide, see section 3.16
- Integrate with other manufacturer's equipment with two dry contact closure inputs, see 3.10.8
- Occupant sensor connection (power and contact closure input) available, see pg. 3.10.8

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

6-Button Wallstation

SO-6BN-[2,3,4,5]

- Typical functions (configured through software):
  - Recall preset light levels for six scenes
  - Reflect position status of six movable walls
- General engraving option (EGN) shown
- For seeTouch model number guide, see section 3.16
- Integrate with other manufacturer's equipment with two dry contact closure inputs, see pg. 3.10.8
- Occupant sensor connection (power and contact closure input) available, see pg. 3.10.8

Footnotes, pg. 3.10.6

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 For insert version use I in place of last N in model number. See pg. 3.16.1 for more information.
3 PELV (Class 2) control wiring.
4 Requires one address on the control station device (CSD) Link.
5 Addressing range is 1 - 64.

Ordering example

SO-2BN-WH-EGN

Add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs. (Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Satin finishes

Ships in 48 hrs.

- See pg. 1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

seeTouch™/1-Button

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[2]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Product	Model
7-Button Wallstation	**SO-7BN-**[3, 4, 5, 6]

- Typical functions (configured through software):
  - Recall preset light levels for seven scenes
  - Reflect position status of seven movable walls
- For seeTouch model number guide, see section 3.16
- Integrate with other manufacturer's equipment with two dry contact closure inputs, see pg. 3.10.8
- Occupant sensor connection (power and contact closure input) available, see pg. 3.10.8

Product	Model
1-Button Wallstation with Status Light	**FOMX-1B-SL-WH** [4, 5, 6]

- Typical functions (configured through software):
  - Toggle any zone(s) On/Off with single tap button
  - Status LED is lit when zone is on and lit dimly as a nightlight when zone is off
- Models available without status LED (FOMX-1B-WH)
- Shipped with screwless Lutron Fassada fashion wallplate
- Available in white (WH) only – white frame and white button
- Can be ganged in standard opening multigang faceplates with other FOMX 1-button wallstations
- Multigang Fassada™ fashion wallplates available from Lutron®

Footnotes, pg. 3.10.7

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 Depth includes wallplate and backbox. Wallplate depth is 6 mm (0.23").
3 For insert version use I in place of last N in model number. See pg. 3.16.1 for more information.
4 PELV (Class 2) control wiring.
5 Requires one address on the control station device (CSD) Link.
6 Addressing range is 1 - 64.

Options

Ordering example

SO-2BN-WH

Add colour/finish model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs.
(Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Satin finishes

Ships in 48 hrs.

- See pg. 1.3.1 for complete colour offering and suffixes.

Customisation

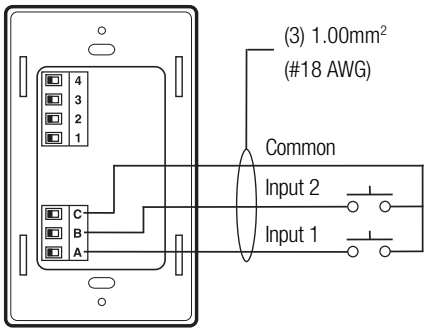
Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

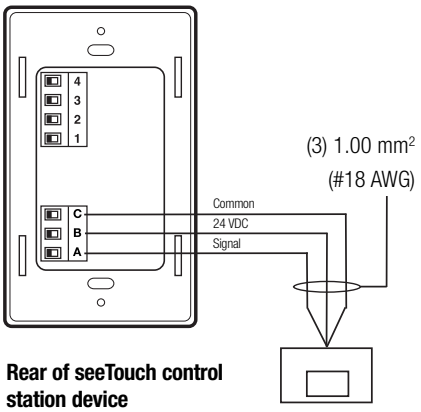
Locking covers

- See pg. 2.13.1 for more information.

seeTouch **Product**



Rear of seeTouch control station device



Rear of seeTouch control station device

Rear of seeTouch control station device

Contact closure input wiring

- Use low voltage PELV (Class 2) wiring to connect the contact closure inputs to the control station device

Specifications

- Inputs must be dry contact closure or common referenced solid-state outputs:

  Dry contact closure:
  - Rated voltage: 10 VDC when open
  - Rated current: 0.5 mA when closed

  Solid-state Output:
  - Open collector (NPN) referenced to common (Terminal C)
  - On-state saturation voltage less than 2 VDC at 0.1 mA
  - Off-state leakage current less than 50 µA at 5 VDC
  - Control station device is miswire protected up to 36 VDC
  - Outputs must stay in the closed or open states for at least 40 msec in order to be recognised by the control station device

Occupant sensor wiring

- Use low voltage PELV (Class 2) wiring to connect the occupant sensor to the control station device

Specifications

- No power pack required
- Power supply output (Terminal B):
  - 24 VDC, 50 mA maximum
  - An auxilliary power supply must be used if the maximum current limit is exceeded
- Occupant sensor signal input (Terminal A):
  - Input must be dry contact closure or solid-state output from the occupant sensor:

  Dry contact closure from occupant sensor:
  - Referenced to common (Terminal C) or power supply (Terminal B: 24 VDC).
  - Rated voltage: 20 VDC when open
  - Rated current: 0.5 mA when closed

  Solid-state output from occupant sensor:
  - Open collector (NPN or PNP) or active-high/active-low
  - When open collector NPN or active-low referenced to common (Terminal C), on-state voltage at terminal 1 must be less than 6 VDC (at 0.3 mA)
  - When open collector PNP or active-high referenced to power supply (Terminal B), on-state voltage at terminal 1 must be greater than 18 VDC (at 0.3 mA)
  - Off-state leakage current less than ±60 mA
  - Outputs must stay in the closed or open states for at least 40 msec in order to be recognised by the wallstation
- Wallstation is miswire protected up to 36 VDC

Architectural	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

2-Button Wallstation — NTOMX-2B-SL-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for two scenes
  - Reflect position status of two movable walls
  - Enable/disable control station devices
  - Start/stop one sequence
  - Enable/disable time clock
  - Security override Scene 1
  - Fine-tune zones

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Keyswitch Wallstation — NTOMX-KS-[2, 3, 4]

- Provides momentary keyswitch control for all functions of the NTOMX-2B-SL- (see above)

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation — NTOMX-4B-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes
  - Reflect position status of four movable walls
  - Select OMX-DACPI daylighting control bank of scenes

Footnotes, pg. 3.10.9

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 PELV (Class 2) control wiring.
3 Requires one address on the control station device (CSD) Link.
4. Addressing range is 1 - 32.

Ordering example

NTOMX-2B-SL-WH

Add colour/finish model #

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Architectural	Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation with Off — NTOMX-4S-NRL-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off
  - Reflect position status of movable walls
  - Start/stop one to four sequences

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation with Off and Raise/Lower — NTOMX-4S-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off
  - Fine-tune light levels in selected scene using master raise/lower

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox:

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

4-Button Wallstation with Off, Raise/Lower and Infrared Receiver — NTOMX-4S-IR-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off with four-scene wireless remote control (GRX-IT-WH, ordered separately)
  - Fine-tune light levels from keypad or wireless remote control
- Recall preset light levels for eight scenes plus off with eight-scene wireless remote control (GRX-8IT-WH, ordered separately)

Footnotes, pg. 3.10.10

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 PELV (Class 2) control wiring.
3 Requires one address on the control station device (CSD) Link.
4 Addressing range is 1 - 32.

Ordering example

NTOMX-4S-NRL-WH

Add colour/finish suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

European Style	Product	Model	Options

Dimensions

W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

2-Button Wallstation — EOMX-2B-[2, 3, 4]

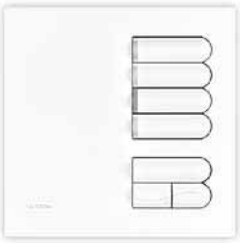
- Typical functions (configured through software):
  - Recall preset light levels for two scenes
  - Reflect position status of two movable walls
  - Enable/disable control station devices
  - Start/stop one sequence
  - Enable/disable timeclock
  - Security override Scene 1
  - Fine-tune individual zones
- Mounts in European wallbox (Lutron® P/N 241683)

Dimensions

W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

4-Button Wallstation — EOMX-4B-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off
  - Fine-tune light levels with master raise/lower
  - Reflect position status of four movable walls
- Mounts in European wallbox (Lutron P/N 241683)



Dimensions

W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

4-Button Wallstation with Off and Raise/Lower — EOMX-4S-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off
  - Fine-tune light levels in selected scene with master raise/lower
- Mounts in European wallbox (Lutron P/N 241683)

Footnotes, pg. 3.10.11

1 Depth includes wallplate and backbox. Wallplate depth is 12 mm (0.48"). Minimum wallbox depth is 25 mm.
2 PELV (Class 2) control wiring.
3 Requires one address on the control station device (CSD) Link.
4 Addressing range is 1 - 64.

Ordering example

EOMX-2B-WH

Add colour/finish suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

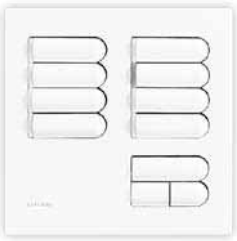
Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

European Style	Product	Model	Options



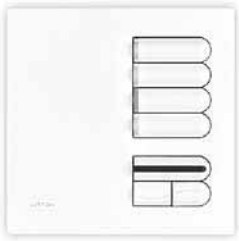
Dimensions

W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

8-Button Wallstation with Off and Raise/Lower

EOMX-8S-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for eight scenes plus off
  - Fine-tune light levels in selected scene with master raise/lower
- Mounts in European wallbox (Lutron P/N 241683)



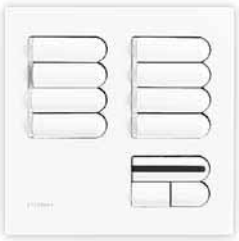
Dimensions

W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

4-Button Wallstation with Off, Raise/Lower and Infrared Receiver

EOMX-4S-IR-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off from keypad or four-scene wireless remote control (GRX-IT-WH, ordered separately)
  - Recall preset light levels for eight scenes plus off with eight-scene wireless remote control (GRX-8IT-WH, ordered separately)
  - Fine-tune light levels in selected scene from keypad or wireless remote control
- Mounts in European wallbox (Lutron P/N 241683)



Dimensions

W: 86 mm (3.38")
H: 86 mm (3.38")
D: 22 mm (0.88")[1]

8-Button Wallstation with Off, Raise/Lower and Infrared Receiver

EOMX-8S-IR-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off from keypad or four-scene wireless remote control (GRX-IT-WH, ordered separately)
  - Recall preset light levels for eight scenes plus off with eight-scene wireless remote control (GRX-8IT-WH, ordered separately)
  - Fine-tune light levels in selected scene with keypad or wireless remote control
- Mounts in European wallbox (Lutron P/N 241683)

Footnotes, pg. 3.10.12

1 Depth includes wallplate and backbox. Wallplate depth is 12 mm (0.48"). Minimum wallbox depth is 25 mm.
2 PELV (Class 2) control wiring.
3 Requires one address on the control station device (CSD) Link.
4 Addressing range is 1 - 64.

Ordering example

EOMX-2B-WH

Add colour/finish suffix to model #

Matt finishes

Ships in 48 hrs.

White	WH
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Slim Button

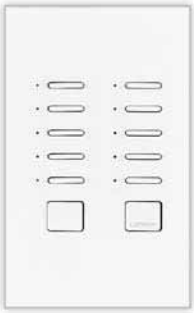
Dimensions

W:	70 mm	(2.75")
H:	114 mm	(4.50")
D:	29 mm	(1.16")[1]

Wallbox:

P/N 241218

W:	50 mm	(2.00")
H:	100 mm	(4.00")
D:	63 mm	(2.50")



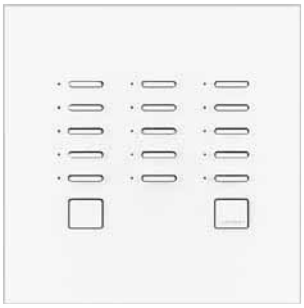
Dimensions

W:	70 mm	(2.75")
H:	114 mm	(4.50")
D:	29 mm	(1.16")[1]

Wallbox:

P/N 241218

W:	50 mm	(2.00")
H:	100 mm	(4.00")
D:	63 mm	(2.50")



Dimensions

W:	114 mm	(4.50")
H:	114 mm	(4.50")
D:	29 mm	(1.16")[1]

Wallbox:

P/N 241218

W:	50 mm	(2.00")
H:	100 mm	(4.00")
D:	63 mm	(2.50")

Product

5-Button Wallstation with Raise/Lower

NTOMX-KP5-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off
  - Fine-tune light levels
  - Recall five scenes plus off and full-on
- Amber status LEDs standard

10-Button Wallstation with Raise/Lower

NTOMX-KP10-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for nine scenes plus off
  - Fine-tune light levels
  - Recall preset light levels for ten scenes plus off and full-on
- Amber status LEDs standard

15-Button Wallstation with Raise/Lower

NTOMX-KP15-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for 14 scenes plus off
  - Fine-tune light levels
  - Recall preset light levels for 15 scenes plus off and full-on
- Amber status LEDs standard

Footnotes, pg. 3.10.13

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Requires one address on the Control Station Device (CSD) Link.
4 Addressing range is 1 - 32.

Options

Ordering example

NTOMX-KP5-WH

Add colour/finish to model #

Matt finishes

Standard, Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Large Button

Dimensions

W:	70 mm	(2.75")
H:	114 mm	(4.50")
D:	29 mm	(1.16")[1]

Wallbox:

P/N 241218

W:	50 mm	(2.00")
H:	100 mm	(4.00")
D:	63 mm	(2.50")

Dimensions

W:	114 mm	(4.50")
H:	114 mm	(4.50")
D:	29 mm	(1.16")[1]

Wallbox:

P/N 2 x 241218

W:	100 mm	(4.00")
H:	100 mm	(4.00")
D:	63 mm	(2.50")

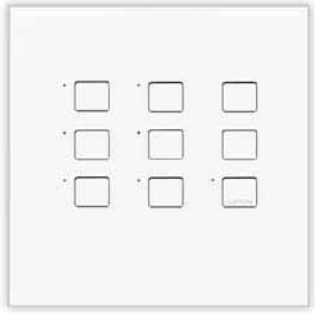
Dimensions

W:	70 mm	(2.75")
H:	114 mm	(4.50")
D:	29 mm	(1.16")[1]

Wallbox:

P/N 241218

W:	50 mm	(2.00")
H:	100 mm	(4.00")
D:	63 mm	(2.50")



Dimensions

W:	114 mm	(4.50")
H:	114 mm	(4.50")
D:	29 mm	(1.16")[1]

Wallbox:

P/N 2 x 241218

W:	100 mm	(4.00")
H:	100 mm	(4.00")
D:	63 mm	(2.50")

Product

5-Scene Wallstation with Off — NTOMX-LB6-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels three scenes plus off
  - Fine-tune light levels
  - Recall preset light levels five scenes plus off
- Amber status LEDs standard

8-Scene Wallstation with Off — NTOMX-LB9-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for six scenes plus
  - Fine-tune light levels
  - Recall preset light levels for eight scenes plus off
- Amber status LEDs standard

3-Scene Wallstation with Off and Raise/Lower — NTOMX-LB6-RL-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for three scenes plus off
  - Fine-tune light levels
- Amber status LEDs standard

6-Scene Wallstation with Off and Raise/Lower — NTOMX-LB9-RL-[2, 3, 4]

- Typical functions (configured through software):
  - Recall preset light levels for six scenes plus off
  - Fine-tune light levels
- Amber status LEDs standard

Footnotes, pg. 3.10.14

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Requires one address on the control station device (CSD) Link.
4 Addressing range is 1 - 32.

Options

Ordering example

NTOMX-LB6-WH

Add colour/finish to model #

Matt finishes

Standard, Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Architrave™	Product	Model	Options

Dimensions

W: 44 mm (1.75")
H: 114 mm (4.50")
D: 41 mm (1.63")[1]

Wallbox:

P/N 241399

W: 32 mm (1.25")
H: 97 mm (3.80")
D: 70 mm (2.75")

2-Slim-Button Architrave Wallstation

OMX-2B-DW-[3, 4, 5]

- Typical functions (configured through software):
  - Recall preset light levels for two scenes
  - Reflect position status of two movable walls
  - Enable/disable control station devices
  - Start/stop one sequence
  - Enable/disable timeclock
  - Security override Scene 1
  - Fine-tune light levels

Dimensions

W: 44 mm (1.75")
H: 114 mm (4.50")
D: 41 mm (1.63")[1]

Wallbox:

P/N 241399

W: 32 mm (1.25")
H: 97 mm (3.80")
D: 70 mm (2.75")

4-Slim-Button Architrave Wallstation with Off and Raise/Lower

OMX-7B-DW-[3, 4, 5]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes, plus off
  - Fine-tune light levels

Dimensions

W: 38 mm (1.50")
H: 131 mm (5.16")
D: 51 mm (1.99")[2]

Wallbox:

P/N 241633

W: 32 mm (1.25")
H: 112 mm (4.40")
D: 70 mm (2.75")

4-Large-Button Wallstation Architrave with Off and Raise/Lower

OMX-4SLB-DW-[3, 4, 5]

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off
  - Fine-tune light levels

Footnotes, pg. 3.10.15

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 Depth includes wallplate and backbox. Wallplate depth is 3 mm (0.13").
3 PELV (Class 2) control wiring.
4 Requires one address on the control dtation device (CSD) Link.
5 Addressing range is 1 - 32.

Ordering example

OMX-2B-DW-WH

Add colour/finish to model #

Metal finishes

Ships in 4-6 weeks.

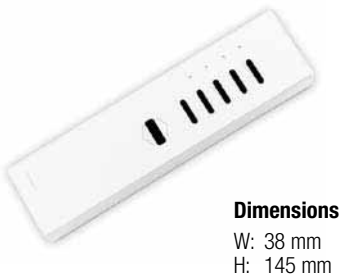
White WH
Bright Brass BB

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Infrared	Product	Model	Options



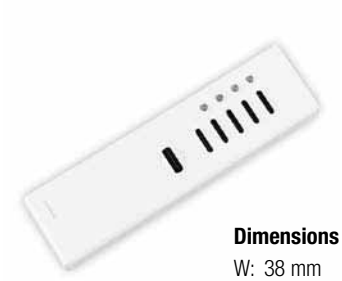
Dimensions

W: 38 mm (1.50")
H: 145 mm (5.69")
D: 22 mm (0.88")

4-Scene Infrared Wireless Remote Control

GRX-IT-WH

- Typical functions (configured through software):
  - Recall preset light levels for four scenes plus off (scenes dependent on receiver settings)
  - Fine-tune light levels in selected scene with master raise/lower
- 15 m (50') line-of-sight range to receiver
- Does not count as a device on the control station device (CSD) Link
- Infrared frequency is 40 kHz
- Available in white (WH) only
- Engraving available: add -E to end of model; see engraving schedule, pg. 3.17.5
- Requires separate infrared receiver



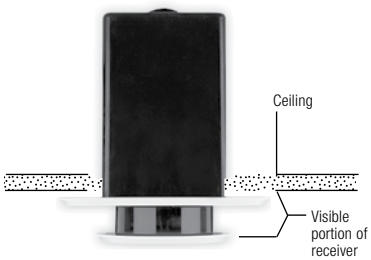
Dimensions

W: 38 mm (1.50")
H: 145 mm (5.69")
D: 22 mm (0.88")

8-Scene Infrared Wireless Remote Control

GRX-8IT-WH

- Typical functions (configured through software):
  - Recall preset light levels for eight scenes plus off (scenes dependent on receiver settings)
  - Fine-tune light levels in selected scene with master raise/lower
- 15 m (50') line-of-sight range to receiver
- Does not count as a device on the control station device (CSD) Link
- Infrared frequency is 40 kHz
- Available in white (WH) only
- Engraving available: add -E to end of model; see engraving schedule, pg. 3.17.5
- Requires separate infrared receiver



Dimensions

Diameter: 89 mm (3.50")
Depth: 75 mm (3.00")

Ceiling-Mounted Infrared Receiver

OMX-CIR-WH[1, 2, 3]

- Typical functions (configured through software):
  - Receive signal from Infrared wireless remote control
  - Recall of preset light levels for four scenes (1-4, 5-8, 9-12, or 13-16) plus off with four-scene infrared wireless remote control (GRX-IT-WH ordered separately)
  - Fine-tune light levels in selected scene with wireless remote control
- 360º reception range, 15 m (50') line-of-sight range from wireless remote control to receiver
- Mounts in 56 mm (2.19") x 56 mm (2.19") collar, provided by Lutron®
- Available in white (WH) only

Ordering example

GRX-IT-WH

Standard, Ships in 48 hrs.

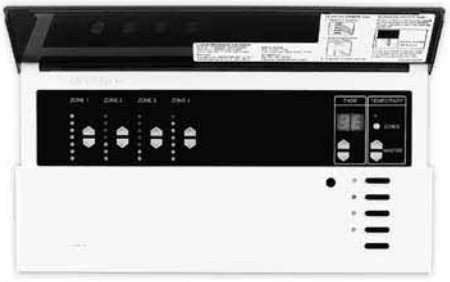
Engraving

Ships in 4-6 weeks.

• See pg. 3.17.5 for engraving schedules.

Footnotes, pg. 3.10.16

1 PELV (Class 2) control wiring.
2 Requires one address on the control station device (CSD) Link.
3 Addressing range is 1 - 32.



Power-handling control unit

Architectural-grade

- Use optional GRAFIK Eye™ control units or GRAFIK Eye slider controls for local control of your space while maintaining centralised control through a PC
- Four scenes per local GRAFIK Eye control unit, expandable through the centralised lighting control system processor
- User-defined lockout options
- Fade time: variable (0-59 seconds and 1-60 minutes set by end user)
- Use multiple GRAFIK Eye 4600 model control units for control of individual zones from multiple locations

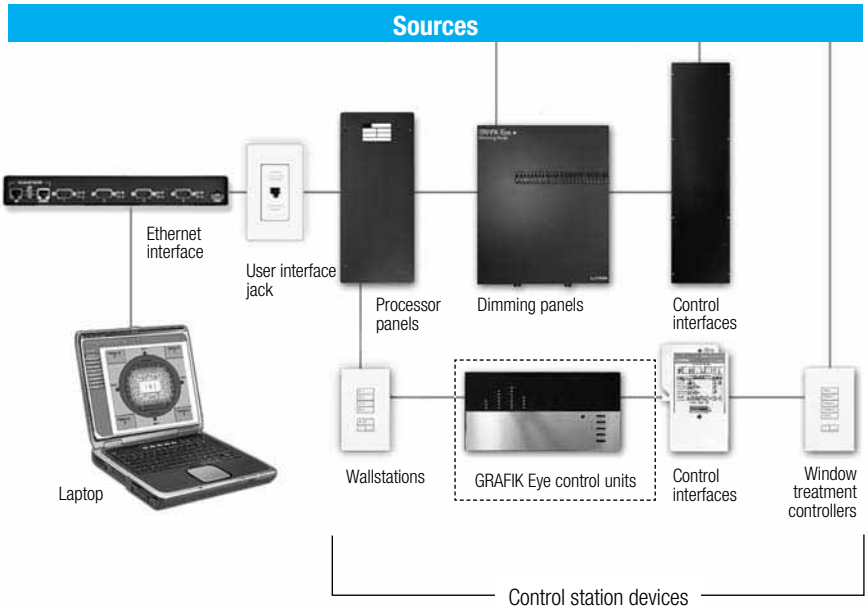
Centralised lighting control system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 3.3.

Sources

	Incandescent
	Magnetic low voltage
	Electronic low voltage*
	Fluorescent*
	Neon/cold cathode
	High-intensity discharge* (non-dim only)
	Controllable window treatments

*Interface required to dim/control. Consult product pages for specifics.



Standards

Standards listed below apply to one or more products in the Lutron® product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Specifications

- Load types:
  3600 models:
  - Directly: incandescent, magnetic low voltage, neon/cold cathode
  - Through power interfaces: fluorescent, electronic low voltage, controllable window treatments

  4600 models/OMX slider controls:
  - Through power panels

Source	Product	Max. Capacity	Model	Options

Dimensions

220-240 VAC	230 VAC
W: 141 mm (5.50")	W: 227 mm (8.94")
H: 116 mm (4.56")	H: 138 mm (5.44")
D: 57 mm (2.25")[1]	D: 57 mm (2.25")[1]
Wallbox:	Wallbox:
P/N 2 x 241218	P/N 241400
W: 100 mm (4.00")	W: 200 mm (8.00")
H: 100 mm (4.00")	H: 95 mm (3.75")
D: 63 mm (2.50")	D: 75 mm (3.00")

Dimensions

220-240 VAC	230 VAC
W: 184 mm (7.25")	W: 227 mm (8.94")
H: 116 mm (4.56")	H: 138 mm (5.44")
D: 57 mm (2.25")[1]	D: 57 mm (2.25")[1]
Wallbox:	Wallbox:
P/N 3 x 241218	P/N 241400
W: 150 mm (6.00")	W: 200 mm (8.00")
H: 100 mm (4.00")	H: 95 mm (3.75")
D: 63 mm (2.50")	D: 75 mm (3.00")

2-Zone Power-Handling Control Units[2, 3,4]

220-240 VAC (non-CE)

1200 W/VA per zone
1600 W/VA per control unit **OMX-3602-_-AU-_**

230 VAC (CE)

800 W/VA per zone
1600 W/VA per control unit **OMX-3602-_-CE-_**

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[5]
- Requires a circuit feed

3-Zone Power-Handling Control Units[2, 3,4]

220-240 VAC (non-CE)

1200 W/VA per zone
2400 W/VA per control unit **OMX-3603-_-AU-_**

230 VAC (CE)

800 W/VA per zone
2300 W/VA per control unit **OMX-3603-_-CE-_**

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[5]
- Requires a circuit feed

Electronic low voltage, fluorescent
Electronic low voltage and flourescent sources require an interface, see section 2.5. interface is not required if using Lutron's ELV transformer[5].

Controllable window treatments
Sivoia QED™ and 3-wire AC motorised window treatments require controllers, see section 2.15, and dedicated zones on control units.

Footnotes, pg. 3.11.2

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Requires one address on the control station device (CSD) Link.
4 Addressing range is 1 - 32.
5 For more information about Lutron's ELV transformers, see application note on page 2.16.2.

Ordering example

OMX-3602-T-AU-WH

Add cover option and colour/finish suffix to model #

Cover options

Opaque **A**

Cover and base will match

Translucent Black **T**

Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

- Matt cover options: A or T
- See pg.1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg.1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg.1.3.1 for complete colour offering and suffixes.

Satin finishes

Ships in 4-6 weeks.

- Satin cover option: A or T
- See pg.1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Source	Product	Max. Capacity	Model	Options

Dimensions

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

4-Zone Power-Handling Control Units [2, 3, 4]

220-240 VAC (non-CE)

1200 W/VA per zone
3000 W/VA per control unit **OMX-3604-_AU-_**

230 VAC

800 W/VA per zone
2300 W/VA per control unit **OMX-3604-_-CE-_**

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron® ELV transformer[5]
- Requires a circuit feed

Dimensions

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

6-Zone Power-Handling Control Units [2, 3, 4]

220-240 VAC (non-CE)

1200 W/VA per zone
3000 W/VA per control unit **OMX-3606-_-AU-_**

230 VAC (CE)

800 W/VA per zone
2300 W/VA per control unit **OMX-3606-_-CE-_**

- Directly control incandescent, magnetic low voltage, neon/cold cathode, Lutron ELV transformer[5]
- Requires a circuit feed

Electronic low voltage, Fluorescent
Electronic low voltage and flourescent sources require an interface, see section 2.5. Interface is not required if using Lutron's ELV transformer[5].

Controllable window treatments
Sivoia QED™ and 3-wire AC motorised window treatments require controllers, see section 2.15, and dedicated zones on control units.

Footnotes, pg. 3.11.3

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Requires one address on the control station device (CSD) Link.
4 Addressing range is 1 - 32.
5. For more information about Lutron's ELV transformers, see application note on page 2.16.2.

Ordering example

OMX-3604-A-AU-WH

Add cover option and colour/ finish suffix to model #

Cover options

Opaque **A**

Cover and base will match

Translucent black T

Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

- Matt cover options: A or T
- See pg.1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg.1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg.1.3.1 for complete colour offering and suffixes.

Satin finishes

Ships in 4-6 weeks.

- Satin cover option: A or T
- See pg.1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Product	Model
2-Zone Control Unit	OMX-4602-[2, 3, 4]
3-Zone Control Unit	OMX-4603-[2, 3, 4]
4-Zone Control Unit	OMX-4604-[2, 3, 4]
6-Zone Control Unit	OMX-4606-[2, 3, 4]

Dimensions
W: 141 mm (5.56")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 2 x 241218
W: 100 mm (4.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

- Sources controlled through power panels
- For panel ordering information, see section 4

Dimensions
W: 186 mm (7.71")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 3 x 241218
W: 150 mm (6.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

- Sources controlled through power panels
- For panel ordering information, see section 4

Dimensions
W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

- Sources controlled through power panels
- For panel ordering information, see section 4

Dimensions
W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

- Sources controlled through power panels
- For panel ordering information, see section 4

Footnotes, pg. 3.11.4

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 PELV (Class 2) control wiring.
3 Requires one address on the control station device (CSD) Link.
4 Addressing range is 1 - 32.

Options

Ordering example

OMX-4604-WH

Add cover option and colour/ finish suffix to model #

Cover options

Opaque **A**

Cover and base will match

Translucent Black T

Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

- Matt cover options: A or T
- See pg.1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg.1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg.1.3.1 for complete colour offering and suffixes.

Satin finishes

Ships in 4-6 weeks.

- Satin cover option: A or T
- See pg.1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Source	Product	Model	Options

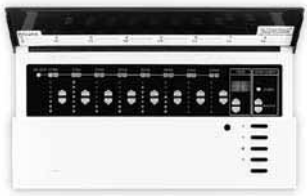
Dimensions

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

8-Zone Control Unit — OMX-4608 -[2, 3]

- Sources controlled through power panels
- For panel ordering information, see section 4
- Requires one address on the control station device (CSD) Link



(Shown with open cover)

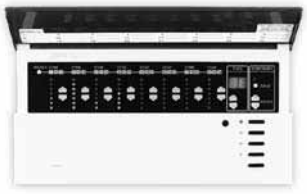
Dimensions

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

16-Zone Control Unit — OMX-4616-[2, 3]

- Sources controlled through power panels
- For panel ordering information, see section 4
- Requires two addresses on the control station device (CSD) Link



(Shown with open cover)

Dimensions

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Wallbox:
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

24-Zone Control Unit[2] — OMX-4624-[2, 3]

- Sources controlled through power panels
- For panel ordering information, see section 4
- Requires three addresses on the control station device (CSD) Link

Footnotes, pg. 3.11.5

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
2 Consult Lutron® for availability
3 Addressing range is 1 - 32.

Ordering example

OMX-4624-WH

Add cover option and colour/finish suffix to model #

Cover options

Opaque **A**

Cover and base will match

Translucent Black **T**

Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

- Matt cover options: A or T
- See pg.1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg.1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg.1.3.1 for complete colour offering and suffixes.

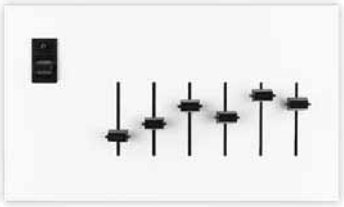
Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.



OMXSL-6-4G (shown)

Slider control units[3,4,5]

- Dim incandescent, magnetic low-voltage, fluorescent, neon/cold cathode, or electronic low-voltage through remote Power Panels, see section 4
- Easy-to-manoeuvre sliders provide intuitive method of controlling a local lighting space
- Requires custom wallbox; wallboxes provided by Lutron
- For other options, contact Lutron
- Controls any of the zones on the same processor physically connected to the slider control

Model[1]	Width	Height	Depth[2]
OMXSL-1-1G	59 mm (2.31")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-2-2G	105 mm (4.13")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-3-2G	105 mm (4.13")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-4-3G	151 mm (5.94")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-5-3G	151 mm (5.94")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-6-4G	200 mm (7.88")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-7-4G	200 mm (7.88")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-8-5G	243 mm (9.56")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-9-5G	243 mm (9.56")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-10-6G	289 mm (11.38")	103 mm (4.06")	76 mm (3.00")[2]
OMXSL-11-6G	289 mm (11.38")	103 mm (4.06")	76 mm (3.00")
OMXSL-12-7G	335 mm (13.19")	103 mm (4.06")	76 mm (3.00")[2]

Footnotes, pg. 3.11.6

1 Ordering example: for model no. OMXSL-1-1G, 1 represents number of zones, 1G represents single-gang wallbox.
2 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
3 PELV (Class 2) control wiring.
4 Requires one address on the control station device (CSD) Link.
5 Addressing range is 1 - 32.

Options

Ordering example

OMXSL-1-1G-WH

Add colour/finish model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 4 - 6 weeks.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Metal finishes

Ships in 4 - 6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

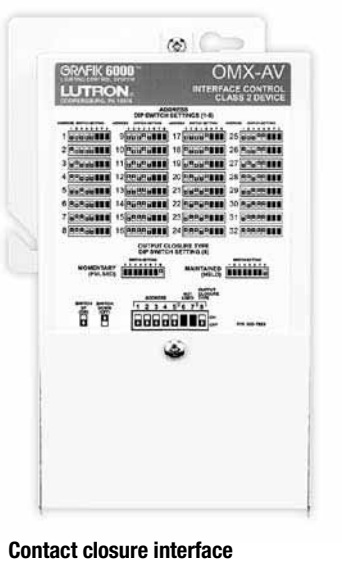
Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.3.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.



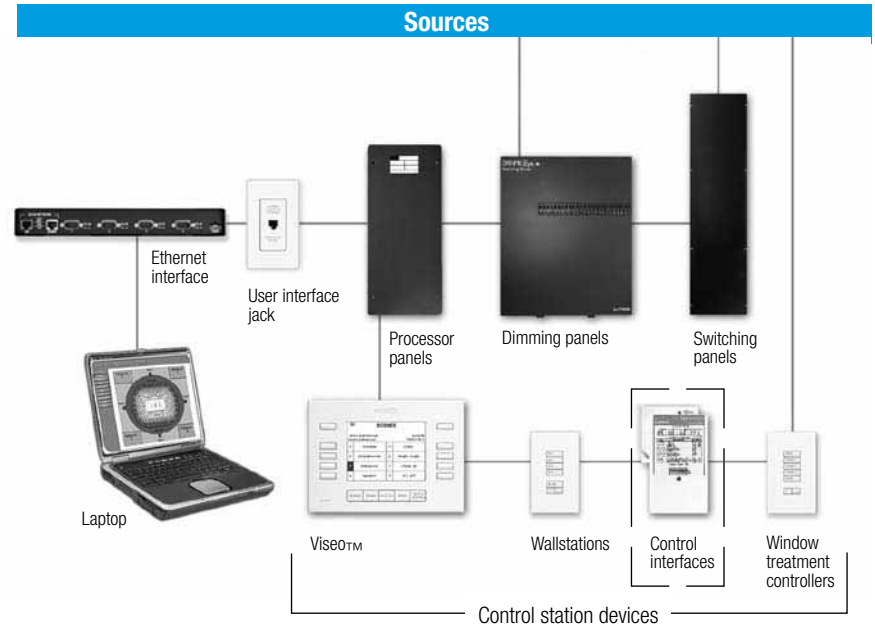
Contact closure interface

Control interface features

- Allows centralised lighting control system to integrate with other manufacturers' equipment
- Connect through:
  - Contact closures
  - RS-232 commands
  - DMX512 control protocol
  - 0-10 V or current-driven photocells

Centralised lighting control system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 3.3.



Specifications

- Wire specification and maximums:
  - Five PELV (Class 2) conductors: (2) 2.5 mm^2 (#12 AWG) for power wires, (1) twisted, shielded 1.0 mm^2 (#22 AWG) pair for control wires; plus (1) 1.0 mm^2 (#18 AWG) wire for the emergency sense line; (Available from Lutron®, GRX-CBL-46L, see pg. 3.14.2)
  - Distance: 610 m (2,000'); 2400 m (8,000') with use of three MX-RPTR-220/240, see pg. 3.9.2
  - Installation: Daisy chain (no home-run wiring)
- Power:
  - 33 VDC (from Centralised Lighting Control System Processor Panel)
- Configuration:
  - Through DesignIT™ software
- Mounting:
  - No derating required when multiganged

Standards

Standards listed below apply to one or more products in the Lutron® product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Features/functions	Contact Closures		Serial Links
	 OMX-AV pg. 3.12.3	 OMX-CCO-8 pg. 3.12.3	 OMX-RS232 pg. 3.12.3
Preset scene control			
Select scene	●		●
Scene status feedback	●		●[1]
Security/life safety			
Initiate a programmed "panic-on" mode through contact closure input	●		
Occupant response			
Lighting control based on occupancy	●		
Sequencing			
Initiate a sequence loop	●		●
Lockout			
Zone lock – prevent intensity changes on selected zones	●		●
Scene lock – disable scene selection within a space	●		●
Partition control			
Set partition status	●		●
Partition status feedback	●		●[1]
Scheduling			
External timeclock – scene selection through contact closure inputs	●		
Zone control			
Independent zone raise/lower	●		●
Set zone intensity	●		●
Zone on/off status feedback	●		●[1]
Zone intensity feedback			●[1]
Window treatments			
Open/close		●	
Open/close/stop		●	
Open collector (NPN) output	●		
Dry contact closure output		●	
RS232 integration			●

Footnotes, pg. 3.12.2

1 Status is returned upon request

Contact Closures/RS-232

Product	Model

Dimensions

W: 127 mm (5.00")
H: 197 mm (7.75")
D: 64 mm (2.50")

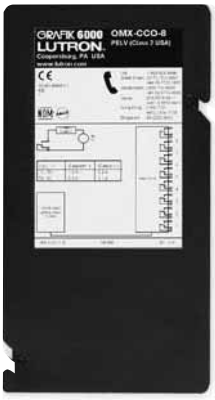
Mounts on

P/N 241496

W: 105 mm (4.13")
H: 105 mm (4.13")
D: 40 mm (1.57")

Contact Closure Interface — OMX-AV [1, 2,3]

- Provides two-way interface between controls and centralised lighting control system
- Typical functions (configured through software):
  - Select scenes
  - Raise/lower zones or groups of zones
  - Open and close partitions
  - Enable and disable control station devices
  - Start and stop sequences
  - Enable and disable panic functions and security modes
- Five inputs and five outputs
- Inputs and outputs can be momentary or maintained
- Output requires external relay and power supply (30 VDC maximum) by others for dry contact closure
- Input specification:
  - Dry contact closure or open collector (NPN)
  - On-state saturation voltage less than 2.0 VDC
  - Off-state leakage current less than 10 µA
  - Open circuit voltage 36 VDC maximum
  - Short circuit current 4.0 mA maximum
- Output specification:
  - 38 VDC maximum
  - 200 mA maximum
  - Open collector (NPN) output
  - On-state saturation voltage 1.0 VDC maximum
  - Off-state leakage current 0.1 mA maximum
- Works with occupancy sensors, pg. 2.16.1
- Works with infrared partition switch, pg. 3.12.4



Dimensions

W: 146 mm (5.75")
H: 273 mm (10.75")
D: 51 mm (2.00")

Surface mount

Contact Closure Output — OMX-CCO-8 [1, 2,3]

- Provides eight dry contact closure outputs
- For integration to third-party controllable window treatments or A/V equipment
- May be set to normally open (NO) or normally closed (NC)
- May be set to momentary or maintained contacts
- Depending on configuration the outputs indicate:
  - Current scene (1-8, 9-16)
  - Zone on/off for eight zones
  - Open/close window treatments (four shades)
  - Open/close/stop window treatments (two shades)
- Output ratings: 0-30 VDC, 10 A and 30-42 VDC, 0.5 A

Dimensions

W: 127 mm (5.00")
H: 197 mm (7.75")
D: 64 mm (2.50")

Mounts on

P/N 241496

W: 105 mm (4.13")
H: 105 mm (4.13")
D: 40 mm (1.57")

RS-232 Interface — OMX-RS232 [1, 2,3]

- Integrates centralised lighting control system with user-supplied PC or digital A/V equipment (touch screen) using RS-232 serial communication
- Enables digital control of scene selection, scene lock, sequencing, zone lock, and zone raise/lower
- Can provide status monitoring through button feedback and scene-status updates
- Must be located within 15 m (50') of RS-232 source

Footnotes, pg. 3.12.3

1 PELV (Class 2) control wiring.
2 Requires one address on the control station device (CSD) Link.
3 Addressing range is 1 - 32.

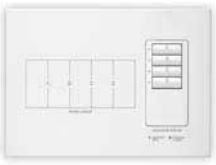
Partitioning	Product	Model	Options

Dimensions
W: 161 mm (6.32")
H: 116 mm (4.56")
D: 29 mm (1.13")

Mounts on
P/N 241218
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Infrared Partition Sensor — GRX-IRPS-WH

- Infrared sensor provides contact closure based on status of sensor
- Can be used with GRX-AV (GRAFIK Eye® 3000/4000 Series), pg. 2.12.3 or OMX-AV (Centralised Lighting Control System), pg. 3.12.3 for partitioning; GRX-AV or OMX-AV ordered separately
- Includes transmitter and receiver (2 units as shown)
- Requires TU240-15DC-9-BL or TE240-15DC-9-BL for power (see pg. 2.13.1)
- Transmitter and receiver are white
- Fits in P/N 241218 backbox, mounted front side down, on either side of partition wall, near ceiling surface
- Consult factory for additional details when being used with switch input Control (NTGRX-SI4S-IR, pg. 2.10.10)



Dimensions
W: 161 mm (6.32")
H: 116 mm (4.56")
D: 29 mm (1.13")[1]

Mounts on
P/N 3 x 241218
W: 150 mm (6.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

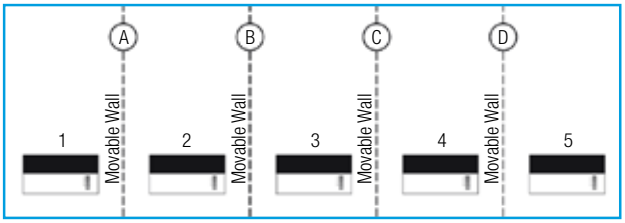
Partition Status Wallstation

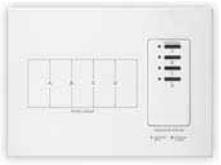
seeTouch™ — **SO-4PS-CF-[4,5,6]**
Architectural — **NTOMX-4PS-CF-[4,5,6]_**

- Provides four buttons to reflect partition status for up to four movable walls
- Map custom engraved to match your floorplan
- Partition status wallstations are available with control for 2-12 movable walls, contact Lutron® customer service for more information

For example:

This button…	Toggles the status of…	To combine Control Units:
Button 1	Wall A	1 and 2
Button 2	Wall B	2 and 3
Button 3	Wall C	3 and 4
Button 4	Wall D	4 and 5





Dimensions
W: 161 mm (6.32")
H: 116 mm (4.56")
D: 27 mm (1.06")[2]

Mounts on
P/N 3 x 241218
W: 150 mm (6.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Room Assignor Control Panel — OMX-RACP

- Map custom engraving to mach your floorplan
- Buttons (up to 12) are placed on your map to communicate partition status of movable walls
- Hinged cover opens downwards

Dimensions
W: 232 mm (8.40")
H: 127 mm (5.00")
D: 99 mm (3.88")[3]

Mounts in Lutron supplied wallbox
P/N 241188

Footnotes, pg. 3.12.4

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35").
3 Depth includes wallplate and backbox. Wallplate depth is 10 mm (0.38").
4 PELV (Class 2) control wiring.
5 Requires one address on the control station device (CSD) Link.
6 Addressing range is 1 - 32.

Ordering example

SO-4PS-CF-WH

Add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Infrared partition sensor

Ships in 1 week.

Partition status wallstations

Ships in 4-6 weeks.

- SeeTouch colour offering, pg. 1.3.1.
- Architectural colour offering, pg.1.3.1.

Room assignor control panel

Ships in 4-6 weeks after the order and full engraving details are received.

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Daylighting	Product	Model	Options

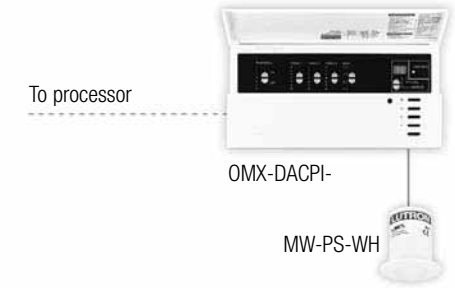
Dimensions

W: 227 mm (8.94")
H: 116 mm (4.56")
D: 57 mm (2.25")[1]

Mounts on
P/N 241400
W: 200 mm (8.00")
H: 95 mm (3.75")
D: 75 mm (3.00")

Daylighting Control — OMX-DACPI-

- Typically selects preset scenes in response to ambient daylight
- Enforce option assures photosensor overrides manual control for energy savings
- Use up to three Lutron® photosensors (MW-PS-WH) in parallel or one 0-10 V Photosensor by others
  NOTE: photosensors ordered separately (see below)
- PELV (Class 2) control wiring
- Requires one address on the control station device (CSD) Link.
- Addressing range is 1 - 32



Dimensions

Diameter: 66 mm (2.59")
D: 55 mm (2.16")[1]

Ceiling mounted; 50 mm (2.16") diameter bracket (Lutron-supplied)

microPS$_{TM}$ Ceiling-Mounted Photosensor — MW-PS-WH

- Responds to daylight and automatically lowers/adjusts light levels
- Linear response from 0 to 500 footcandles
- Easily calibrated at OMX-DACPI
- Available in white (WH) only
- Does NOT require an address on the control station devices (CSD) Link

Footnotes, pg. 3.12.5

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35")

Ordering example

OMX-DACPI-A-AU-WH
Add colour/finish and engraving suffix to model #

Cover options

Opaque A
Cover and base will match
Translucent Black T
Black translucent cover with base colour from below

Matt finishes

Ships in 48 hrs.
- Matt cover options: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes

Ships in 48 hrs.
- Matt Cover Options: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.
- Metal cover options: T only
- See pg. 1.3.1 for complete colour offering and suffixes.

Satin finishes

Ships in 48 hrs.
- Satin cover options: A or T
- See pg. 1.3.1 for complete colour offering and suffixes.

Customisation

Ships in 4-6 weeks.
- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

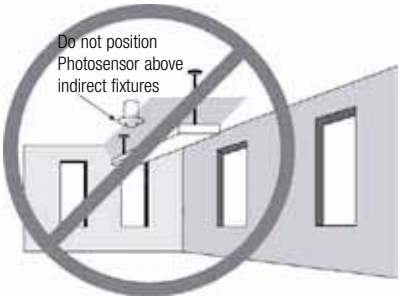
- See pg. 2.13.1 for more information.

Daylighting

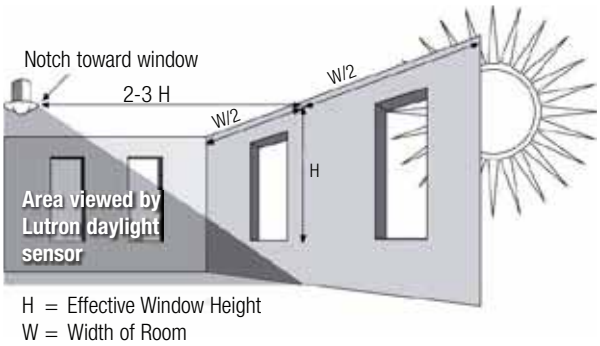
Photosensors

- The notch on the photosensor defines the viewing direction
- Place photosensor so its viewing area does not extend out the window
- Do not position the photosensor in the well of a skylight or above indirect fixtures
- Ensure the view of the photosensor is not obstructed

Mounting considerations



Photosensor location for average size area



H = Effective Window Height
W = Width of Room

Photosensor location for narrow area

Footnotes, pg. 3.12.6

1 Depth includes wallplate and backbox. Wallplate depth is 9 mm (0.35")

Theatrical	Product	Model

Dimensions

W: 127 mm (5.00")
H: 197 mm (7.75")
D: 64 mm (2.50")

Mounts on
P/N 241496
W: 105 mm (4.13")
H: 105 mm (4.13")
D: 45 mm (1.57")

DMX512 Interface (Output) — LUT-DMX

- Converts centralised lighting control system intensities to DMX512 output
- Use to control:
  - Fibre optic lighting
  - LED-based lamps
  - Strobe lights
  - Fogger machines
  - Moving fixtures
  - Animated characters
- DMX send (output DMX intensities) only
- PELV (Class 2) control wiring
- Takes the place of a panel on the power panel link

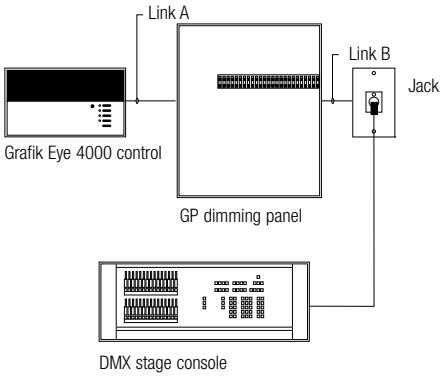
Dimensions

W: 127 mm (5.00")
H: 197 mm (7.75")
D: 64 mm (2.50")

Mounts on
P/N 241496
W: 105 mm (4.13")
H: 105 mm (4.13")
D: 45 mm (1.57")

DMX512 Interface (Input) — ODMX-512

- Converts DMX512 intensities to centralised lighting control system input
- Use to control light intensities of dimmers on the power panel link
- DMX receive only
- Accepts up to 32 consecutive channels
- Requires one address on the control station device (CSD) link
- Addressing range is 1 - 32
- PELV (Class 2) control wiring



2Link™

The 2Link option provides two distinct control links inside each power panel. Each link—Link A and Link B—is capable of operating on any one of 3 systems– Lutron's GRAFIK Eye® 4000, Lutron's centralised lighting control system, or USITT DMX512 protocol. Each system or protocol is unique, but the power panel is designed to automatically detect which one is present and operate accordingly.

When ordering the appropriate panel, ask for the 2Link option.

Theatrical	Product	Model

Dimensions-
12 Channels

W: 391 mm (15.41")
H: 73 mm (2.87")
D: 257 mm (10.13")

Dimensions-
24 Channels

W: 644 mm (25.38")
H: 73 mm (2.87")
D: 257 mm (10.13")

Multi-Channel Theatrical Consoles

12 Channels	**LTC-12**
24 Channels	**LTC-24**

- Two-scene preset mode with 12 or 24 channels
- Dipless crossfade between manual scenes
- Preset scenes may be "piled on" in any combination
- Preview mode allows cues to be checked
- Preset memories: 48 or 96
- DMX Output: 5-pin XLR
- Analog Output: (2 each) 8-pin CJ male or (1 each) 27-pin CJ male
- Other models available, contact Lutron®
- Cable with male and female XLR style connectors available from Lutron, (P/N GRX-CBL-LTC-25)

Dimensions

W: 70 mm (2.76")
H: 116 mm (4.57")
D: 51 mm (2.00")[1]

Mounts on

P/N 241218

W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Theatrical Receptacles

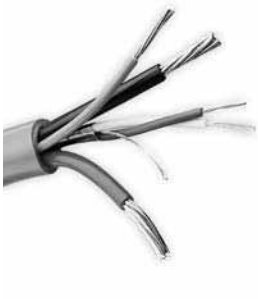
- Receptacle provides standard pinout for DMX512 theatrical protocol
- PELV (Class 2) device; barriers must be provided when line-voltage and Class 2 controls are ganged together in the same wallbox
- DMX cable available from Lutron (P/N GRX-CBL-DMX)
- See pg. 3.14.1 for colours/finishes

Stageboard Receptacle	**NT-DMXJ-IN-WH**

- 5-pin XLR-style male jack for connecting to a theatrical stage board

Fixture Equipment Receptacle	**NT-DMXJ-OUT-WH**

- 5-pin XLR-style male jack for connecting to a theatrical fixture equipment



DMX Cable

75 m (250')	**GRX-CBL-DMX-250**
150 m (500')	**GRX-CBL-DMX-500**

- Five conductors:
  Pair 1 – black and white 0.64 mm^2 (#22 AWG)
  Pair 2 – red and brown 0.64 mm^2 (#22 AWG)
  Drain wire 0.5 mm^2 (#22 AWG)
- Outer jacket diameter 8 mm (0.30")

Footnotes, pg. 3.13.2

1 Depth includes wall plate and back box. Wallplate depth is 9 mm (0.35").

Accessories	Product	Model

SR-2BI-WH-E01 shown

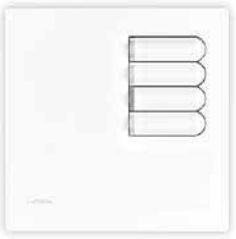
Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")

Replacement seeTouch™ Plates

2-Button	SR-2BN-[Colour/Finish]-[Language]-[Non-standard text engraving]
3-Button	SR-3BN-[Colour/Finish]-[Language]-[Non-standard text engraving]
4-Button	SR-4BN-[Colour/Finish]-[Language]-[Non-standard text engraving]
4-Button with off	SR-4NRLN-[Colour/Finish]-[Language]-[Non-standard text engraving]
4-Button with off and raise/lower	SR-4S-[Colour/Finish]-[Language]-[Non-standard text engraving]
4-Button with off, raise/lower, and Infrared Receiver	SR-4SIRN-[Colour/Finish]-[Language]-[Non-standard text engraving]
5-Button	SR-5BN-[Colour/Finish]-[Language]-[Non-standard text engraving]
7-Button	SR-7BN-[Colour/Finish]-[Language]-[Non-standard text engraving]

See section 3.16 for options
Replace N with I for Insert versions



EFP-4S-WH shown

Dimensions

W: 86 mm (3.38")
H: 86 mm (3.38")

Replacement European Style Plates

2-Button	EFP-2B-[Colour/Finish]
4-Button	EFP-4B-[Colour/Finish]
4-Button with off and raise/lower	EFP-4S-[Colour/Finish]
8-Button with off and raise/lower	EFP-8S-[Colour/Finish]
4-Button with off, raise/lower, and Infrared Receiver	EFP-4S-IR-[Colour/Finish]
8-Button with off, raise/lower, and Infrared Receiver	EFP-8S-IR-[Colour/Finish]

See pg. 3.10.1 for options

NT-A-NFB-WH shown

Dimensions

Varies based on model ordered

Replacement Architecural Style Plates

Single-Gang	NT-[Code]-NFB-[Colour/Finish]
Two-Gang	NT-[Code][Code]-FB-[Colour/Finish]
Three-Gang	NT-[Code][Code][Code]-FB-[Colour/Finish]
Four-Gang	NT-[Code][Code][Code][Code]-FB-[Colour/Finish]

Control	Code
NTOMX-2B-SL	T8
NTOMX-4B	T5
NTOMX-4S	A
NTOMX-4S-IR	A

Call customer service for other insert codes

Accessories	Product	Model	Options

Lockable Covers

Single-gang	GRX-1GLC
Two-gang (AU models only)	GRX-2GLC
Three-gang (AU models only)	GRX-3GLC
Four-gang (Both AU and CE models)	GRX-4GLC

- Prevents tampering with GRAFIK Eye™ control units or wallstations
- Permits infrared operation
- Translucent smoked grey
- Cover slides left or right

Replacement Covers

Two-gang (AU models only)	GRX-2GRC-
Three-gang (AU models only)	GRX-3GRC-
Four-gang (Both AU and CE models)	GRX-4GRC-

- See right hand column for cover options and base colours
- For 230 VAC applications, all GRAFIK Eye 3000 series control units are four-gang

Low-Voltage Cable[1,2]

GRAFIK Eye 4000, Centralised Lighting Control Systems

75 m (250') spool	GRX-CBL-46L-250 (non-plenum)
	GRX-PCBL-46L-250 (plenum)
150 m (500') spool	GRX-CBL-46L-500 (non-plenum)
	GRX-PCBL-46L-500 (plenum)

- Five PELV (Class 2) conductors: (2) 2.5 mm^2 (#12 AWG) for power wires; (1) twisted, shielded 1.0 mm^2 (#22 AWG) pair for control wires; plus (1) 1.0 mm^2 (#18 AWG) wire for the emergency sense line

Footnotes, pg. 3.14.2

1 For information on cable size and distance, see "Application Note W14" on http://www.lutron.com/onespec/cutsheets/appnotes/grx/grxwire.pdf

2 See the application note on pg. 2.16.4 for more imformation.

Ordering example

OMX-3602-T-AU-WH

Add cover option and colour/finish suffix to model #

Cover options

Opaque **A**

Cover and base will match

Translucent Black **T**

Black translucent cover with base colour from below

Base colours

Matt finishes

Standard, ships in 48 hrs.

•Matt cover options: A or T

- See pg. 1.3.1 for complete colour offering and suffixes.

Gloss (NEMA) finishes-

Ships in 4-6 weeks.

- Gloss cover option: A only
- See pg. 1.3.1 for complete colour offering and suffixes.

Metal finishes

Ships in 4-6 weeks.

- Metal cover option: T only
- See pg. 1.3.1 for complete colour offering and suffixes.

Satin finishes

Ships in 4-6 weeks.

- Satin cover option: A or T
- See pg. 1.3.1 for complete colour offering and suffixes

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multi-gang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules

Locking covers

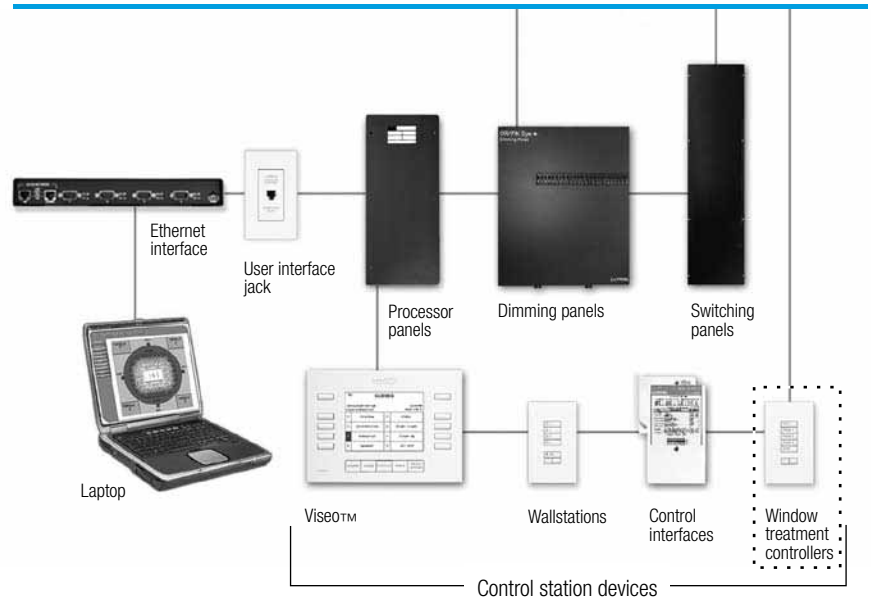
- See pg. 2.13.1 for more information.

seeTouch™ window treatment wallstations

- Used to control one or more window treatment zones (Sivoia QED™ and AC motorised window treatments) simultaneously with Sivoia QED interface, pg. 3.15.2 and/or motor modules in power panels, see section 4
- The LEDs next to each button are used during programming and provide feedback when the buttons are pressed during normal operation
- Can be set to control up to 8 groups of Sivoia QED electronic drive units (EDUs). For each group of Sivoia QED EDUs a centralised lighting control Sivoia QED interface is needed, see pg. 3.15.2
- Large, rounded buttons are easy to use
- User-changeable button and faceplate assemblies make for easy customisation
- Optional engraving is angled up to the eye for easy reading
- On-button engraving and backlit buttons improve clarity of control functions in low light conditions
- Standard text and non-standard text engraving available; for more details, please visit the website at www.lutron.com/seetouch
- Insert versions available for multigang installations; see section 3.16 for more information

Centralised lighting control system map

- Use the map at right to identify system component being reviewed in each section.
- For overall wiring information, see section 3.3.



Specifications

- Wire specification and maximums for Control Station Devices (CSD) Link:
  - Five PELV (Class 2) conductors: (2) 2.5 mm² (#12 AWG) for power wires; (1) twisted, shielded 1.0 mm² (#22 AWG) pair for control wires; plus (1) 1.0 mm² (#18 AWG) wire for the emergency sense line (Available from Lutron®, GRX-CBL-46L, see pg. 3.14.2)
  - Distance: 610 m (2,000'); 2400 m (8,000') with use of three MX-RPTR
  - Installation: daisy-chain (no home-run wiring)
- Power: 33 VDC (from centralised lighting control system processor)
- Configuration: through DesignIT™ software
- Mounting: standard US wallbox unless otherwise noted;
  - No derating required when multiganged
- Centralised lighting control system Sivoia QED interface (SO-SVCN) connects to both control station device and Sivoia QED communication links
  - to Centralised Lighting Control System CSD Link: (2) 2.5 mm² (#12 AWG) and (1) twisted, shielded pair 1.0 mm² (#18 AWG)
  - to Sivoia QED EDU: (3) 1.0 mm² (#18 AWG) [24 VAC, plus earth ground] and (1) twisted, shielded pair 1.0 mm² (#22 AWG)

Standards

Standards listed below apply to one or more products in the Lutron® product line. Consult Lutron for specific information.

LUTRON Quality Systems registered to ISO 9001

Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox
P/N 241218
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

Centralised Lighting Control System Sivoia QED Interface — SO-SVCN-[2, 3,4]

- Requires a dedicated zone for each Sivoia QED interface
- Provides programming and control of one group of Electronic Drive Units; one SO-SVCN needed per group of Sivoia QED EDUs (up to 96) moving together
- Allows for the selection of preset window treatment levels from scenes
- Typical functions (configured through software):
  - Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement
  - Pressing Preset 1, 2, or 3 once will cause the window treatments to move to that preset level; if the Preset button is pressed again while the window treatments are moving, the window treatments will stop
  - Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button while the window treatments are moving will stop their movement
  - Raise/Lower buttons open and close the window treatments for the duration of the button press
- PELV (Class 2) control wiring; connects to both control station device (CSD) Link and Sivoia QED (EDU) Link

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox
P/N 241218
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

2-Button Window Treatment Wallstation — SO-2WN-[2, 3,4]

- Use with Sivoia QED (SO-SVCN-), pg. 3.15.2 interface or motor modules in power panels, section 4
- Used to control one or more window treatment zones simultaneously
- Can control Sivoia QED and AC motorised window treatments
- Typical functions (configured through software):
  - Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement
  - Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button while the window treatments are moving will stop their movement
- Standard text engraving option (EO1) shown

Footnotes, pg. 3.15.2

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 Insert version available for multigang installations. For insert version use I in place of last N in model number. See section 3.16 for more information.
3 Requires one address on the control station device (CSD) Link.
4 Addressing range is 1 - 32.

Ordering example

SO-SVCN-WH-EO1

Add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs. (Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.4.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox
P/N 241218
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Button Window Treatment Wallstation — SO-3WN-[2, 3,4]

- Use with Sivoia QED™ interface (SO-SVCN-), pg. 3.15.2 or motor modules in power panels, section 4
- Used to control one or more window treatment zones simultaneously in centralised lighting control systems
- Typical functions (configured through software):
  - Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement
  - Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button while the window treatments are moving will stop their movement
  - Pressing Stop will stop the movement of the window treatments
- Standard text engraving option (EO1) shown

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox
P/N 241218
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Button Window Treatment Wallstation with raise/lower — SO-3WRLN-[2, 3,4]

- Use with Sivoia QED interface (SO-SVCN-), pg. 3.15.2 or motor modules in power panels, section 4
- Used to control one or more window treatment zones simultaneously in centralised lighting control systems
- Typical functions (configured through software):
  - Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement
  - Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Preset button again while the window treatments are moving, will cause the window treatments to stop
  - Pressing Stop will stop the movement of the window treatments
  - Raise/lower buttons open and close the window treatment(s) for the duration of the button press
- Standard text engraving option (EO1) shown

Footnotes, pg. 3.15.3

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 Insert version available for multigang installations. For insert version use I in place of last N in model number. See section 3.16 for more information.
3 Requires one address on the Control Station Device (CSD) Link.
4 Addressing range is 1 - 32.

Ordering example

SO-3WN-WH-EO1

Add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs.
(Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.3.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

Product	Model	Options

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox
P/N 241218
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

3-Button Dual Window Treatment Wallstation — SO-3WDN-[2, 3]

- Use with Sivoia QED interface (SO-SVCN-), pg. 3.15.2. or motor modules in power panels, section 4.
- Used to control one or more window treatment zones simultaneously in centralised lighting control systems.
- Provides control for two separate groups of window treatments from one wallstation.
- Typical functions (configured through software):
  - Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement.
  - Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button while the window treatments are moving will stop their movement.
  - Pressing Stop will stop the movement of the window treatments.
- Standard text engraving option (EO1) shown.

Dimensions

W: 70 mm (2.75")
H: 116 mm (4.56")
D: 27 mm (1.06")[1]

Wallbox
P/N 241218
W: 50 mm (2.00")
H: 100 mm (4.00")
D: 63 mm (2.50")

5-Button Preset Sivoia QED Wallstation with raise/lower — SO-5WRLN-[2, 3]

- Use ONLY with Sivoia QED Interface (SO-SVCN-), pg. 3.15.2
- Used to simultaneously control one or more zones of Sivoia QED electronic drive units (EDUs) from a centralised lighting control system
- Typical functions (configured through software):
  - Pressing the Open button once will cause the window treatments to move to their fully open position; pressing the Open button again while the window treatments are opening will stop their movement.
  -

Pressing the Preset 1, 2, or 3 button once will cause the window treatments to move to that preset level; pressing the Preset button again while the window treatments are moving, will cause the window treatments will stop.

  - Pressing the Close button once will cause the window treatments to move to their fully closed position; pressing the Close button while the window treatments are moving will stop their movement.
  - Raise/lower buttons open and close the window treatment(s) for the duration of the button press.
- Standard text engraving option (EO1) shown

Footnotes, pg. 3.15.4

1 Depth includes wallplate and backbox. Wallplate depth is 8 mm (0.31").
2 Insert version available for multigang installations. For insert version use I in place of last N in model number. See section 3.16 for more information.
3 Requires one address on the control station device (CSD) Link.
4 Addressing range is 1 - 32.

Ordering example

SO-3WDN-WH-EO1

Add colour/finish and engraving suffix to model #

For choices see: www.lutron.com/seetouch

Matt finishes

Ships in 48 hrs.

White	WH
Ivory	IV
Beige	BE
Grey	GR
Brown	BR
Black	BL

Gloss (NEMA) finishes

Ships in 48 hrs.
(Insert models only)

White	GWH
Light Almond	GLA

Metal finishes

Ships in 4-6 weeks.

Bright Brass	BB
Bright Chrome	BC
Bright Nickel	BN
Satin Brass	SB
Satin Chrome	SC
Satin Nickel	SN
Antique Brass	QB
Antique Bronze	QZ

Anodised Aluminium

Clear	CLA
Black	BLA
Brass	BRA

Customisation

Ships in 4-6 weeks.

- See pg. 1.3.1 for multigang wallplates, colour matching, engraving/silk screening, and custom controls.
- See pg. 3.17.5 for engraving schedules.

Locking covers

- See pg. 2.13.1 for more information.

How to build seeTouch models

1	2		3		4		5	6
SO	–	2B	0	N	–	WH	–	E	01

1 Series

SO

Three options for GRAFIK Eye™ lighting control systems.

2 Button configurations/features

2B

Choose the button configurations and features required.

3 Non-insert or insert

N

Use NON-INSERT (N) models for a clean single-gang look. Use INSERT (I) Models for multigang applications.

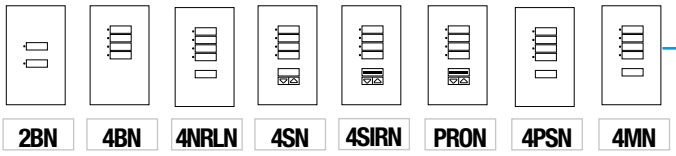
0

Used to indicate occupant sensor models for SO wallstations

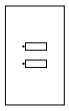
3000 and 4000 Series

SG

Non-insert (N) models



N



Non-Insert for single-gang use

Insert (I) models

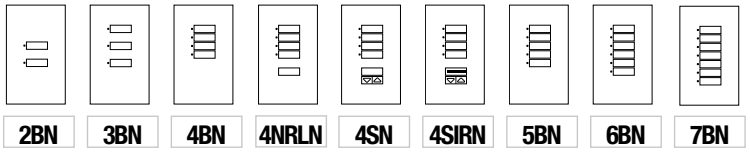
I

Insert for multigang use

Centralised lighting control system

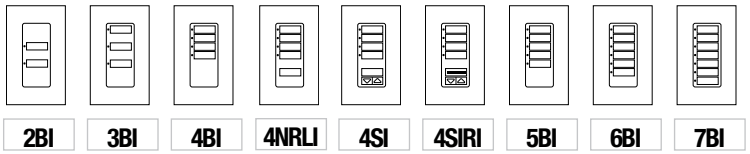
SO

Non-insert (N) models



N

Insert (I) models

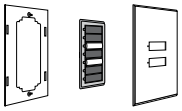


I

Button and wallplate replacement kits

SR

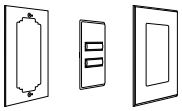
Non-insert (N) models



Includes wallplate adapter, button assembly, and wallplate

N

Insert (I) models



Includes wallplate adapter, button assembly, and wallplate

I

Tip!

Use Button Replacement kits to:

- Order non-standard text engraving
- Change colours, button configurations, and engraving
- Change between insert and non-insert

4 Colours/finishes

— **W H**

Insert a colour/finish code into the model number.

Matt

- **WH** White[3]
- **BE** Beige[3]
- **IV** Ivory[2]
- **GR** Grey[2]
- **BR** Brown[2]
- **BL** Black[2]

Gloss[1]

- **GWH** White[3]
- **GLA** Light Almond[3]

Metal

- **SB** Satin Brass[2]
- **BB** Bright Brass[2]
- **BC** Bright Chrome[2]
- **QB** Antique Brass[2]
- **QZ** Antique Bronze[2]
- **SC** Satin Chrome[2]
- **SN** Satin Nickel[2]
- **BN** Bright Nickel[2]
- **CLA** Clear Anodised Aluminium[2]
- **BLA** Black Anodised Aluminium[2]
- **BRA** Brass Anodised Aluminium[2]

5 Language

— **E**

Standard text engraving is available in 13 languages. Insert a language code into the model number.

Arabic	**A**
Chinese	**C**
Danish	**D**
Dutch	**N**
English	**E**
French	**F**
German	**G**
Italian	**I**
Japanese	**J**
Portuguese, Brazil	**B**
Portuguese, Europe	**P**
Spanish, Europe	**S**
Spanish, Americas	**L**

Note: Language is not required for non-standard text engraving **NST**, see right.

6 Engraving choices

0 1

Three options are available for engraving (see www.lutron.com/seeTouch). Insert an engraving code into the model number.

General

Add **GN** to model number. Language code is required.

Standard text

01 — **99**

Available in a number of standard choices. Language code and engraving number is required. For choices, see www.lutron.com/seetouch.

Non-standard text (**SR** only)

Offers customised button engraving to suit particular needs. To order, contact Lutron Customer Service.
Add **NST** to model number. No language code is required.

Multigang ordering

Controls: Order insert (I) models for multigang installations. Contact Lutron® for multigang installations using Non-Insert (N) models.

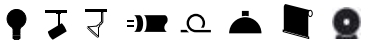
Wallplates: Specify "R3" openings in Lutron NovaT☆™ multigang FB series (fins broken only) wallplates. Note: seeTouch button assemblies are NOT provided with multigang wallplates. Use the button assemblies provided with Insert (I) models or button replacement kits.

Footnotes, pg. 3.16.2

1 Gloss available for Insert models only.
2 Illuminated (backlit) text with opaque buttons. Metals have black buttons.
3 Illuminated (backlit) buttons with opaque text.

Three schedules to detail a project

Lighting load schedule, pg. 3.17.2



Details the connected load and load type for each circuit/zone.

Lighting control schedule, pg. 3.17.3

GRAFIK Eye™

European Style

seeTouch™

Details all controls, not just dimmers.

- This includes wallstations, multigang faceplates, etc.

Engraving schedule, pg. 3.17.5

seeTouch

Logo engraving

Indicates where and what type of engraving is required.

- A schedule should be filled out for each lighting control or multigang faceplate

Lighting load schedule

Job name: **Job number:**

Date: **Page** **of**

Room name	Wall location	Circuit number	Zone number	Zone description	Fixture type	Load type	Number of fixtures	Load per fixture	Total load

Lighting control schedule

Job name: **Job number:**

Date: **Page** **of**

Room name	Wall location/ position	Zone description	Wallstation or GRAFIK Eye™ model No.	Button programming	Button details	Power booster model no.	Wallplate model no.	Colour	Engrave Y/N	No. ganged boxes

Lighting control schedule

Job name: **Job number:**

Date: **Page** **of**

Room name	Wall location/ position	Zone description	Wallstation or GRAFIK Eye™ model No.	Button programming	Button details	Power booster model no.	Wallplate model no.	Colour	Engrave Y/N	No. ganged boxes

How to order custom engraving

- Select the product drawing below that matches your control or wallplate
  - Product drawings indicate the placement and number of lines available for engraving
  - Engraving chart (bottom, right) indicates the recommended maximums for point size and characters per line including spaces
- Use information from this page to fill out engraving schedule at right

Products Available for Engraving

- GRAFIK Eye™ control units and wallstations
- Wallplates on Vareo™, NovaT☆™, Nova™ controls and accessories
- VWP-, FB-, and NFB-Series wallplates

Engraving examples

Engraving chart Recommended maximums		
Key	**Point size**	**Characters per line (including spaces)**
A	8	5
B	8	6
C	8	7
D	8	10
E	8	13
F	10	7
G	10	14
H	12	12
I	10	10

Engraving schedule

Indicates where and what type of engraving is required.

- A schedule should be filled out for each lighting control or multigang faceplate
- Engraving schedules also available at www.lutron.com/engraving

1 **List the model number of the Lutron® control or wallplate to be engraved**

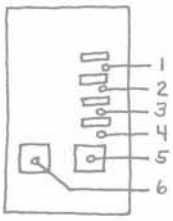
2 **List tracking information from lighting load schedule (see pg. 3.17.2)**

Room name:

Wall location:

3 **Draw in wallplate or control-**

Example



- Use pictures at left to determine how many lines, what point size, and how many characters are available for engraving
- Number the lines of engraving copy; fill in engraving worksheet (step 4) accordingly

4 **Engraving worksheet (fill in wording)**

Line	Legend (Fill in wording to be engraved)	Left or Centred
1	Cove Example	L

5 **Type selections (Select one from each option offered)**

FONT TYPE AND SIZE: (circle one)

Helvetica	8 POINT	10 POINT	12 POINT
Helv. Italic	*8 POINT*	*10 POINT*	*12 POINT*
Microgram	8 POINT	10 POINT	12 POINT
Avant	8 POINT	10 POINT	12 POINT
Gothic	8 POINT	10 POINT	12 POINT
Times Roman	8 POINT	10 POINT	12 POINT
Cursive	*8 POINT*	*10 POINT*	*12 POINT*

TYPE FILL COLOUR: (circle one)

STRAW YELLOW	YELLOW	GRAY	BLACK
ROYAL BLUE	GOLD	GREEN	BROWN
LUTRON BLUE	WHITE	RED	BEIGE

CASE: (circle one)

ALL LETTERS CAPITALISED First Letters Capitalised

LEFT OR CENTRED TYPE (indicate on Engraving Worksheet)

6 **Submit schedule**

To Lutron customer service

Requests for the engraving on this form and for other custom engraving or logos should be submitted directly to Lutron customer service.

Section 4

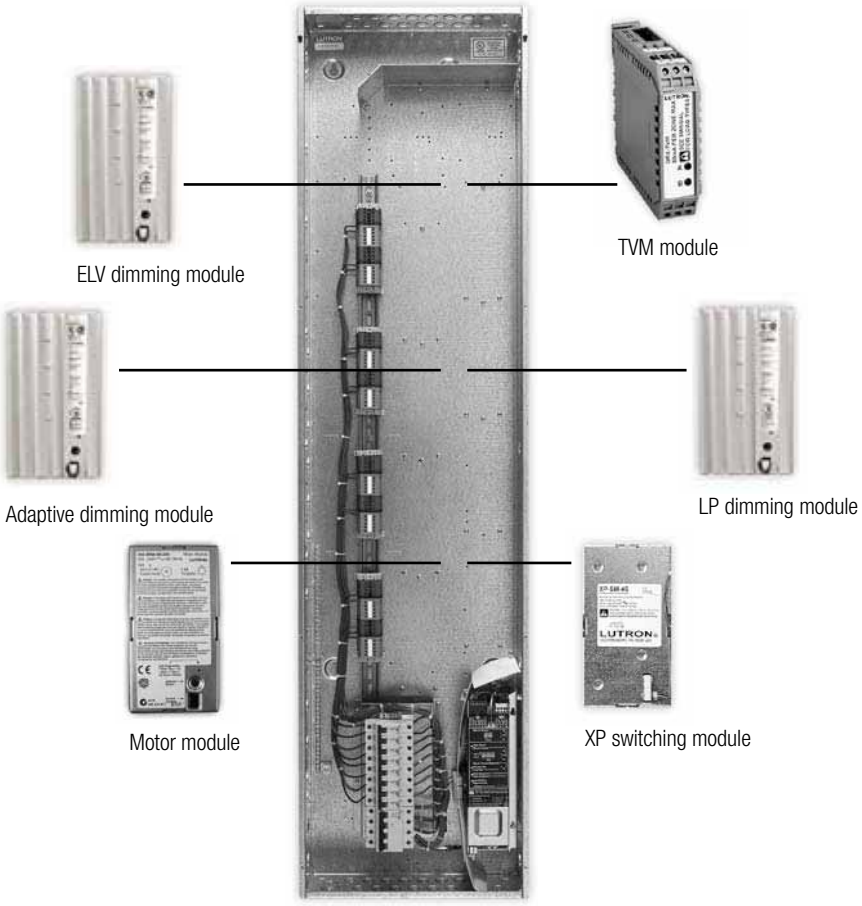
Pre-assembled dimming and switching panels

Lutron's dimming and switching panels provide the power behind the GRAFIK systems line of products.

A variety of panels are available to meet the performance and budget requirements of any project.

Power panels have been designed to work independently or combined together to meet the requirements of any project.

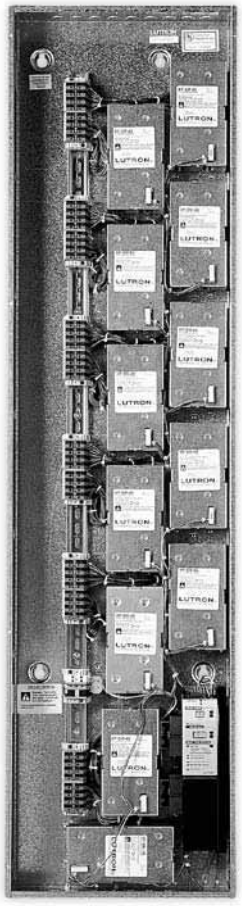
Lutron® can also further customise individual panels.



Custom combination panel

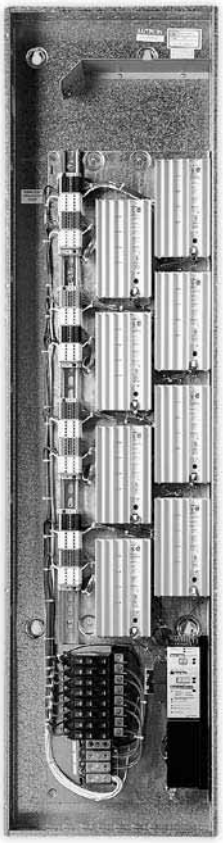
Custom dimming/switching panel tailored to your project's requirements.

Pre-assembled dimming and switching panels



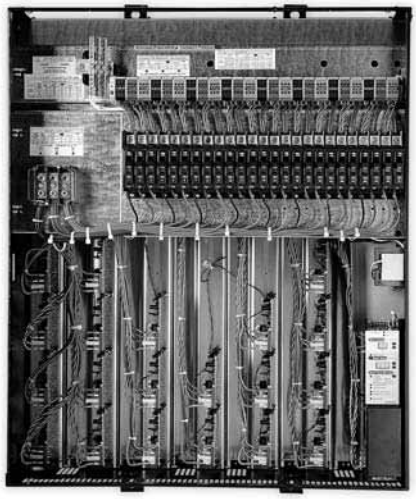
XP Softswitch™ panel

Million-cycle switching panel employs Lutron's patented Softswitch technology.



LP dimming panel

Commercial dimming panel for handling numerous small loads.



GP dimming panel

Lutron's highest performance architectural dimming panel for all applications.

Real-Time Illumination Stability System (RTISS™)

Dimmers compensate for incoming line voltage variations such as changes in RMS (Root Mean Square) voltage, frequency shifts, harmonics, and line noise. See the application note on pg. 4.8.6 for more information.

The benefits

Flicker-free dimming

Products

Custom combination panels, GP, LP

Recommended specifications

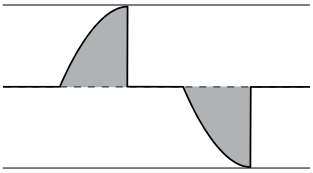
Dimmer loads shall have no visible flicker by checking for changes 100 times per second (120 times per second at 60 Hz) under the following conditions: ±2% change in RMS voltage per cycle and or ±2% rate of change in frequency per second.

Real-Time Illumination Stability System–trailing edge (RTISS-TE™)

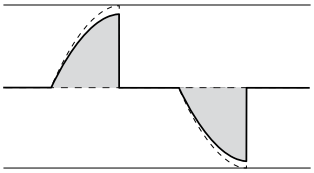
Trailing edge (reverse phase control) dimmers equipped with the new RTISS-TE technology protect against power conditions that cause lights controlled by standard toggle switches to flicker. See the application note on pg. 4.8.9 for more information.

The benefits

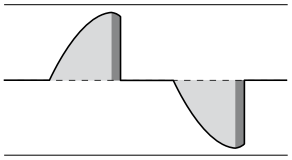
Flicker-free dimming



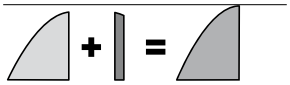
A. Expected power provided to the dimmer



B. Poor quality power caused by line sag.



C. RTISS-TE compensates for the line sag by conducting longer (darker section).



D. The actual RTISS-TE power output when the line sags is the same as the expected power.

Note. RTISS-TE provides a similar reponse due to a line surge by conducting for a shorter period of time.

Products

Custom combination panels

Recommended specifications

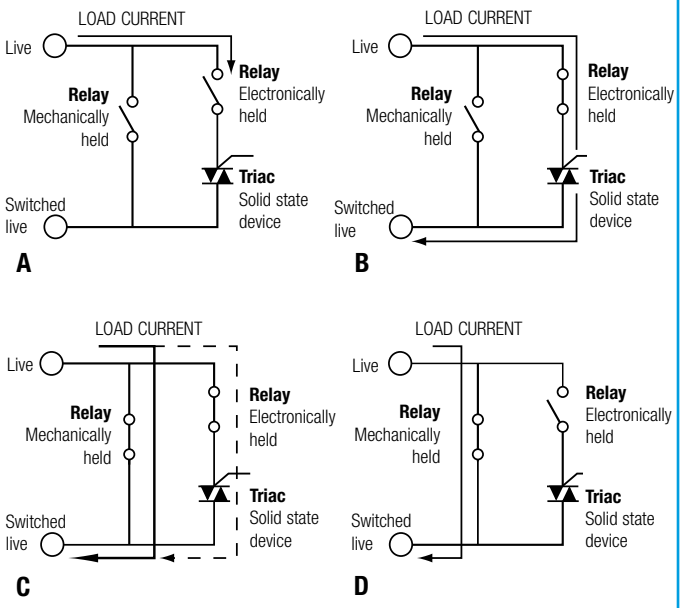
Dimmers shall maintain constant power (±2%) to the load by checking for changes 100 times per second (120 times per second at 60 Hz) under the following conditions: ±10% change in RMS voltage per cycle and or ±2% rate of change in frequency per second.

1,000,000 cycle switching modules

Lutron's exclusive Softswitch™ circuitry opens and closes the relay contacts without arcing. See the application note on pg. 4.8.12 for more information.

The benefits

Even when fully loaded, the arc reduction extends a relay's average rated life to more than 1,000,000 on/off cycles.



Products

Custom combination panels, XP

Recommended specifications

Switching modules shall:

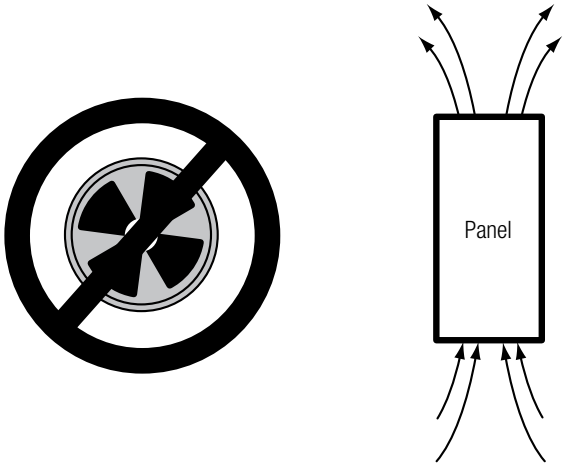
1. Be operated in a manner that ensures no arcing will occur at the mechanical contacts when power is applied to or removed from the load circuits.
2. Have a minimum rated lifetime of 1,000,000 cycles at 16 A.
3. Maintain an open air gap when in the off state.
4. Switch semiconductor out of circuit to ensure highest efficiency.

Convection cooling

Panels are cooled naturally via air convection.

The benefits

No fan to worry about failing, no filters to replace, no maintenance.



Products

Custom combination panels, GP, LP, XP

Recommended specifications

Dimmers/modules shall be cooled naturally via air convection.

Air gap off

An air gap is provided in each module.

The benefits

Without this, the leakage current of the module may cause electrical shock when servicing lamps or a fire if a fixture or lamp source fails violently.

Products

Custom combination panels, GP, LP, XP

Recommended specifications

Modules shall have an air gap to totally disconnect power from the load so that no leakage current shall be present at the fixture(s) when all outputs are in the off state.

Lightning strike surge protection

Special circuitry protects the modules from surges.

The benefits

Protects your modules from power surges during a storm (or from within the building).

Products

Custom combination panels, GP, LP, XP

Recommended specifications

Dimmers/modules shall meet IEEE standard c62.41, tested to withstand voltage surges of up to 6,000 volts and 3,000 amps.

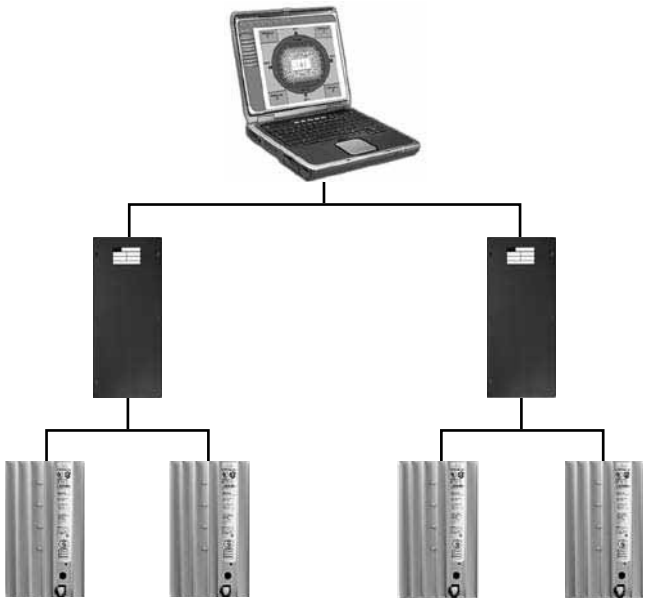
Dimmers/modules shall meet IEC 61000-4-5 surge requirements.

Distributed intelligence

Each dimmer or module has its own microprocessor that tells it how bright the lights shoud be.

The benefits

Lutron's tiered intelligence architecture is better suited to keeping your lights at their current light level in the unlikely event of a failure at a higher level in the system providing; multiple levels of redundancy.



Products

Custom combination panels, GP, LP, XP

Recommended specifications

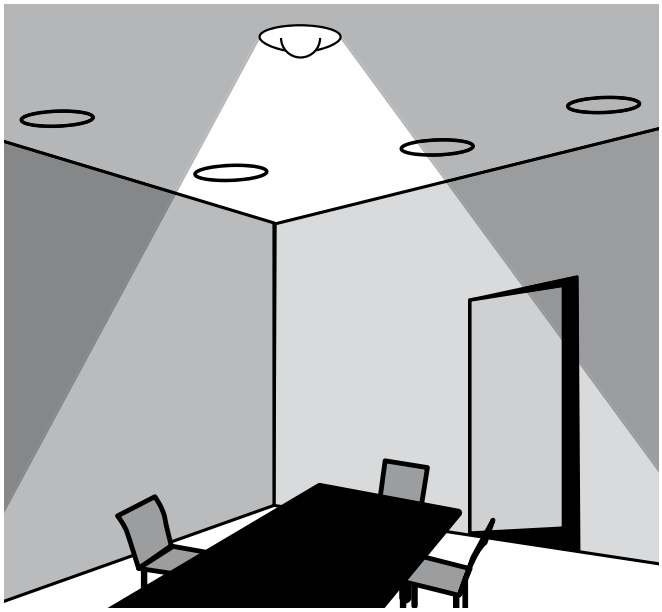
Dimmers/modules shall have dimming/switching intelligence at the dimmer/module level.

Emergency mode

Selected circuits go to full-on when normal power fails either automatically (see the application note on pg. 4.8.4), or manually (by cycling power to the dimmer or module).

The benefits

You won't be in the dark during emergencies.



Products

Custom combination panels, GP, LP, XP.

Recommended specifications

Dimmers/modules shall go to full-on mode when power to the dimmer/module is cycled without a control input or with a loss of normal power.

Smooth and continuous dimming

Smooth and continuous lighting control across the dimming range.

The benefits

Step-free continuous lighting control; sudden steps in light level are eliminated.

Products

Custom combination panels, GP, LP

Recommended specifications

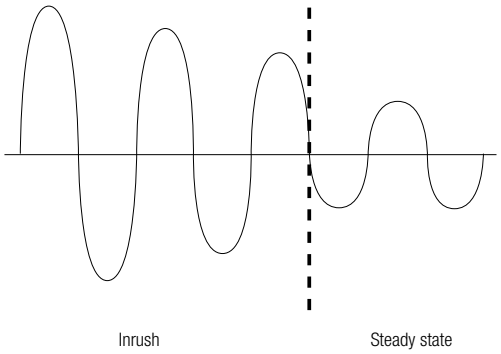
Dimmers shall provide smooth and continuous control of light intensity with a minimum of 4,056 steps or light levels.

Inrush current

Switching modules are designed to withstand inrush of 50 times operating current.

The benefits

Switching modules last longer and do not fail under high inrush conditions such as bulb burnouts and switching electronic fluorescent ballasts on.



Products

Custom combination panels, XP

Recommended specifications

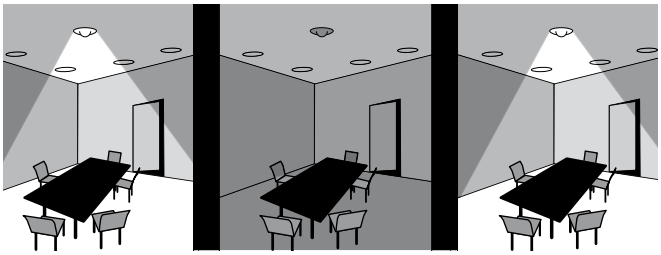
Switching modules shall withstand an inrush of 50 times operating current.

Power failure memory

Keeps lights as you left them when power is restored.

The benefits

Minimises the inconvenience of power service interruptions by returning lights to previous level.



Products

Custom combination panels, GP, LP, XP

Recommended specifications

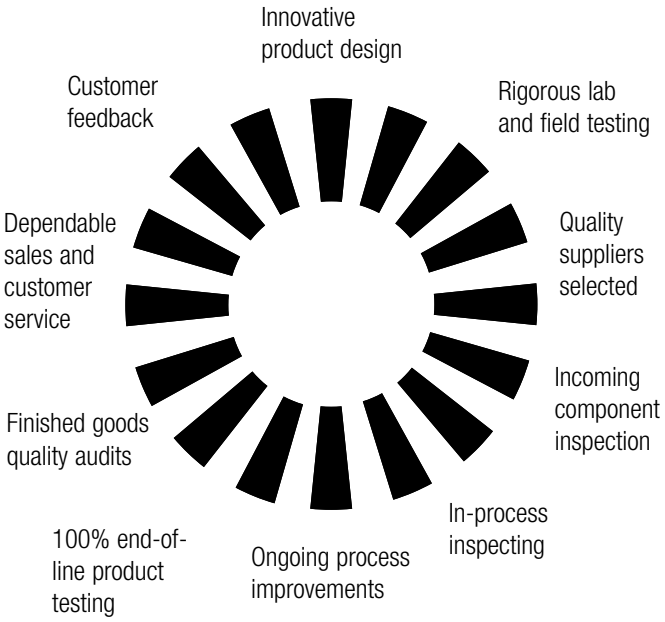
Dimmers/modules shall incorporate power-failure memory. Should power be interrupted and subsequently returned, the lights will come back on to the same level set prior to the power interruption. Restoration to some other default level is not acceptable.

World-class quality process

For over 40 years, Lutron® has designed, manufactured, and delivered quality lighting control products.

The benefits

Reliable product quality, dependable service, and continual innovation.



Products

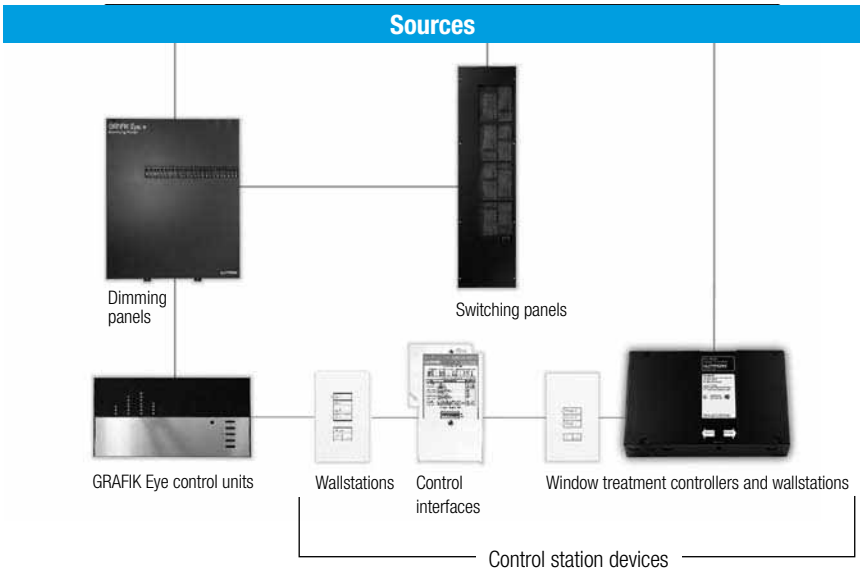
All

Recommended specifications

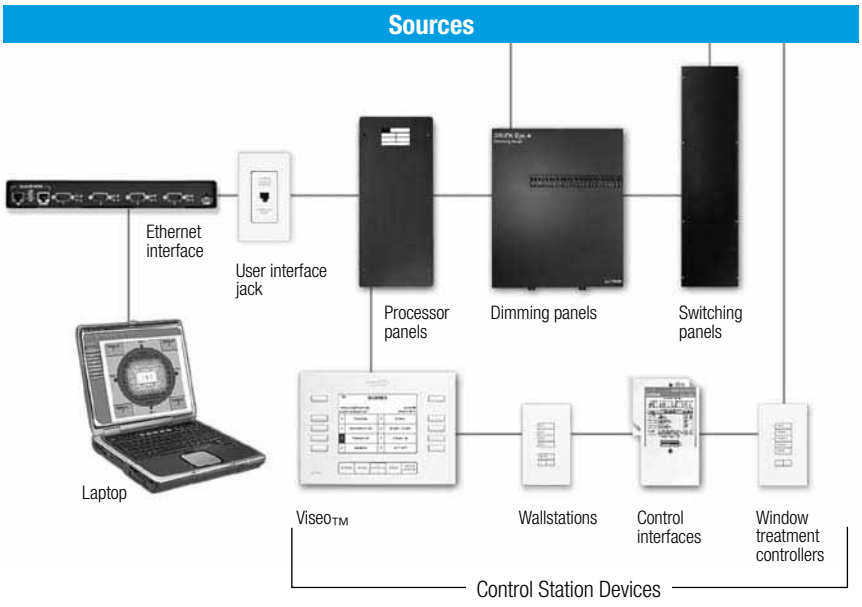
Manufacturer shall be Lutron Electronics. Manufacturer shall be at least ISO 9001:2000 registered.

Lutron® power panels are compatible with the following systems:

GRAFIK Eye™ 4000 series, section 2.6



Centralised lighting control system, section 3



Contact Lutron for additional sales and technical literature, or visit www.lutron.com.

Power booster or power panel?

There are specific system requirements that could lead to designing with either approach. Factors that need to be examined include:

Simplicity of design

Deciding on an approach is a matter of personal design preferences. A project may require additional interfaces solely because of the chosen lighting sources or may require power boosters for higher wattages. A GP power panel can handle virtually any load type without additional interfaces.

Space for equipment

If power boosters/interfaces can be located throughout the building, it may be the preferred approach. If all power boosters/interfaces are located in the same electrical room, a power panel will typically require less space. Power panels may also include branch circuit breakers, reducing the size of the lighting distribution panel or eliminating it altogether.

Emergency

One of the circuits may need to be an emergency circuit. If using an upstream main transfer switch (i.e., 100 A, 3P), a power panel solution is the better choice. Lutron also offers an emergency lighting interface to sense loss of voltage on a single or multi-phase system in 220-240 V (non-CE) applications. See the application note on pg. 4.8.5 for more information.

Installation time

A power panel will require less time to install than numerous power boosters.

Acoustic performance

Lamp Noise Suppression

GP dimming panels provide the highest level of lamp noise suppression for:

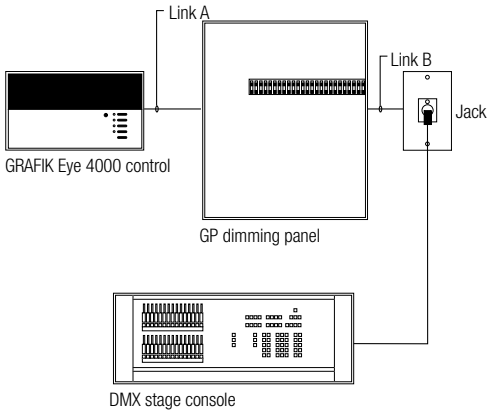
- high wattage situations
- incandescent sources
- halogen sources
- extremely quiet ambient environments

Lamp debuzzing coils (LDC) can be added to power boosters to provide the same performance. See the application note on pg. 4.8.2 for more information.

Entertainment DMX512 options

2Link™

The 2Link option provides two distinct control links inside each power panel. Each link—Link A and Link B—is capable of operating on any one of these systems – Lutron's GRAFIK Eye™ 4000, Lutron's centralised lighting control system, or USITT DMX512 protocol. Each system or protocol is unique, but the power panel is designed to automatically detect which one is present and operate accordingly. When ordering the appropriate panel, ask for the 2Link option.



GRAFIK Eye Designer software

Want system design time to be two to four times faster? Lutron's GRAFIK Eye Designer software automatically assigns boosters/interfaces or dimming panels, removing any guesswork when designing a system. Consult Lutron or visit www.lutron.com/designer for more information.

Custom combination panels

Custom combination panels are built-to-order to provide the following capabilities on a project-by-project basis:

- Dimming modules for incandescent (tungsten)/halogen, magnetic low voltage, neon/cold cathode sources also switch 0-10 V, DALI, or DSI loads
- Dimming modules for electronic low-voltage sources
- Switching modules for all sources
- Control Modules for operating 0-10 V, DALI (broadcast only), or DSI loads
- Motor Modules for 3-wire AC motorised window treatments

Modules listed above can be combined into one panel. Contact Lutron® for possible module combinations that will meet the specific needs of your project.

Sources

	Incandescent
	Magnetic low voltage
	Electronic low voltage
	Fluorescent
	Neon/cold cathode
	High-intensity discharge
	Motor

Design options

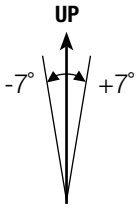
- Input feed – input breaker, isolator switch, feed-through
- Branch breakers – 10 A, 13 A, or 16 A
- Panel voltage – 220 V-240 V, 230 V (CE)
- Operates on 50 Hz or 60 Hz power
- Panel feed – single-phase or three-phase
- 2Link™ option – provides a second control link that automatically detects the presence of a DMX512 stage console

Specifications

- All voltages indicated are phase-to-neutral
- Operates on 50 Hz or 60 Hz power
- Can control most popular load sources
- Common neutrals are not permitted; run separate neutrals for each control load
- Panels may be in the middle of a GRAFIK Eye 4000 control link; control link must be daisy-chained
- System can include a combination of GP, LP, XP, and custom combination Panels
- Power panel installation instructions are available in multiple languages; contact Lutron or visit www.lutron.com for more information

Mounting

- Indoor use only; IP-20 protection
- Panel generates heat; mount only where ambient temperature will be 0-40° C (32-104° F) with a non-condensing relative humidity < 90%
- Panels must mount within 7° of true vertical



Mount panel vertically

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

Systems

GRAFIK Eye™
4000 series, section 2.6

Centralised lighting control system, section 3

Step 1: Select modules based on load requirements

NEW Adaptive module

Sources

- Incandescent
- Magnetic low voltage
- Electronic low voltage
- Neon/cold cathode

NEW

- Manual or automatic selection between leading edge or trailing edge dimming
- One input and four outputs per module
- Maximum loads (CE and non-CE):
  8 A per output
  13 A continuous total per module
- Maximum 100 BTUs/hour

With **NEW** RTISS-TE™ technology

LP dimming module

Sources

- Incandescent
- Magnetic low voltage
- Electronic low voltage*
- Fluorescent**
- Neon/cold cathode
- Non-dim for above load types

* Requiring Lutron® low voltage transformer.

** Switched loads w/TVM modules.

- One input and four outputs per module
- Maximum loads (CE):
  10 A per output
  13 A continuous total per module
- Maximum loads (non-CE):
  16 A per output
  16 A continuous total per module
- Maximum 80 BTUs/hour

ELV dimming module

Sources

- Incandescent
- Electronic low voltage

- One input and four outputs per module
- Maximum loads (CE and non-CE):
  10 A per output
  16 A continuous total per module
- Maximum 100 BTUs/hour

Step 1: continued

TVM module

Sources

- Fluorescent

- Each module controls two consecutive dimming legs of lighting for 0-10 V, DALI (broadcast intensity only), DSI ballasts, or PWM ballasts
- For every two TVM Modules one LP Dimming or XP switching module MUST be present
- 50 mA maximum low voltage ballast control current per dimming leg
- 750 mA maximum low voltage ballast control current per panel
- Sinks and sources current
- 2 outputs per module

XP Switching module

Sources

- Incandescent
- Magnetic low voltage
- Electronic low voltage
- Fluorescent
- Neon/cold cathode
- High intensity discharge

- Switches all lighting sources
- Four inputs and four outputs
- Softswitch™ technology (see pg. 4.8.12)
- Maximum load: 16 A per output
- Maximum 5 BTUs/hour

Motor module

Sources

- AC Motors

- One input and four dual outputs
- Controls up to four three-wire AC motors
- Maximum load per motor module is 16 A
- Maximum load per AC motor is 5 A

Step 2: select an enclosure style

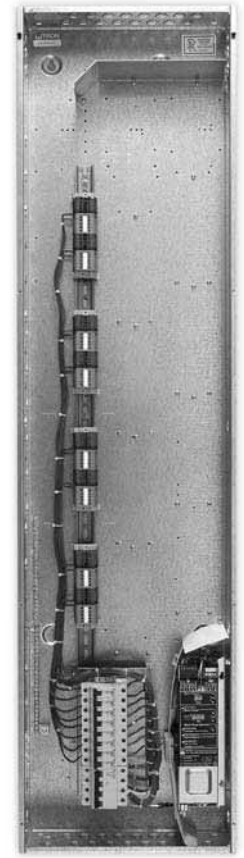
Small enclosure

Feed type	TVM	Adaptive	LP	ELV	Motor	XP
Feed-through	NA	Any combination up to 3 modules				
Feed-through	0-4	Any combination up to 2 modules				
Input breakers	NA	Any combination up to 3 modules				0
Input breakers	0-4	Any combination up to 2 modules				0

Dimensions

W: 404 mm (15.88")
H: 622 mm (24.50")
D: 108 mm (4.25")

Large enclosure



Feed type	TVM	Adaptive	LP	ELV	Motor	XP
Feed-through	0-12	Any combination up to 8 modules				
Input breakers	0-12	Any combination up to 8 modules				0
Input breakers	0-12	Any combination up to 6 modules				

Notes

- For every two TVM modules, one LP dimming or XP switching module MUST be present.
- Consult Lutron® for panels with custom breaker needs.
- TVM = 0 is a TVM-ready panel; TVM modules can easily be installed in the future.
- TVM = NA is not TVM-ready

Dimensions

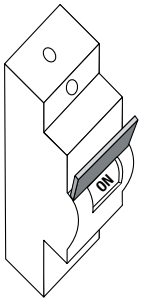
W: 404 mm (15.88")
H: 1512 mm (59.50")
D: 108 mm (4.25")

Step 3: select input breaker

A: Feed-through panel, no breakers

B: Single pole input breakers – 10, 13 and 16 A available; 6000 AIC Rating; Type C

C: Consult Lutron® for other breaker options



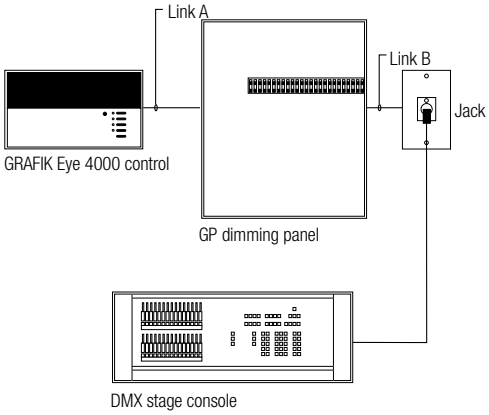
Dimensions - single pole breakers

W: 17.6 mm (0.69")
H: 81.4 mm (3.20")
D: 65.0 mm (2.55")

Step 4: select circuit selector

A: One-Link (Standard) circuit selector

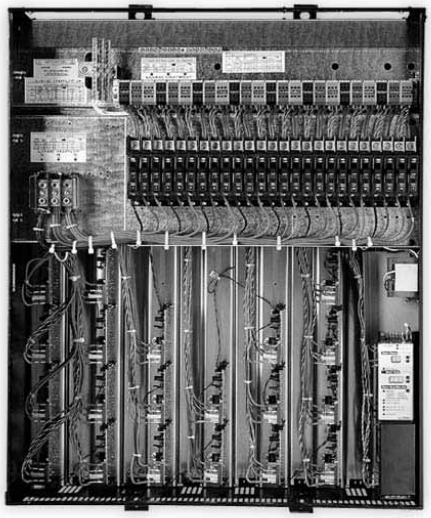
B: The 2Link™ option provides two distinct control links inside each power panel. Each link – Link A and Link B – is capable of operating on any one of these systems: Lutron's GRAFIK Eye™ 4000, Lutron's centralised lighting system control, or USITT DMX 512 protocol. Each system or protocol is unique, but the power panel is designed to automatically detect which one is present and operate accordingly.



Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

Mini GP (3,4)



GP8-24

High-performance architectural dimming

- Lutron's patented filter circuit, RTISS™–Real-Time Illumination Stability System, compensates for incoming line-voltage variations and maintains constant light levels with no visible flicker under conditions with a ±2% change in RMS voltage/cycle and a ±2 Hz change in frequency/second; for more information, see application note on pg. 4.8.6 for more information
- Offered in two cabinet sizes containing from 3-24 circuits
- Preassembled panels, field wiring is similar to wiring lighting distribution panel
- Filter chokes provide a rise time of at least 165 µsec at 50% dimmer capacity, measured from 10-90% of the load current waveform at 90% conduction angle and at no point faster than 60 mA/µsec
- Custom panels available if needs are beyond 24 circuits; contact Lutron®

Loading	Measurement limits	Current rise time
50%	10-90%	165 µsec
50%	0-100%	250 µsec
100%	10-90%	195 µsec
100%	0-100%	290 µsec

Higher rise times are available up to 400 µsec; contact Lutron for details.

Sources

	Incandescent
	Magnetic low voltage
	Electronic low voltage (leading edge only)
	Fluorescent
	Neon/cold cathode
	High-intensity discharge (non-dim)

Specifications

- All voltages indicated are phase-to-neutral
- Operates on 50 Hz or 60 Hz power
- Can control most popular load sources
- Common neutrals are not permitted; run separate neutrals for each control load
- Panels may be in the middle of a GRAFIK Eye 4000 control link; control link must be daisy-chained
- System can include a combination of GP, LP, XP, and Custom Combination Panels
- Power Panel installation instructions are available in multiple languages; contact Lutron or visit www.lutron.com for more information

Design Options

- Input feed – feed-through, isolator switch
- Branch breakers – 10 A (CE), 16 A (non CE)
- Panel voltage – 220 V-240 V, 230V (CE)
- Operates on 50 Hz or 60 Hz power
- Panel feed – single-phase or three-phase
- Number of circuits: 3-24
- 2Link™ option – provides a second control link that automatically detects the presence of a DMX512 stage console
- Custom panels available if needs are beyond 24 circuits; contact Lutron.
- Review requirements with Lutron. Some fluorescent loads require an interface or a custom panel.

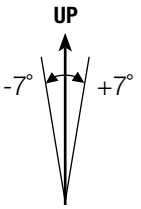
Systems

GRAFIK Eye™ 4000 Series, section 2.6

Centralised Lighting Control System, section 3

Mounting

- Indoor use only; IP-20 protection
- Panel generates heat; mount only where ambient temperature will be 0-40º C (32-104º F) with a non-condensing relative humidity < 90%
- Surface-mount only
- Panels must mount within 7º of true vertical



Mount panel vertically

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

Source

3 or 4 circuits

Dimensions

GP3, 4

W: 280 mm (11.00")
H: 546 mm (21.15")
D: 159 mm (6.25")

Wt: 14 kg (30 lbs)
Ship wt: 19 kg (40 lbs)
Max. BTUs/hr: 685
(kcal/hr: 172.7)

8 - 24 circuits

Dimensions

GP8 - GP24

W: 703 mm (27.65")
H: 997 mm (39.25")
D: 305 mm (12.00")

Weight

GP8

Wt: 52 kg (115 lbs)
Ship wt: 75 kg (165 lbs)
Max. BTUs/hr: 1365 (kcal/hr: 343.98)

GP12

Wt: 60 kg (130 lbs)
Ship wt: 82 kg (180 lbs)
Max. BTUs/hr: 2045 (kcal/hr: 515.34)

GP16

Wt: 66 kg (145 lbs)
Ship wt: 88 kg (195 lbs)
Max. BTUs/hr: 2725 (kcal/hr: 686.70)

GP20

Wt: 73 kg (160 lbs)
Ship wt: 95 kg (210 lbs)
Max. BTUs/hr: 3405 (kcal/hr: 858.06)

GP24

Wt: 80 kg (175 lbs)
Ship wt: 102 kg (225 lbs)
Max. BTUs/hr: 4085 (kcal/hr: 1,029.42)

Type	Model No. Prefix	No. of Circuits	Voltage	Feed Type[1]	Isolator Switch (IS)	Branch Circuit Breaker Capacity(A)	Region Suffix[2]	Maximum Panel Feed (A)	Maximum Dimmed Load (W/VA) per circuit
GP3									
	GP	3-	230	4	M-[3]	10	CE	N/A	2300
	GP	3-	240	4	M-[3]	16	AU	N/A	3840
GP4									
	GP	4-	230	FTML			CE	N/A	2300
	GP	4-	240	FTML			AU	N/A	3840
GP8									
	GP	8-	230	2	IS-	10	CE	125	2300
	GP	8-	230	4	IS-	10	CE	125	2300
	GP	8-	240	2	IS-	10	AU	125	2400
	GP	8-	240	2	IS-	16	AU	125	3840
	GP	8-	240	4	IS-	10	AU	125	2400
	GP	8-	240	4	IS-	16	AU	125	3840
GP12									
	GP	12-	230	4	IS-	10	CE	125	2300
	GP	12-	240	4	IS-	10	AU	125	2400
	GP	12-	240	4	IS-	16	AU	125	3840
GP16									
	GP	16-	230	4	IS-	10	CE	125	2300
	GP	16-	240	4	IS-	10	AU	125	2400
	GP	16-	240	4	IS-	16	AU	125	3840
GP20									
	GP	20-	230	4	IS-	10	CE	125	2300
	GP	20-	240	4	IS-	10	AU	125	2400
	GP	20-	240	4	IS-	16	AU	125	3840
GP24									
	GP	24-	230	4	IS-	10	CE	125	2300
	GP	24-	240	4	IS-	10	AU	125	2400
	GP	24-	240	4	IS-	16	AU	125	3840

Available model numbers (Model No. Example: GP12-2304IS-10CE)

- Custom panels available if needs are beyond 24 circuits; contact Lutron®.

Footnotes, pg. 4.5.2

1 Feed types–phase-to-neutral only. 2=1Ø,2 W; 4=3Ø,4 W; FTML= Feed Through

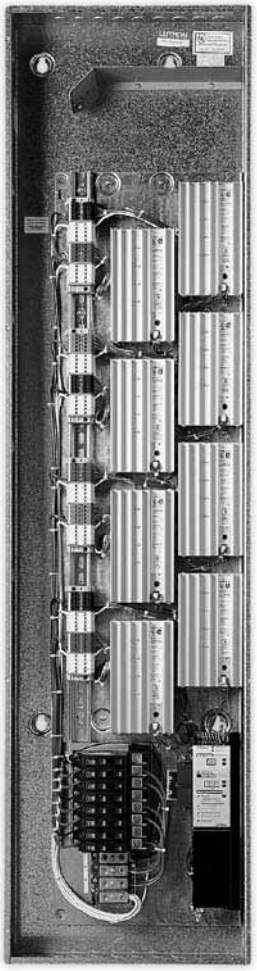
2 Region suffix: CE= Europe; AU=Asia or 240V Latin America, or Africa

3 Input feed terminates at branch breaker(s)

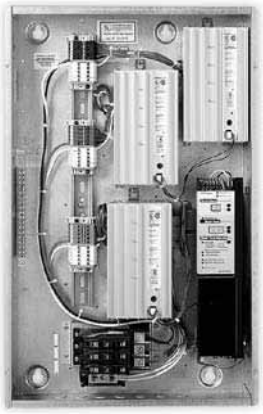
4 The feed type of a GP3 panel is designated as a 4, which is 3Ø, 4 W. These panels can be wired as 1Ø, 2 W with a 50 A max. feed, or 1Ø, 3 W with a 40 A max. feed.

Note

Panels listed above are Lutron standard panels. Consult Lutron for additional capabilities, such as job-specific circuit requirements, 0-10 V, 2Link™, etc.



LP dimming panel



Mini LP dimming panel

Commercial dimming panel for numerous small loads

- Lutron's patented filter circuit, RTISS™–Real-Time Illumination Stability System, compensates for incoming line-voltage variations and maintains constant light levels with no visible flicker under conditions with a ±2% change in RMS voltage per cycle and a ±2 Hz change in frequency per second; see the application note on pg. 4.8.6 for more information
- Preassembled panels, field wiring is similar to wiring lighting distribution panel
- Four independently dimmed switch legs per module; up to eight modules (32 dimmers) per panel

Sources

	Incandescent
	Magnetic low voltage
	Electronic low voltage*
	Neon/cold cathode

* Requires Lutron® low voltage transformer

Sources requiring an interface or custom panel

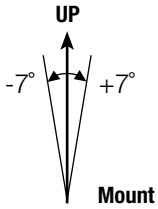
	Electronic low voltage pg. 2.5.2
	Fluorescent[1]

Design options

- Input feed – isolator switch
- Branch breakers – 13 A (CE), 16 A (non-CE)
- Panel voltage – 220 V-240 V, 230 V (CE)
- Operates on 50 Hz or 60 Hz power
- Panel feed – single-phase or three-phase
- Number of switch legs: 4-32
- 2Link™ option – provides a second control link that automatically detects the presence of a DMX512 stage console

Mounting

- Indoor use only; IP-20 protection
- Panel generates heat; mount only where ambient temperature will be 0-40° C (32-104° F) with a non-condensing relative humidity < 90%
- Flush or surface-mount
- Panels must mount within 7° of true vertical



Mount panel vertically

Specifications

- All voltages indicated are phase-to-neutral
- Each dimming module has four independently dimmed switch legs, which share a common air-gap switch
- Common neutrals are not permitted; run separate neutrals for each control load
- Panels may be in the middle of a GRAFIK Eye™ 4000 control link; control link must be daisy-chained
- System can include a combination of GP, LP, XP, and custom combination Panels
- Power panel installation instructions are available in multiple languages; contact Lutron® or visit www.lutron.com for more information

Systems

GRAFIK Eye 4000 series, section 2.6

Centralised lighting control System, section 3

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

Footnotes, pg. 4.6.1

1 0-10 V refer to pg. 4.9.5 in the wiring diagrams section, for other loads contact Lutron.

Source

230 V (CE)/ 240 V (non CE)
1- 8 dimming modules

Dimensions

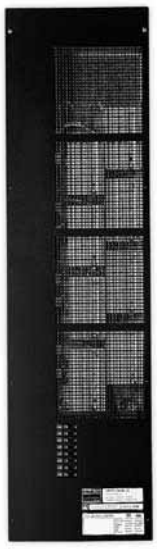
Mini LP1, 2, 3

W: 404 mm (15.88")
H: 622 mm (24.50")
D: 108 mm (4.25")

Wt: LP1 15 kg (33 lbs)
LP2 16 kg (35 lbs)
LP3 17 kg (37 lbs)

Ship Wt adder for LP1, LP2, LP3: +1.4kg (3 lbs)

LP1 Max. BTUs/hr: 90 (kcal/hr: 22.68)
LP2 Max. BTUs/hr: 170 (kcal/hr: 42.84)
LP3 Max. BTUs/hr: 250 (kcal/hr: 63.00)



Dimensions

LP4, 5, 6, 7, 8

W: 404 mm (15.88")
H: 1514 mm (59.50")
D: 108 mm (4.25")

Wt: LP4 25 kg (55 lbs)
LP5 26 kg (57 lbs)
LP6 27 kg (59 lbs)
LP7 28 kg (61 lbs)
LP8 29 kg (63 lbs)

Ship wt adder for LP4-LP8: +4.5kg (10 lbs)

LP4 Max. BTUs/hr: 330 (kcal/hr: 83.16)
LP5 Max. BTUs/hr: 410 (kcal/hr: 103.32)
LP6 Max. BTUs/hr: 490 (kcal/hr: 123.48)
LP7 Max. BTUs/hr: 570 (kcal/hr: 143.64)
LP8 Max. BTUs/hr: 650 (kcal/hr: 163.80)

Type	Model No. Prefix	No. of Dimming Modules	No. of Switch Legs	Voltage	Feed Type [1]	Input Breaker (M)[2] Isolator Switch (IS)	Branch Circuit Breaker Capacity (A)	Maximum Panel Feed (A)	Maximum Dimmed Load (W/VA) per module
LP1	**230 V (CE)**								
	LP	1/	4-	230	2	M-[2]	13	N/A	3000
	240 V (non CE)								
	LP	1/	4-	240	2	M-[2]	16	N/A	3840
LP2	**230 V (CE)**								
	LP	2/	8-	230	2	M-[2]	13	N/A	3000
	240 V (non CE)								
	LP	2/	8-	240	2	M-[2]	16	N/A	3840
LP3	**230 V (CE)**								
	LP	3/	12-	230	4	M-[2]	13	N/A	3000
	240 V (non CE)								
	LP	3/	12-	240	4	M-[2]	16	N/A	3840
LP4	**230 V (CE)**								
	LP	4/	16-	230	4	IS-	13	125	3000
	240 V (non CE)								
	LP	4/	16-	240	4	IS-	16	125	3840
LP5	**230 V (CE)**								
	LP	5/	20-	230	4	IS-	13	125	3000
	240 V (non CE)								
	LP	5/	20-	240	4	IS-	16	125	3840
LP6	**230 V (CE)**								
	LP	6/	24-	230	4	IS-	13	125	3000
	240 V (non CE)								
	LP	6/	24-	240	4	IS-	16	125	3840
LP7	**230 V (CE)**								
	LP	7/	28-	230	4	IS-	13	125	3000
	240 V (non CE)								
	LP	7/	28-	240	4	IS-	16	125	3840
LP8	**230 V (CE)**								
	LP	8/	32-	230	4	IS-	13	125	3000
	240 V (non CE)								
	LP	8/	32-	240	4	IS-	16	125	3840

Available model numbers (Model No. Example: LP5/20-2404IS-16)

- Custom panels available
- 230 V (CE) Model numbers if ordering within Europe:

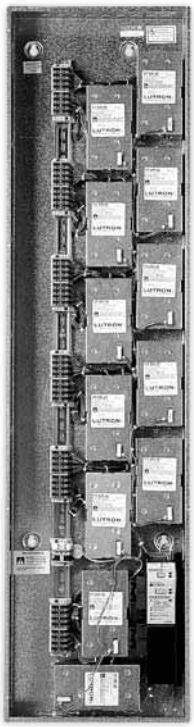
LP1/4-2302M-13 → CCP-1L-2302M-1L
LP2/8-2302M-13 → CCP-2L-2302M-1L
LP3/12-2304M-13 → CCP-3L-2304M-1L
LP4/16-2304IS-13 → CCP-4L-2304IS-1L
LP5/20-2304IS-13 → CCP-5L-2304IS-1L
LP6/24-2304IS-13 → CCP-6L-2304IS-1L
LP7/28-2304IS-13 → CCP-7L-2304IS-1L
LP8/32-2304IS-13 → CCP-8L-2304IS-1L

Footnotes, pg. 4.6.2

1 Feed types–phase-to-neutral only. 2= 1Ø,2 W; 4= 3Ø,4 W

2 Input feed terminates at branch breaker(s)

Note: Panels listed above are Lutron standard panels. Consult Lutron for additional capabilities, such as job-specific circuit requirements, 0-10 V, 2Link™, etc.

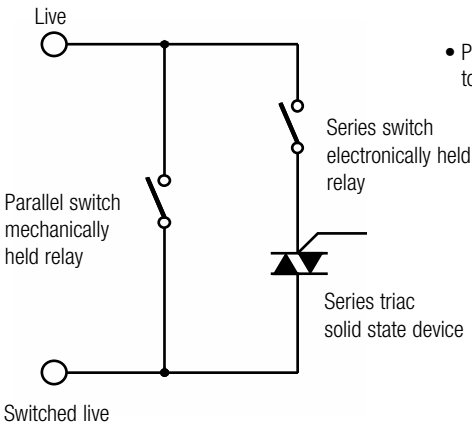


XP Softswitch
Feed-through panel – 20-48 circuits

Mini XP Softswitch
Feed-through panel – 4-16 circuits

Million-cycle switching panel employs Lutron's patented Softswitch™ technology

- Patented Softswitch relay switches load with no arc. Lutron® has verified an average rated relay life of 1,000,000 cycles (on/off). See application note on page 185 for further details.



- Pre-assembled panels, field wiring is similar to wiring lighting distribution panel

Sources

	Incandescent
	Magnetic low voltage
	Electronic low voltage
	Fluorescent
	Neon/cold cathode
	High-intensity discharge
	Non-dim*

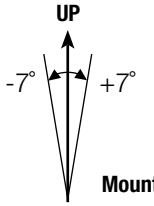
*For above load types.

Design Options

- Input feed – feed-through
- Panel voltage – 220 V-240 V, 230 V (CE)
- Operates on 50 Hz or 60 Hz power
- Number of switch legs: 4-48
- 2Link™ option – provides a second control link that automatically detects the presence of a DMX512 stage console

Mounting

- Indoor use only; IP-20 protection
- Panel generates heat; mount only where ambient temperature will be 0-40° C (32-104° F) with a non-condensing relative humidity < 90%
- Flush or surface-mount
- Panels must mount within 7° of true vertical



Mount panel vertically

Specifications

- All voltages indicated are phase-to-neutral
- Each switching module has four independent switch legs, each with an air-gap switch
- Panels may be in the middle of a GRAFIK Eye™ 4000 control link; control link must be daisy-chained
- System can include a combination of GP, LP, XP, and custom combination Panels
- Power panel installation instructions are available in multiple languages; contact Lutron or visit www.lutron.com for more information

Systems

GRAFIK Eye 4000 series, section 2.6

Centralised lighting control System, section 3

Standards

Standards listed below apply to one or more products in the Lutron product line. Consult Lutron for specific information.

4 – 16 circuits with feed-through

Dimensions

Mini panel

W: 404 mm (15.88")
H: 623 mm (24.50")
D: 108 mm (4.25")

Wt: 12.2 kg (27 lbs) Maximum

Ship Wt: 13.5 kg (30 lbs) Maximum.

20 – 48 circuits with feed-through

Dimensions

Standard panel

W: 404 mm (15.88")
H: 1512 mm (59.50")
D: 108 mm (4.25")

Wt: 37 kg (80 lbs) Maximum

Ship Wt: 41 kg (90 lbs) Maximum.

Type	Model No. Prefix	No. of Switching Circuits	Switching Circuit Switching Voltage	Feed Type[1]	Maximum Feed (A)	Load (A) per circuit Maximum Switched
XP4	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	4-	230	FTML[1]	16	16
XP8	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	8-	230	FTML[1]	16	16
XP12	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	12-	230	FTML[1]	16	16
XP16	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	16-	230	FTML[1]	16	16
XP20	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	20-	230	FTML[1]	16	16
XP24	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	24-	230	FTML[1]	16	16
XP28	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	28-	230	FTML[1]	16	16
XP32	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	32-	230	FTML[1]	16	16
XP36	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	36-	230	FTML[1]	16	16
XP40	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	40-	230	FTML[1]	16	16
XP44	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	44-	230	FTML[1]	16	16
XP48	**230 VAC (CE) and 220-240 VAC (non-CE)**					
	XP	48-	230	FTML[1]	16	16

Available model numbers (Model No. Example: XP4-230FTML)

- Model numbers if ordering within Europe:

XP4-230FTML → CCP-1X-230FT-1L
XP8-230FTML → CCP-2X-230FT-1L
XP12-230FTML → CCP-3X-230FT-1L
XP16-230FTML → CCP-4X-230FT-1L
XP20-230FTML → CCP-5X-230FT-1L
XP24-230FTML → CCP-6X-230FT-1L
XP28-230FTML → CCP-7X-230FT-1L
XP32-230FTML → CCP-8X-230FT-1L
XP36-230FTML → CCP-9X-230FT-1L
XP40-230FTML → CCP-10X-230FT-1L
XP44-230FTML → CCP-11X-230FT-1L
XP48-230FTML → CCP-12X-230FT-1L

Footnotes, pg. 4.7.2

1 FTML= feed-through only; feed wires terminate at terminal blocks. Branch breaker protection provided by others.

Note

Panels listed above are Lutron standard panels. Consult Lutron for additional capabilities, such as job-specific circuit requirements, 0-10 V, 2Link™, etc.

What makes the light dim

A component in the dimmer called the triac actually turns the light on and off very rapidly, 100/120 times per second.

The longer the light is ON versus OFF (Figure 1) the brighter the lights. Conversely, when the light is OFF more than ON (Figure 2) the lights are dimmer.

Figure 1
Lights Dimmed to 75% of maximum

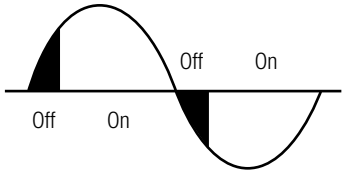
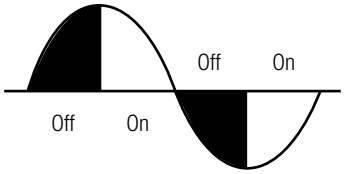


Figure 2
Lights Dimmed to 50% of maximum



This operation saves electricity: When the lamp is OFF (shaded areas of Figures 1 and 2), no electricity is being used. The longer the lamp is OFF, the lower the light output and the greater the energy savings. Additionally, dimming incandescent/halogen lamps extends the life of the lamp.

There are two potential side effects of dimming: radio frequency interference (RFI) and lamp noise (buzz). Lutron® addresses both in the design of the dimmer and integral filter as well as by offering supplementary products.

Radio frequency interference

Radio frequency interference (RFI) occurs when solid-state dimmers emit electrical noise that interferes with AM radios, audio equipment, etc. Every Lutron dimmer contains a filter to suppress or eliminate RFI. Additional filtering may be required in some applications. In instances where interference does occur, Lutron recommends the following:

- Ensure there is 15 m between the dimmer and audio equipment
- Place the dimmer on a different phase than the audio equipment
- Run dimmer wiring in its own metal conduit
- Use a lamp debuzzing coil (see pg.4.8.2)*
- Purchase an in-line filter for the audio equipment

*Lutron's GP dimming panels provide the highest level of RFI suppression and should not require the use of an additional lamp debuzzing coil.

Visit www.lutron.com/applicationnotes/360484.pdf for more information.

Lamp noise (buzz) (non-CE)

Dimensions

W: 80 mm (3.125")
H: 175 mm (6.88")
D: 57 mm (2.25")

Rapid on/off switching 100/120 times a second will cause incandescent lamp filaments to vibrate differently than when they are receiving current from a normal 230 V line. This vibration can lead to instances of undesirable acoustical noise from the lamp(s) when dimmed. The highest possible potential lamp noise occurs when the OFF time is equal to the ON time within any given half-cycle (sometimes referred to as the 90º conduction angle). This is shown in Figure 2, pg. 4.8.1.

GRAFIK Eye™ 4000 series, GRAFIK 5000™, GRAFIK 6000™, GRAFIK 7000™, and Lutron's GP dimming panels include filter chokes (lamp debuzzing coils) that provide the highest level of lamp noise suppression (performance is indicated in next application note).

GRAFIK Eye 3000 series, power boosters and LP dimming panels include filter chokes to suppress some levels of lamp noise. To address more severe lamp noise with these products, Lutron suggests the following:

- Select another brand of lamp
- Use lower wattage lamps (100 W or less)
- Use a physically smaller lamp
- Install a lamp debuzzing coil (LDC) in the circuit Lutron has four LDC models; performance is indicated below.

Model #	Rated capacity
LDC-10-TCP	1500 W - 2300 W
LDC- 6.7-TCP	800 W - 1500 W
LDC- 3.3-TCP	400 W - 800 W
LDC- 1.7-TCP	200 W - 400 W

For other capacities, contact Lutron Technical Support.

LDCs (or GP dimming panels) make an audible buzz and should be mounted in an area where the noise will not be objectionable (e.g., an electrical closet, a basement, or above a drop ceiling). For further information visit www.lutron.com/applications/360476.pdf or contact Lutron Technical Support and request "Application Note #3."

Lamp filtering performance

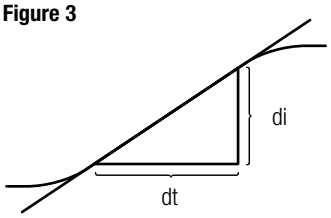
(GP Dimming Panels, LDCs)

GP dimming panel

Lamp debuzzing coil

There are two ways to quantitatively measure the performance of a filter choke used on a dimmer for the purpose of reducing lamp noise. The most accurate way is to look at the maximum rate of current rise or current acceleration through the lamps, measured in di/dt (mA/µsec). See Figure 3. For GP dimming panels and lamp debuzzing coils, the rate of rise is 30 mA/µsec, well below the broadcast industry of 100 mA/µsec. This is the most critical measurement, but it is not a number that is available from many manufacturers.

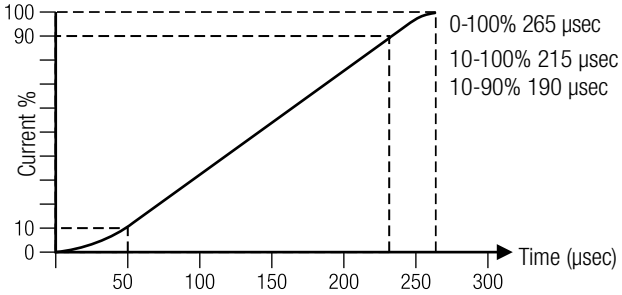
Figure 3



slope = di/dt = rate of rise
smaller di/dt = smoother slope
(less lamp noise)

The second and more popular measure is the dimmer's rise time. Most dimming system manufacturers provide filtering data at full load, which provides typically the "best" data but represents an unrealistic real-world condition, since the dimmers are very rarely loaded to their full capacity. A more reasonable approach is to measure the performance at 1/2 of the real rated load. (Larger loads will naturally carry proportionately higher rise times, since the current has farther to travel before it reaches its destination.) The rise time is the time (measured in µsec) that it takes for the load current to rise between point A (10% for Lutron) and point B (90% for Lutron). Other measurements such as 0% to 100% provide the absolute best rise times,
but are typically less accurate due to large "interpretation" errors of 0% or 100%. Figure 4 represents measurements taken of the choke used in Lutron's GP panels at 1/2 the rated load.

Figure 4



Notes

Higher rise times are available up to 400 µsec; contact Lutron for details.

Applications using Lutron® power panels for emergency

Source types

- **N (Normal)**–Panel input feed comes directly from normal utility power. Lighting circuit intensities respond to GRAFIK Eye™ control inputs as long as normal power is present. Upon loss of normal power, no power is available for the lighting circuits.
- **N/E (Normal or Emergency)**–Panel input feed comes from an upstream transfer switch (by others). When Normal power is available, the panel receives normal power from the transfer switch. All lighting circuit intensities respond to GRAFIK Eye control inputs. Upon loss of normal power, the panel receives emergency power from the transfer switch. The N/E panel senses loss of normal power to the normal panel, overrides all GRAFIK Eye control inputs, and changes all lighting circuit intensities to preprogrammed emergency levels (normally full-on).
- **E (Emergency only)**–Panel input feed comes directly from the Emergency power source. Under Normal power, no power is available for the lighting circuits. Upon activation of Emergency power, the panel sets all lighting circuit intensities to preprogrammed Emergency levels.

Typical normal/emergency application

1. A source of emergency power is required, typically from a standby generator, UPS, or a separate emergency power utility feed.
2. A transfer switch is required upstream of the dimming panel.
3. A normal/emergency switch is located at the bottom of the circuit Sselector in each panel. This switch must be set properly for the panel to function either as a Normal/Emergency panel or a Normal panel.
4. The normal panel and normal/emergency panel must be on the same GRAFIK Eye control link. Terminal #5 on the normal panel must be connected to Terminal #5 on the normal/ emergency panel. This is the Normal power sense line for the normal/emergency panel.

Information on compliance with standards and codes

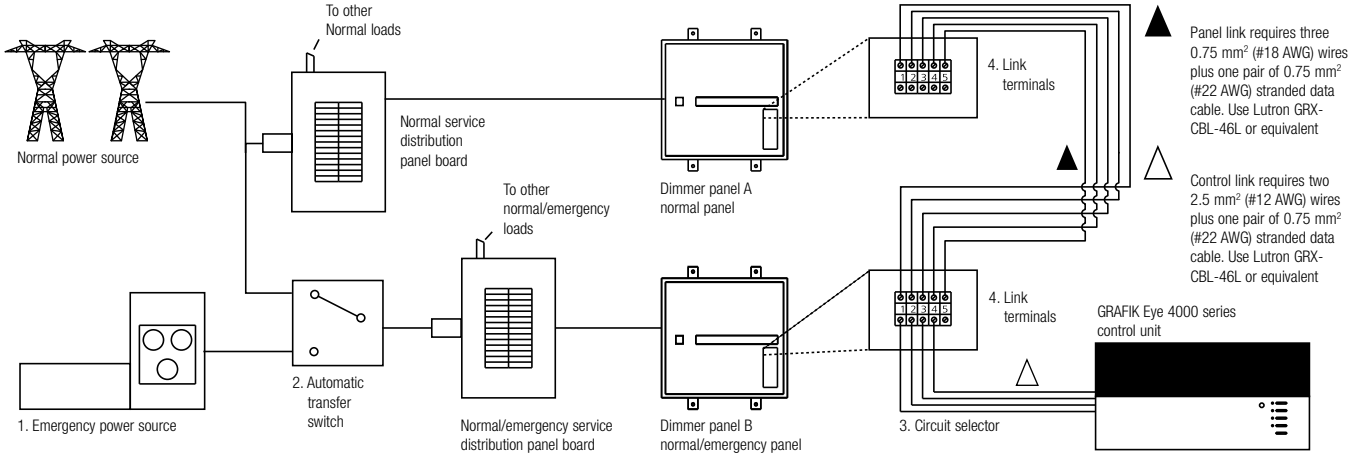
Some local codes and/or local authorities having jurisdiction (AHJ) do not permit emergency power to be connected to dimmer circuits. Check with your local AHJ before laying out emergency circuits. For applications where local codes do not permit dimmers on emergency power, load side automatic transfer switches (provided by others) can be used. See Solution 2 on the next page.

Solution 1

Normal/emergency application using Lutron power panels

How it works

1. When Normal power is available, both the normal and normal/emergency panels are energised and respond to GRAFIK Eye controls.
2. Upon loss of normal power, all circuits connected to the normal panel go out.
3. The circuit selector in the normal/emergency panel, via the control link sense line from the normal panel, senses the loss of normal power.
4. The automatic transfer switch delivers power to the normal/emergency panel from the emergency power source.
5. When emergency power is on, the circuit selector in the normal/emergency panel overrides all GRAFIK Eye intensity controls and sets all circuits connected to normal/emergency panel to preset emergency levels (normally full-on).
6. Upon restoration of normal power, the transfer switch diverts power from the normal/emergency panel back to the normal power source. The circuit selector in the normal/emergency panel returns intensity control back to the GRAFIK Eye controls. All circuits in the normal/emergency panel and the normal panel return to the intensity levels at which they were set prior to the loss of normal power.

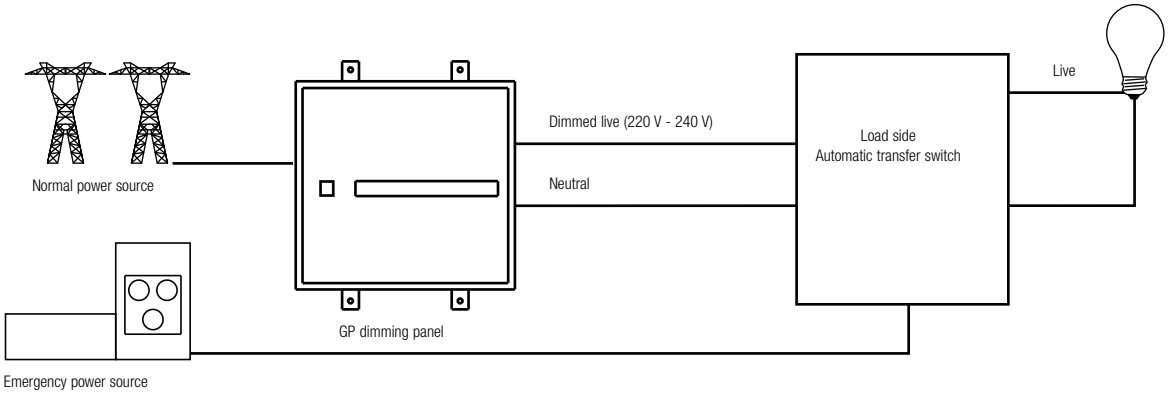


Solution 2

Normal/emergency application using automatic transfer switches

How it works

1. When normal power is available, all circuits from the normal panel are connected directly to the luminaires by the load side transfer switches. All circuits respond to the GRAFIK Eye controls.
2. Upon loss of normal power, the load side automatic transfer switch diverts that single circuit to the emergency power source, completely bypassing the dimmer panel. Luminaires will go to full light output.
3. Upon restoration of normal power, the load side transfer switch reconnects the luminaires to the normal panel. The power failure memory feature in the GRAFIK Eye controls will return all circuits in the normal panel to the intensity levels at which they were set prior to the loss of normal power.



Solution 3

Applications using constant live for unit equipment

Utilise the constant live terminal provided on each circuit to power the unit equipment that provides emergency lighting for the area served by the dimming panel.

Emergency light interface

LUT-ELI-3PH (non-CE)

Dimensions

W: 127 mm (5.00")
H: 197 mm (7.75")
D: 64 mm (2.50")

Mounts on a Lutron back-box, P/N 241496

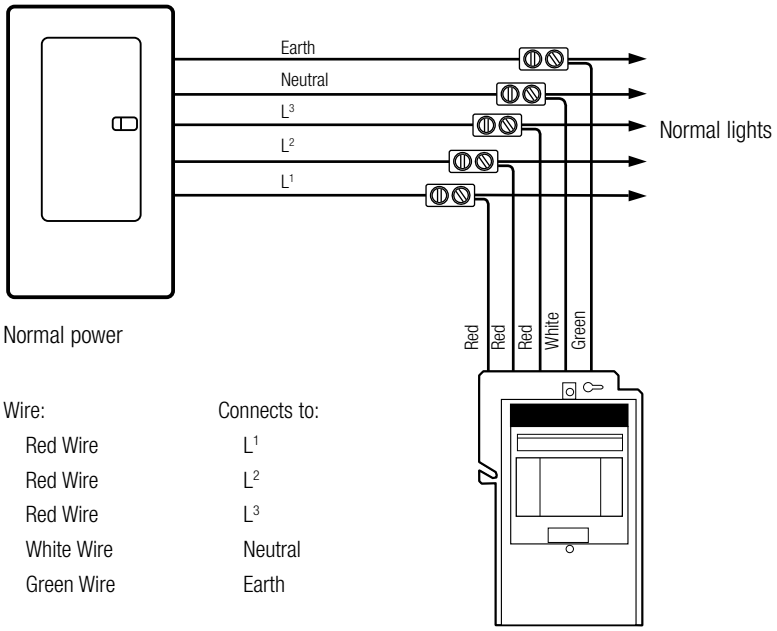
W: 105 mm (4.13")
H: 105 mm (4.13")
D: 40 mm (1.57")

The LUT-ELI is to be used in conjunction with Lutron® GRAFIK panels. The LUT-ELI senses the normal (non-essential) line voltage on all three phases of normal power. When one or more phases of power are lost, the LUT-ELI will send a signal to the circuit selector with emergency (essential) power, causing it to enter the emergency lighting mode. Any lights controlled by these devices will go to the emergency light level setting (factory set to 100% intensity). When normal power is restored the lights will return to their previous intensities.

The interface mounts to a Lutron backbox, P/N 241496. It is powered by the GP, LP, XP, or custom combination panel's 24-volt supply. The interface can detect 100 to 347 VAC 50/60 Hz.

- Pilot light indicates the phase status
- A test switch is provided to simulate an emergency situation
- The interface has normally open or normally closed inputs for a Fire Alarm Control Panel
- Can be used with up to 32 circuit selectors
- Sense voltage range is 220-240 V (non-CE) 50/60 Hz, 3 Phase
- Sense voltage input to the LUT-ELI MUST be from the NORMAL (Non-essential) power source.

Guide to power source wiring



Wire:	Connects to:
Red Wire	L^1
Red Wire	L^2
Red Wire	L^3
White Wire	Neutral
Green Wire	Earth

Real-Time Illumination Stability System (RTISS™)

Overview

Lutron has faced many technical challenges in its history. Lutron engineers have addressed the issue of international power quality, specifically power line noise, and its negative effect on dimmers.

Poor-quality power can cause lights to change rapidly as power source integrity changes. This can manifest itself as an occasional flash, a strobe effect, or a roller coaster or breathing effect.

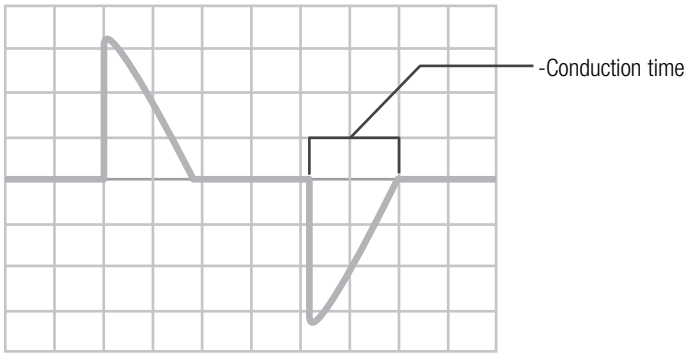
This abbreviated Application Note outlines the basic concepts of dimming, power line noise, and successful dimming in the presence of poor power quality. It identifies probable causes of poor power quality and describes how Lutron has integrated a patented design enhancement – RTISS – that filters out line noise to the dimmer to ensure consistent, quality dimming performance. For more information, visit www.lutron.com/grafikeye/rtiss or speak with your local representative.

Dimmer operation

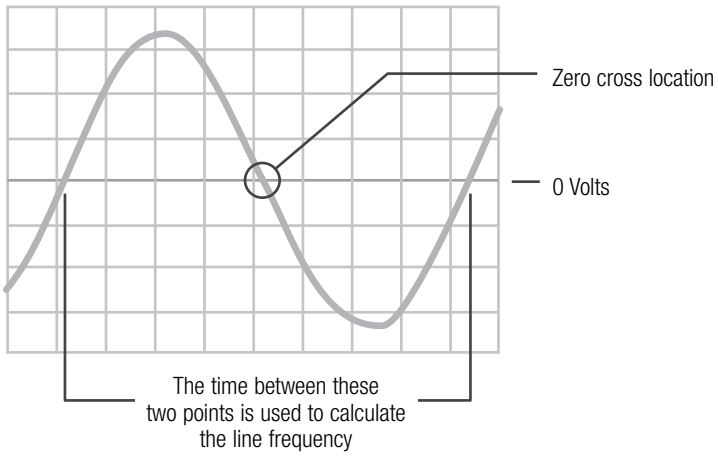
Most industry standard dimmers operate using one of four basic devices: Triac, SCR, FET, or IGBT. These devices are made into either phase-control or reverse-phase-control dimmer switches. The triac is used in this discussion for simplicity purposes; however, the issues and solutions covered affect all of these devices, not just triacs.

A phase-control dimmer controls the power to the load through a solid state switch or triac. The triac turns on and off at regular intervals based upon the AC power source, for example, 120 times per second on a 60 Hz line and 100 times per second on a 50 Hz line.

Using a slider, rotary knob, or other device, a user sets a light level that tells the dimmer, through a potentiometer or microcontroller, to provide a specific intensity level. The dimmer translates this level into a triac conduction time. Conduction time is defined as the time between “turn-on” and “turn-off” of the triac.



A phase-control dimmer is synchronised to the AC line. Timing software internal to the microcontroller synchronises the dimmer with the AC power line. The timing software measures the line frequency and the time at which the AC line crosses through zero. Stable, consistent phase-control dimming requires accurate line frequency and clean zero cross information.



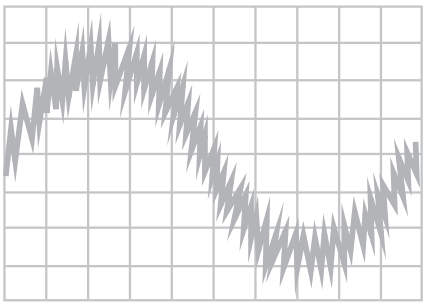
These two requirements, zero cross information and accurate line frequency, are unique to dimming. Other equipment that uses electricity is not concerned with these two factors. A common misconception is that computer equipment is just as sensitive to power line anomalies. In fact, because dimmers do not store energy as power supplies in computers do, they can be more sensitive to power line quality problems.

Real-Time Illumination Stability System (RTISS™) (continued)

Research

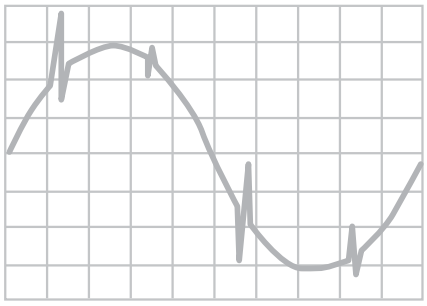
Through research, Lutron® has identified six different types of power line anomalies and their typical causes.

• High-frequency noise



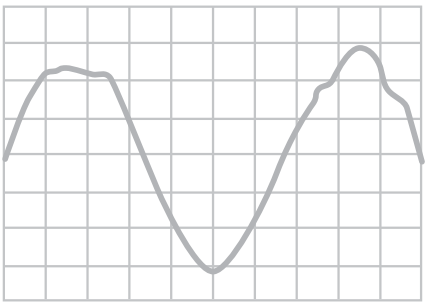
- Caused by: variable-speed motor drives, on-line UPS systems

• Impulse noise



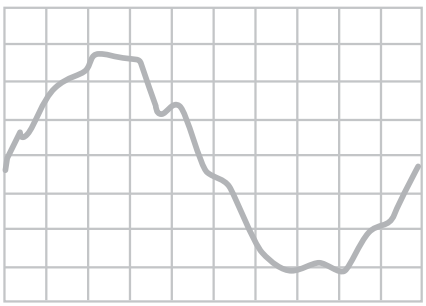
- Caused by: switch arcing (loads switching on/off)

• Low-frequency non-harmonics and signaling systems



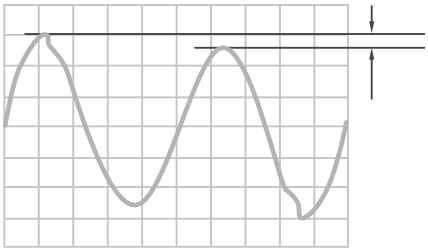
- Caused by: signaling systems, power line carrier communications

• Notches and low-frequency noise



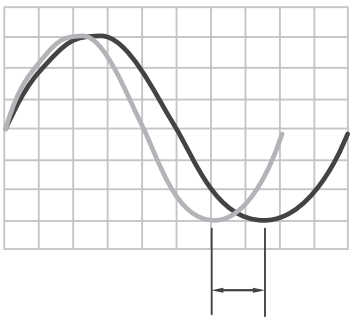
- Caused by: elevators and large industrial loads

• RMS (Root Mean Square) voltage changes



- Caused by: heavy loads switching on/off

• Variable fundamental frequency



- Caused by: backup generators, relatively small power grids

These specific conditions are the result of the various building power distribution systems that exist. Wire and transformer impedance as well as disparate loads/systems fed from a common distribution panel will affect the severity of the conditions. Lutron isolated these conditions after reviewing over 150 samples from a multinational installation base. All samples reviewed were gathered in facilities where problems were occurring regularly and noted by knowledgeable personnel.

Real-Time Illumination Stability System (RTISS™) (continued)

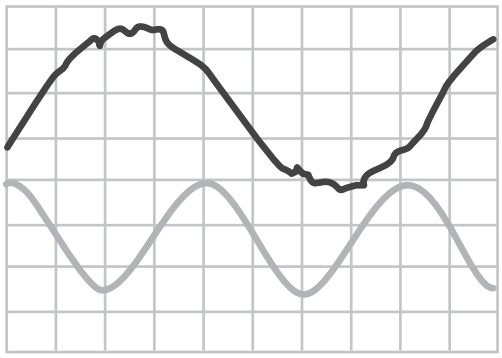
Solution

Lutron's original solution was well-suited for filtering out single instances of power line anomalies through a digital filter called a Phase Locked Loop (PLL). Through constant monitoring of the zero cross location, the PLL would average any noise presented to the dimmer. Adjusting the system meant enabling or disabling the PLL or changing how quickly it tracked noise.

The PLL system worked well when only one power line anomaly existed. If two or more existed simultaneously, the PLL became inadequate. To accommodate instances of multiple simultaneous anomalies, Lutron developed its next generation zero cross filter, RTISS—Real-Time Illumination Stability System. The development effort resulted in an analog filter used by the microcontroller's timing circuit.

The filter was designed to eliminate any frequency content that has the potential to corrupt the timing circuit. It provides stable sync pulses for the micro-controller in the presence of poor power quality.

The diagram below shows how the filter operates. The top waveform shows an unstable, distorted input voltage. The bottom waveform shows the result of the filter circuit – what is actually provided to the microcontroller timing circuit.



Input voltage to dimmer/output to the light source

Filtered signal to timing circuit (at 2x frequency)

Note: The RTISS filter circuit is not a power conditioner to the dimmer. It does not affect the power profile out to the load, it only provides a clean signal to the timing circuit so accurate zero cross and frequency information is available for the triac.

Conclusion

Incorporating the zero cross filter into microcontroller-based products allows Lutron's products to continue to provide superior performance. It helps to ensure that Lutron's customers will not experience inconsistent or unreliable dimming simply because power conditions at the installation vary or are of poor quality.

Continuing its commitment to providing exceptional lighting controls, Lutron is incorporating the recording tools it developed into the design verification process for all its products.

All of Lutron's products are 100% tested under worst-case, real-world conditions before they leave the lab. This process ensures that Lutron products not only meet but exceed customer expectations now and in the future.

Real-Time Illumination Stability Systems - Trailing Edge (RTISS-TE™)

Overview:

RTISS™ technology has been proven to successfully provide stable light output for phase control dimmers in the presence of poor power quality. Through its research, Lutron® has identified six different types of power line anomalies:

- High frequency noise
- Impulse noise
- Low-frequency non-harmonics and signaling systems
- Notches and low frequency distortion
- RMS (Root Mean Square) voltage changes
- Variable fundamental frequency

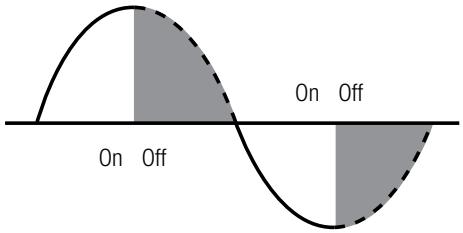
These noise sources may occur independently or in combination. Some of the worst power quality problems usually contain more than one of these noise types. Due to the increasing severity of poor power quality, Lutron has continued research into the performance of its commercial lighting systems. As a result of this research Lutron has found it necessary to develop an additional type of RTISS design.

Dimmer operation:

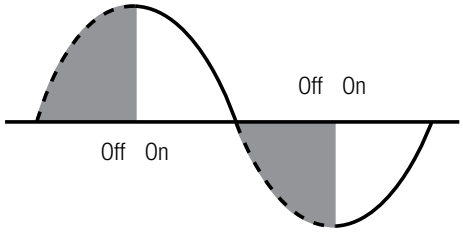
RTISS-TE technology has been designed around "Trailing-Edge (TE)" or "Reverse Phase Control (RPC)" dimmers. This type of dimmer uses transistors such as FETs or IGBTs as the power device instead of the typical triac or SCR devices used in "Leading-Edge" or "Forward Phase Control (FPC)" dimmers. The transistors allow the circuit to apply or interrupt current anywhere in the line cycle. A triac or SCR device can only be controlled to turn on at a predefined point. The turnoff of these devices is only controlled by when the load current goes through a zero crossing.

As the name implies, a Trailing-Edge dimmer applies line voltage to the load beginning at the zero crossing. Then the power device switches off at some point in the half cycle creating a "Trailing-Edge" waveform. The need for the two dimming waveforms is a result of the drive requirements of different load types. Incandescent loads can be driven by either dimming waveform. Electronic low-voltage loads have a capacitive input and require a Trailing-Edge waveform for dimming. Magnetic low-voltage loads can only be dimmed using a Leading-Edge waveform

The two waveforms are shown graphically in the pictures below.



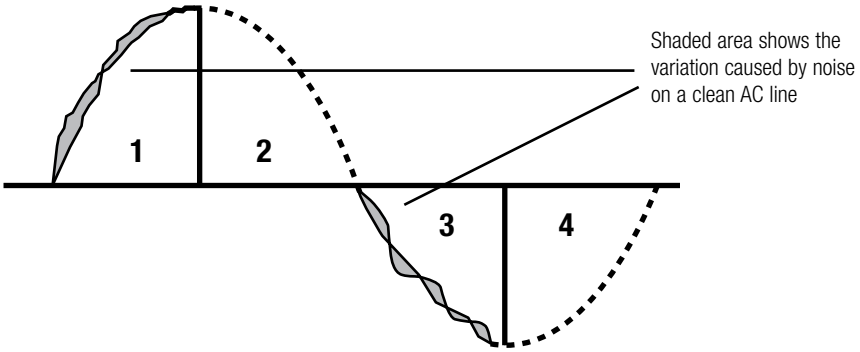
"Trailing Edge" dimmer output
or
Reverse phase control waveform



"Leading Edge" dimmer output
or
Forward phase control waveform

Real-Time Illumination Stability Systems - Trailing Edge (RTISS-TE) (continued)

Lutron's research of the poor AC power quality and dimming performance revealed that the rising edge of the AC waveform sometimes contains more interference from loads that draw large currents in the first and third quarter of each line cycle. This was especially noticeable on systems that used generator power or "softer" AC utility lines (examples of this are shipboard systems or emergency backup generators). This noise results in RMS voltage fluctuations that occur only in the beginning portion of each half cycle. It was also noted that these fluctuations could be different from half-cycle to half-cycle. A standard triac-based dimmer uses "Leading Edge" or Forward Phase Control (FPC). In this mode of operation the triac is off during this portion of the AC line. As a result, the noisiest part of the waveform does not appear across the load. On loads that requires the "trailing edge" or RPC dimmers, the noisy portion of the AC line is all that gets delivered to the load. As a result the load sees a large variation in RMS voltage, which may result in visible flicker.



Example of noise on the rising edge of the AC line

Lutron engineers developed a new method of control specifically for Trailing Edge dimmers to maintain a stable output even in the presence of the power quality issues described earlier. This method uses sophisticated digital signal processing to precisely measure the amount of power delivered to the load within each half-cycle. When the appropriate energy is delivered, the voltage is removed from the load by opening the power device. Using this method, it is possible to maintain the output within a 2% variation, even with a 10% variation in the RMS line voltage from half-cycle to half-cycle.

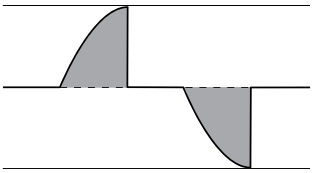
How does it work?

The dimmer first needs to receive the value of the desired power level for the load. Once this is obtained, the power device turns on as close to the zero crossing as possible. The standard RTISS filter is used to ensure the dimmer can find a clean zero crossing point in the AC waveform. Next, the voltage delivered to the load is measured and used to calculate the power delivered to the load. When the desired power level is reached, the power device is given a signal to turn off. The process is then repeated in the next half-cycle. Each half-cycle is controlled independently so that the power is constant throughout either frequency or voltage variations.

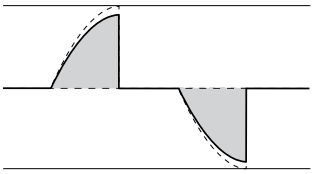
The diagram on the next page shows a simple variation in the AC line to illustrate how the RTISS-TE applies a correction. The RTISS-TE technology ensures that the conduction time of the power device is sufficient to deliver the consistent power to the load regardless of the waveshape. This can be seen graphically by the areas under each waveform.

Real Time Illumination Stability Systems - Trailing Edge (RTISS-TE™) (continued)

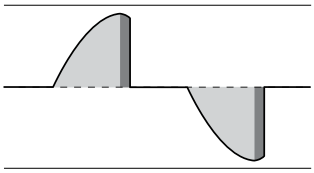
Effects Caused by a Line Sag



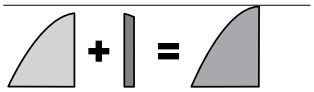
A. Expected power provided to the dimmer



B. Poor quality power caused by line sag.



C. RTISS-TE compensates for the line sag by conducting longer (darker section).



D. The actual RTISS-TE power output when the line sags is the same as the expected power.

Note: RTISS-TE provides a similar reponse due to a line surge by conducting for a shorter period of time.

Better than a switch:

RTISS-TE will provide better performance than a standard light switch. As long as the high-end level is set lower than 90% of full, the output power (light level) can be maintained even with a 10% drop in input voltage (dimmers can't generate voltage). A switch cannot provide any correction to incoming voltages. On a switch, a 10% drop in input voltage will result in a 10% drop in output voltage. Power is proportional to the square of the voltage. This means the power (light level) drop on a switch will be approx. 20%.

Conclusion:

The RTISS-TE technology shows Lutron's commitment to advancing the performance of dimming systems. It ensures that Lutron customers will continue to experience the superior performance they are accustomed to even with trailing edge dimming technology. When compared with a standard toggle switch the RTISS-TE technology provides an advantage in performance. A lamp controlled by a switch is subjected to all the RMS variation that may exist on the power line. The Lutron RTISS-TE equipped dimmer continuously modifies the conduction time so that the lamp power remains constant at all times.

"RTISS-TE is better than a switch."

Lutron Softswitch™ Technology

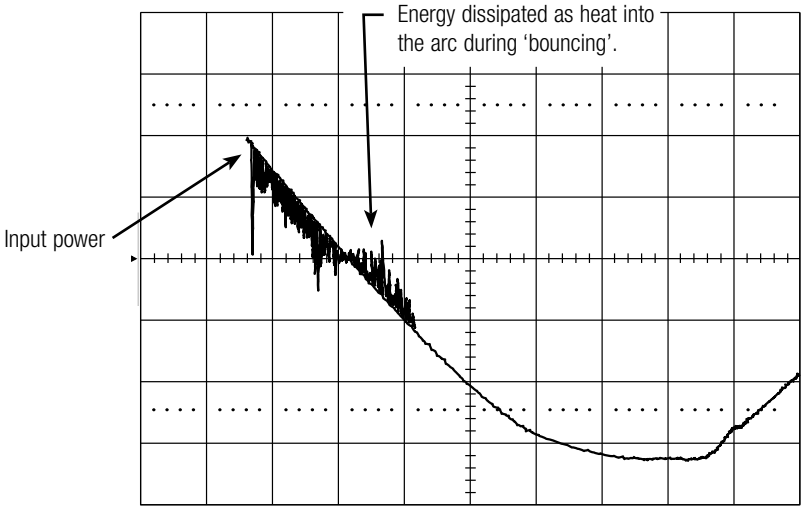
Background

Up until the early 1990s, relays needed to be concerned with only incandescent and inductive loads. The worst case inrush for these load types was 10X, and the relays were designed accordingly.

Unfortunately, the advent of electronic ballasts changed the rules as the inrush for these loads can be as high as 100X, more typically 30-50X. At these levels of inrush, the relays that were designed for 10X will typically experience a lower life. In some cases, this could be only weeks after initial operation.

The primary cause of relay failure is heat, which is caused when the typical relay is closed during turn-on. As the relay closes, an arc is created as the relay contacts close, 'bouncing' several times before finally closing. As Figure 1 shows, this results in wasted energy that is dissipated in the contacts of the relay as heat. The higher the inrush, the more heat is created. Ultimately, this heat causes the contacts to weld and become inoperative.

Figure 1.



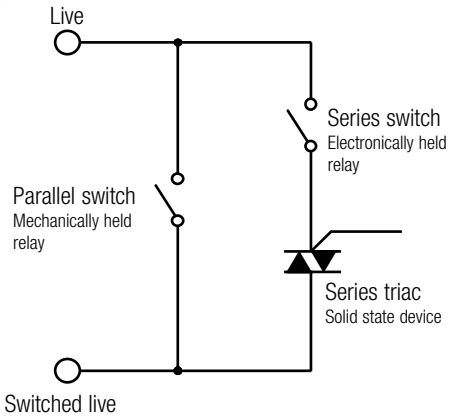
Solution

Knowing that heat was the source of relay impairment, Lutron's approach was aimed at reducing the heat by eliminating the root cause: the arc.

Figure 2a (next page) shows three components: a mechanically held relay (which is the primary component of other relays), an electronically held relay, and a solid-state triac. Upon being signalled to close (or turn on), the electronically held relay is closed before the triac is signalled to begin conducting (Figure 2b). Once the electronically held relay is closed, the triac begins conducting, energising the load. Any inrush at this point is passed through the triac. (Triacs are inherently more capable of handling surges than relays because they have no moving parts and therefore no arc.) Since the electronic relay is already closed, it is not affected by any inrush.

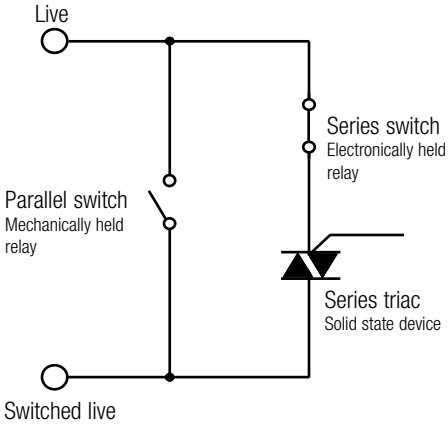
Lutron® Softswitch™ Technology (continued)

Figure 2a.



This is the circuit prior to activation. Three components are shown: a mechanically held relay, an electronically held relay, and a solid-state triac.

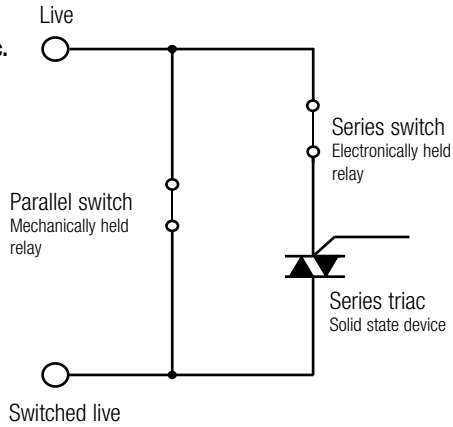
Figure 2b.



Upon activation, the electronically held relay is closed and then the triac begins conducting. Once the load is energised, inrush is passed through the triac (the closed relay is not affected).

At this point, the mechanically held relay is closed (Figure 2c). When the contacts for this relay 'bounce', there is no current passing through the contacts because the 'bouncing' contacts have a higher resistance than the already completed circuit passing through the electronically held relay and triac. Accordingly, this relay closes without an arc. Figure 3 reflects this.

Figure 2c.



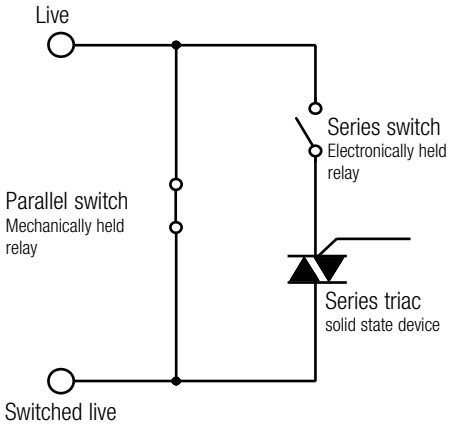
Now the mechanically held relay closes as well. Because of the higher resistance than the electronically held relay, no current passes through the mechanically held relay, resulting in no arc.

Lutron Softswitch Technology (continued)

Finally, the electronically held relay opens (Figure 2d) and takes the triac (and any heat or inefficiency - most triacs are 2-3% inefficient) out of the circuit. The notch in the waveform in Figure 3 is the triac remaining in the circuit. The electronically held relay opens after 10 line cycles, removing the triac from the circuit.

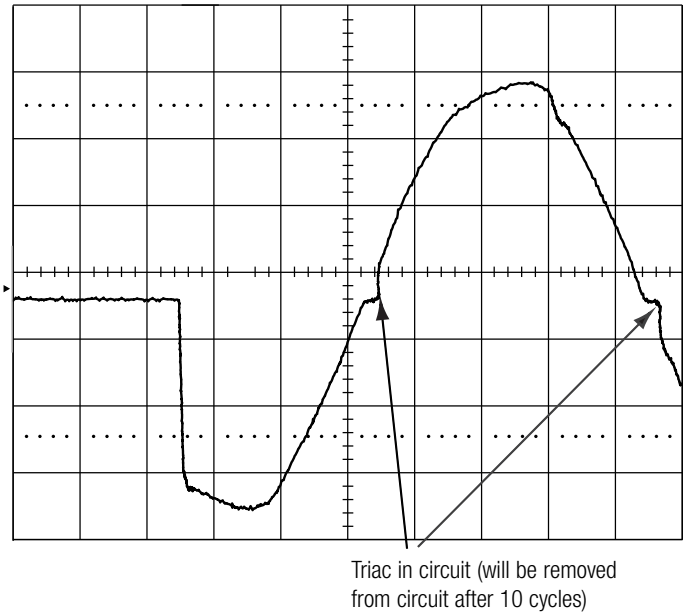
In turning off the circuit, both relays are opened using the same sequence in reverse, ensuring an air gap off that is consistent with all Lutron products.

Figure 2d.



The electronically held relay now opens and the triac is removed from the circuit. When the circuit is turned off, both relays open again, providing an air gap.

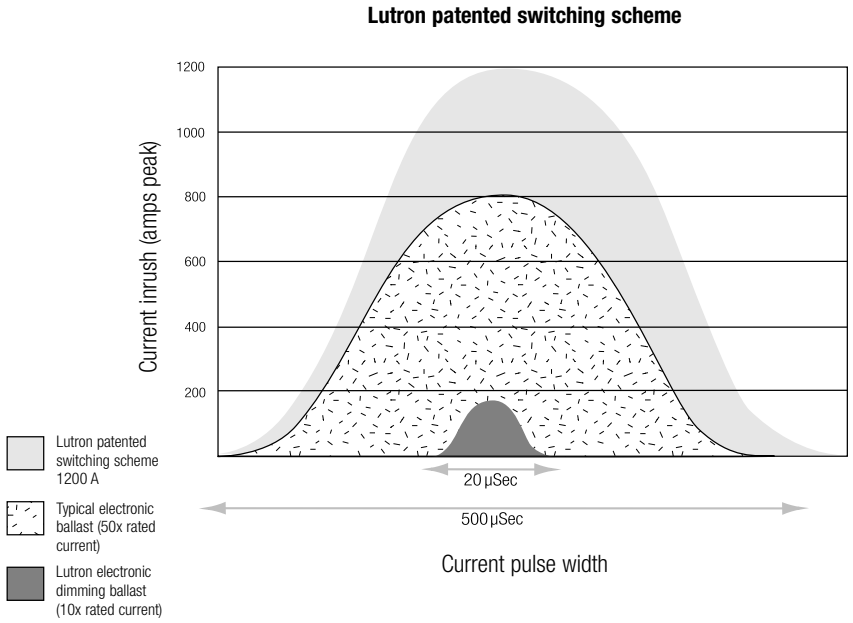
Figure 3.



Lutron® Softswitch™ Technology (continued)

With this design, Lutron has verified relay cycles (on/off) in excess of 1,000,000 times without adverse effects on relay operation. It is also independent of source - resistive, inductive, or capacitive - where most other relays are rated for resistive only. Figure 4 shows the various levels of typical inrush current and Lutron's solution which is capable of handling 50 times inrush current.

Figure 4



Another 'new' relay circuit that has been introduced recently is what is called 'zero cross relays'. These relays are supposed to reduce the inrush, by turning on where the power sine wave crosses zero. These relays do reduce the inrush but there is still inefficiency in this operation. Figure 1 is, in fact, a zero cross relay. Other common relays (i.e. GE's RR7) would be far worse. Zero cross switching is implemented in order to protect the relay contacts from the effects of arcing. With Lutron's Softswitch technology there are no moving parts to protect, therefore zero-cross switching is not necessary.

One last comment is that many facilities have not experienced a problem with traditional relay operation. There are several factors that can contribute to this - circuits that are not fully loaded and line impedance (longer wire runs as an example) being the two most common. It is important to note that we as a manufacturer had the same perspective four years ago. Because we do operate some circuits as non-dim, we began to witness issues with our circuits (and components) that led us to this solution. With this solution in place, we have not experienced a problem.

Neon Tube/Cold Cathode application information

To ensure proper operation, the steps at right must be followed closely.

Successful dimming of neon and cold cathode sources can be achieved through proper equipment selection and installation. The following installation instructions and derated luminous tube length chart for dimming applications must be used for optimal performance.

1. If equipment is selected and installed as specified, a dimming range of 95%-10% light should be possible.
2. The electrical properties of argon fill gas make it easier to dim than red neon fill gas; therefore, installations using argon fill gas will see a greater degree of success compared with neon installations.
3. In addition to the following guidelines, all installations must meet local codes.

Lamps

1. Neon/cold cathode lamps must be manufactured to proper lamp pressurisation (standard lamp pressure) without impurities. If pressurisation is not standard or impurities are present, poor performance will result.
2. Neon/cold cathode tubing should be well supported to avoid rattling when dimmed. Verify lamps are fully seated in lamp holders (if applicable).
3. Lutron recommends using only the transformer/tube combinations spelled out in the derated luminous tube length chart for neon/cold cathode dimming applications (next page). Other combinations will result in poor performance and flicker. Note that there are few successful combinations for red neon tubes smaller than 11 mm.
4. Ends of tubes must be insulated to avoid arcing and subsequent lamp instability.

Transformers

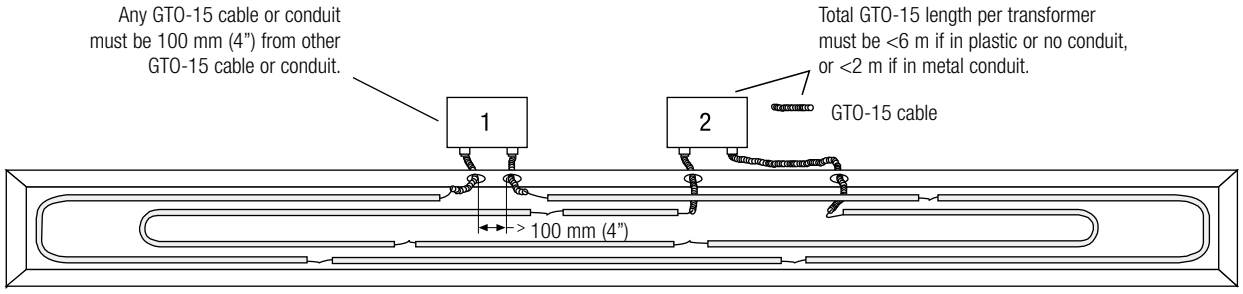
1. Normal power factor transformers must be used; electronic transformers are not dimmable.
2. When choosing transformer secondary currents, it is important to note that the higher the transformer current rating, the brighter the light from the tube.
3. Transformers must be sized according to the chart. These modified charts must be used by neon/cold cathode transformer suppliers to size the transformer for dimming applications. Standard luminous tube length charts must not be used to size transformers in dimming applications as poor performance will result.
4. Transformers must be thermally protected or fused.
5. Power factor correction capacitors, if present, must be disconnected. If power correction is required, contact Lutron technical support for details on power factor correction at the lighting controller.
6. Transformers should be sized to run as close as possible to full load footage, as shown in the chart.

Wiring

1. Optimal dimming performance is achieved when the high-voltage (GTO-15) cable connecting a transformer output terminal to a cold cathode tube is enclosed in plastic conduit or run without conduit. If code requires a metal conduit, aluminum is preferred.
2. The total length of all GTO-15 cable connecting a transformer to the cold cathode tubes must be:
   6 m or less–enclosed in plastic or no conduit
   2 m or less–enclosed in metal conduit
3. Braided or shielded GTO-15 cable must not be used for dimming applications.
4. Lutron recommends that only one GTO-15 cable be run per conduit.
5. All GTO-15 cables should be spaced a minimum of 100 mm (4”) from any other GTO-15 cable.
6. Make sure spacing from tube ends to earth 100 mm (4”) and other tube ends is adequate to prevent arcing and subsequent lamp instability.

Notes

1. Make sure spacing between any tubing, tubing ends, high voltagee secondary cable, or conduit to any earthed surface is adequate to prevent arcing and subsequent lamp instability.



Neon tube application information

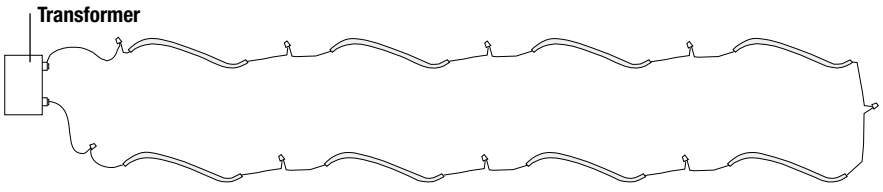
Notes:
- x denotes this combination cannot be successfully dimmed.
- Tube length is shown in metres.
- If using a centre-tap on a centre-tapped transformer, the secondary voltage will be reduced by half.

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

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

Derated luminous tube length chart for neon/cold cathode dimming applications

Transformer ratings			Appropriate number of metres of (tubing and pairs of electrodes)																				
			Neon fill (clear or fluorescent red)											Argon/mercury fill (colours other than neon red)									
Secondary voltage (V)	Secondary short circuit current (mA)	Input volt-amperes with secondary short circuit (VA)	Tube size (millimetres)											Tube size (millimetres)									
			25	22	20	18	15	14	13	12	11	10	9	25	22	20	18	15	14	13	12	11	10	9
15,000	60	900	23.5	19.5	17.7	16.5	13.7	x	x	x	x	x	x	29.3	24.4	22.0	19.5	17.7	15.6	14.6	13.4	11.6	10.7	x
	30	450	23.5	19.5	17.7	16.5	13.7	x	x	x	x	x	x	29.3	24.4	22.0	19.5	17.7	15.6	14.6	13.4	11.6	10.7	x
	20	270					x	x	x	x	x	x	x					x	x	x	x	x	x	x
12.000	60	720	18.0	15.3	14.0	12.5	10.4	9.8	8.8	7.9	x	x	x	23.2	19.2	17.1	15.3	13.4	12.2	11.3	10.7	9.2	8.5	x
	30	360	18.0	15.3	14.0	12.5	10.4	9.8	8.8	7.9	x	x	x	23.2	19.2	17.1	15.3	13.4	12.2	11.3	10.7	9.2	8.5	x
	20	225					x	x	x	x	x	x	x					x	x	x	x	x	x	x
9000	120	1080	17.7	14.9	12.5	10.7	8.5	7.6	7.6	7.0	6.1	5.2	x	22.6	18.9	15.3	12.8	11.3	10.1	9.2	8.5	7.9	6.7	x
	60	540	15.3	13.1	11.0	9.2	7.6	7.0	6.7	6.1	5.5	4.9	x	19.5	16.5	13.4	11.0	9.8	8.8	7.9	7.9	6.7	6.1	x
	30	270	15.3	13.1	11.0	9.2	7.6	7.0	6.7	6.1	x	x	x	19.5	16.5	13.4	11.0	9.8	8.8	7.9	7.9	6.7	6.1	x
	20	180				6.4	6.1	5.5	4.9	x	x	x						8.2	7.6	7.0	6.7	5.5	4.9	x
7500	120	900	13.4	10.7	8.8	7.3	6.7	6.1	6.1	5.2	4.9	4.3	x	17.1	13.4	11.0	9.5	8.5	7.9	7.6	6.7	6.1	5.5	x
	60	450	11.6	9.5	7.6	6.4	6.1	5.5	4.9	4.9	4.3	4.0	x	14.9	11.6	9.5	8.5	7.6	6.7	6.7	6.1	5.5	4.9	x
	30	225	11.6	9.5	7.6	6.4	6.1	5.5	4.9	4.9	x	x	x	14.9	11.6	9.5	8.5	7.6	6.7	6.7	6.1	5.5	4.9	x
	20	150				4.9	4.9	4.6	4.3	x	x	x						6.7	6.1	5.5	5.2	4.6	4.3	x
6000	120	720	10.7	8.8	7.3	6.1	5.5	4.9	4.9	4.3	4.0	3.4	x	13.4	11.3	9.2	7.9	6.7	6.4	6.1	5.5	4.9	4.3	x
	60	360	9.2	7.6	6.4	5.2	4.9	4.3	4.3	3.7	3.4	3.1	x	11.6	9.8	7.9	6.7	5.8	5.5	5.2	4.6	4.3	4.0	x
	30	180	9.2	7.6	6.4	5.2	4.9	4.3	4.3	3.7	x	x	x	11.6	9.8	7.9	6.7	5.8	5.5	5.2	4.6	4.3	4.0	x
	20	130				4.3	4.0	3.7	3.1	x	x	x						5.5	4.9	4.3	4.3	3.7	3.1	x
5000	120	600	8.5	7.3	6.1	4.9	4.6	4.3	4.0	3.1	2.7	2.4	x	11.3	9.2	7.6	6.4	5.5	5.5	4.6	4.3	3.7	3.1	x
	60	300	7.6	6.4	5.2	4.3	4.0	3.7	3.4	2.7	2.4	2.4	x	9.8	7.9	6.7	5.5	4.9	4.6	4.0	4.0	3.1	3.1	x
	30	160	7.6	6.4	5.2	4.3	4.0	3.7	3.4	2.7	x	x	x	9.8	7.9	6.7	5.5	4.9	4.6	4.0	4.0	3.1	3.1	x
	20	100				3.4	3.1	3.1	2.4	x	x	x						4.3	4.0	3.7	3.4	2.7	2.4	x
4000	60	240	6.1	5.2	4.3	3.7	3.1	2.7	2.4	2.4	2.1	1.8	x	7.9	6.7	5.5	4.6	4.3	4.0	3.7	3.4	2.7	2.4	x
	30	140	6.1	5.2	4.3	3.7	3.1	2.7	2.4	2.4	x	x	x	7.9	6.7	5.5	4.6	4.3	4.0	3.7	3.4	2.7	2.4	x
	20	90				8	2.4	2.4	2.1	x	x	x						3.4	3.1	3.1	3.1	2.1	1.8	x
3000	60	180	4.0	3.1	2.7	2.4	2.4	2.1	2.1	1.8	1.5	1.5	x	5.5	4.3	4.0	3.4	3.1	2.7	2.4	2.1	1.8	1.8	x
	30	100	4.0	3.1	2.7	2.4	2.4	2.1	2.1	1.8	1.5	1.5	x	5.5	4.3	4.0	3.4	3.1	2.7	2.4	2.1	1.8	1.8	x
	20	75				1.8	1.8	1.5	1.5	1.2	0.9	x						2.4	2.1	1.8	1.8	1.5	1.2	x
2000	30	75				1.5	1.5	1.5	1.5	x	x	x						2.1	1.8	1.8	1.8	1.5	1.2	x
	20	50				1.5	1.2	1.2	1.2	x	x	x						1.8	1.8	1.8	1.5	1.2	0.9	x
Recommended gas pressure (mm/Hg)			6	7	7.5	8	9	10	10	11	12	13		6	7	7.5	8	9	10	10	11	12	13	

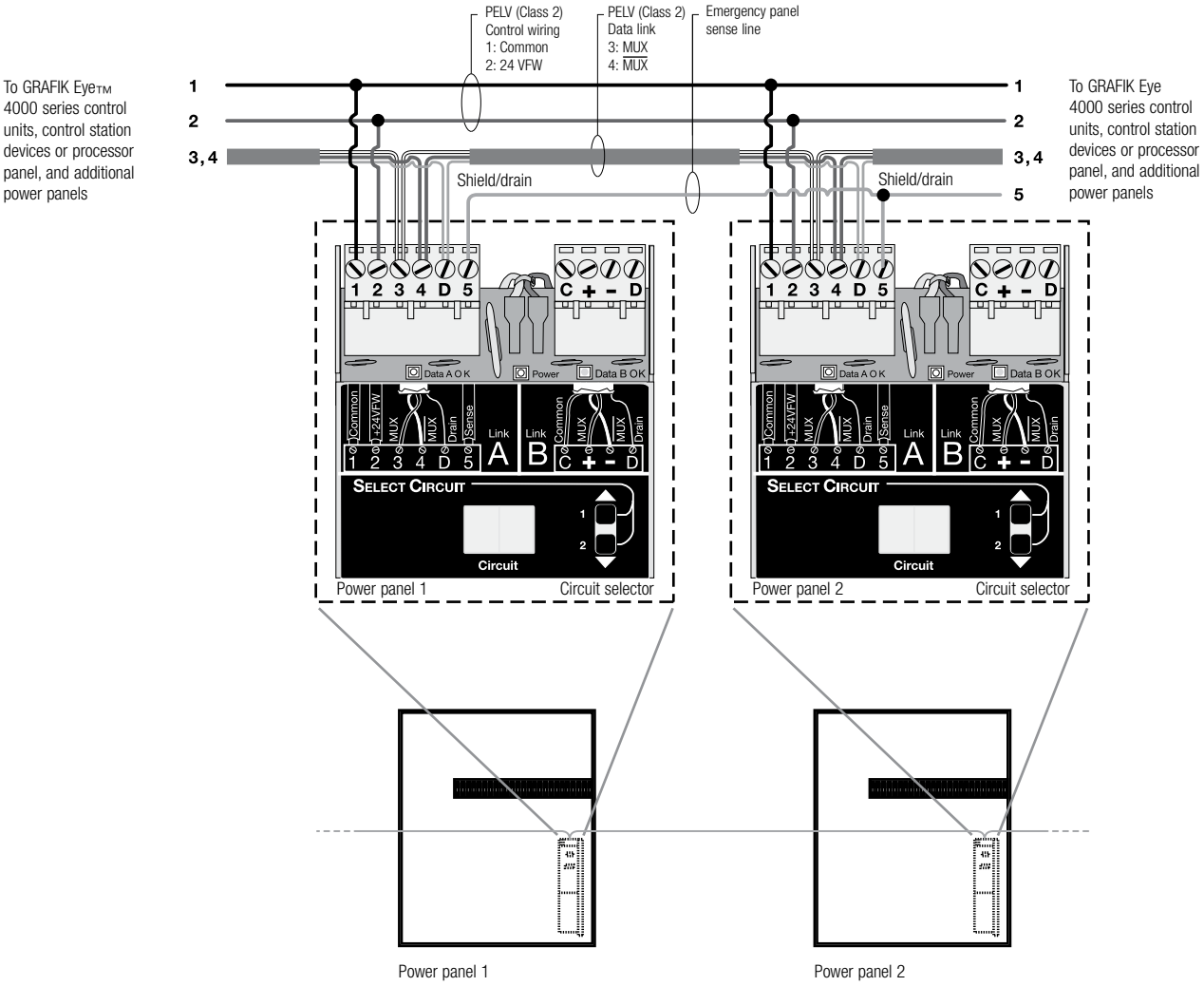


Notes
1. Each pair of electrodes equals 0.3 m of tube. Example application = 8 red neon, 1m long, 18 mm dia., 60 mA lamps.
2. Total lamp length = (8 lamps x 1 m) + (8 lamps x 0.3 m for each pair of electrodes) = 10.4 m. 9,000 V, 120 mA, 1080 VA transformer should be used.

Wiring diagram #1

Power panels

Panel-to-panel wiring



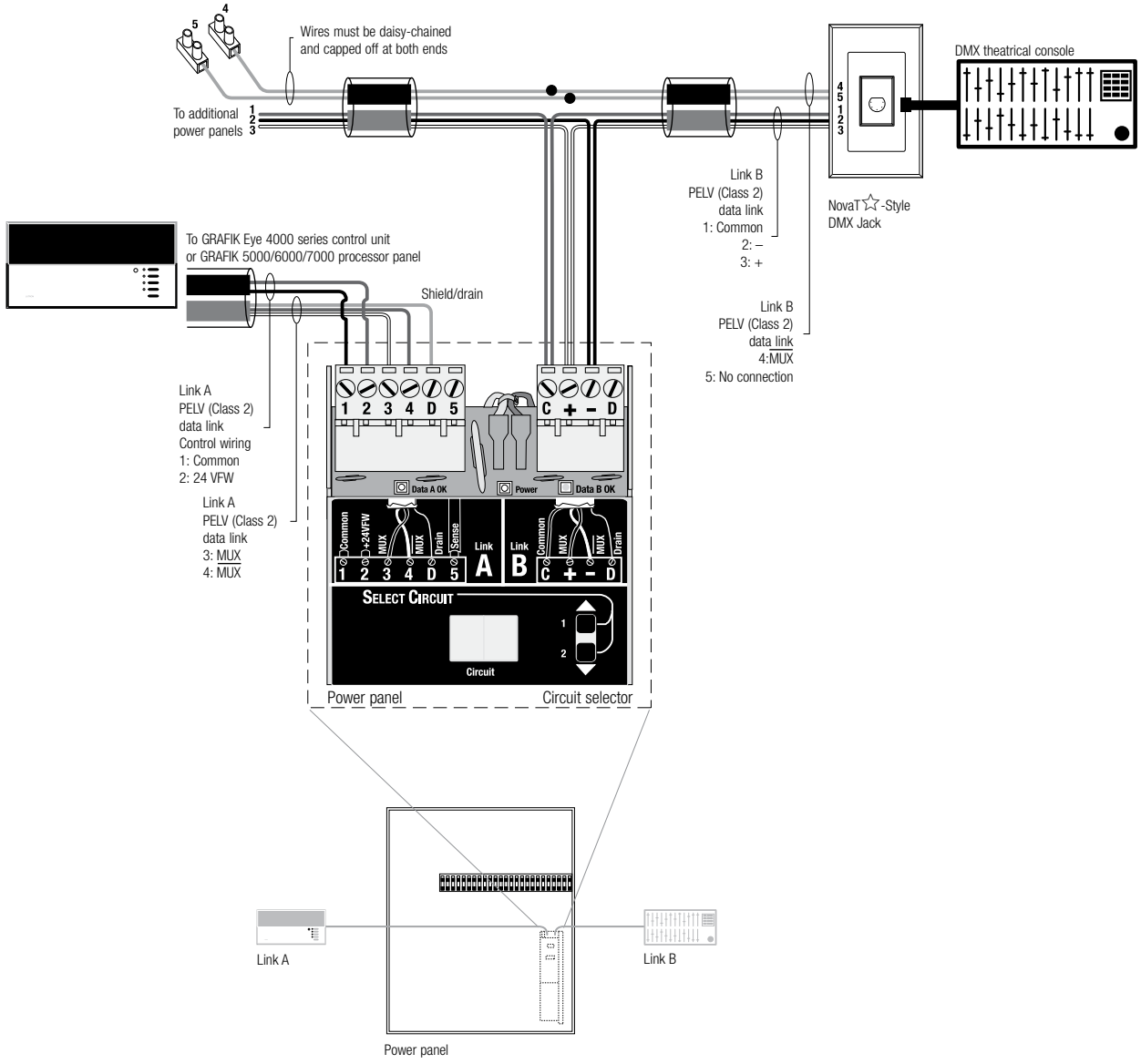
Notes

1. Use (2) 2.5 mm^2 (#12 AWG) wires for terminals 1 and 2, and (1) 1.0 mm^2 (#18 AWG) twisted, shielded pair for terminals 3 and 4 (Lutron® P/N GRX-CBL-46L) see pg. 2.13.1.
2. The additional 1.0 mm^2 (#18 AWG) wire is a “sense” line from terminal 5 of another panel. This sense line allows an emergency (Essential) lighting panel to “sense” when normal (non-essential) power is lost. If more than one emergency lighting panel needs to sense off a specific normal panel, a dedicated wire may need to be run between each pair of normal (non-essential) and Emergency (essential) panels.
3. Shielding must be connected as shown. Do not connect to earth or circuit selector. Connect the bare drain wires and cut off the outside shield.

Wiring diagram #2

Power panels

2Link™ DMX512 wiring



Notes

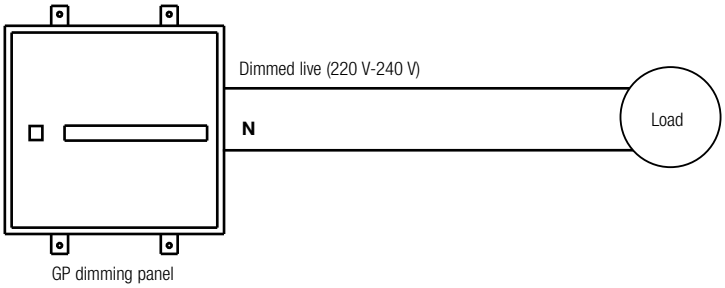
1. Use (2) 2.5 mm² (#12 AWG) wires for terminals 1 and 2, and (1) 1.0 mm² (#18 AWG) twisted, shielded pair for terminals 3 and 4 (use Lutron P/N GRX-CBL-46L) see pg. 2.13.1.
2. An additional 1.0 mm² (#18 AWG) wire can be used as a "sense" line from terminal 5 of another panel. This sense line allows an emergency (essential) lighting panel to "sense" when normal (non-essential) power is lost. If more than one emergency lighting panel needs to sense off a specific normal panel, a dedicated wire may need to be run between each pair of normal (non-essential) and emergency (essential) panels.
3. For panel-to-panel wiring, refer to power panel instruction sheet.
4. GRAFIK 5000/6000/7000 has separate power panel and wallstation control links. GRAFIK Eye 4000 series power panels connect to the same link as control units and wallstations/control Interfaces.
5. For DMX512 connection, use 1.0 mm² (#18AWG) for terminals 1, 2, and 3. Terminals 4 and 5 have no connection – daisy-chain wires and cap off at both ends (Lutron P/N GRX-CBL-DMX).
6. Use Link A if connecting only a DMX controller.

Wiring diagram #3

Dimmed live (DL) must be used for non-dim loads.
Switched live (SL) is unused.

Power panels

GP dimming panel load wiring



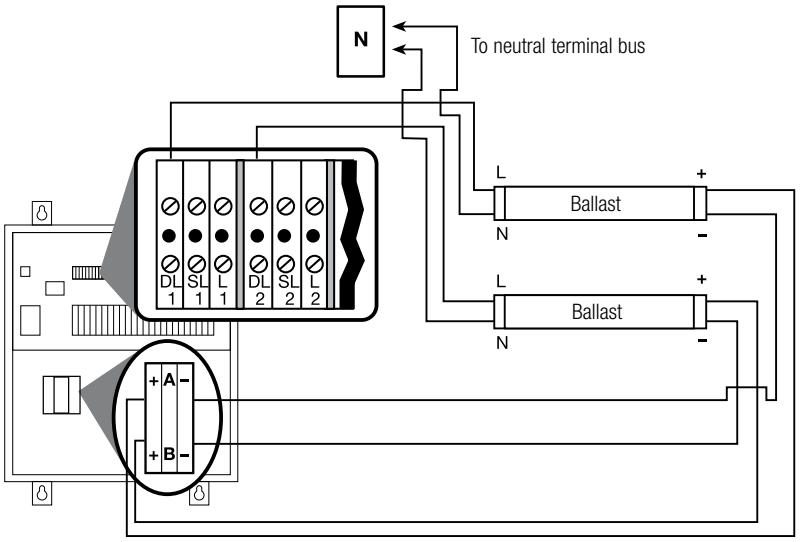
Notes

1. Load terminals accept 4 mm^2 (#10 AWG) – 2.5 mm^2 (#12 AWG) wire (75° C wire only).
2. Common neutrals are not permitted. Run separate neutrals for each load circuit.

Wiring diagram #4

Power panels

0-10 V dimming option (GP panel shown)



DL = Dimmed live; SL = Switched live; L = Live; N = Neutral

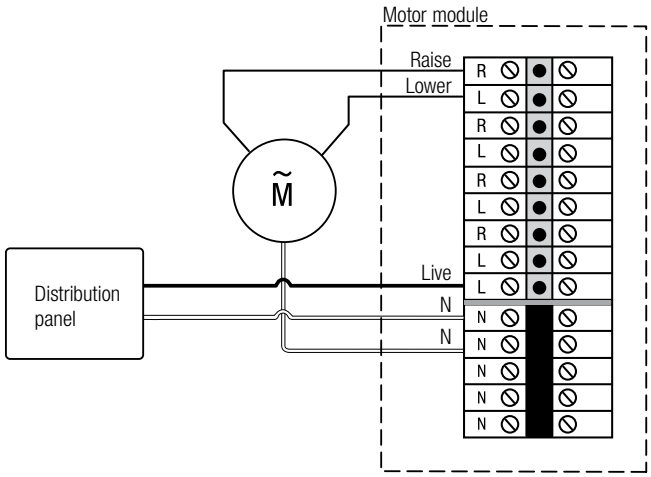
Notes

Dimmed live (DL) must be used for non-dim loads. Switched live (SL) is not used.

Wiring diagram #5

Power panels

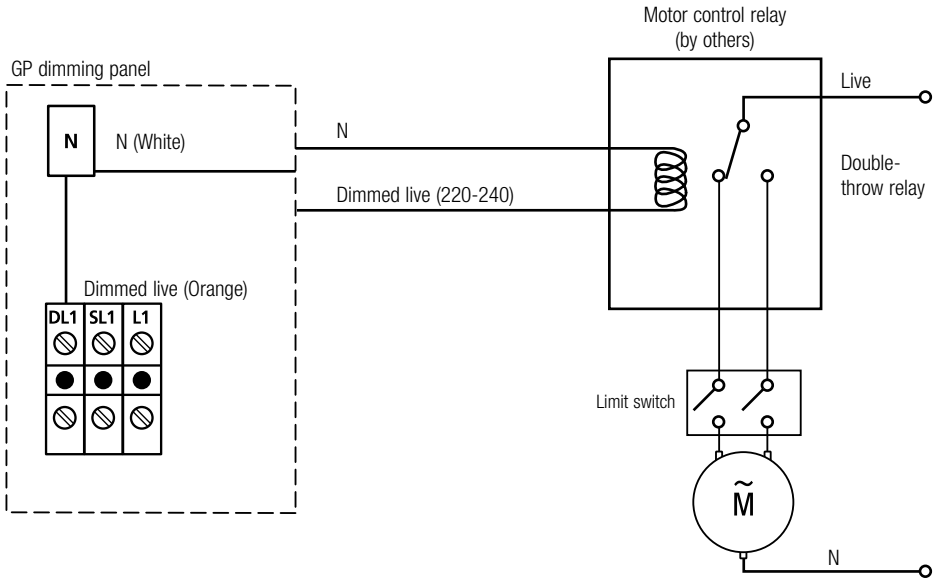
LP dimming panel motor module to 3-wire AC motor wiring



Wiring diagram #6

Power panels

Wiring motor control relay to GP dimming panel



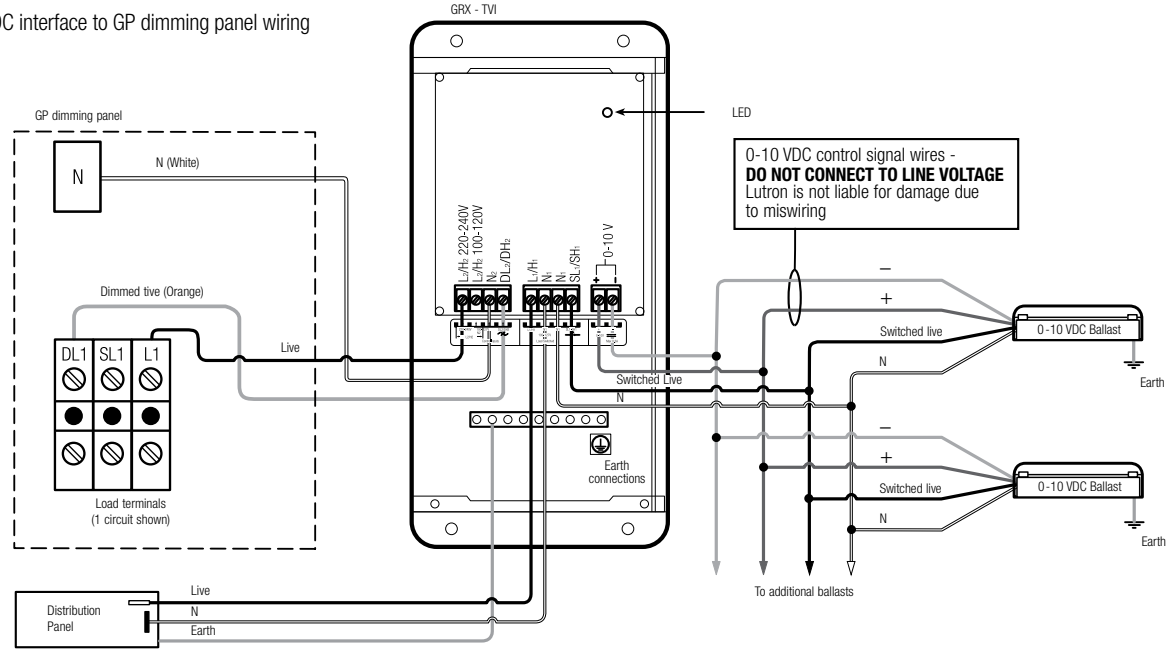
Notes

1. GP dimming panels can operate bidirectional screen motors using a 220 - 240 VAC relay (in conjunction with a dimmer in the dimming panel) to provide two position (up or down) control of these motors. (The circuit must be programmed as non-dim.)
2. This same approach can be used to operate a single-throw relay.
3. For GP panels only; LP panels require additional shunt load resistors.

Wiring diagram #7

Power panels

0-10 VDC interface to GP dimming panel wiring



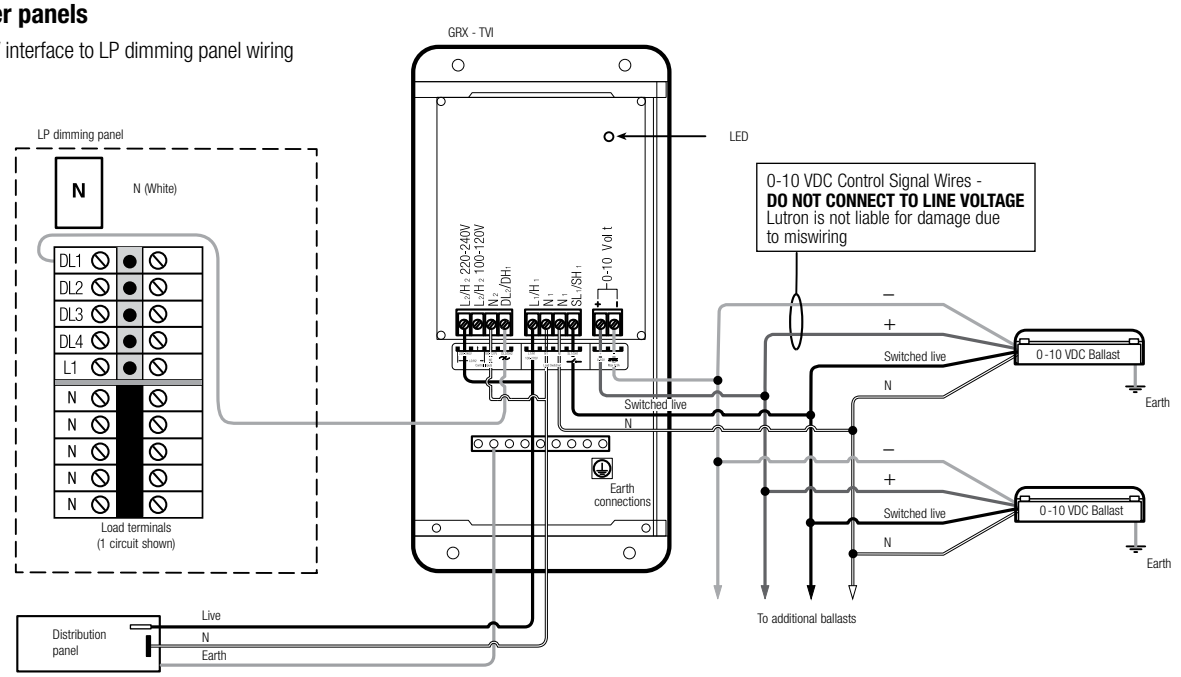
Notes

1. Distribution panel feeds can be different phases or voltages.
2. GP dimming panel load terminals accept 4 mm^2 (#10 AWG) - 2.5 mm^2 (#14 AWG) wire (75˚C wire only).
3. Common neutrals are not permitted. Run separate neutrals for each load circuit.

Wiring diagram #8

Power panels

0-10 V interface to LP dimming panel wiring



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