HomeWorks® QS
Technical Specification Guide

Rev. A

LUTRON®

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Front Room Equipment

Keypads

HomeWorks QS Wired seeTouch® Architectural Keypads

HomeWorks QS *seeTouch* keypads provide homeowners with a simple and elegant way to operate lights, shades/draperies, motorized screens, thermostats, and many other devices.

HomeWorks QS *seeTouch* keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes the keypads readable any time of the day or night. *seeTouch* buttons are rounded, allowing engraving to be displayed at an upward angle, increasing readability.

Replacement Kits are available in a variety of colors and with custom engraving to clearly identify each button's function. The flexible design of the keypads allows the color, number of buttons, and button configuration to be changed by installing a new engraved Replacement Kit.

All *HomeWorks* QS wired *seeTouch* models have two contact closure inputs on the back of the unit which provide independent functions from the front buttons. Other options include configurations with infrared receiver and raise/lower buttons.

Use Lutron® Nova T☆® wallplates. Wallplates are included with the keypad. *Lutron Nova T☆* wallplates snap on with no visible means of attachment.

HomeWorks QS wired *seeTouch* architectural keypads are available in many button configurations, shown on the following two pages. They are also available in insert (*above left*) and non-insert (*above right*) styles. The insert style allows decorator-style controls to be easily ganged using *Lutron Nova T☆* wallplates.

HomeWorks® QS Wired seeTouch® Architectural Keypads

Non-Insert Style Architectural Keypads

Model Numbers

HQWA-W1BN-XX*	1 Button Keypad
RKA-W1BN-XX*-E	Engraved Replacement Kit
HQWA-W2BSN-XX*	2 Button Keypad
RKA-W2BSN-XX*-E	Engraved Replacement Kit
HQWA-W3BSN-XX*	3 Button Keypad
RKA-W3BSN-XX*-E	Engraved Replacement Kit
HQWA-W3BSRLN-XX*	3 Button with Raise/Lower Keypad
RKA-W3BSRLN-XX*-E	Engraved Replacement Kit
HQWA-W4BSN-XX*	4 Button Keypad
RKA-W4BSN-XX*-E	Engraved Replacement Kit
HQWA-W4SN-XX*	4 Scene with Raise/Lower Keypad
RKA-W4SN-XX*-E	Engraved Replacement Kit
HQWA-W5BN-XX*	5 Button Keypad
RKA-W5BN-XX*-E	Engraved Replacement Kit
HQWA-W5BRLN-XX*	5 Button with Raise/Lower Keypad
RKA-W5BRLN-XX*-E	Engraved Replacement Kit
HQWA-W5BIRN-XX*	5 Button with Raise/Lower Keypad and Infrared Receiver
RKA-W5BIRNXX*-E	Engraved Replacement Kit
HQWA-W6BN-XX*	6 Button Keypad
RKA-W6BN-XX*-E	Engraved Replacement Kit
HQWA-W6BRLN-XX*	6 Button with Raise/Lower Keypad
RKA-W6BRLN-XX*-E	Engraved Replacement Kit
HQWA-W7BN-XX*	7 Button Keypad
RKA-W7BN-XX*-E	Engraved Replacement Kit
HQWA-W1RLDN-XX*-E	Engraved Replacement Kit
RKA-W1RLDN-XX*	Dual Group with Raise/Lower Keypad
HQWA-W2RLDN-XX*	Dual Group with Dual Raise/Lower Keypad
RKA-W2RLDN-XX*-E	Engraved Replacement Kit
HQWA-W3BDN-XX*	Dual Group Keypad
RKA-W3BDN-XX*-E	Engraved Replacement Kit


HQWA-W1BN


HQWA-W2BSN


HQWA-W3BSN


HQWA-W3BSRLN


HQWA-W4BSN


HQWA-W4SN


HQWA-W5BN


HQWA-W5BRLN


HQWA-W5BIRN


HQWA-W6BN


HQWA-W6BRLN


HQWA-W7BN


HQWA-W1RLDN


HQWA-W2RLDN


HQWA-W3BDN

*"XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document.

HomeWorks® QS Wired seeTouch® Architectural Keypads

Insert Style Architectural Keypads

Model Numbers

HQWA-W1BI-XX*	1 Button Keypad
RKA-W1BI-XX*-E	Engraved Replacement Kit
HQWA-W2BSI-XX*	2 Button Keypad
RKA-W2BSI-XX*-E	Engraved Replacement Kit
HQWA-W3BSI-XX*	3 Button Keypad
RKA-W3BSI-XX*-E	Engraved Replacement Kit
HQWA-W3BSRLI-XX*	3 Button with Raise/Lower Keypad
RKA-W3BSRLI-XX*-E	Engraved Replacement Kit
HQWA-W4BSI-XX*	4 Button Keypad
RKA-W4BSI-XX*-E	Engraved Replacement Kit
HQWA-W4SI-XX*	4 Scene with Raise/Lower Keypad
RKA-W4SI-XX*-E	Engraved Replacement Kit
HQWA-W5BI-XX*	5 Button Keypad
RKA-W5BI-XX*-E	Engraved Replacement Kit
HQWA-W5BRLI-XX*	5 Button with Raise/Lower Keypad
RKA-W5BRLI-XX*-E	Engraved Replacement Kit
HQWA-W5BIRI-XX*	5 Button with Raise/Lower Keypad and Infrared Receiver
RKA-W5BIRIXX*-E	Engraved Replacement Kit
HQWA-W6BI-XX*	6 Button Keypad
RKA-W6BI-XX*-E	Engraved Replacement Kit
HQWA-W6BRLI-XX*	6 Button with Raise/Lower Keypad
RKA-W6BRLI-XX*-E	Engraved Replacement Kit
HQWA-W7BI-XX*	7 Button Keypad
RKA-W7BI-XX*-E	Engraved Replacement Kit
HQWA-W1RLDI-XX*-E	Engraved Replacement Kit
RKA-W1RLDI-XX*	Dual Group with Raise/Lower Keypad
HQWA-W2RLDI-XX*	Dual Group with Dual Raise/Lower Keypad
RKA-W2RLDI-XX*-E	Engraved Replacement Kit
HQWA-W3BDI-XX*	Dual Group Keypad
RKA-W3BDI-XX*-E	Engraved Replacement Kit


HQWA-W1BI


HQWA-W2BSI


HQWA-W3BSI


HQWA-W3BSRLI


HQWA-W4BSI


HQWA-W4SI


HQWA-W5BI


HQWA-W5BRLI


HQWA-W5BIRI


HQWA-W6BI


HQWA-W6BRLI


HQWA-W7BI


HQWA-W1RLDI


HQWA-W2RLDI


HQWA-W3BDI

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HomeWorks® QS Wired seeTouch® Architectural Keypads

Specifications

Model Numbers	See pages 2 and 3 for complete lists of model numbers.
Power	24 V⎓ 30 mA PELV (Class 2: USA)
Typical Power Consumption	0.6 W Test conditions: all backlights on medium intensity, two LEDs on (two presets active), keypad powered at 24 V⎓
Regulatory Approvals	UL, cUL, NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Connects to QS wired device link on *Homeworks* QS processor.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the keypad will return to its previous state when power is restored.
Mounting	U.S. wallbox 3½ in (89 mm) deep, 2¼ in (57 mm) deep minimum, or low-voltage mounting bracket
Wiring	Control wire must be 1 pair 18 AWG (1.0 mm^2) PELV (Class 2: USA) for power and 1 pair 22 to 18 AWG (0.5 to 1.0 mm^2) PELV (Class 2: USA) twisted/shielded for data (see **Wiring**).
Warranty	8 Year Limited Warranty. http://www.lutron.com/resiinfo

Design Features

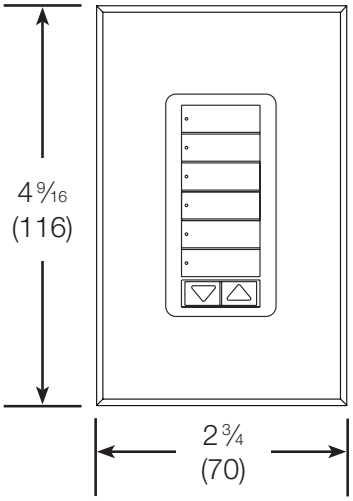
- Green status LEDs.
- Backlit button/engraving.
- Field-changeable Replacement Kits make for easy customization.
- All terminal block inputs are over-voltage and miswire-protected against wire reversals and shorts.
- Use Lutron® Nova T☆® wallplates. Wallplates are included with the keypad.
- *Lutron Nova T☆* wallplates snap on with no visible means of attachment.
- Use Replacement Kits to change color, button configuration, or engraving.

HomeWorks® QS Wired seeTouch® Architectural Keypads

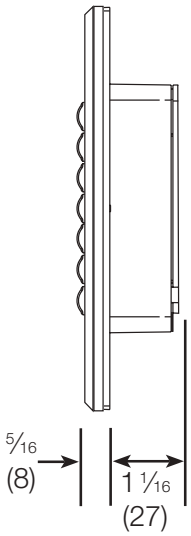
Dimensions

All dimensions are shown as in (mm)

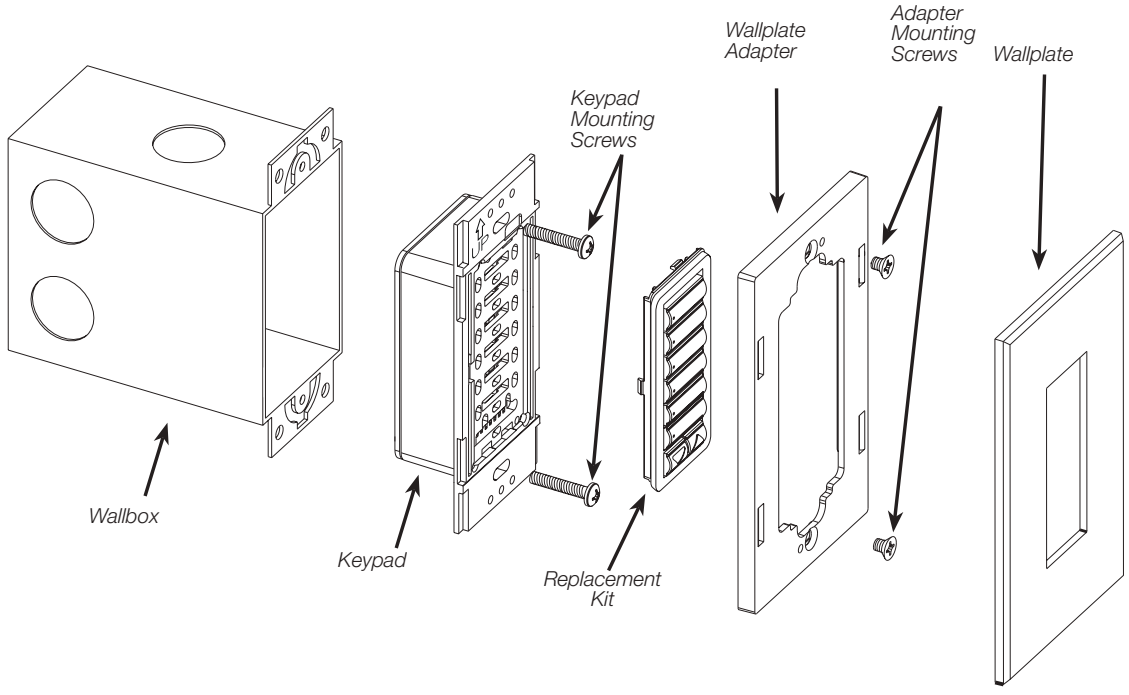
Front View



Side View

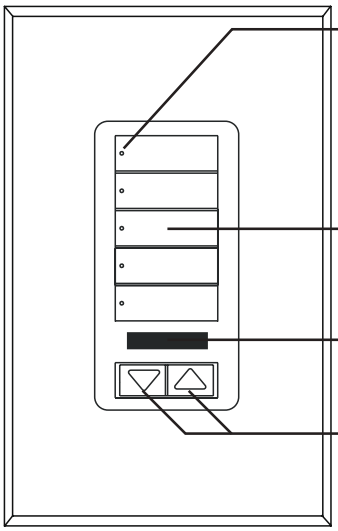


Mounting and Parts Identification



HomeWorks® QS Wired seeTouch® Architectural Keypads

Operation



Status LEDs
Show which keypad button has been activated.

Keypad Buttons
Press to activate desired levels or positions.

IR Receiver
Use a compatible IR remote to activate button functions.

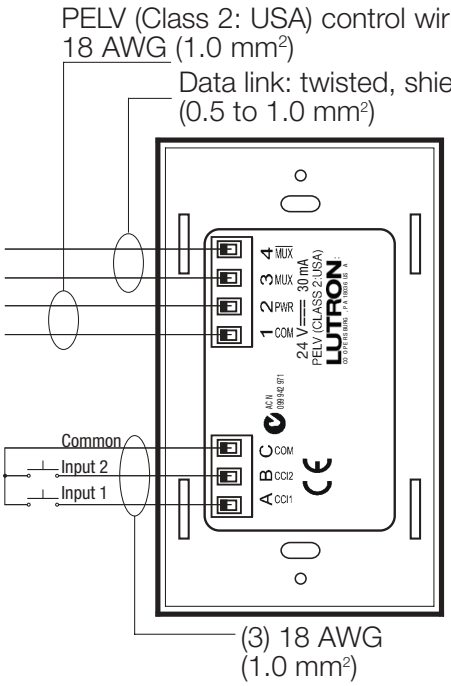
Raise/Lower Buttons
Lights increase or decrease in intensity and shades/draperies move towards the open or close limit.

HomeWorks® QS Wired seeTouch® Architectural Keypads

Wiring

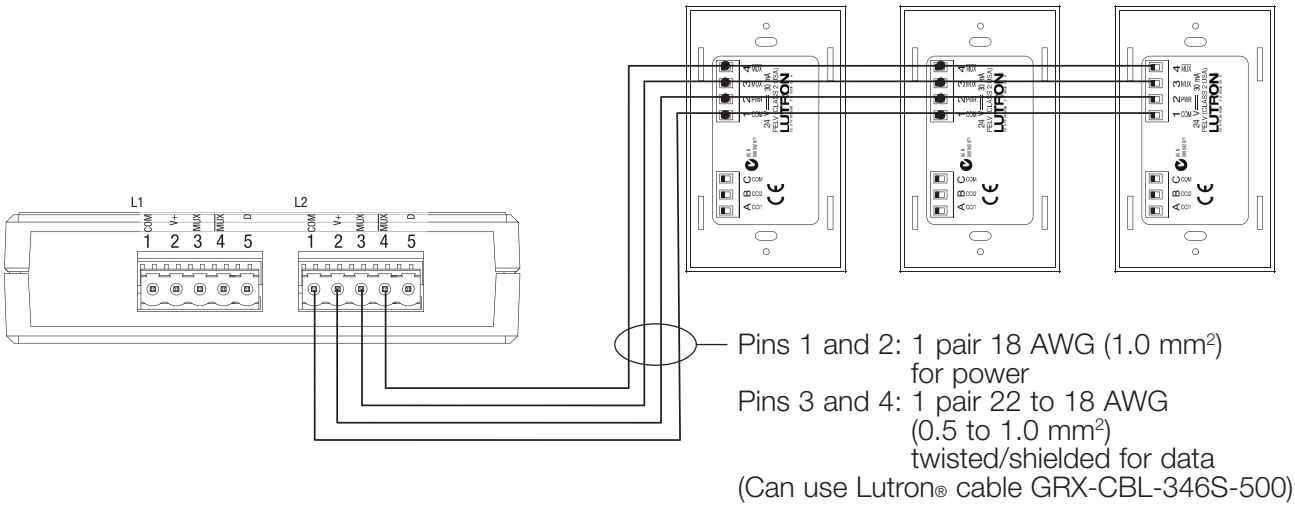
Wiring Notes

- Keypad wiring may be in a daisy-chain, star or T-tap configuration.
- The total length of wire on a QS wired link is not to exceed 2000 ft (610 m).
- Up to 100 devices can be connected to the QS wired link. This can include seeTouch® keypads along with other devices as defined in the HomeWorks QS software.
- An external power supply may be required depending on the total current draw of all wired devices on the processor link.



Contact Closure Notes

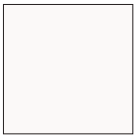
- The contact closure inputs can be used with either dry contact closures or ground-referenced solid-state outputs.
- The outputs must stay in the closed or open states for at least 40 ms in order to be recognized by the keypad.

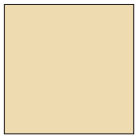


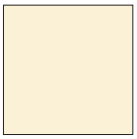
HomeWorks® QS Wired seeTouch® Architectural Keypads

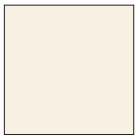
Colors and Finishes

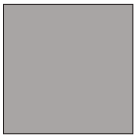
Architectural Matte Finishes


White
WH


Ivory
IV

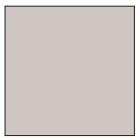

Almond
AL


Light Almond
LA

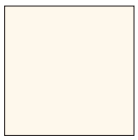

Gray
GR


Brown
BR


Black
BL

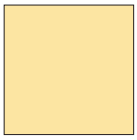

Taupe
TP

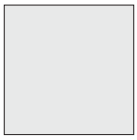

Sienna
SI


Beige
BE

Architectural Metal Finishes (wallplates only)


Satin Brass
SB


Bright Brass
BB


Bright Chrome
BC


Clear Anodized Aluminum
CLA


Black Anodized Aluminum
BLA

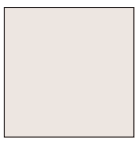

Brass Anodized Aluminum
BRA

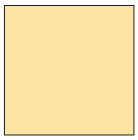

Antique Brass
QB


Antique Bronze
QZ


Satin Chrome
SC


Satin Nickel
SN


Bright Nickel
BN


Gold
AU

When ordering metal wallplates, it is recommended to order the keypad in Black (BL).

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

  Architectural Matte Finishes- AM-CK-1
  Architectural Metal Finishes - AMTL-CK-1

HomeWorks QS Wired seeTouch® Designer Keypads

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All *HomeWorks* QS wired *seeTouch* models have two contact closure inputs on the back of the unit which provide independent functions from the front buttons. Other options include configurations with infrared receiver and raise/lower buttons.

Use Lutron® Designer (Claro® or Satin Colors®) wallplates. Wallplates are sold separately. *Lutron Claro* and *Satin Colors* wallplates snap on with no visible means of attachment.


HQWD-W1B


HQWD-W2BS


HQWD-W3BS


HQWD-W3BSRL


HQWD-W4BS


HQWD-W4S


HQWD-W5B


HQWD-W5BRL


HQWD-W5BIR


HQWD-W6B


HQWD-W6BRL


HQWD-W7B


HQWD-W1RLD


HQWD-W2RLD


HQWD-W3BD

Model Numbers

HQWD-W1B-XX*	1 Button Keypad
RKD-W1B-XX*-E	Engraved Replacement Kit
HQWD-W2BS-XX*	2 Button Keypad
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HQWD-W3BS-XX*	3 Button Keypad
RKD-W3BS-XX*-E	Engraved Replacement Kit
HQWD-W3BSRL-XX*	3 Button with Raise/Lower Keypad
RKD-W3BSRL-XX*-E	Engraved Replacement Kit
HQWD-W4BS-XX*	4 Button Keypad
RKD-W4BS-XX*-E	Engraved Replacement Kit
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RKD-W4S-XX*-E	Engraved Replacement Kit
HQWD-W5B-XX*	5 Button Keypad
RKD-W5B-XX*-E	Engraved Replacement Kit
HQWD-W5BRL-XX*	5 Button with Raise/Lower Keypad
RKD-W5BRL-XX*-E	Engraved Replacement Kit
HQWD-W5BIR-XX*	5 Button with Raise/Lower Keypad and Infrared Receiver
RKD-W5BIR-XX*-E	Engraved Replacement Kit
HQWD-W6B-XX*	6 Button Keypad
RKD-W6B-XX*-E	Engraved Replacement Kit
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RKD-W6BRL-XX*-E	Engraved Replacement Kit
HQWD-W7B-XX*	7 Button Keypad
RKD-W7B-XX*-E	Engraved Replacement Kit
HQWD-W1RLD-XX*-E	Dual Group with Raise/Lower Keypad
RKD-W1RLD-XX*	Engraved Replacement Kit
HQWD-W2RLD-XX*	Dual Group with Dual Raise/Lower Keypad
RKD-W2RLD-XX*-E	Engraved Replacement Kit
HQWD-W3BD-XX*	Dual Group Keypad
RKD-W3BD-XX*-E	Engraved Replacement Kit

*"XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document.

HomeWorks® QS Wired seeTouch® Designer Keypads

Specifications

Model Numbers	**Keypads:** HQWD-W1B, HQWD-W2BS, HQWD-W3BS, HQWD-W3BSRL, HQWD-W4BS, HQWD-W4S, HQWD-W5B, HQWD-W5BRL, HQWD-W5BIR, HQWD-W6B, HQWD-W6BRL, HQWD-W7B, HQWD-W1RLD, HQWD-W2RLD, HQWD-W3BD **Replacement Kits:** RKD-W1B-XX-E, RKD-W2BS-XX-E, RKD-W3BS-XX-E, RKD-W3BSRL-XX-E, RKD-W4BS-XX-E, RKD-W4S-XX-E, RKD-W5B-XX-E, RKD-W5BRL-XX-E, RKD-W5BIR-XX-E, RKD-W6B-XX-E, RKD-W6BRL-XX-E, RKD-W7B-XX-E, RKD-W1RLD-XX-E, RKD-W2RLD-XX-E, RKD-W3BD-XX-E
Power	24 V⎓ 30 mA PELV (Class 2: USA)
Typical Power Consumption	0.6 W Test conditions: all backlights on medium intensity, two LEDs on (two presets active), keypad powered at 24 V⎓
Regulatory Approvals	UL, cUL , NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Connects to QS wired device link on *Homeworks* QS processor.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
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Power Failure	Power failure memory: should power be interrupted, the keypad will return to its previous state when power is restored.
Mounting	U.S. wallbox 3½ in (89 mm) deep, 2¼ in (57 mm) deep minimum, or low-voltage mounting bracket
Wiring	Control wire must be 1 pair 18 AWG (1.0 mm^2) PELV (Class 2: USA) for power and 1 pair 22 to 18 AWG (0.5 to 1.0 mm^2) PELV (Class 2: USA) twisted/shielded for data (see **Wiring**).
Warranty	8 Year Limited Warranty. http://www.lutron.com/resiinfo

Design Features

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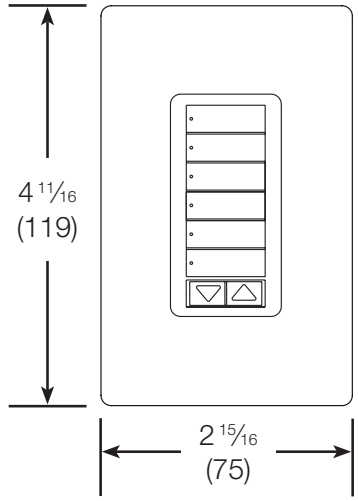
HomeWorks® QS Wired seeTouch® Designer Keypads

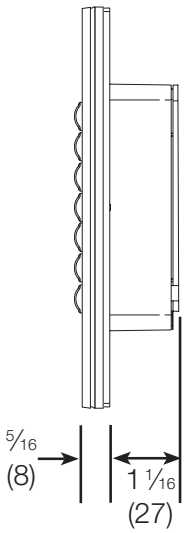
Dimensions

All dimensions are shown as in (mm)

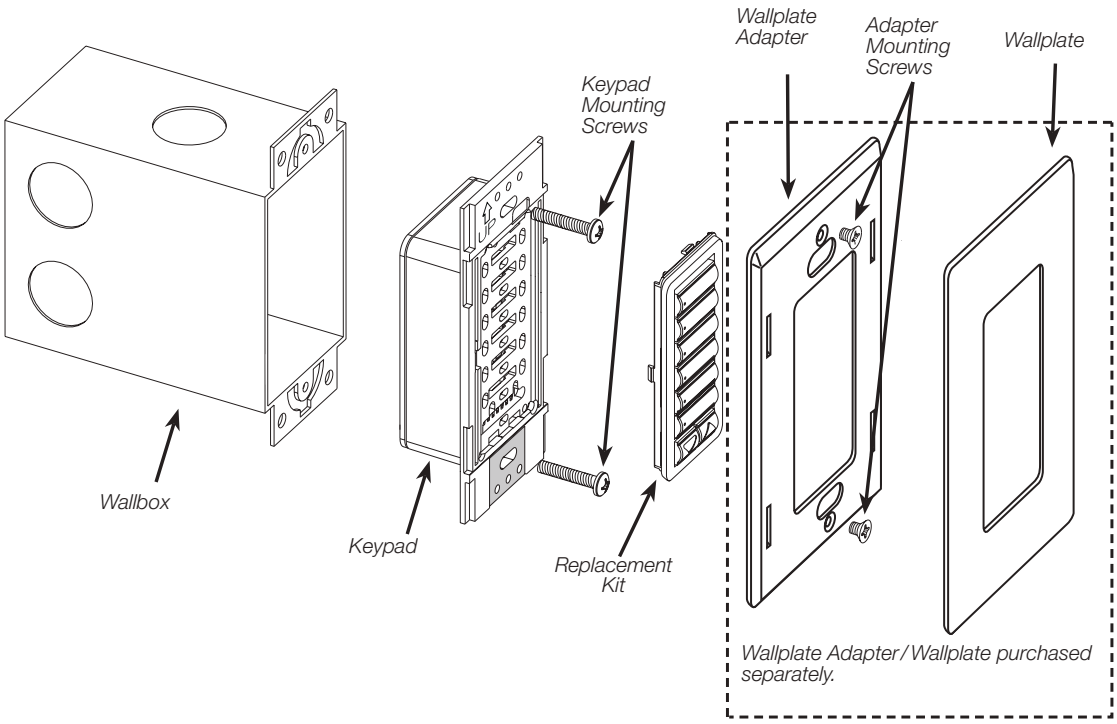
Front View



Side View

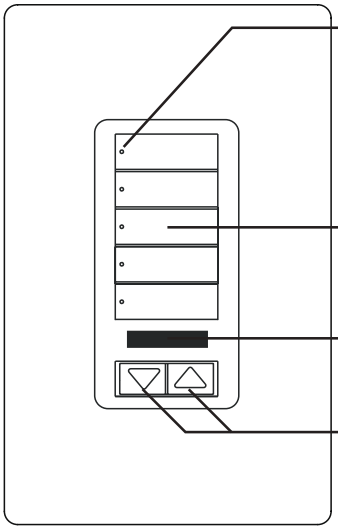


Mounting and Parts Identification



HomeWorks® QS Wired seeTouch® Designer Keypads

Operation



Status LEDs
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Keypad Buttons
Press to activate desired levels or positions.

IR Receiver
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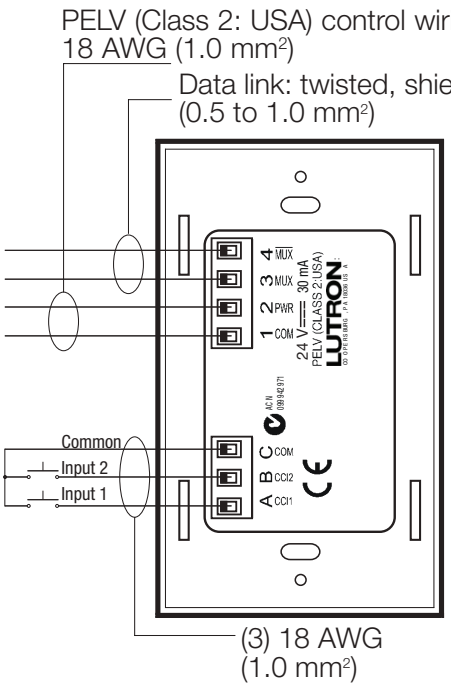
Raise/Lower Buttons
Lights increase or decrease in intensity and shades/draperies move towards the open or close limit.

HomeWorks® QS Wired seeTouch® Designer Keypads

Wiring

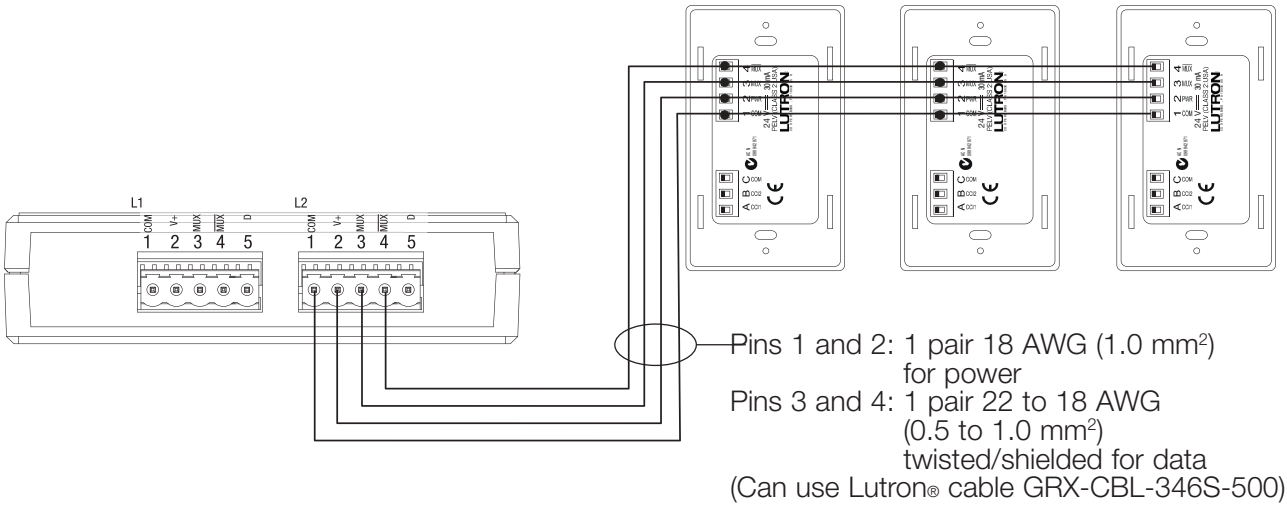
Wiring Notes

- Keypad wiring may be in a daisy-chain, star or T-tap configuration.
- The total length of wire on a QS wired link is not to exceed 2000 ft (610 m).
- Up to 100 devices can be connected to the QS wired link. This can include seeTouch® keypads along with other devices as defined in the HomeWorks QS software.
- An external power supply may be required depending on the total current draw of all wired devices on the processor link.



Contact Closure Notes

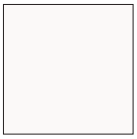
- The contact closure inputs can be used with either dry contact closures or ground-referenced solid-state outputs.
- The outputs must stay in the closed or open states for at least 40 ms in order to be recognized by the keypad.

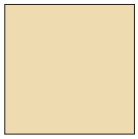


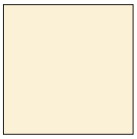
HomeWorks® QS Wired seeTouch® Designer Keypads

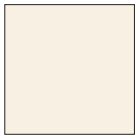
Colors and Finishes

Gloss Finishes


White
WH


Ivory
IV


Almond
AL


Light Almond
LA


Gray
GR


Brown
BR

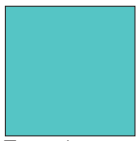

Black
BL

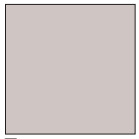
Satin Finishes

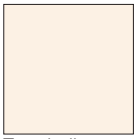

Hot
HT

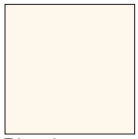

Merlot
MR

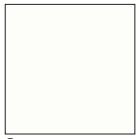

Plum
PL

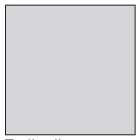

Turquoise
TQ


Taupe
TP


Eggshell
ES


Biscuit
BI


Snow
SW


Palladium
PD

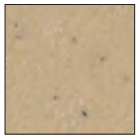

Midnight
MN

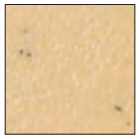

Sienna
SI


Terracotta
TC


Greenbriar
GB


Bluestone
BG


Mocha Stone
MS


Goldstone
GS


Desert Stone
DS


Stone
ST


Limestone
LS

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:
  Gloss Finishes- DG-CK-1
  Satin Finishes - SC-CK-1

Metal Finish (wallplate only)


Stainless Steel
SS

When using Stainless Steel wallplates, it is recommended to order the keypad in Midnight (MN).

Wired International seeTouch® Keypads

HomeWorks® QS international seeTouch® keypads provide homeowners with a simple and elegant way to operate lights, shades/draperies, motorized screens, thermostats, and many other devices.

All HomeWorks® QS wired international seeTouch® keypads have two contact closure inputs on the back of the unit which provide independent functions from the front buttons. Some models are available with an infrared (IR) receiver.

HomeWorks® QS international seeTouch® keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes the keypads readable any time of the day or night. seeTouch® buttons are rounded, allowing engraving to be displayed at an upward angle, increasing readability.

Replacement Kits are available in a variety of colors and with custom engraving to clearly identify each button's function.

Lutron® wallplates snap on with no visible means of attachment. Multi-gang wallplates sold separately.

HomeWorks® QS wired international seeTouch® keypads are available in many button configurations, shown on the following two pages. They are also available in insert (*above left*) and non-insert (*above right*) styles. The insert style keypad allows for easy ganging. Keypad and Button/Wallplate kits sold separately.

Wired International seeTouch® Keypads Insert Style

Model Numbers

Base Units

HQWIS-NB-NONE	Keypad without Wallplate /Button Kit
HQWIS-NBIR-NONE	IR Keypad without Wallplate/Button Kit

Button/Wallplate Kits

HWIS-2B-I-XX*	2 button
HWIS-3B-I-XX*	3 button
HWIS-4B-I-XX*	4 button
HWIS-5BRL-I-XX*	5 button with Raise/Lower
HWIS-5BRLIR-I-XX*	5 button with Raise/Lower and IR
HWIS-6BRL-I-XX*	6 button with Raise/Lower
HWIS-7BRL-I-XX*	7 button with Raise/Lower
HWIS-8BRL-I-XX*	8 button with Raise/Lower
HWIS-8BRLIR-I-XX*	8 button with Raise/Lower and IR
HWIS-10BRL-I-XX*	10 button with Raise/Lower

Replacement Button Kits

SIB-2B-XX*-E	2 button
SIB-3B-XX*-E	3 button
SIB-4B-XX*-E	4 button
SIB-5BRL-XX*-E	5 button with Raise/Lower
SIB-5BRLIR-XX*-E	5 button with Raise/Lower and IR
SIB-6BRL-XX*-E	6 button with Raise/Lower
SIB-7BRL-XX*-E	7 button with Raise/Lower
SIB-8BRL-XX*-E	8 button with Raise/Lower
SIB-8BRLIR-XX*-E	8 button with Raise/Lower and IR
SIB-10BRL-XX*-E	10 button with Raise/Lower

*HWIS-2B-I-XX**

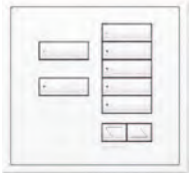
*HWIS-3B-I-XX**

*HWIS-4B-I-XX**

*HWIS-5BRL-I-XX**

*HWIS-5BRLIR-I-XX**

*HWIS-6BRL-I-XX**



*HWIS-7BRL-I-XX**

*HWIS-8BRL-I-XX**

*HWIS-8BRLIR-I-XX**

*HWIS-10BRL-I-XX**

Ordering Example:

HQWIS-NB-NONE (Base Unit) and
HWIS-2B-I-AW (Wallplate/Button Kit)

*"XX" in the model number represents color/finish code.
See **Colors and Finishes** at end of document.

Wired International seeTouch® Keypads Non-Insert Style

Model Numbers

Base Units

HQWIS-NB-NONE	International seeTouch® without Wallplate or Button Kit
HQWIS-NBIR-NONE	International seeTouch® with IR without Wallplate or Button Kit

Button/Faceplate Kits

HWIS-2B-F-XX*	2 button non-insert
HWIS-3B-F-XX*	3 button non-insert
HWIS-4B-F-XX*	4 button non-insert
HWIS-5BRL-F-XX*	5 button non-insert with raise/lower
HWIS-5BRLIR-F-XX*	5 button non-insert with raise/lower and IR
HWIS-6BRL-F-XX*	6 button non-insert with raise/lower
HWIS-7BRL-F-XX*	7 button non-insert with raise/lower
HWIS-8BRL-F-XX*	8 button non-insert with raise/lower
HWIS-8BRLIR-F-XX*	8 button non-insert with raise/lower and IR
HWIS-10BRL-F-XX*	10 button non-insert with raise/lower

Replacement Button Kits

SIB-2B-XX*-E	2 button replacement kit
SIB-3B-XX*-E	3 button replacement kit
SIB-4B-XX*-E	4 button replacement kit
SIB-5BRL-XX*-E	5 button replacement kit with raise/lower
SIB-5BRLIR-XX*-E	5 button replacement kit with raise/lower and IR
SIB-6BRL-XX*-E	6 button replacement kit with raise/lower
SIB-7BRL-XX*-E	7 button replacement kit with raise/lower
SIB-8BRL-XX*-E	8 button replacement kit with raise/lower
SIB-8BRLIR-XX*-E	8 button replacement kit with raise/lower and IR
SIB-10BRL-XX*-E	10 button replacement kit with raise/lower


*HWIS-2B-F-XX**

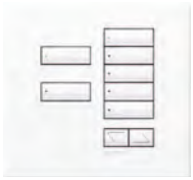

*HWIS-3B-F-XX**


*HWIS-4B-F-XX**


*HWIS-5BRL-F-XX**


*HWIS-5BRLIR-F-XX**


*HWIS-6BRL-F-XX**


*HWIS-7BRL-F-XX**


*HWIS-8BRL-F-XX**


*HWIS-8BRLIR-F-XX**


*HWIS-10BRL-F-XX**

Ordering Example:

HQWIS-NB-NONE (for base unit) plus
HWIS-2B-F-AW (for button/faceplate kit)

*"XX" in the model number represents color/finish code.
See **colors and finishes** at end of document.

Wired International seeTouch® Keypads

Specifications

Model Numbers	See pages 2 and 3 for complete lists of model numbers.
Power	24 V⎓ 30 mA
Typical Power Consumption	0.6 W; 1 Power Draw Unit (PDU) Test conditions: all backlights on medium intensity, two LEDs on (two presets active), keypad powered at 24 V⎓
Regulatory Approvals	CE, ✔ C-tick, UL, cUL
Environment	Ambient operating temperature: 0 °C to 40 °C (32 °F to 104 °F), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Connects to QS wired device link on Homeworks® QS processor.
ESD Protection	Tested to withstand 15 kV electrostatic discharge without damage or memory loss, in accordance with IEC 801-2.
Power Failure	Power failure memory: should power be interrupted, the keypad will return to its previous state when power is restored.
Mounting	EBB-15 RD (Round wallbox) 71 mm (2 11⁄16 in) diameter x 61mm (2 1⁄8 in) Deep or EBB-15 SQ (Square wallbox) 71 mm (2 11⁄16 in) wide x 71 mm (2 11⁄16 in) high x 47 mm (1 7⁄8 in) deep.
Wiring	Control wire must be 1 pair 1.2 mm^2 (18 AWG) IEC PELV / NEC® Class 2 for power and 1 pair 0.5 mm^2 to 1.0 mm^2 (22 AWG to 18 AWG) IEC PELV / NEC® Class 2 twisted/shielded for data (see **Wiring**).
Warranty	8 Year Limited Warranty. http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf

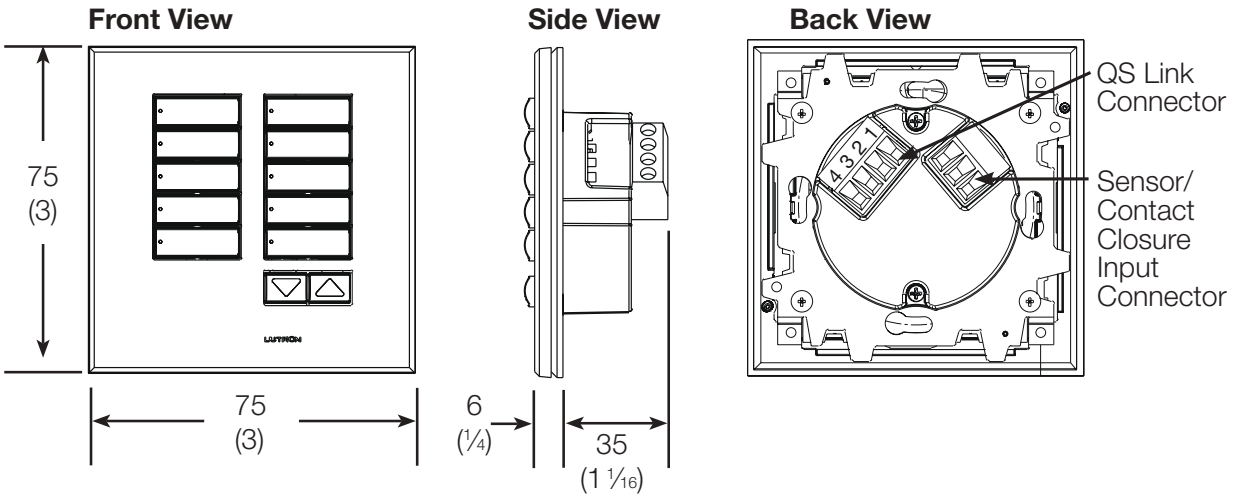
Design Features

- Green status LEDs.
- Backlit button/engraving.
- Field-changeable Button/Wallplate Kits allow for easy customization.
- All terminal block inputs are over-voltage and miswire-protected against wire reversals and shorts.
- Available as an insert style control for muti-ganging.
- Lutron® wallplates snap on with no visible means of attachment.
- Use Replacement Kits to change color, button configuration, engraving, or to convert between insert and non-insert style configurations.

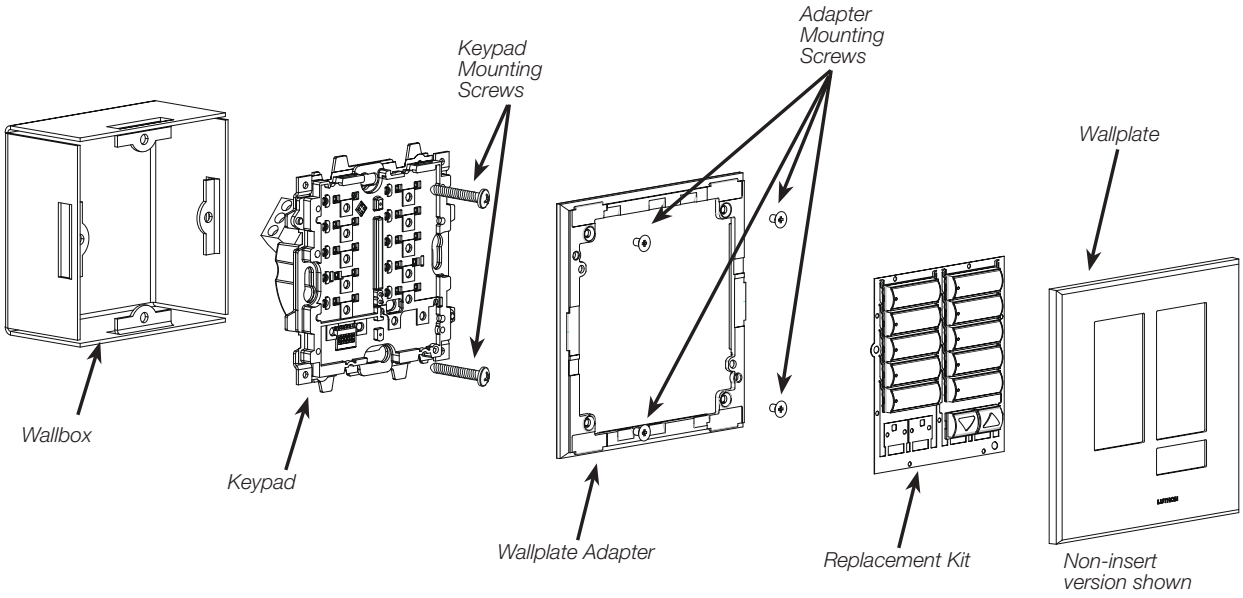
Wired International seeTouch® Keypads

Dimensions

All dimensions are shown as mm (in)

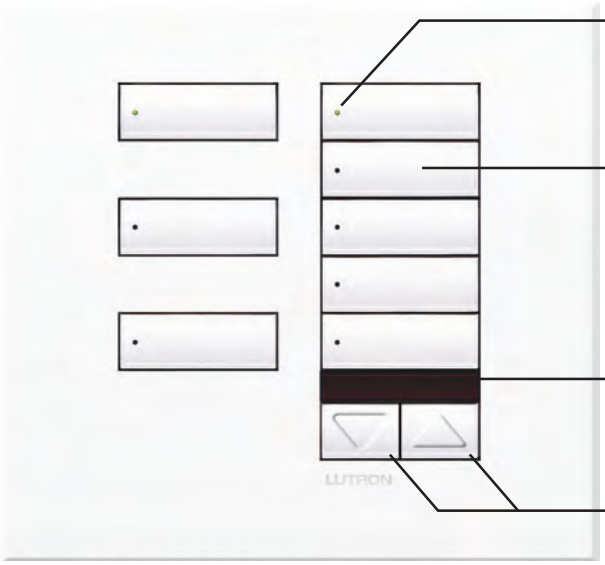


Mounting and Parts Identification



Wired International seeTouch® Keypads

Operation



Non-insert version shown

Status LEDs
Show which keypad button has been activated.

Keypad Buttons
Press to activate desired levels or positions.

IR Receiver
Use a compatible IR remote to activate button functions.

Raise/Lower Buttons
Lights increase or decrease in intensity and shades/draperies move towards the open or close limit.

Wired International seeTouch® Keypads

Wiring

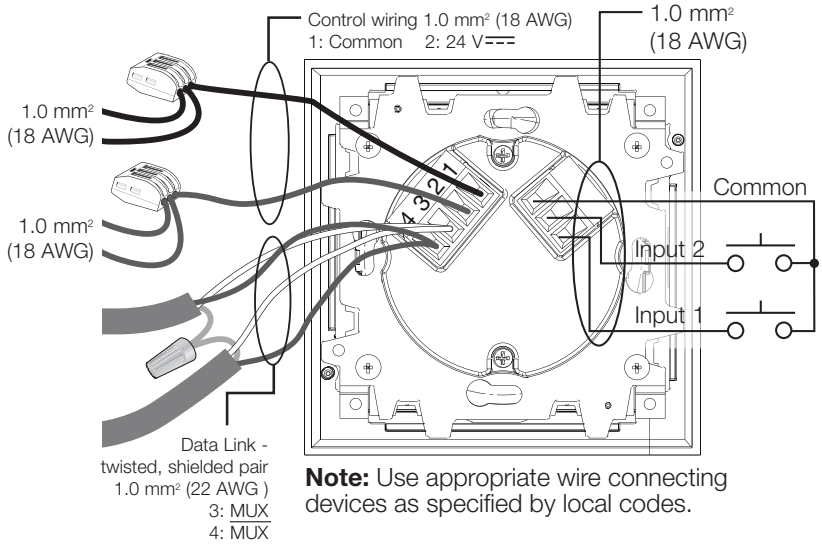
Control Link

- Keypad wiring may be in a daisy-chain, star or T-tap configuration.
- The total length of wire on a QS wired link is not to exceed 610 m (2000 ft).
- Up to 100 devices can be connected to the QS wired link. This can include wired international seeTouch® keypads along with other devices as defined in the HomeWorks® QS software.
- An external power supply may be required depending on the total current draw of all wired devices on the processor link.
- Make connections inside the wallbox or in a switch/junction box with a maximum wire length of 2.5 m (8 ft) from the link to the Wallstation.
- Two 1.0 mm² (18 AWG) conductors for common (terminal 1) and 24 V⎓ (terminal 2). These will not fit in terminals. Connect as shown.
- One shielded, twisted pair 1.0 mm² (22 AWG) for data link (terminals 3 and 4).
- Connect Drain/Shield as shown. Do not connect to Ground (Earth) or Wallstation. Connect the bare drain wires and cut off the outside shield.

Wiring to Control Link

IEC PELV / NEC® Class 2 control wiring: 1.0 mm² (18 AWG)

Data link: twisted, shielded pair 0.5 to 1.0 mm² (22 AWG to 18 AWG)



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

Contact Closure Input

- The contact closure inputs can be used with either dry contact closures or ground-referenced solid-state outputs.
- The outputs must stay in the closed or open states for at least 40 ms in order to be recognized by the keypad.
- Wallstation is miswire protected up to 36 V⎓.

Wired International seeTouch® Keypads

Colors and Finishes

Architectural Metal Finishes (wallplates only)

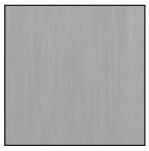

Satin Brass
SB


Bright Brass
BB


Bright Chrome
BC


Antique Brass
QB


Antique Bronze
QZ

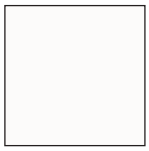

Satin Chrome
SC


Satin Nickel
SN


Bright Nickel
BN


Gold
AU

Architectural Matte Finishes


Arctic White
AW


Argentum
AR


Mica
MC

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip portfolios and keychains are available for more precise color matching.

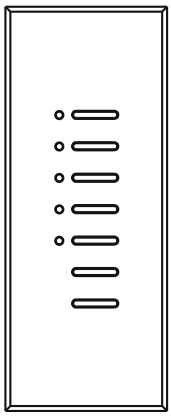
Architectural Metal portfolio	AMTL-CK-1
Architectural Matte keychain	AM-CK-1

HomeWorks® QS Wired Architrave™ Keypads

HomeWorks® QS Wired Architrave™ keypads provide homeowners with a simple and elegant way to operate lights, shades/draperies, motorized screens, thermostats, and many other devices.

Replacement faceplates are available in a variety of colors and with custom engraving to clearly identify each button's function.

All HomeWorks® QS Wired Architrave™ models have two contact closure inputs on the back of the unit which provide independent functions from the front buttons.



HomeWorks® QS Wired Architrave™ architectural keypads are available in multiple configurations, shown on the following page.

HomeWorks® QS Wired Architrave™ Keypads

Model Numbers

Base Units

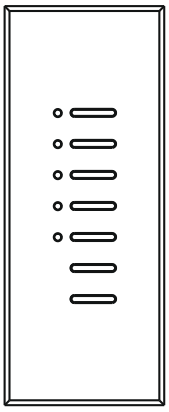
HQWA-KP5-DW-WH*	Door Wide, 5 Button Raise/ Lower keypad without faceplate
HQWA-KP5-DW-BL*	Door Wide, 5 Button Raise/ Lower keypad without faceplate
HQWA-KP5-DN-WH*	Door Narrow, 5 Button Raise/ Lower keypad without faceplate
HQWA-KP5-DN-BL*	Door Narrow, 5 Button Raise/ Lower keypad without faceplate
HQWA-KP7-DW-WH*	Door Wide, 7 Button keypad without faceplate
HQWA-KP7-DW-BL*	Door Wide, 7 Button keypad without faceplate
HQWA-KP7-DN-WH*	Door Narrow, 7 Button keypad without faceplate
HQWA-KP7-DN-BL*	Door Narrow, 7 Button keypad without faceplate

Replacement Faceplates

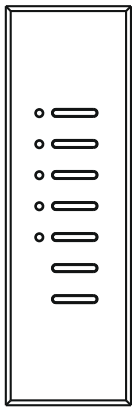
AR-M4-DW-XX**-E	Door Wide, 5 Button Raise/ Lower replacement faceplate
AR-M4-DN-XX**-E	Door Narrow, 5 Button Raise/ Lower replacement faceplate
AR-M16-DW-XX**-E	Door Wide, 7 Button replacement faceplate
AR-M16-DN-XX**-E	Door Narrow, 7 Button replacement faceplate

* "WH" in the model number represents white buttons; "BL" in the model number represents black buttons.

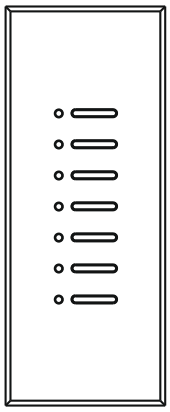
** "XX" in the model number represents color/finish code. See **colors and finishes** at end of document.



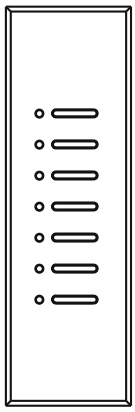
AR-M4-DW-XX



AR-M4-DN-XX



AR-M16-DW-XX



AR-M16-DN-XX

HomeWorks® QS Wired Architrave™ Keypads

Specifications

Model Numbers	See page 2 for a complete list of model numbers.
Power	24 V⎓ 30 mA IEC PELV / NEC® Class 2
Typical Power Consumption	0.6 W; 1 Power Draw Unit (PDU) Test conditions: all backlights on medium intensity, two LEDs on (two presets active), keypad powered at 24 V⎓
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Connects to QS wired device link on HomeWorks® QS processor.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEC 61000-4-5.
Power Failure	Power failure memory: should power be interrupted, the keypad will return to its previous state when power is restored.
Mounting	Architrave™ Wallbox P/N 241399 (sold separately), 4.4 in (111.76 mm) tall by 1.25 in (31.75 mm) wide by 2.75 in (69.85 mm) deep.
Wiring	Control wire must be 1 pair 18 AWG (1.0 mm^2) IEC PELV / NEC® Class 2 for power and 1 pair 22 to 18 AWG (0.5 to 1.0 mm^2) IEC PELV / NEC® Class 2 twisted/shielded for data (see **Wiring**).
Warranty	www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf

Design Features

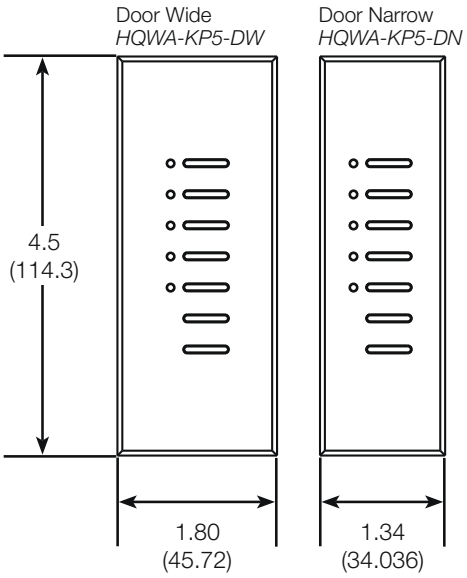
- All terminal block inputs are over-voltage and miswire-protected against wire reversals and shorts.
- Field-changeable replacement faceplates make for easy color customization and engraving.

HomeWorks® QS Wired Architrave™ Keypads

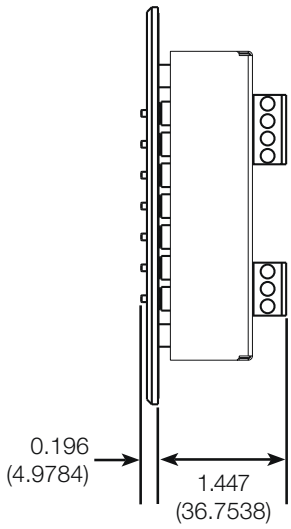
Dimensions

All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$

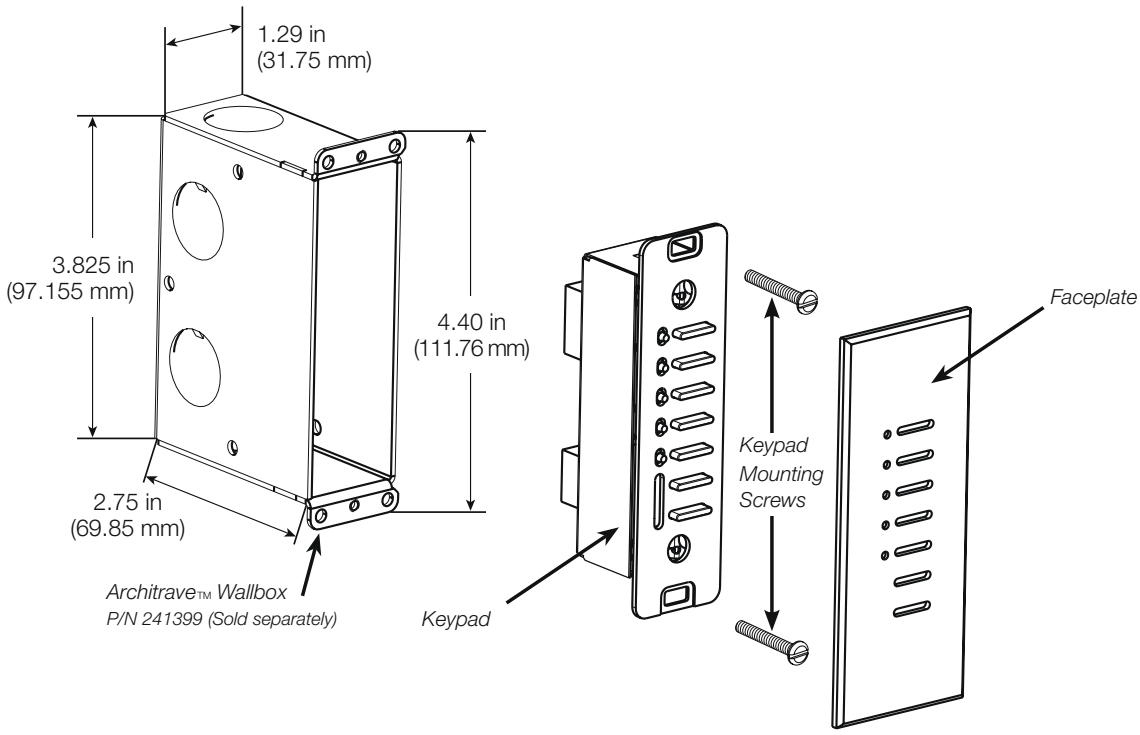
Front View



Side View

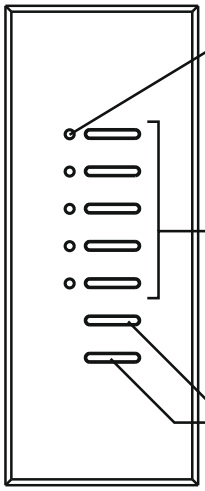


Mounting and Parts Identification



HomeWorks® QS Wired Architrave™ Keypads

Operation



Status LEDs
Show which keypad button has been activated.

Keypad Buttons
Press to activate desired levels or positions.

Raise/Lower Buttons*
Lights increase or decrease in intensity and shades/draperies move towards the open or close limit.

* Raise/Lower buttons do not have a status LED.

HomeWorks® QS Wired Architrave™ Keypads

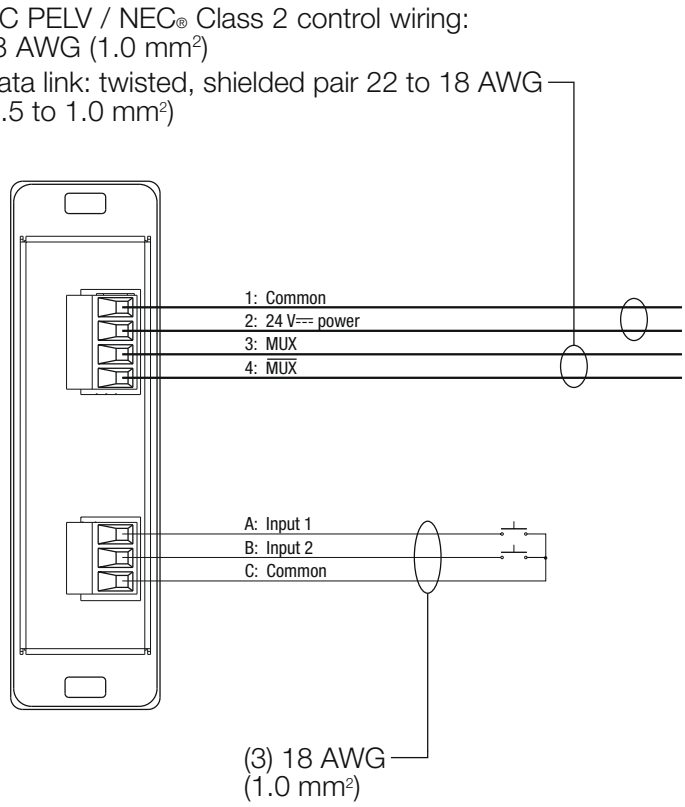
Wiring

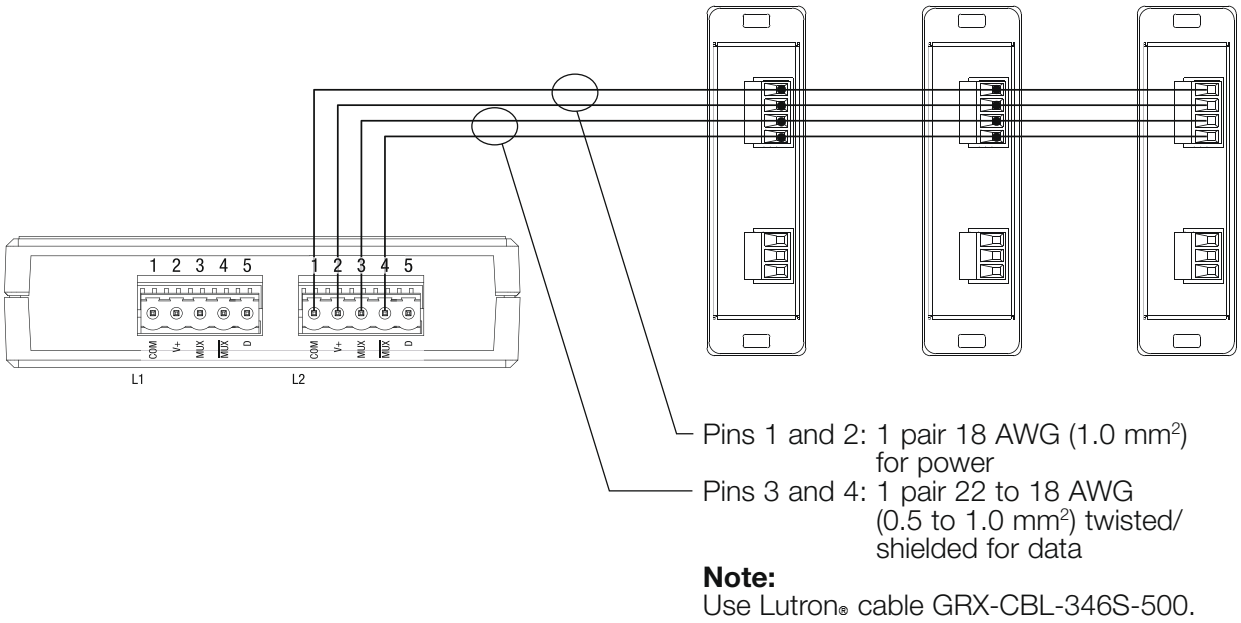
Wiring Notes

- Keypad wiring may be in a daisy-chain, star or T-tap configuration.
- The total length of wire on a HomeWorks® QS wired link is not to exceed 2000 ft (610 m).
- Up to 100 devices can be connected to the HomeWorks® QS wired link. This can include seeTouch® keypads along with other devices as defined in the HomeWorks® QS software.
- An external power supply may be required depending on the total current draw of all wired devices on the processor link.

Contact Closure Notes

- The contact closure inputs can be used with either dry contact closures or ground-referenced solid-state outputs.
- The outputs must stay in the closed or open states for at least 40 ms in order to be recognized by the keypad.



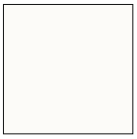


Note:
Use Lutron® cable GRX-CBL-346S-500.

HomeWorks® QS Wired Architrave™ Keypads

Colors and Finishes

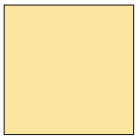
Architectural Matte Finishes (Metal)



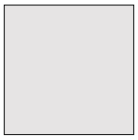
White
WH

Architectural Metal Finishes (faceplates only)

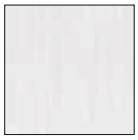
Satin Brass
SB



Bright Brass
BB



Bright Chrome
BC



Clear Anodized
Aluminum
CLA

Black Anodized
Aluminum
BLA

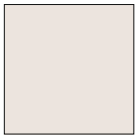
Brass Anodized
Aluminum
BRA

Antique Brass
QB

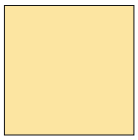
Antique Bronze
QZ

Satin Chrome
SC

Satin Nickel
SN



Bright Nickel
BN



Gold
AU

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:
  Architectural Matte Finishes - AM-CK-1
  Architectural Metal Finishes - AMTL-CK-1
- When ordering metal faceplates, it is recommended to order the keypad in Black (BL).

HomeWorks® QS Wired Signature Series™ Keypads

HomeWorks® QS Wired Signature Series™ keypads provide homeowners with a simple and elegant way to operate lights, shades/draperies, motorized screens, thermostats,and many other devices.

HomeWorks® QS Wired Signature Series™ keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes the keypads readable any time of the day or night. Wired Signature Series™ buttons are rounded, allowing engraving to be displayed at an upward angle, increasing readability.

Replacement Kits are available in a variety of colors and with custom engraving to clearly identify each button's function. The flexible design of the keypads allows the color, number of buttons, and button configuration to be changed by installing a new engraved Replacement Kit.

All HomeWorks® QS Wired Signature Series™ models have two contact closure inputs on the back of the unit which provide independent functions from the front buttons. Other options include raise/lower buttons.

HomeWorks® QS Wired Signature Series™ architectural keypads are available in many button configurations, shown on the following page.

HomeWorks® QS Wired Signature Series™ Keypads

Model Numbers

Base Units

HQWAS-G	Keypad with Green LED status and backlighting without Faceplate or Button Kit
HQWAS-B	Keypad with Blue LED status and backlighting without Faceplate or Button Kit

Button/Faceplate Kits

LFS-W1B-XX*	1 Button
LFS-W2BS-XX*	2 Button
LFS-W3BS-XX*	3 Button
LFS-W3BSRL-XX*	3 Button, Raise/Lower
LFS-W4BS-XX*	4 Button
LFS-W4S-XX*	4 Scene, Raise/Lower
LFS-W5B-XX*	5 Button
LFS-W5BRL-XX*	5 Button, Raise/Lower
LFS-W6B-XX*	6 Button
LFS-W6BRL-XX*	6 Button, Raise/Lower
LFS-W7B-XX*	7 Button
LFS-W1RLD-XX*	Dual Group, Raise/Lower (1)
LFS-W2RLD-XX*	Dual Group, Raise/Lower (2)
LFS-W3BD-XX*	Dual Group

Engraveable Replacement Button Kits

RKS-W1B-XX*-E	1 Button
RKS-W2BS-XX*-E	2 Button
RKS-W3BS-XX*-E	3 Button
RKS-W3BSRL-XX*-E	3 Button, Raise/Lower
RKS-W4BS-XX*-E	4 Button
RKS-W4S-XX*-E	4 Scene, Raise/Lower
RKS-W5B-XX*-E	5 Button
RKS-W5BRL-XX*-E	5 Button, Raise/Lower
RKS-W6B-XX*-E	6 Button
RKS-W6BRL -XX*-E	6 Button, Raise/Lower
RKS-W7B-XX*-E	7 Button
RKS-W1RLD-XX*-E	Dual Group, Raise/Lower (1)
RKS-W2RLD-XX*-E	Dual Group, Raise/Lower (2)
RKS-W3BD-XX*-E	Dual Group

* "XX" in the model number represents color/finish code. See **colors and finishes** at end of document.


*LFS-W1B-XX**


*LFS-W2BS-XX**


*LFS-W3BS-XX**


*LFS-W3BSRL-XX**


*LFS-W4BS-XX**


*LFS-W4S-XX**


*LFS-W5B-XX**


*LFS-W5BRL-XX**


*LFS-W6B-XX**


*LFS-W6BRL-XX**


*LFS-W7B-XX**


*LFS-W1RLD-XX**


*LFS-W2RLD-XX**


*LFS-W3BD-XX**

HomeWorks® QS Wired Signature Series™ Keypads

Specifications

Model Numbers	See page 2 for a complete list of model numbers.
Power	24 V⎓ 30 mA IEC PELV / NEC® Class 2
Typical Power Consumption	0.6 W; 1 Power Draw Unit (PDU) Test conditions: all backlights on medium intensity, two LEDs on (two presets active), keypad powered at 24 V⎓
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Connects to QS wired device link on HomeWorks® QS processor.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the keypad will return to its previous state when power is restored.
Mounting	Signature Series™ Wallbox P/N WBOX-SA1-Q1 (sold separately) 4.45 in (113.03 mm) tall by 1.55 in (39.37 mm) wide by 2.8 in (71.12 mm) deep.
Wiring	Control wire must be 1 pair 18 AWG (1.0 mm^2) IEC PELV / NEC® Class 2 for power and 1 pair 22 to 18 AWG (0.5 to 1.0 mm^2) IEC PELV / NEC® Class 2 twisted/shielded for data (see **Wiring**).
Warranty	www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf

Design Features

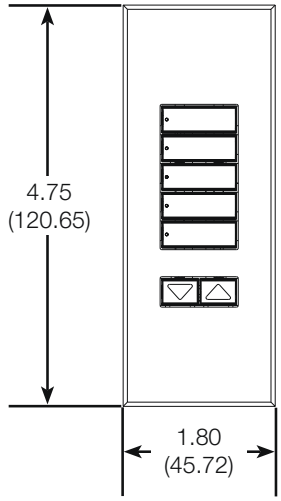
- Green or Blue status LEDs available.
- Backlit button/engraving.
- All terminal block inputs are over-voltage and miswire-protected against wire reversals and shorts.
- Field-changeable Replacement Kits make for easy customization.
- Use Replacement Kits to change color, button configuration, or engraving.

HomeWorks® QS Wired Signature Series™ Keypads

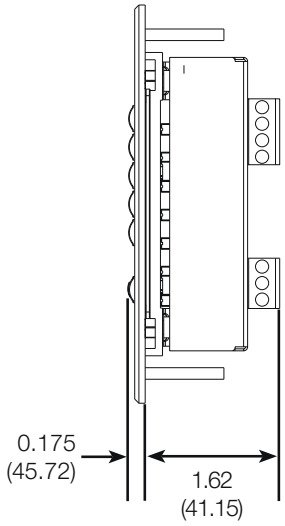
Dimensions

All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$

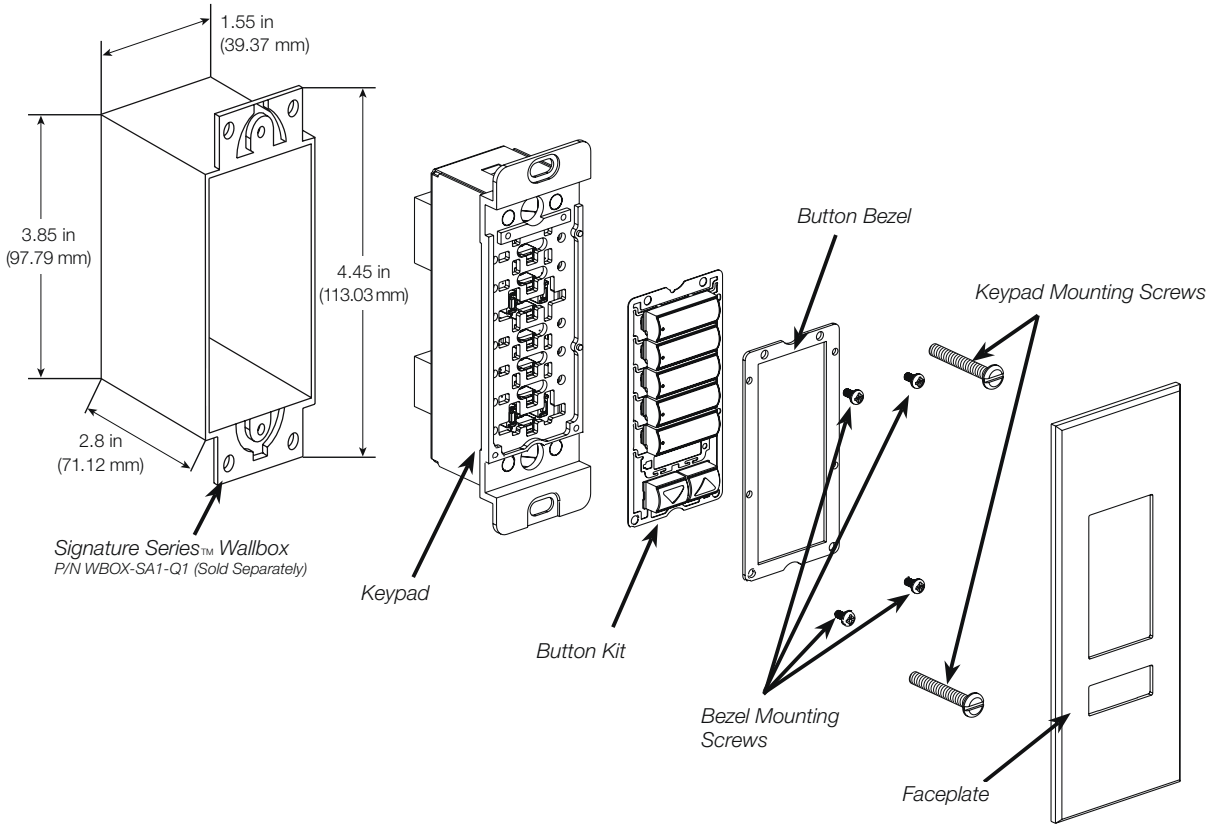
Front View



Side View

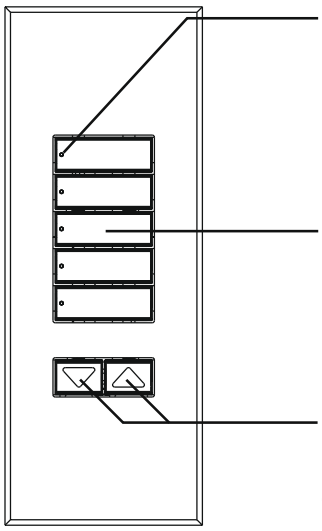


Mounting and Parts Identification



HomeWorks® QS Wired Signature Series™ Keypads

Operation



Status LEDs
Show which keypad button has been activated.

Keypad Buttons
Press to activate desired levels or positions.

Raise / Lower Buttons
Lights increase or decrease in intensity and shades/ draperies move towards the open or close limit.

HomeWorks® QS Wired Signature Series™ Keypads

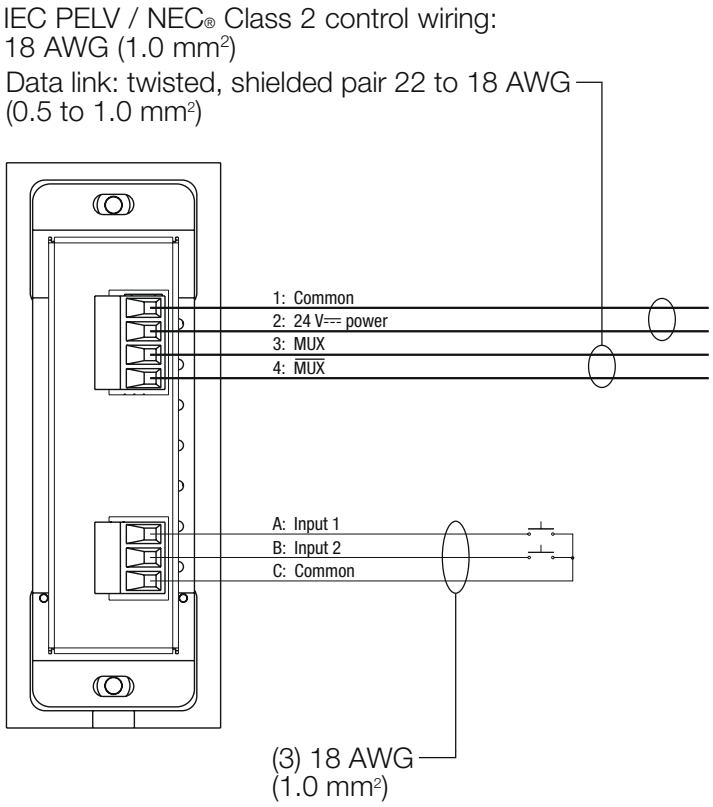
Wiring

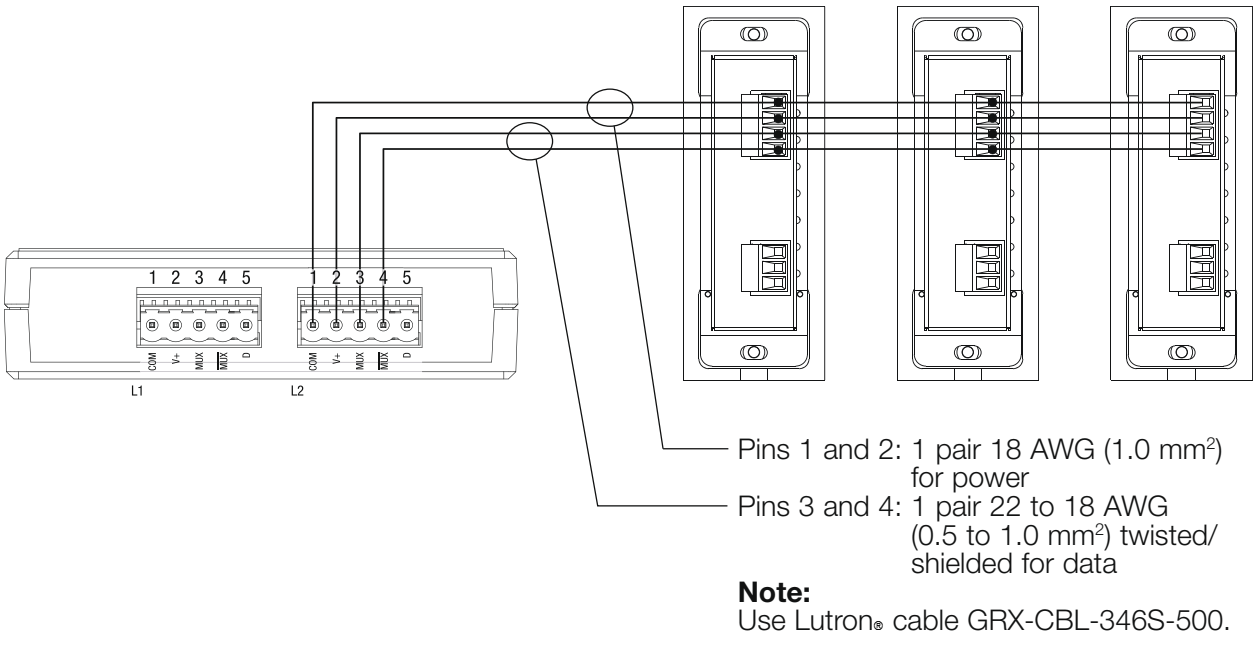
Wiring Notes

- Keypad wiring may be in a daisy-chain, star or T-tap configuration.
- The total length of wire on a HomeWorks® QS wired link is not to exceed 2000 ft (610 m).
- Up to 100 devices can be connected to the HomeWorks® QS wired link. This can include seeTouch® keypads along with other devices as defined in the HomeWorks® QS software.
- An external power supply may be required depending on the total current draw of all wired devices on the processor link.

Contact Closure Notes

- The contact closure inputs can be used with either dry contact closures or ground-referenced solid-state outputs.
- The outputs must stay in the closed or open states for at least 40 ms in order to be recognized by the keypad.



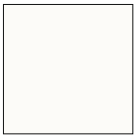


Note:
Use Lutron® cable GRX-CBL-346S-500.

HomeWorks® QS Wired Signature Series™ Keypads

Colors and Finishes

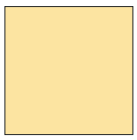
Architectural Matte Finishes (Metal)



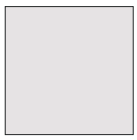
White
WH

Architectural Metal Finishes (faceplates only)

Satin Brass
SB



Bright Brass
BB



Bright Chrome
BC

Clear Anodized
Aluminum
CLA

Black Anodized
Aluminum
BLA

Brass Anodized
Aluminum
BRA

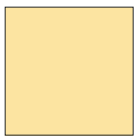
Antique Brass
QB

Antique Bronze
QZ

Satin Chrome
SC

Satin Nickel
SN

Bright Nickel
BN



Gold
AU

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:
  Architectural Matte Finishes - AM-CK-1
  Architectural Metal Finishes - AMTL-CK-1

HomeWorks QS RF seeTouch® Designer keypads

HomeWorks QS RF *seeTouch* Designer keypads provide homeowners with a simple and elegant way to operate lights, shades / draperies, motorized screens, thermostats, and many other devices.

HomeWorks QS RF *seeTouch* Designer keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes the keypads readable any time of the day or night. *seeTouch* keypad buttons are rounded, allowing engraving to be displayed at an upward angle, increasing readability.

Replacement Kits are available in a variety of colors and with custom engraving to clearly identify each button's function. The flexible design of the keypads allow the color, number of buttons, and the configuration of the buttons to be changed by installing a new engraved button kit.

Use Lutron® Designer (Claro® or Satin Colors®) wallplates. Wallplates are sold separately. *Lutron Claro* and *Satin Colors* wallplates snap on with no visible means of attachment.


HQRD-W1B


HQRD-W2BS


HQRD-W3BS


HQRD-W3BSRL


HQRD-W4BS


HQRD-W4S


HQRD-W5B


HQRD-W5BRL


HQRD-W6B


HQRD-W6BRL


HQRD-W7B


HQRD-W1RLD


HQRD-W2RLD


HQRD-W3BD

Model Numbers

HQRD-W1B-XX*	1 Button Keypad
RKD-W1B-XX*-E	Engraved Replacement Kit
HQRD-W2BS-XX*	2 Button Keypad
RKD-W2BS-XX*-E	Engraved Replacement Kit
HQRD-W3BS-XX*	3 Button Keypad
RKD-W3BS-XX*-E	Engraved Replacement Kit
HQRD-W3BSRL-XX*	3 Button with Raise/Lower Keypad
RKD-W3BSRL-XX*-E	Engraved Replacement Kit
HQRD-W4BS-XX*	4 Button Keypad
RKD-W4BS-XX*-E	Engraved Replacement Kit
HQRD-W4S-XX*	4 Scene with Raise/Lower Keypad
RKD-W4S-XX*-E	Engraved Replacement Kit
HQRD-W5B-XX*	5 Button Keypad
RKD-W5B-XX*-E	Engraved Replacement Kit
HQRD-W5BRL-XX*	5 Button with Raise/Lower Keypad
RKD-W5BRL-XX*-E	Engraved Replacement Kit
HQRD-W6B-XX*	6 Button Keypad
RKD-W6B-XX*-E	Engraved Replacement Kit
HQRD-W6BRL-XX*	6 Button with Raise/Lower Keypad
RKD-W6BRL-XX*-E	Engraved Replacement Kit
HQRD-W7B-XX*	7 Button Keypad
RKD-W7B-XX*-E	Engraved Replacement Kit
HQRD-W1RLD-XX*	Dual Group with Raise/Lower Keypad
RKD-W1RLD-XX*-E	Engraved Replacement Kit
HQRD-W2RLD-XX*	Dual Group with Dual Raise/Lower Keypad
RKD-W2RLD-XX*-E	Engraved Replacement Kit
HQRD-W3BD-XX*	Dual Group Keypad
RKD-W3BD-XX*-E	Engraved Replacement Kit

* "XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document.

HomeWorks QS RF seeTouch® Designer keypads

Specifications

Model Numbers	**Keypads:** HQRD-W1B, HQRD-W2BS, HQRD-W3BS, HQRD-W3BSRL, HQRD-W4BS, HQRD-W4S, HQRD-W5B, HQRD-W5BRL, HQRD-W6B, HQRD-W6BRL, HQRD-W7B, HQRD-W1RLD, HQRD-W2RLD, HQRD-W3BD **Replacement Kits:** RKD-W1B-XX-E, RKD-W2BS-XX-E, RKD-W3BS-XX-E, RKD-W3BSRL-XX-E, RKD-W4BS-XX-E, RKD-W4S-XX-E, RKD-W5B-XX-E, RKD-W5BRL-XX-E, RKD-W6B-XX-E, RKD-W6BRL-XX-E, RKD-W7B-XX-E, RKD-W1RLD-XX-E, RKD-W2RLD-XX-E, RKD-W3BD-XX-E
Power	120 V~ 50/60 Hz 0.5 A
Typical Power Consumption	0.6 W Test conditions: all backlights on medium-intensity, two LEDs on (two presets active), keypad powered at 120 V~
Regulatory Approvals	UL, CSA, NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	*HomeWorks* QS RF *seeTouch* Designer keypads communicate with the system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the keypad will return to its previous state when power is restored.
Mounting	Requires a U.S. wallbox. 3½ in (89 mm) deep recommended, 2¼ in (57 mm) deep minimum.
Wiring	*HomeWorks* QS RF *seeTouch* Designer keypads require a 120 V~ hot and neutral wire connection.
Warranty	8 Year Limited Warranty. http://www.lutron.com/resiinfo

Design Features

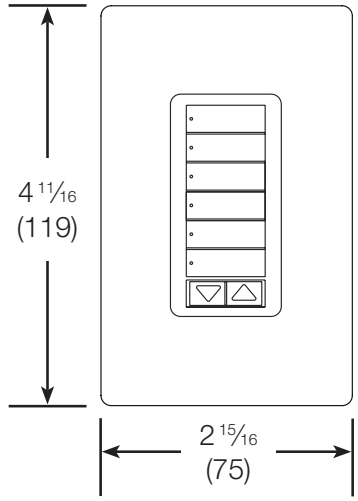
- At the press of a single button, lights fade/turn ON or OFF to desired levels and shades/draperies open or close to desired positions.
- Light levels and shade/drapery positions can be fine-tuned by pressing and holding the raise/lower buttons.
- Programmable to select whole-house or single room preset levels or positions.
- Green LEDs for status and button/engraving back-lighting.
- Adjustable back-light intensity.
- Prepaid engraving included. Redeemable for one engraved Replacement Kit.

HomeWorks QS RF seeTouch® Designer keypads

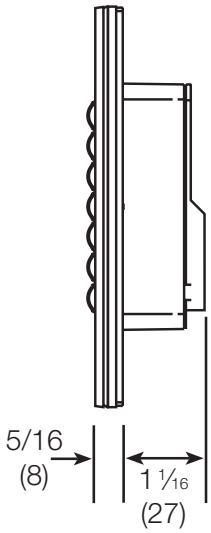
Dimensions

All dimensions are shown as in (mm)

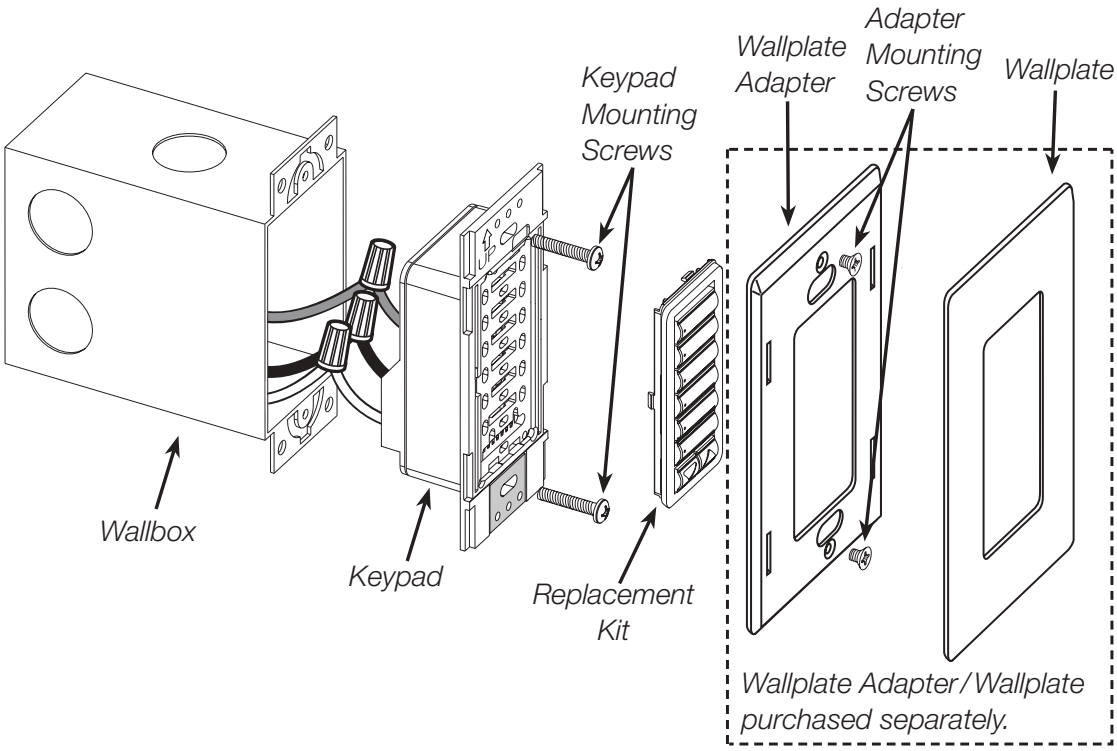
Front View



Side View

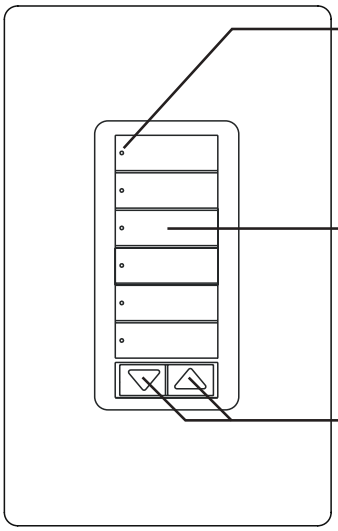


Mounting and Parts Identification



HomeWorks QS RF seeTouch® Designer keypads

Operation

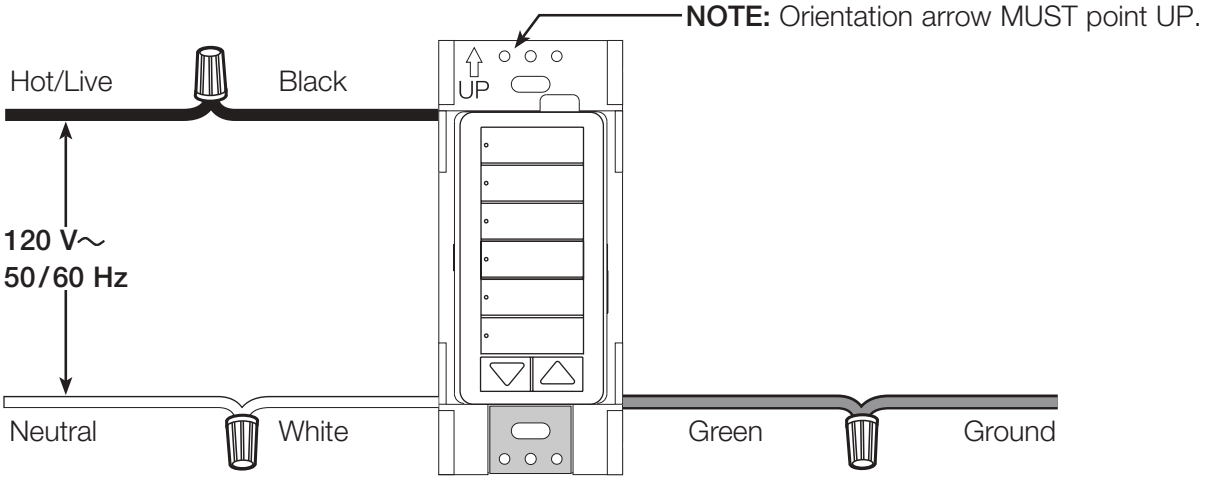


Status LEDs
Shows status of outputs programmed to the button.

Keypad Buttons
Press to control outputs programmed to the button.

Raise/Lower Buttons
Lights increase or decrease in intensity and shades/draperies move towards the open or close limit.

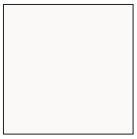
Wiring Diagram

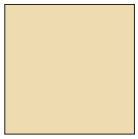


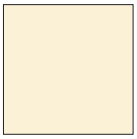
HomeWorks QS RF seeTouch® Designer keypads

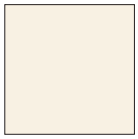
Colors and Finishes

Gloss Finishes


White
WH


Ivory
IV


Almond
AL


Light Almond
LA


Gray
GR


Brown
BR

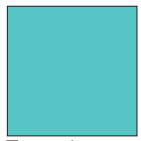

Black
BL

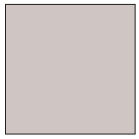
Satin Finishes

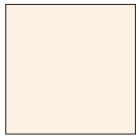

Hot
HT

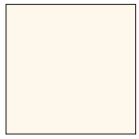

Merlot
MR

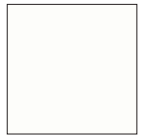

Plum
PL

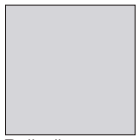

Turquoise
TQ


Taupe
TP


Eggshell
ES


Biscuit
BI


Snow
SW


Palladium
PD

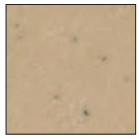

Midnight
MN


Sienna
SI


Terracotta
TC


Greenbriar
GB


Bluestone
BG


Mocha Stone
MS


Goldstone
GS


Desert Stone
DS


Stone
ST


Limestone
LS

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:
  Gloss Finishes- DG-CK-1
  Satin Finishes - SC-CK-1

Metal Finish (wallplate only)


Stainless Steel
SS

When using Stainless Steel wallplates, it is recommended to order the keypad in Midnight (MN).

HomeWorks® QS RF seeTouch® Architectural keypads

HomeWorks® QS RF seeTouch® Architectural keypads provide homeowners with a simple and elegant way to operate lights, shades/draperies, motorized screens, thermostats, and many other devices.

HomeWorks® QS RF seeTouch® Architectural keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes the keypads readable any time of the day or night. seeTouch® keypad buttons are rounded, allowing engraving to be displayed at an upward angle, increasing readability.

Replacement Kits are available in a variety of colors and with custom engraving to clearly identify each button's function. The flexible design of the keypads allow the color, number of buttons, and the configuration of the buttons to be changed by installing a new engraved button kit.

Use Lutron® Nova T☆® wallplates. Wallplates are sold separately. Lutron® Nova T☆® wallplates snap on with no visible means of attachment.


HQRA-W1B


HQRA-W2BS


HQRA-W3BS


HQRA-W3BSRL


HQRA-W4BS


HQRA-W4S


HQRA-W5B


HQRA-W5BRL


HQRA-W6B


HQRA-W6BRL


HQRA-W7B


HQRA-W1RLD


HQRA-W2RLD


HQRA-W3BD

HomeWorks® QS RF seeTouch® Architectural keypads

Model Numbers

HQRA-W1B-XX[1]	1 Button Keypad
RKA-W1B-XX[1]	Replacement Kit[2]
HQRA-W2BS-XX[1]	2 Button Keypad
RKA-W2BS-XX[1]	Replacement Kit[2]
HQRA-W3BS-XX[1]	3 Button Keypad
RKA-W3BS-XX[1]	Replacement Kit[2]
HQRA-W3BSRL-XX[1]	3 Button with Raise/ Lower Keypad
RKA-W3BSRL-XX[1]	Replacement Kit[2]
HQRA-W4BS-XX[1]	4 Button Keypad
RKA-W4BS-XX[1]	Replacement Kit[2]
HQRA-W4S-XX[1]	4 Scene with Raise/ Lower Keypad
RKA-W4S-XX[1]	Replacement Kit[2]
HQRA-W5B-XX[1]	5 Button Keypad
RKA-W5B-XX[1]	Replacement Kit[2]
HQRA-W5BRL-XX[1]	5 Button with Raise/ Lower Keypad
RKA-W5BRL-XX[1]	Replacement Kit
HQRA-W6B-XX[1]	6 Button Keypad
RKA-W6B-XX[1]	Replacement Kit[2]
HQRA-W6BRL-XX[1]	6 Button with Raise/ Lower Keypad
RKA-W6BRL-XX[1]	Replacement Kit[2]
HQRA-W7B-XX[1]	7 Button Keypad
RKA-W7B-XX[1]	Replacement Kit[2]
HQRA-W1RLD-XX[1]	Dual Group with Raise/ Lower Keypad
RKA-W1RLD-XX[1]	Replacement Kit[2]
HQRA-W2RLD-XX[1]	Dual Group with Dual Raise/Lower Keypad
RKA-W2RLD-XX[1]	Replacement Kit[2]
HQRA-W3BD-XX[1]	Dual Group Keypad
RKA-W3BD-XX[1]	Replacement Kit[2]

[1] "XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document.

[2] To order an engraved Replacement Kit, add "-E" to the end of the model number.

Design Features

- At the press of a single button, lights fade/ turn ON or OFF to desired levels and shades/ draperies open or close to desired positions.
- Light levels and shade/drapery positions can be fine-tuned by pressing and holding the raise/lower buttons.
- Programmable to select whole-house or single room preset levels or positions.
- Green LEDs for status and button/engraving back-lighting.
- Adjustable back-light intensity.
- Prepaid engraving included. Redeemable for one engraved Replacement Kit.

HomeWorks® QS RF seeTouch® Architectural keypads

Specifications

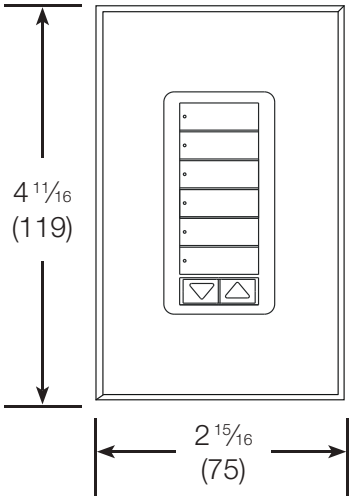
Model Numbers	**Keypads:** HQRA-W1B-XX, HQRA-W2BS-XX, HQRA-W3BS-XX, HQRA-W3BSRL-XX, HQRA-W4BS-XX, HQRA-W4S-XX, HQRA-W5B-XX,HQRA-W5BRL-XX, HQRA-W6B-XX, HQRA-W6BRL-XX, HQRA-W7B-XX,HQRA-W1RLD-XX, HQRA-W2RLD-XX, HQRA-W3BD-XX **Replacement Kits:** RKA-W1B-XX, RKA-W2BS-XX, RKA-W3BS-XX, RKA-W3BSRL-XX, RKA-W4BS-XX, RKA-W4S-XX, RKA-W5B-XX, RKA-W5BRL-XX, RKA-W6B-XX, RKA-W6BRL-XX, RKA-W7B-XX, RKA-W1RLD-XX, RKA-W2RLD-XX, RKA-W3BD-XX
Power	120 V~ 50/60 Hz 0.5 A
Typical Power Consumption	0.6 W Test conditions: all backlights on medium-intensity, two LEDs on (two presets active), keypad powered at 120 V~
Regulatory Approvals	UL, CSA, NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	HomeWorks® QS RF seeTouch® Architectural keypads communicate with the system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the keypad will return to its previous state when power is restored.
Mounting	Requires a U.S.A. wallbox. 3½ in (89 mm) deep recommended, 2¼ in (57 mm) deep minimum.
Wiring	HomeWorks® QS RF seeTouch® architectural keypads require a 120 V~ hot and neutral wire connection.
Warranty	8 Year Limited Warranty. http://www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf

HomeWorks® QS RF seeTouch® Architectural keypads

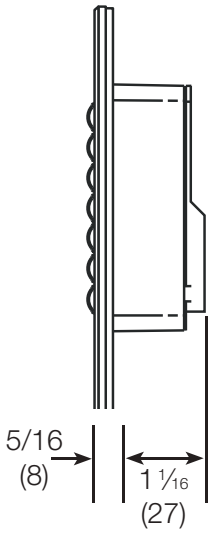
Dimensions

All dimensions are shown as in (mm)

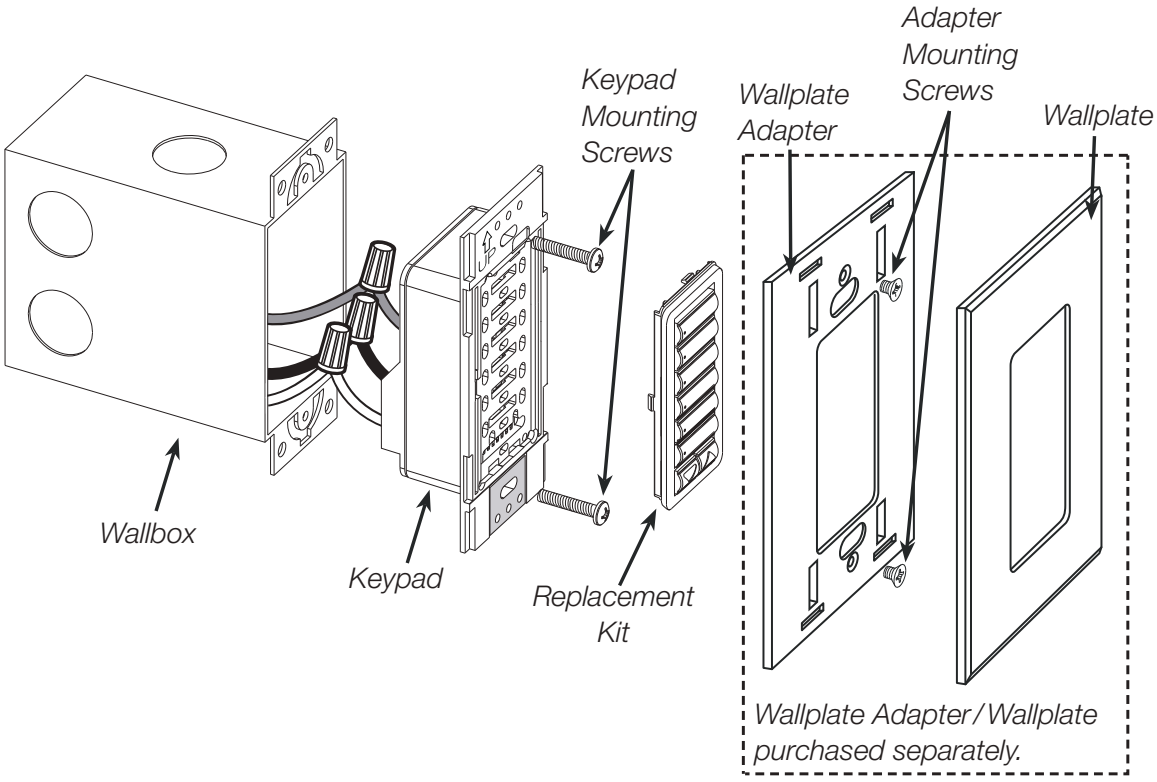
Front View



Side View

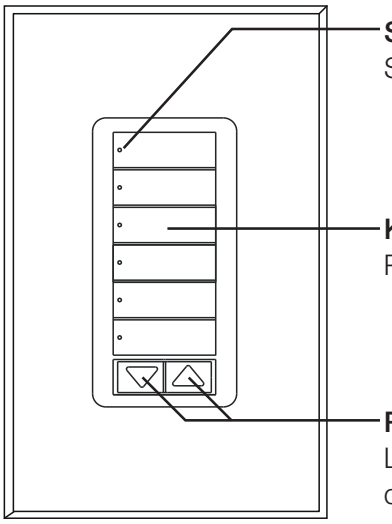


Mounting and Parts Identification



HomeWorks® QS RF seeTouch® Architectural keypads

Operation

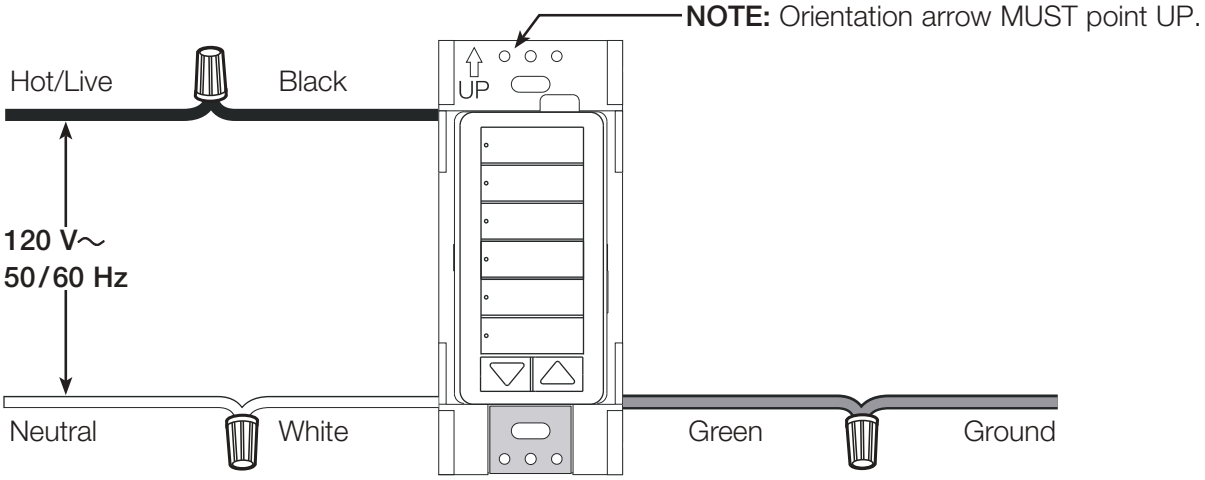


Status LEDs
Shows status of outputs programmed to the button.

Keypad Buttons
Press to control outputs programmed to the button.

Raise/Lower Buttons
Lights increase or decrease in intensity and shades/draperies move towards the open or close limit.

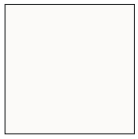
Wiring Diagram

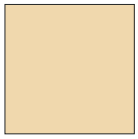


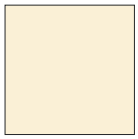
HomeWorks® QS RF seeTouch® Architectural keypads

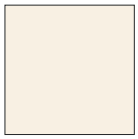
Colors and Finishes

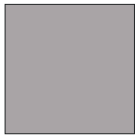
Architectural Matte Finishes


White
WH


Ivory
IV

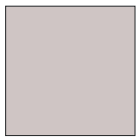

Almond
AL


Light Almond
LA

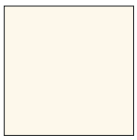

Gray
GR


Brown
BR


Black
BL

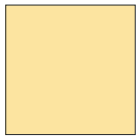

Taupe
TP

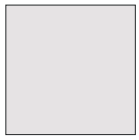

Sienna
SI


Beige
BE

Architectural Metal Finishes (wallplates only)


Satin Brass
SB


Bright Brass
BB


Bright Chrome
BC


Clear Anodized Aluminum
CLA


Black Anodized Aluminum
BLA

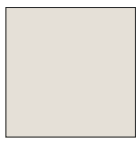

Brass Anodized Aluminum
BRA

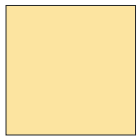

Antique Brass
QB


Antique Bronze
QZ


Satin Chrome
SC


Satin Nickel
SN


Bright Nickel
BN


Gold
AU

When ordering metal wallplates, it is recommended to order the keypad in Black (BL).

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:
  Architectural Matte Finishes- AM-CK-1
  Architectural Metal Finishes - AMTL-CK-1

Botoneras de Arquitectónico inalámbricas seeTouch® de HomeWorks® QS

Las botoneras de arquitectónico inalámbricas seeTouch® de HomeWorks® QS les ofrecen a los propietarios de las casas una manera sencilla y elegante de operar luces, cortinas enrollables y de riel, pantallas motorizadas, termostatos y cualquier otro dispositivo.

Las botoneras de arquitectónico inalámbricas seeTouch® de HomeWorks® QS incluyen botones grandes y fáciles de usar, además de una opción única de retroiluminación grabada que permite que las botoneras se puedan leer en cualquier momento del día o de la noche. Los botones de las botoneras seeTouch® son redondeados, lo cual permite que el grabado se pueda mostrar desde un ángulo ascendente, aumentando la legibilidad.

Los kits de reemplazo están disponibles en una gran variedad de colores y con grabados personalizados para identificar claramente la función de cada botón. El diseño flexible de las botoneras permite cambiar el color, el número y la configuración de los botones al instalar un nuevo kit de botones grabados.

Use las carátulas Nova T☆® de Lutron®. Las carátulas se venden por separado. Las carátulas Nova T☆® de Lutron® se insertan sin medios visibles de anexión.


HQRA-W1B


HQRA-W2BS


HQRA-W3BS


HQRA-W3BSRL


HQRA-W4BS


HQRA-W4S


HQRA-W5B


HQRA-W5BRL


HQRA-W6B


HQRA-W6BRL


HQRA-W7B


HQRA-W1RLD


HQRA-W2RLD


HQRA-W3BD

Botoneras de Arquitectónico inalámbricas seeTouch® de HomeWorks® QS

Números de modelo

HQRA-W1B-XX[1]	Botonera de 1 botón:
RKA-W1B-XX[1]	Kit de reemplazo[2]
HQRA-W2BS-XX[1]	Botonera de 2 botones:
RKA-W2BS-XX[1]	Kit de reemplazo[2]
HQRA-W3BS-XX[1]	Botonera de 3 botones:
RKA-W3BS-XX[1]	Kit de reemplazo[2]
HQRA-W3BSRL-XX[1]	Botonera de 3 botones con subir/bajar
RKA-W3BSRL-XX[1]	Kit de reemplazo[2]
HQRA-W4BS-XX[1]	Botonera de 4 botones:
RKA-W4BS-XX[1]	Kit de reemplazo[2]
HQRA-W4S-XX[1]	Botonera de 4 escenas con subir/bajar
RKA-W4S-XX[1]	Kit de reemplazo[2]
HQRA-W5B-XX[1]	Botonera de 5 botones:
RKA-W5B-XX[1]	Kit de reemplazo[2]
HQRA-W5BRL-XX[1]	Botonera de 5 botones con subir/bajar
RKA-W5BRL-XX[1]	Kit de reemplazo[2]
HQRA-W6B-XX[1]	Botonera de 6 botones:
RKA-W6B-XX[1]	Kit de reemplazo[2]
HQRA-W6BRL-XX[1]	Botonera de 6 botones con subir/bajar
RKA-W6BRL-XX[1]	Kit de reemplazo[2]
HQRA-W7B-XX[1]	Botonera de 7 botones:
RKA-W7B-XX[1]	Kit de reemplazo[2]
HQRA-W1RLD-XX[1]	Botonera de 2 grupos con subir/bajar
RKA-W1RLD-XX[1]	Kit de reemplazo[2]
HQRA-W2RLD-XX[1]	Botonera de 2 grupos con doble subir/bajar
RKA-W2RLD-XX[1]	Kit de reemplazo[2]
HQRA-W3BD-XX[1]	Botonera de doble grupo
RKA-W3BD-XX[1]	Kit de reemplazo[2]

[1] "XX" en el número de referencia representa el código de color/acabado. Vea **Colores y acabados** al final del documento.

[2] Para ordenar un kit de reemplazo grabado añadir "-E" al final del número de modelo

Características del diseño

- Con solo presionar un botón, las luces se atenúan/se encienden o se apagan hasta los niveles deseados y las cortinas/cortinajes de riel se abren o se cierran hasta las posiciones deseadas.
- Es posible ajustar los niveles de iluminación y las posiciones de las cortinas al mantener presionados los botones de subir/bajar.
- Se puede programar para seleccionar niveles o posiciones preajustadas para toda la casa o para una sola habitación.
- LED verdes para indicar el estado y retroiluminación de los botones/grabado.
- Intensidad ajustable de la retroiluminación.
- Se incluye el grabado prepagado. Canjeable por un kit de reemplazo grabado.

Botoneras de Arquitectónico inalámbricas seeTouch® de HomeWorks® QS

Especificaciones

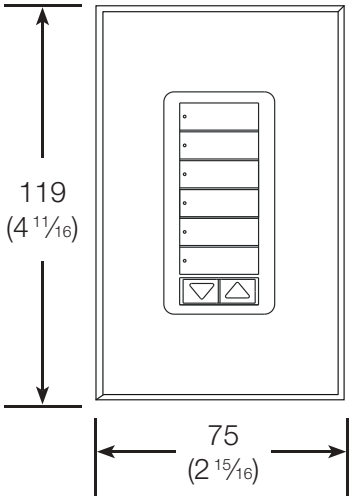
Números de referencia	**Botoneras:** HQRA-W1B-XX, HQRA-W2BS-XX, HQRA-W3BS-XX, HQRA-W3BSRL-XX, HQRA-W4BS-XX, HQRA-W4S-XX, HQRA-W5B-XX,HQRA-W5BRL-XX, HQRA-W6B-XX, HQRA-W6BRL-XX, HQRA-W7B-XX,HQRA-W1RLD-XX, HQRA-W2RLD-XX, HQRA-W3BD-XX **Kits de reemplazo:** RKA-W1B-XX, RKA-W2BS-XX, RKA-W3BS-XX, RKA-W3BSRL-XX, RKA-W4BS-XX, RKA-W4S-XX, RKA-W5B-XX, RKA-W5BRL-XX, RKA-W6B-XX, RKA-W6BRL-XX, RKA-W7B-XX, RKA-W1RLD-XX, RKA-W2RLD-XX, RKA-W3BD-XX
Energía	120 V~ 50/60 Hz 0,5 A
Consumo de energía típico	0,6 W Condiciones de prueba: Todas las retroiluminaciones en intensidad media, dos LED encendidos (dos ajustes predefinidos activos), botonera con energía a 120 V~
Aprobaciones reglamentarias	UL, CSA, NOM, FCC, IC, COFETEL
Medioambiente	Temperatura de operación al ambiente: De de 0 °C a 40 °C (32 °F a 104 °F) , de 0% a 90% de humedad, sin condensación. Solo para uso en interiores.
Comunicaciones	Las botoneras de diseñador inalámbricas seeTouch® de HomeWorks® QS se comunican con el sistema a través de radiofrecuencia (RF) y se deben ubicar a 9 m (30 pies) de un repetidor.
Protección ESD	Probada para soportar la descarga electroestática sin daños ni pérdidas de memoria, de acuerdo con IEC 61000-4-2.
Protección contra picos de voltaje	Probada para soportar picos de voltaje sin daños ni pérdidas de operación, de acuerdo con IEEE C62.41-1991 Práctica recomendada en picos de voltaje en circuitos de energía AC de bajo voltaje.
Fallas de energía	Memoria para fallas de energía: En caso de que se interrumpa la energía, la botonera regresará a su estado previo cuando se restaure la energía.
Montaje	Requiere una caja de pared de los E.U.A. Se recomiendan 89 mm (3½ pulg) de profundidad, 57 mm (2¼ pulg) de profundidad como mínimo.
Cableado	Las botoneras de arquitectónico inalámbricas seeTouch® de HomeWorks® QS requieren una conexión de cableado viva y neutral de 120 V~.
Garantía	Garantía limitada de 8 años. http://www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf

Botoneras de Arquitectónico inalámbricas seeTouch® de HomeWorks® QS

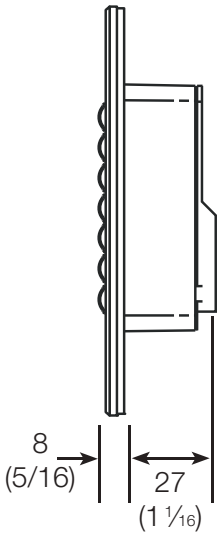
Dimensiones

Todas las dimensiones se muestran en mm (pulg)

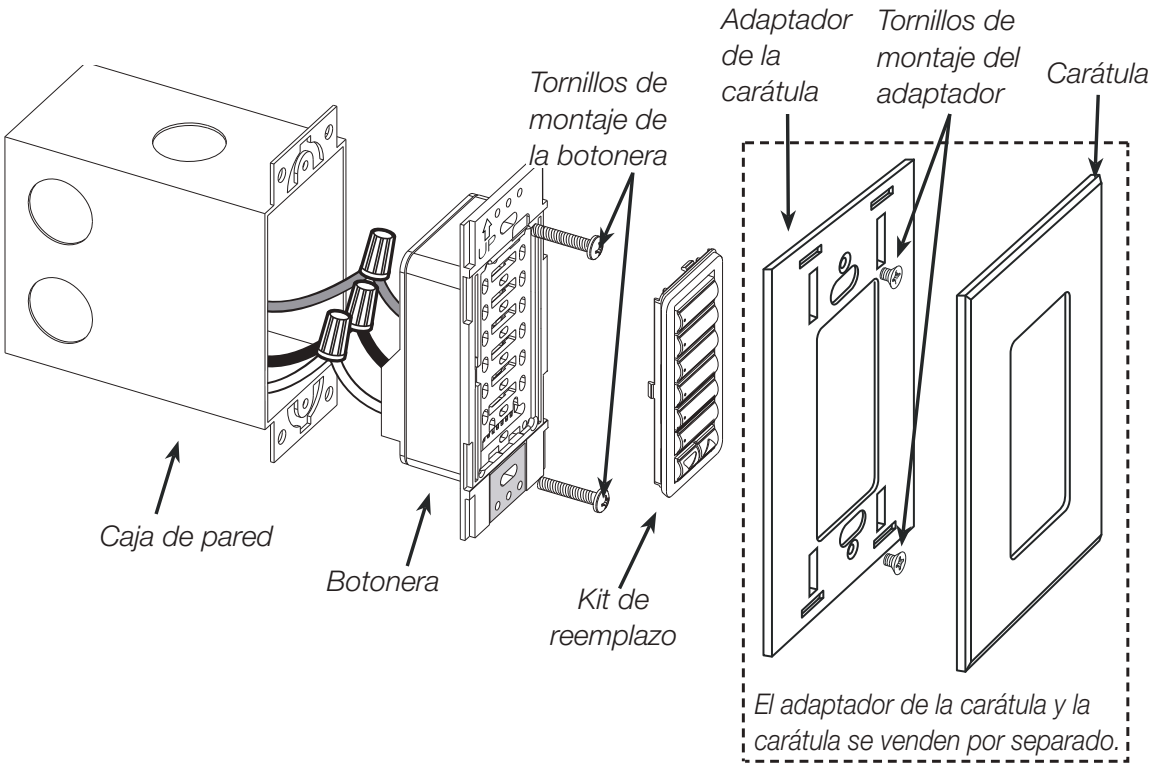
Vista frontal



Vista lateral

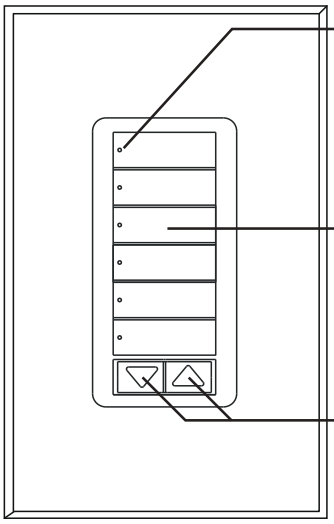


Montaje e identificación de las partes



Botoneras de Arquitectónico inalámbricas seeTouch® de HomeWorks® QS

Operación

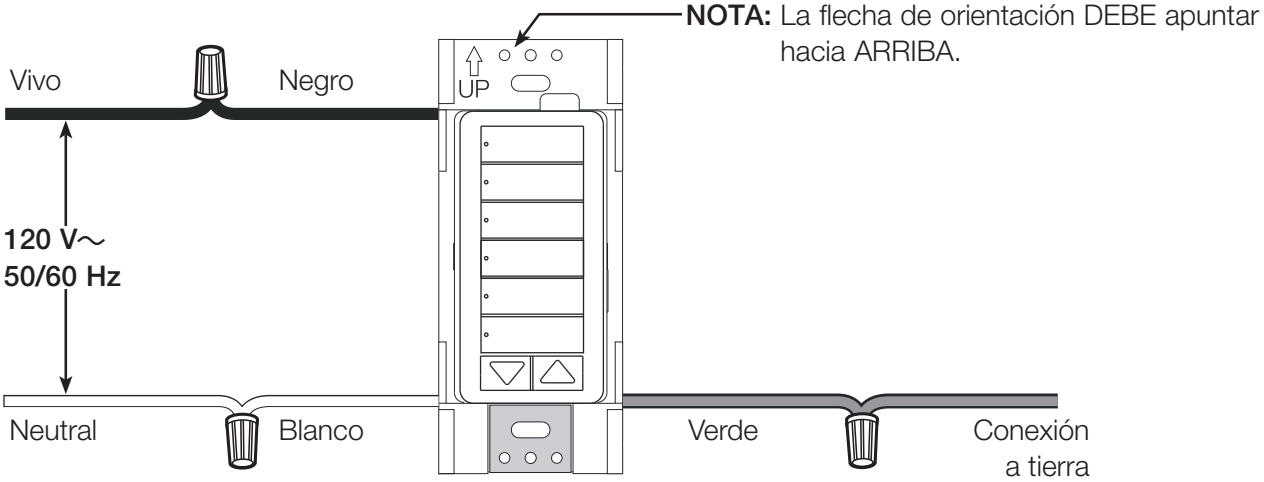


LED de estado
Muestra el estado de las salidas programadas en el botón.

Botones de la botonera
Presione para controlar las salidas programadas en el botón.

Botones de subir/bajar
La intensidad de las luces aumenta o disminuye y las cortinas enrollables o de riel se mueven hacia el límite de apertura o de cierre.

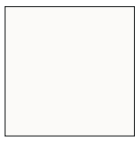
Diagrama del cableado

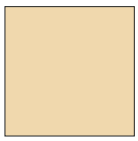


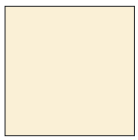
Botoneras de Arquitectónico inalámbricas seeTouch® de HomeWorks® QS

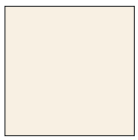
Colores y acabados

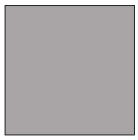
Acabados mate arquitectónicos


Blanco
WH


Marfil
IV

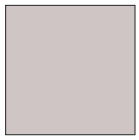

Almendra
AL

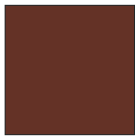

Almendra clara
LA

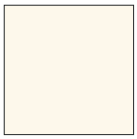

Gris
GR


Café
BR


Negro
BL

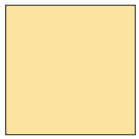

Marrón
(TP)

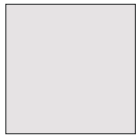

Siena
(SI)


Beige
BE

Acabados metálicos arquitectónicos (solo las carátulas)


Cobre satinado
SB


Cobre brillante
BB


Cromo brillante
BC


Aluminio anodizado claro
CLA


Aluminio anodizado negro
BLA

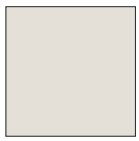

Aluminio anodizado cobrizo
BRA

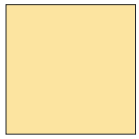

Cobre antiguo
QB


Bronce antiguo
QZ


Cromo satinado
SC


Níquel satinado
SN


Níquel brillante
BN


Oro
AU

Al ordenar las carátulas metálicas, se recomienda ordenar la carátula en Negro (BL).

- Debido a las limitaciones de la impresión, no es posible garantizar que los colores y los acabados que se muestran coincidan perfectamente con los productos reales.
- Existen llaveros con muestras de color disponibles para una coincidencia del color más precisa:

  Acabados arquitectónicos mate- AM-CK-1
  Acabados arquitectónicos metálicos - AMTL-CK-1

Claviers HomeWorks® QS RF seeTouch® de style architectural

Les claviers HomeWorks® QS RF seeTouch® de style architectural permettent aux propriétaires de gérer d'une façon simple et élégante les lumières, les stores/rideaux, les écrans motorisés, les thermostats et bien d'autres applications.

Les claviers HomeWorks® QS RF seeTouch® de style architectural présentent de grands boutons, faciles à utiliser, plus une option de texte rétro-éclairé qui rend le clavier lisible à toute heure du jour et de la nuit. Les boutons du clavier seeTouch® sont arrondis, ce qui permet au texte d'être dans un angle supérieur et donc mieux lisible.

Des ensembles de remplacement sont disponibles dans une large gamme de couleurs et avec des textes personnalisés permettant d'identifier clairement la fonction de chaque bouton. La souplesse du design des claviers permet de changer la couleur, le nombre de boutons et la configuration de ceux-ci en installant simplement un nouvel ensemble de boutons à texte.

Les claviers HomeWorks® QS RF seeTouch® utilisent les plaques murales Lutron® Nova T☆®. Les plaques murales sont vendues séparément. Les plaques murales Lutron® Nova T☆® s'enclenchent sans attaches visibles.


HQRA-W1B


HQRA-W2BS


HQRA-W3BS


HQRA-W3BSRL


HQRA-W4BS


HQRA-W4S


HQRA-W5B


HQRA-W5BRL


HQRA-W6B


HQRA-W6BRL


HQRA-W7B


HQRA-W1RLD


HQRA-W2RLD


HQRA-W3BD

Claviers HomeWorks® QS RF seeTouch® de style architectural

Numéros de modèles

HQRA-W1BXX[1]	Clavier à 1 bouton
RKA-W1B XX[1]	Kit de remplacement[2]
HQRA-W2BS-XX[1]	Clavier à 2 boutons
RKA-W2BS-XX[1]	Kit de remplacement[2]
HQRA-W3BS-XX[1]	Clavier à 3 boutons
RKA-W3BS-XX[1]	Kit de remplacement[2]
HQRA-W3BSRL-XX[1]	Clavier à 3 boutons avec variateur
RKA-W3BSRL-XX[1]	Kit de remplacement[2]
HQRA-W4BS-XX[1]	Clavier à 4 boutons
RKA-W4BS-XX[1]	Kit de remplacement[2]
HQRA-W4S-XX[1]	Clavier à 4 scènes avec variateur
RKA-W4S-XX[1]	Kit de remplacement[2]
HQRA-W5B-XX[1]	Clavier à 5 boutons
RKA-W5B-XX[1]	Kit de remplacement[2]
HQRA-W5BRL-XX[1]	Clavier à 5 boutons avec variateur
RKA-W5BRL-XX[1]	Kit de remplacement[2]
HQRA-W6B-XX[1]	Clavier à 6 boutons
RKA-W6B-XX[1]	Kit de remplacement[2]
HQRA-W6BRL-XX[1]	Clavier à 6 boutons avec variateur
RKA-W6BRL-XX[1]	Kit de remplacement[2]
HQRA-W7B-XX[1]	Clavier à 7 boutons
RKA-W7B-XX[1]	Kit de remplacement[2]
HQRA-W1RLD-XX[1]	Clavier à deux groupes avec variateur
RKA-W1RLD-XX[1]	Kit de remplacement[2]
HQRA-W2RLD-XX[1]	Clavier à deux groupes avec double variateur
RKA-W2RLD-XX[1]	Kit de remplacement[2]
HQRA-W3BD-XX[1]	Clavier à deux groupes
RKA-W3BD-XX[1]	Kit de remplacement[2]

[1] Dans les numéros des modèles « XX » représente le code couleur/finition. Voir **Couleurs et finitions** à la fin de ce document.

[2] Pour commander un jeu de plaques gravées, ajouter “-E” à la fin du numéro de modèle

Caractéristiques de la conception

- Sur simple pression d’un bouton, les lumières se tamisent/s’éteignent ou s’allument jusqu’aux niveaux désirés et les stores/rideaux s’ouvrent ou se ferment jusqu’aux positions souhaitées.
- Les niveaux de lumière et les positions des stores/rideaux peuvent être raffinés en maintenant enfoncés les boutons augmenter/diminuer.
- Programmable de façon à sélectionner des positions ou niveaux prédéfinis pour toute la maison ou pour une seule pièce.
- DEL vertes pour indiquer le statut, et boutons/textes rétro-éclairés.
- Intensité du rétro-éclairage réglable.
- Gravure prépayée incluse. Remboursement d’un ensemble de remplacement de gravure.

Claviers HomeWorks® QS RF seeTouch® de style architectural

Spécifications

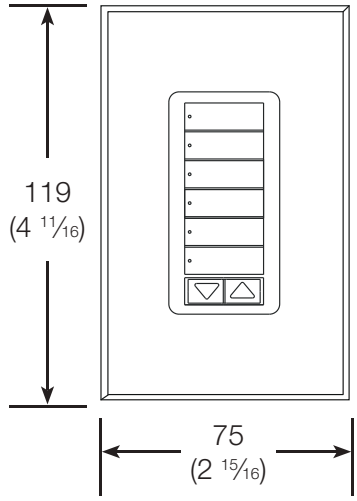
Numéros de modèles	**Claviers :** HQRA-W1B-XX, HQRA-W2BS-XX, HQRA-W3BS-XX, HQRA-W3BSRL-XX, HQRA-W4BS-XX, HQRA-W4S-XX, HQRA-W5B-XX,HQRA-W5BRL-XX, HQRA-W6B-XX, HQRA-W6BRL-XX, HQRA-W7B-XX,HQRA-W1RLD-XX, HQRA-W2RLD-XX, HQRA-W3BD-XX **Kit de remplacement :** RKA-W1B-XX, RKA-W2BS-XX, RKA-W3BS-XX, RKA-W3BSRL-XX, RKA-W4BS-XX, RKA-W4S-XX, RKA-W5B-XX, RKA-W5BRL-XX, RKA-W6B-XX, RKA-W6BRL-XX, RKA-W7B-XX, RKA-W1RLD-XX, RKA-W2RLD-XX, RKA-W3BD-XX
Alimentation	120 V~ 50/60 Hz 0,5 A
Consommation électrique habituelle :	0,6 W Conditions du test : Rétro-éclairage de tous les boutons à intensité moyenne, deux DEL allumées (deux préréglages actifs), clavier alimenté à 120 V~
Approbations réglementaires	UL, CSA, NOM, FCC, IC, COFETEL
Environnement	Température ambiante de fonctionnement : 0 °C à 40 °C (32 °F à 104 °F), 0 % à 90 % d'humidité, sans condensation. Utilisation à l'intérieur uniquement.
Communications	Les claviers HomeWorks® QS RF seeTouch® de style architectural communiquent avec le système via une fréquence radio (FR) et doivent être situés à maximum 9 m (30 pi) d'un répéteur.
Protection DES	Testé pour résister à une décharge électrostatique sans dommage ni perte de mémoire, conformément à la norme CEI 61000-4-2.
Protection contre la surtension	Testé pour résister à une surtension sans dommage ni perte de fonctionnement, conformément aux normes IEEE C62.41-1991 « Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits ».
Panne d'alimentation	Mémoire et panne d'alimentation : en cas de coupure de courant, lorsque le courant reviendra, le clavier reviendra à la position dans laquelle il était.
Montage	Nécessite un boîtier mural américain. Épaisseur recommandée de 89 mm (3 ½ po), épaisseur minimum de 57 mm (2 ¼ po).
Câblage	Les claviers HomeWorks® QS RF seeTouch® de style architectural nécessitent des connexions de 120 V~ (une chaude et une neutre).
Garantie	Garantie limitée de 8 ans. http://www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf

Claviers HomeWorks® QS RF seeTouch® de style architectural

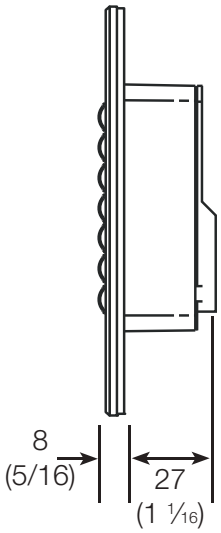
Dimensions

Toutes les dimensions sont indiquées en mm (po)

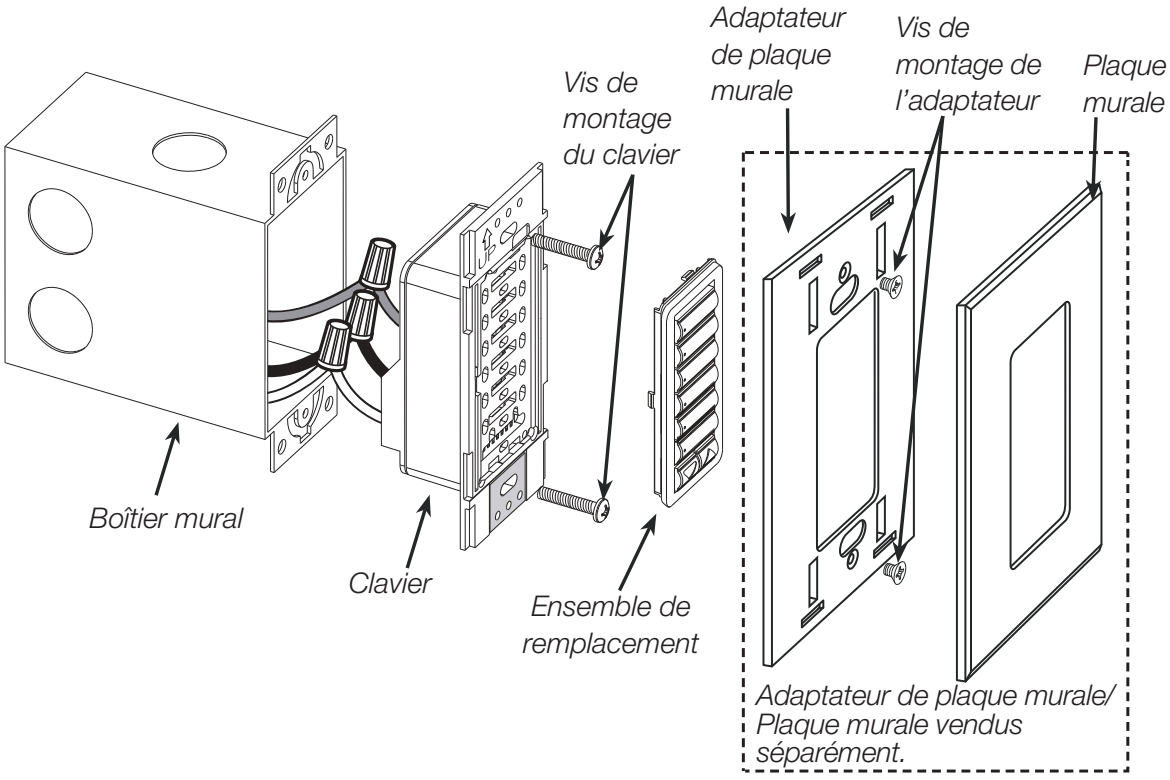
Vue avant



Vue de côté

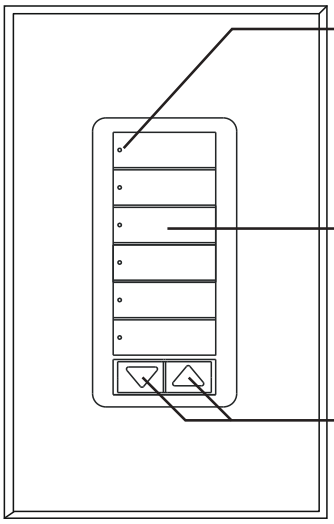


Montage et identification des pièces



Claviers HomeWorks® QS RF seeTouch® de style architectural

Fonctionnement

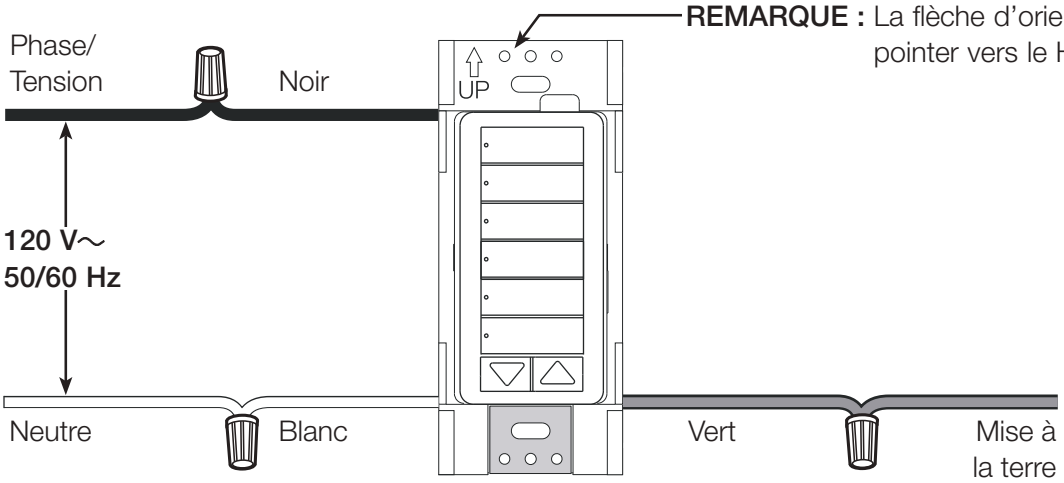


DEL de statut
Montre le statut des sorties programmées sur le bouton.

Boutons du clavier
Appuyez pour contrôler les sorties programmées sur le bouton.

Boutons augmenter/diminuer
L'intensité des lumières augmente ou diminue et les stores/rideaux se déplacent vers la limite d'ouverture ou de fermeture.

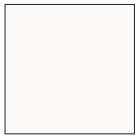
Schéma de câblage

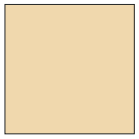


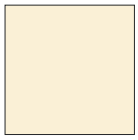
Claviers HomeWorks® QS RF seeTouch® de style architectural

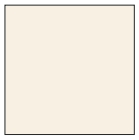
Couleurs et finitions

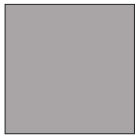
Finitions architecturales mates


Blanc
WH


Ivoire
IV

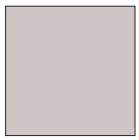

Amande
AL


Amande
Pâle
LA

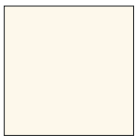

Gris
GR


Brun
BR


Noir
BL

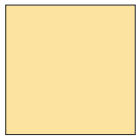

Taupe
TP

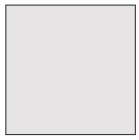

Sienna
SI


Beige
BE

Finitions architecturales métallisées (plaques murales uniquement)


Laiton Brossé
SB


Laiton Poli
BB


Chrome Poli
BC


Aluminium Anodisé
Transparent
CLA


Aluminium Anodisé
Noir
BLA

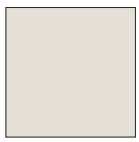

Aluminium Anodisé
en Laiton
BRA

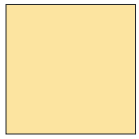

Laiton Antique
QB


Bronze Antique
QZ


Chrome Brossé
SC


Nickel Brossé
SN


Nickel Poli
BN


Or
AU

Avec des plaques murales métallisées, il est conseillé de commander le clavier en Noir (BL).

- L'impression a ses limites. Dès lors, les couleurs et finitions qui apparaissent ici ne peuvent pas garantir une concordance parfaite avec les couleurs et finitions réelles des produits.
- Des trousses d'échantillons de couleurs sont disponibles pour une meilleure concordance des couleurs :

  Finitions architecturales mates-AM-CK-1
  Finitions architecturales métallisées - AMTL-CK-1

Teclados HomeWorks® QS RF seeTouch® arquitetônico

Os teclados HomeWorks® QS RF seeTouch® arquitetônico fornecem aos usuários domésticos uma forma simples e elegante de acionar lâmpadas, cortinas/venezianas, telas motorizadas, termostatos e muitos outros dispositivos.

Os teclados HomeWorks® QS RF seeTouch® arquitetônico apresentam botões grandes e fáceis de usar, além de uma opção exclusiva de gravura retroiluminada que torna os teclados legíveis a qualquer hora do dia ou da noite. Os botões do teclado seeTouch® são arredondados, permitindo que a gravura seja exibida em um ângulo voltado para cima, aumentando a capacidade de leitura.

Há kits de reposição disponíveis em uma série de cores e com gravuras personalizadas para identificar claramente a função de cada botão. O design flexível dos teclados permite que a cor, o número e a configuração dos botões sejam alterados ao instalar um novo kit de botões com gravuras.

Use as tampas Lutron® Nova T☆®. As tampas são vendidas separadamente. As tampas Lutron® Nova T☆® são encaixadas sem junções visíveis.


HQRA-W1B


HQRA-W2BS


HQRA-W3BS


HQRA-W3BSRL


HQRA-W4BS


HQRA-W4S


HQRA-W5B


HQRA-W5BRL


HQRA-W6B


HQRA-W6BRL


HQRA-W7B


HQRA-W1RLD


HQRA-W2RLD


HQRA-W3BD

Teclados HomeWorks® QS RF seeTouch® arquitetônico

Números do modelo

HQRA-W1BXX[1]	Teclado de 1 botão
RKA-W1B XX[1]	Kit de reposição[2]
HQRA-W2BS-XX[1]	Teclado de 2 botões
RKA-W2BS-XX[1]	Kit de reposição[2]
HQRA-W3BS-XX[1]	Teclado de 3 botões
RKA-W3BS-XX[1]	Kit de reposição[2]
HQRA-W3BSRL-XX[1]	Teclado de 3 botões com setas de aumentar/diminuir
RKA-W3BSRL-XX[1]	Kit de reposição[2]
HQRA-W4BS-XX[1]	Teclado de 4 botões
RKA-W4BS-XX[1]	Kit de reposição[2]
HQRA-W4S-XX[1]	Teclado de 4 cenas com setas de aumentar/diminuir
RKA-W4S-XX[1]	Kit de reposição[2]
HQRA-W5B-XX[1]	Teclado de 5 botões
RKA-W5B-XX[1]	Kit de reposição[2]
HQRA-W5BRL-XX[1]	Teclado de 5 botões com setas de aumentar/diminuir
RKA-W5BRL-XX[1]	Kit de reposição[2]
HQRA-W6B-XX[1]	Teclado de 6 botões
RKA-W6B-XX[1]	Kit de reposição[2]
HQRA-W6BRL-XX[1]	eclado de 6 botões com setas de aumentar/diminuir
RKA-W6BRL-XX[1]	Kit de reposição[2]
HQRA-W7B-XX[1]	Teclado de 7 botões
RKA-W7B-XX[1]	Kit de reposição[2]
HQRA-W1RLD-XX[1]	Teclado de dois grupos, um deles com setas aumentar/diminuir
RKA-W1RLD-XX[1]	Kit de reposição[2]
HQRA-W2RLD-XX[1]	Teclado de dois grupos, ambos com setas aumentar/diminuir
RKA-W2RLD-XX[1]	Kit de reposição[2]
HQRA-W3BD-XX[1]	Teclado de dois grupos
RKA-W3BD-XX[1]	Kit de reposição[2]

[1] "XX" no número do modelo representa o código de cor/acabamento. Consulte as **Cores e acabamentos** no final do documento.

[2] Para fazer kit de reposição gravado, adicione "-E" ao final do número do modelo

Características do dispositivo

- Ao pressionar um único botão, as luzes se desvanecerão/se apagarão ou acenderão, e as cortinas/venezianas abrirão ou fecharão nas posições desejadas.
- Os níveis de iluminação e as posições das cortinas/venezianas serão ajustados ao manter os botões de aumentar/diminuir pressionados.
- Programável para selecionar níveis ou posições pré-ajustadas para a casa toda ou para apenas um ambiente.
- LEDs de status verde e retroiluminação dos botões/gravura.
- Intensidade de retroiluminação ajustável.
- Gravura paga antecipadamente incluída. Recuperável para um kit de reposição com gravura.

Teclados HomeWorks® QS RF seeTouch® arquitetônico

Especificações

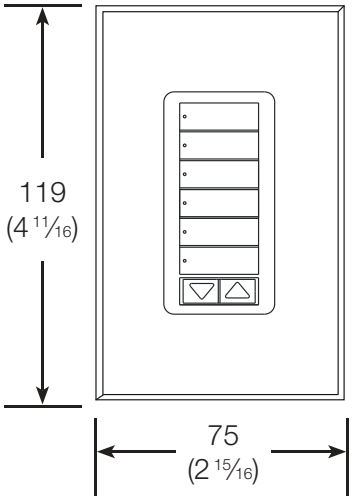
Números do modelo	**Teclados:** HQRA-W1B-XX, HQRA-W2BS-XX, HQRA-W3BS-XX, HQRA-W3BSRL-XX, HQRA-W4BS-XX, HQRA-W4S-XX, HQRA-W5B-XX,HQRA-W5BRL-XX, HQRA-W6B-XX, HQRA-W6BRL-XX, HQRA-W7B-XX,HQRA-W1RLD-XX, HQRA-W2RLD-XX, HQRA-W3BD-XX **Kits de reposição:** RKA-W1B-XX, RKA-W2BS-XX, RKA-W3BS-XX, RKA-W3BSRL-XX, RKA-W4BS-XX, RKA-W4S-XX, RKA-W5B-XX, RKA-W5BRL-XX, RKA-W6B-XX, RKA-W6BRL-XX, RKA-W7B-XX, RKA-W1RLD-XX, RKA-W2RLD-XX, RKA-W3BD-XX
Alimentação de energia	120 V~ 50/60 Hz 0,5 A
Consumo de energia normal	0,6 W Condições do teste: todas as retroiluminações em intensidade média, dois LEDs acesos (dois pré-ajustes ativos), teclado alimentado em 120 V~.
Aprovações regulatórias	UL, CSA, NOM, FCC, IC, COFETEL
Meio ambiente	Temperatura operacional do ambiente: 0 °C a 40 °C (32 °F a 104 °F), 0% a 90% de umidade, sem condensação. Somente uso interno.
Comunicações	Os teclados HomeWorks® QS RF seeTouch® arquitetônico se comunicam com o sistema por meio de Frequência de Rádio (FR) e devem estar localizados a uma distância de 9 m (30 pés) de um repetidor.
Proteção contra descarga eletrostática	Testado para suportar descarga eletrostática sem dano ou perda de memória, de acordo com IEC 61000-4-2.
Proteção contra picos de energia	Testado para suportar picos de tensões sem dano ou perda de operação, de acordo com a Prática recomendada IEEE C62.41-1991 para picos de tensões em circuitos de alimentação AC de baixa tensão.
Falha de energia	Memória para falha de energia: se a energia for interrompida, o teclado retornará ao estado anterior quando a energia for restaurada.
Montagem	Requer uma caixa de parede dos E.U.A. com profundidade recomendada de 89 mm (3½ pol) e profundidade mínima de 57 mm (2¼ pol).
Fiação	Os teclados HomeWorks® QS RF seeTouch® arquitetônico exigem uma conexão neutro e fase de 120 V~.
Garantia	Garantia limitada de 8 anos. http://www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf

Teclados HomeWorks® QS RF seeTouch® arquitetônico

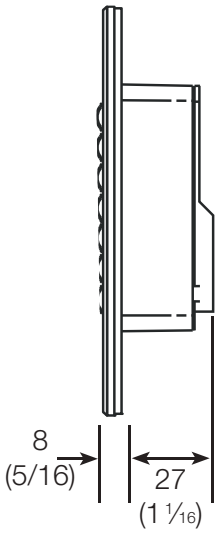
Dimensões

Todas as dimensões são mostradas em mm (pol)

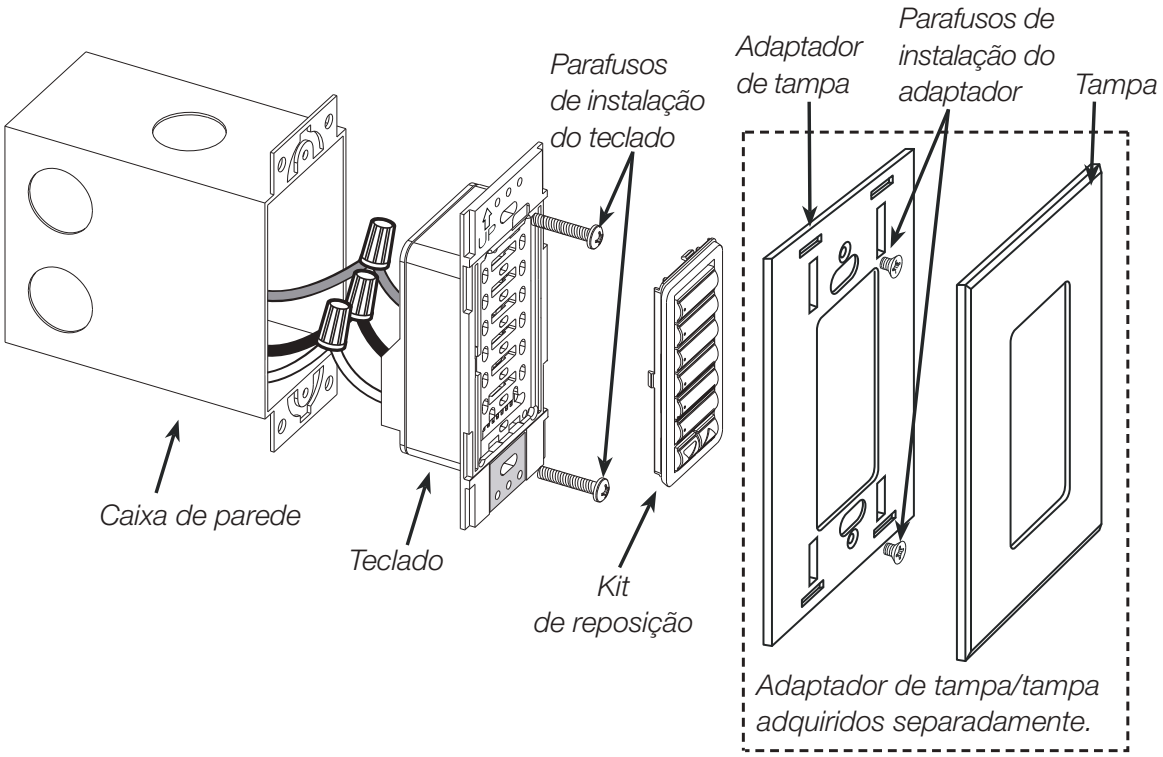
Vista frontal



Vista lateral

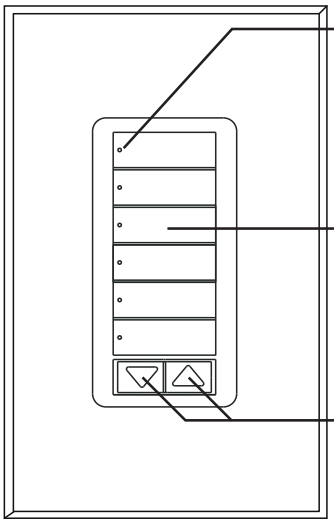


Montagem e identificação das peças



Teclados HomeWorks® QS RF seeTouch® arquitetônico

Operação

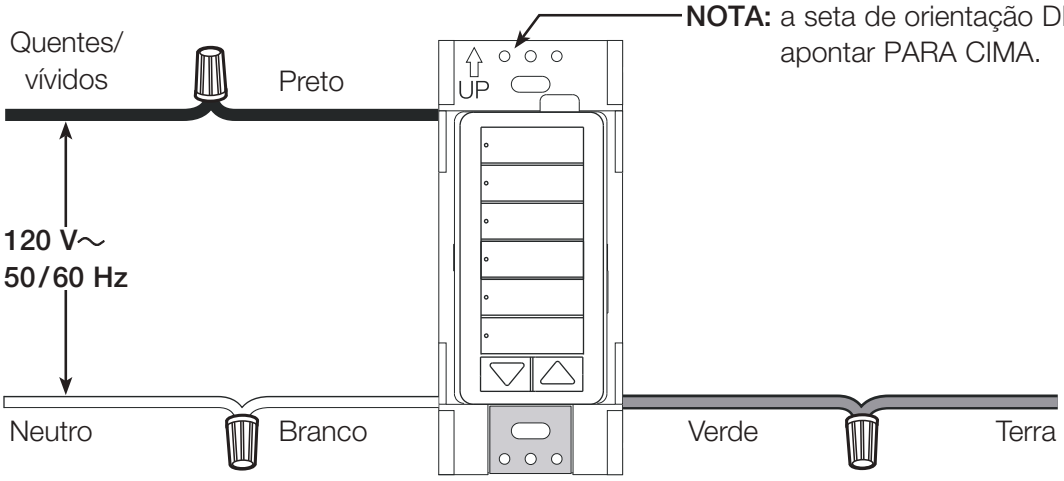


LEDs de status
Mostram o status das saídas programadas para o botão.

Botões do teclado
Pressione as saídas de controle programadas para o botão.

Botões aumentar/diminuir
As luzes aumentam ou diminuem em intensidade e as cortinas/venezianas são direcionadas para o limite de aberto ou fechado.

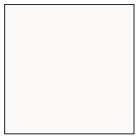
Diagrama de fiação

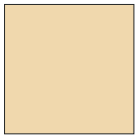


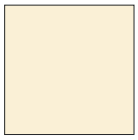
Teclados HomeWorks® QS RF seeTouch® arquitetônico

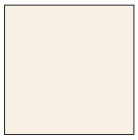
Cores e acabamentos

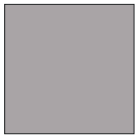
Acabamentos arquitetônicos foscos


Branco
WH


Marfim
IV

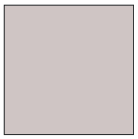

Amêndoa
AL


Amêndoa claro
LA

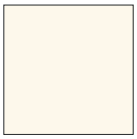

Cinza
GR


Marrom
BR


Preto
BL

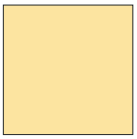

Cinza-acastanhado
TP

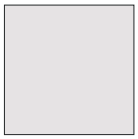

Siena
S


Bege
BE

Acabamentos arquitetônicos em metal (somente tampas)


Bronze acetinado
SB


Latão brilhante
BB


Cromo brilhante
BC


Alumínio claro anodizado
CLA


Alumínio preto anodizado
BLA

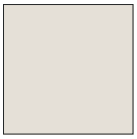

Alumínio em latão anodizado
BRA

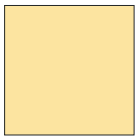

Latão antigo
QB


Bronze antigo
QZ


Cromo acetinado
SC


Níquel acetinado
SN


Níquel brilhante
BN


Dourado
AU

Quando solicitar tampas em metal, recomenda-se solicitar o teclado na cor Preto (BL).

- Devido às limitações de impressão, não é possível garantir que as cores e os acabamentos mostrados correspondam às cores reais do produto.
- As gamas de cores estão disponíveis visando a correspondência de cores mais precisa:
  acabamentos arquitetônicos foscos- AM-CK-1;
  acabamentos arquitetônicos em metal - AMTL-CK-1.

HomeWorks® QS RF seeTouch® Tabletop Keypads

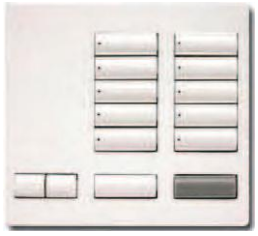
HomeWorks® QS RF seeTouch® Tabletop Keypads provide homeowners with a simple and elegant way to operate lights, shades/draperies, motorized screens, thermostats, and many other devices.

HomeWorks® QS RF seeTouch® Keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes the Keypads readable any time of the day or night. The Keypad buttons are rounded, making them easier to read.

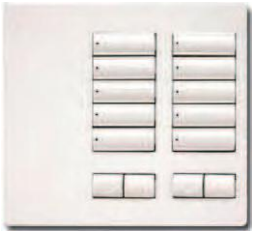
The versatile design of HomeWorks® QS RF seeTouch® Tabletop Keypads allows them to be mounted on a wall, placed on top of a table, or used as a cordless Keypad. The Keypads can be powered by a DC adapter or with 2 AAA batteries. Battery powered Tabletop Keypads will shut off after a short period of inactivity in order to conserve battery power.

HQY-T5RL*

HQY-T5CRL*



HQY-T10RL*



HQY-T10CRL*

HQY-T15RL*

HQY-T15CRL*

*"Y" in the model number represents frequency code

Model Numbers

HQR-T5RL-XX*, HQR-T5RL-XX*-BA, HQK-T5RL-XX, HQM-T5RL-XX*, HQQ-T5RL-XX*, HQN-T5RL-XX*	5 button with Master On/Off and Raise/Lower.	HQR-T5CRL-XX*, HQR-T5CRL-XX*-BA, HQK-T5CRL-XX*, HQM-T5CRL-XX*, HQQ-T5CRL-XX*, HQN-T5CRL-XX*	5 button with Column Raise/ Lower.
LFK-T5RL-XX*-E	Engraved Faceplate	LFK-T5CRL-XX*-E	Engraved Faceplate
RK-T5RL-XX*-E	Engraved Button Kit	RK-T5CRL-XX*-E	Engraved Button Kit
HQR-T10RL-XX*, HQR-T10RL-XX*-BA, HQK-T10RL-XX*, HQM-T10RL-XX*, HQQ-T10RL-XX*, HQN-T10RL-XX*	10 button with Master On/Off and Raise/Lower.	HQR-T10CRL-XX*, HQR-T10CRL-XX*-BA, HQK-T10CRL-XX*, HQM-T10CRL-XX*, HQQ-T10CRL-XX*, HQN-T10CRL-XX*	10 button with Column Raise/ Lower.
LFK-T10RL-XX*-E	Engraved Faceplate	LFK-T10CRL-XX*-	Engraved Faceplate
RK-T10RL-XX*-E	Engraved Button Kit	RK-T10CRL-XX*-E	Engraved Button Kit
HQR-T15RL-XX*, HQR-T15RL-XX*-BA, HQK-T15RL-XX*, HQM-T15RL-XX*, HQQ-T15RL-XX*, HQN-T15RL-XX*	15 button with Master On/Off and Raise/Lower.	HQR-T15CRL-XX*, HQR-T15CRL-XX*-BA, HQK-T15CRL-XX*, HQM-T15CRL-XX*, HQQ-T15CRL-XX*, HQN-T15CRL-XX*	15 button with Column Raise/ Lower.
LFK-T15RL-XX*-E	Engraved Faceplate	LFK-T15CRL-XX*-	Engraved Faceplate
RK-T15RL-XX*-E	Engraved Button Kit	RK-T15CRL-XX*-E	Engraved Button Kit

* "XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document.

HomeWorks® QS RF seeTouch® Tabletop Keypads

Specifications

Model Numbers	Keypads: HQR-T5RL-XX*; HQR-T5RL-XX-BA; HQK-T5RL-XX; HQM-T5RL-XX*; HQQ-T5RL-XX*; HQN-T5RL-XX*; HQR-T10RL-XX*; HQR-T10RL-XX-BA; HQK-T10RL-XX*; HQM-T10RL-XX*; HQQ-T10RL-XX*; HQN-T10RL-XX*; HQR-T15RL-XX*; HQR-T15RL-XX-BA; HQK-T15RL-XX*; HQM-T15RL-XX*; HQQ-T15RL-XX*; HQN-T15RL-XX*; HQR-T5CRL-XX*; HQR-T5CRL-XX-BA; HQK-T5CRL-XX*; HQM-T5CRL-XX*; HQQ-T5CRL-XX*; HQN-T5CRL-XX*; HQR-T10CRL-XX*; HQR-T10CRL-XX-BA; HQK-T10CRL-XX*; HQM-T10CRL-XX*; HQQ-T10CRL-XX*; HQN-T10CRL-XX*; HQR-T15CRL-XX*; HQR-T15CRL-XX-BA; HQK-T15CRL-XX*; HQM-T15CRL-XX*; HQQ-T15CRL-XX*; HQN-T15CRL-XX* Faceplate/Button Kits: LFK-T5RL-XX*-E; RK-T5RL-XX*-E; LFK-T10RL-XX*-E; RK-T10RL-XX*-E; LFK-T15RL-XX*-E; RK-T15RL-XX*-E; LFK-T5CRL-XX*-E; RK-T5CRL-XX*-E; LFK-T10CRL-XX*-E; RK-T10CRL-XX*-E; LFK-T15CRL-XX*-E; RK-T15CRL-XX*-E
Power	DC adapter: Input: 100-240 V~ 50/60 Hz 6.5 W Output: 9 V⎓ 300 mA **Battery powered:** 2 AAA alkaline (included) 1.5 V each
Typical Power Consumption	0.6 W Test conditions: all backlights on medium intensity, nightlight mode enabled, six LEDs on (two presets active per column), Keypad powered by a 9 V⎓ adapter (T120-9DC-3).
Regulatory Approvals	**DC adapter:** UL Listed for U.S. and Canada, NOM **Tabletop Keypad:** FCC, IC, COFETEL, ANATEL, CE, TRA, SUPERTEL; SUTEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	HomeWorks® QS RF seeTouch® Tabletop Keypads communicate with the system through Radio Frequency (RF) and must be located within 30 ft (9 m) of an RF hybrid repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the Keypad will return to its previous state when power is restored.
Mounting	Mounting bracket included for optional wall mount applications.
Warranty	http://www.lutron.com/resiinfo

HomeWorks® QS RF seeTouch® Tabletop Keypads

Design Features

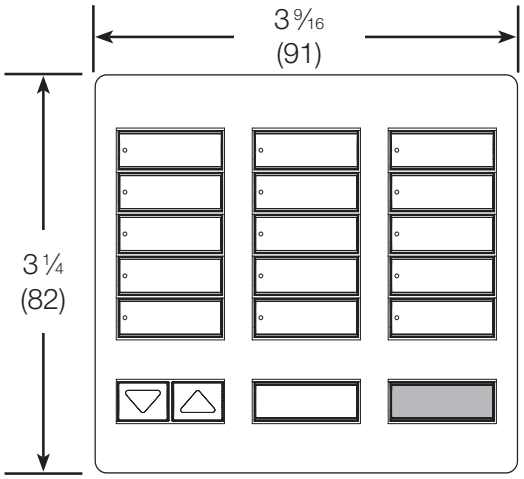
- At the press of a single button, lights fade ON or OFF to desired levels and shades/draperies open or close to desired positions.
- Light levels and shade/drapery positions can be fine-tuned by pressing and holding the raise/lower buttons.
- Programmable to select whole-house or single-room preset levels or positions.
- Green LEDs for status and button/engraving backlighting.
- Adjustable backlight intensity.
- Prepaid engraving included. Redeemable for one engraved button kit.
- Tabletop Keypad Button action is “Wake-up and Activate” - A single button press will “wake up” and activate selected button.

HomeWorks® QS RF seeTouch® Tabletop Keypads

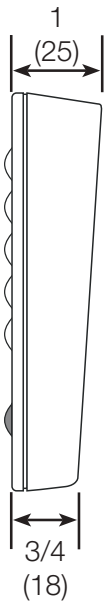
Dimensions

All dimensions are shown as in (mm)

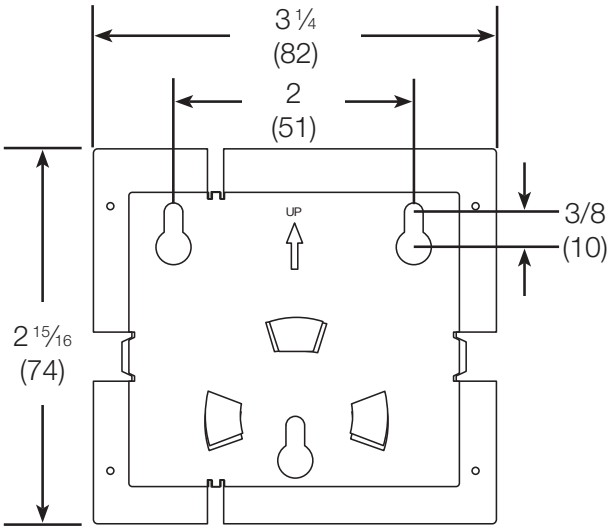
Keypad Front View



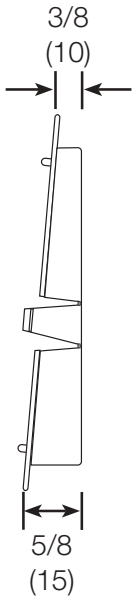
Keypad Side View



Mounting Bracket Front View



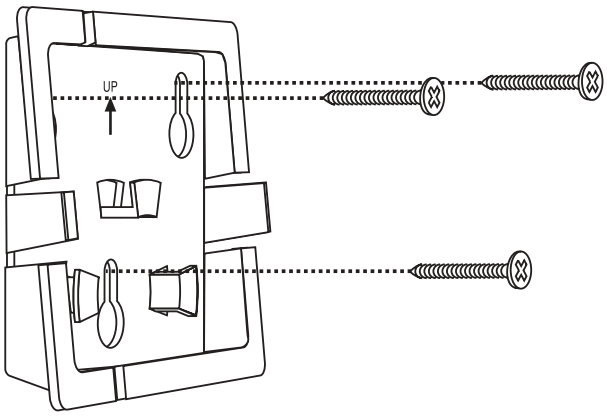
Mounting Bracket Side View



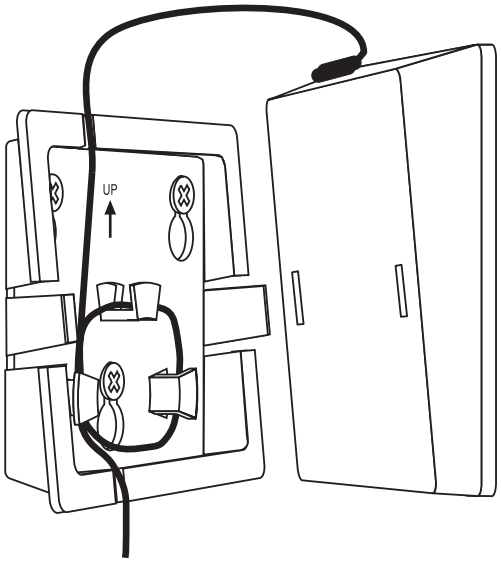
HomeWorks® QS RF seeTouch® Tabletop Keypads

Wall Mounting (optional)

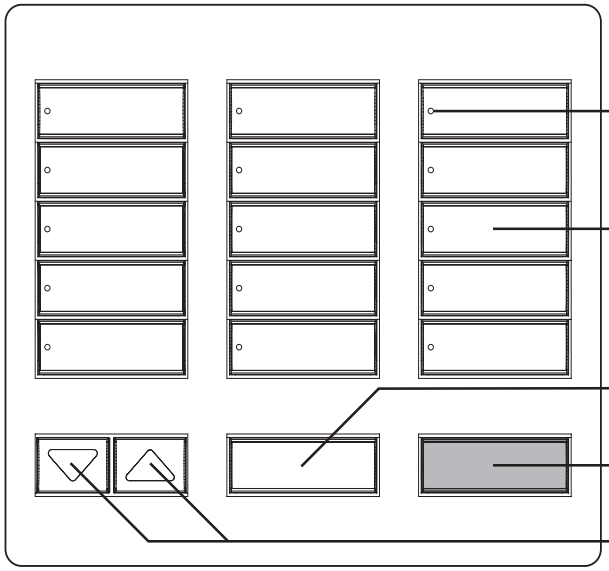
Attach mounting bracket to wall using the supplied wall anchors and screws.



If using the DC adapter, wrap excess cord around the cord holder and snap Keypad onto the mounting bracket.



Operation



Status LEDs
Show which Keypad button has been activated.

Keypad Buttons
Press to activate desired levels or positions.

All On Button
Turn all lights to full on and shades/draperies to open.

All Off Button
Turn all lights off and shades/draperies to closed.

Raise/Lower Buttons
Lights increase or decrease in intensity and shades/draperies move towards the open or close limit.

Colors and Finishes

Keypads and Engraved Button Kits
Satin Finishes

Snow
SW


Midnight
MN

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

  Satin Finishes – SC-CK-1
  Architectural Metal Finishes – AMTL-CK-1

Engraved Faceplate Kits
Satin Finishes

Snow
SW


Midnight
MN

Engraved Faceplate Kits
Metal Finishes

When ordering metal faceplates, it is recommended to order the keypad in Midnight (MN).

Satin Brass
SB

Bright Brass
BB

Bright Chrome
BC

Clear Anodized
Aluminum
CLA


Black Anodized
Aluminum
BLA


Brass Anodized
Aluminum
BRA


Antique Brass
QB


Antique Bronze
QZ

Satin Chrome
SC

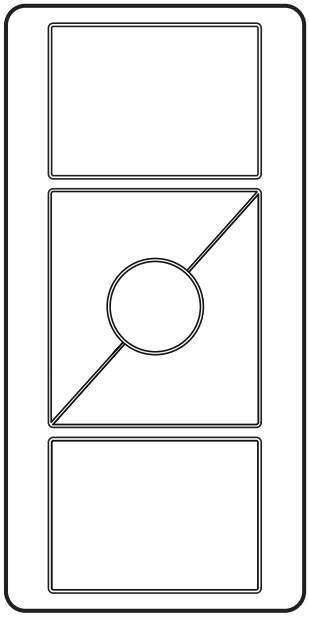
Satin Nickel
SN

Bright Nickel
BN

369-453b 1 03.12.12

Pico® Wireless Control and Mounting Accessories (for North, Central, and South America)

The Pico® wireless control is a flexible and easy to use device that allows the user to control Lutron® wireless load control devices from anywhere in the space. This battery operated control requires no external power or communication wiring.



Pico® wireless control

Features

- Provides control for the following:
  - Maestro Wireless® controls
  - PowPak™ Modules
  - Sivoia® QS wireless systems
  - Energi Savr Node™ and Quantum® systems, through the use of a QS sensor module (QSM)
  - GRAFIK Eye® QS wireless systems
  - RadioRA® 2 systems
  - HomeWorks® QS wireless systems
- Control available in a variety of button marking options.
- Easy reconfiguration for use as:
  - Handheld remote
  - Wall mount control (with or without faceplate; faceplate adapter kit sold separately)
  - Car visor control (car visor clip sold separately)
  - A table top control (table top pedestal sold separately).
- Battery powered Pico® wireless control requires no wiring.
- 10 year battery life (one CR2032 battery included).
- Can provide control to blinds, curtains or lighting devices within a 30 ft (9 m) range.

Job Name:	Model Numbers:	
Job Number:		

Specifications

Regulatory

- Lutron® Quality Systems registered to ISO 9001:2008.
- FCC Certified (U.S.A.)
- IC Certified (Canada)
- COFETEL Certified (Mexico)
- SUTEL Certified (Costa Rica)

Power

- Operating Voltage 3 V⎓
- (1) CR2032 Battery (included)

System Communication and Capacity

- Pico® wireless controls communicate using Radio Frequency (RF) at 431 - 437 MHz.
- Thousands of system addresses prevent interference between systems.
- Pico® wireless controls can be assigned to control blinds, curtains or lighting devices that are within a 30 ft (9 m) range.
- Can be configured as a scene or zone control in GRAFIK Eye® QS wireless applications.

Mounting Considerations

- Mounting of any RF devices on or in close proximity to a metal surface will drastically reduce the effective range of radio signal transmission or reception.
- All RF devices must be mounted on non-conductive materials to ensure proper performance.
- Coming soon! If you wish to mount your Pico® wireless control to a metal surface, the “Metal Mounter” will be required in order to maintain proper RF performance. Please contact Lutron® Customer Service for availability at 1.888.LUTRON1 (1.888.588.7661).

Environment

- Ambient operating temperature: 32 ˚F to 140 ˚F (0 ˚C to 60 ˚C)
- Maximum 90% non-condensing relative humidity
- Indoor use only

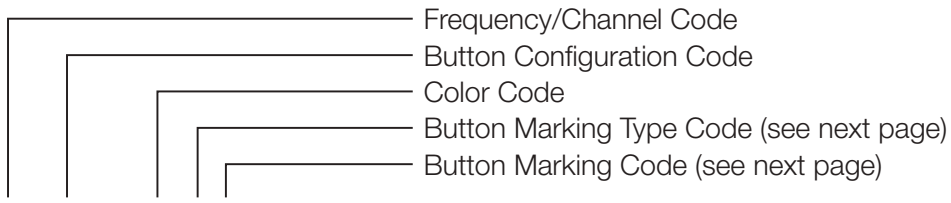
Warranty

- 1 Year Limited Warranty
  For additional Warranty information, please visit http://www.lutron.com/TechnicalDocumentLibrary/369-119_Wallbox_Warranty.pdf

Job Name:	Model Numbers:	
Job Number:		

Model Number

For order quantities of 96 pieces or greater of the same model number, bulk packaging may be available. Mounting hardware is not available with bulk packaging. Please contact Lutron® Customer Service for availability at 1.888.LUTRON1 (1.888.588.7661).

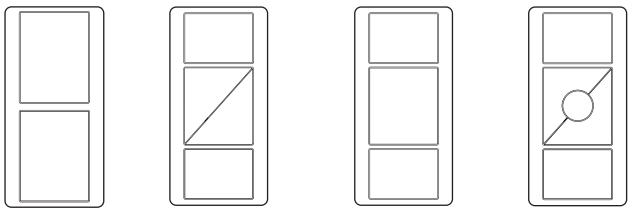


Frequency/Channel Codes:

Code	
J — 431.0 - 437.0 MHz	Contact Lutron's Customer Service at www.lutron.com for frequency/channel code compatibility with your particular geographic region, and for integrating with other Lutron® lighting and shading products.

Button Configuration Codes:

Button Configuration	Code
2 Button	2B
2 Button with Raise/Lower	2BRL
3 Button	3B
3 Button with Raise/Lower	3BRL



2 Button (2B) | 2 Button with Raise/Lower (2BRL) | 3 Button (3B) | 3 Button with Raise/Lower (3BRL)

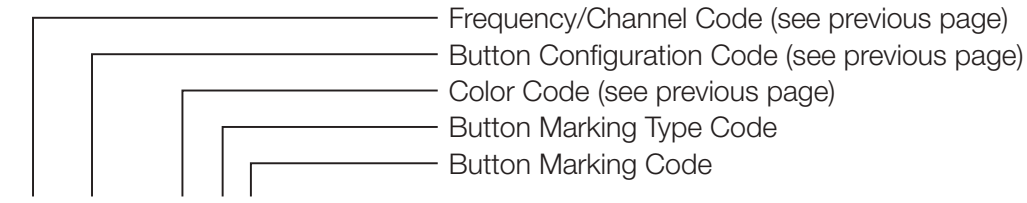
Color Codes:

Gloss Color	Code
White	WH
Black	BL
Ivory	IV
Light Almond	LA
White/Gray	WG (Top and Raise buttons are White; Preset, Lower, and Bottom buttons are Gray)

Continued on next page...

Job Name:	Model Numbers:	
Job Number:		

Model Number (continued)



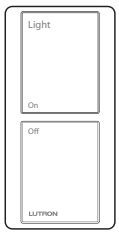
Button Marking Type Codes:

Button Marking Type Options	Code
Text	T
Icons	I

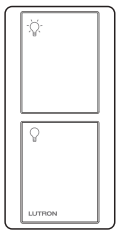
Button Marking Codes:

Button Marking Options	Code	Button Marking Options	Code
Light	01	Drapery	08
Shade	02	Blackout	09
Shade 1	05	Sheer	10
Shade 2	06	Blind	13
Screen	07	Power	14

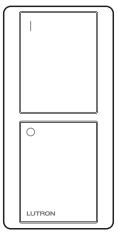
2 Button



Light (text)
(01)



Light (icons)
(01)

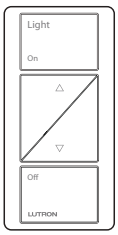


Power (icons)
(14)

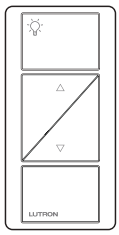
Continued on next page...

Button Marking Codes: (continued)

2 Button with Raise/Lower

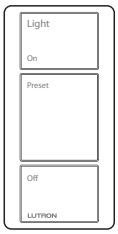


Light (text)
(01)

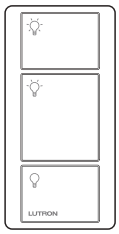


Light (icons)
(01)

3 Button

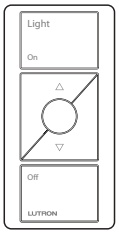


Light (text)
(01)

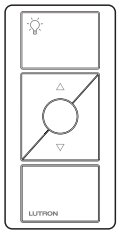


Light (icons)
(01)

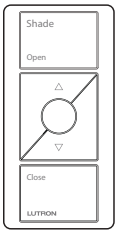
3 Button with Raise/Lower



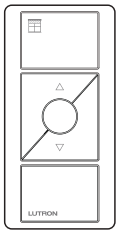
Light (text)
(01)



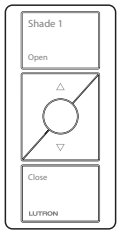
Light (icons)
(01)



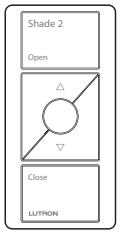
Shade (text)
(02)



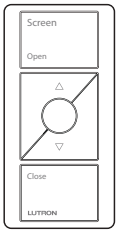
Shade (icons)
(02)



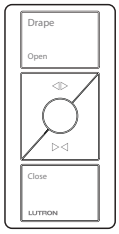
Shade 1 (text)
(05)



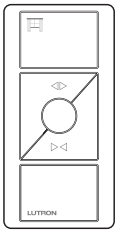
Shade 2 (text)
(06)



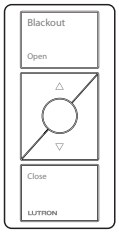
Screen (text)
(07)



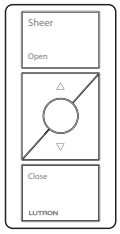
Drapery (text)
(08)



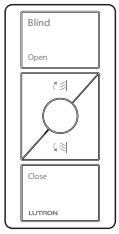
Drapery (icons)
(08)



Blackout (text)
(09)



Sheer (text)
(10)



Blind (text)
(13)

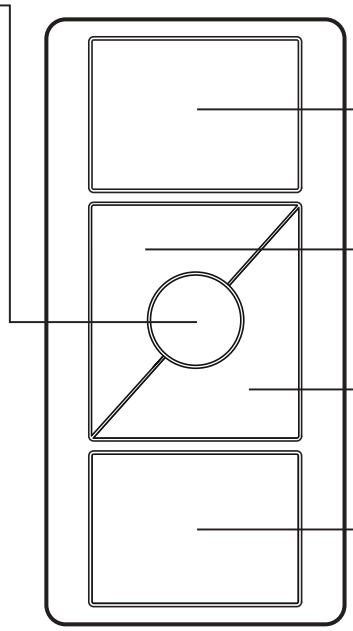
Job Name:	Model Numbers:	
Job Number:		

Operation

Preset Button
(3B & 3BRL models only)

Tap once:
Devices go to preset levels/positions. Activates scene 16 when used in scene mode with GRAFIK Eye® QS wireless applications.

Press and hold:
To save new preset level or position, press and hold for 6 seconds.



Top Button
Lights brighten to full intensity and shades/draperies go to open limit. Activates scene 1 when used in scene mode with GRAFIK Eye® QS wireless applications.

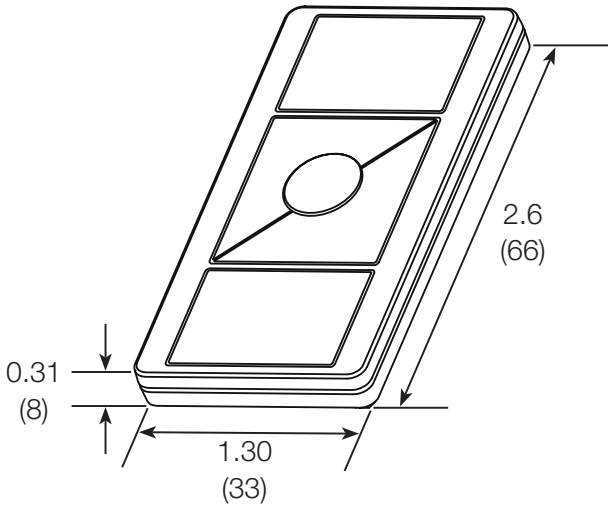
Raise Button (2BRL & 3BRL models only)
Lights increase in intensity and shades/draperies move towards open limit.

Lower Button (2BRL & 3BRL models only)
Lights decrease in intensity and shades/draperies move towards close limit.

Bottom Button
Lights dim to off and shades/draperies go to close limit. Activates "OFF" scene when used in scene mode with GRAFIK Eye® QS wireless applications.

Dimensions

Measurements shown as: in (mm)



Job Name:	Model Numbers:	
Job Number:		

Pico® Pedestal Model Number

Pedestals sold separately. Available in gloss finish only.

L-PEDX-XX

- Color Code
- Capacity Code

Capacity	Capacity Code
Single	1
Double	2
Triple	3
Quadruple	4

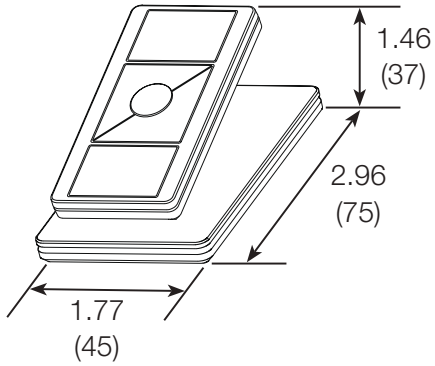
Gloss Color	Color Code
White	WH
Black	BL

Dimensions

Measurements shown as: in (mm)

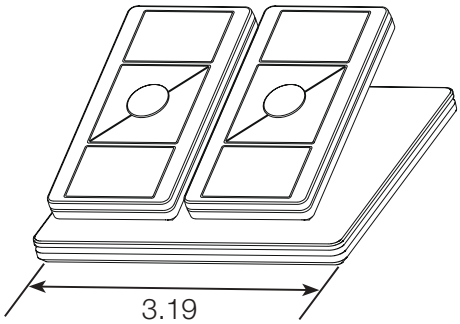
Single Pedestal

Pedestals sold separately.



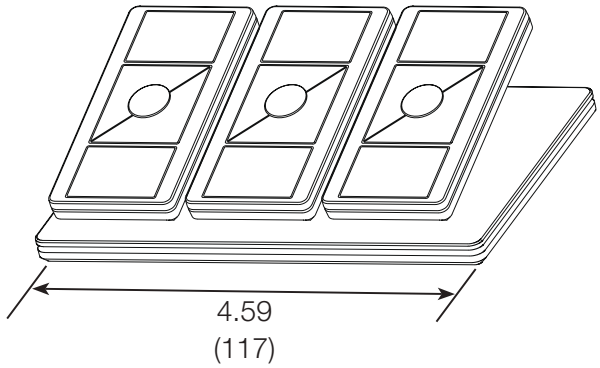
Double Pedestal

Pedestals sold separately.



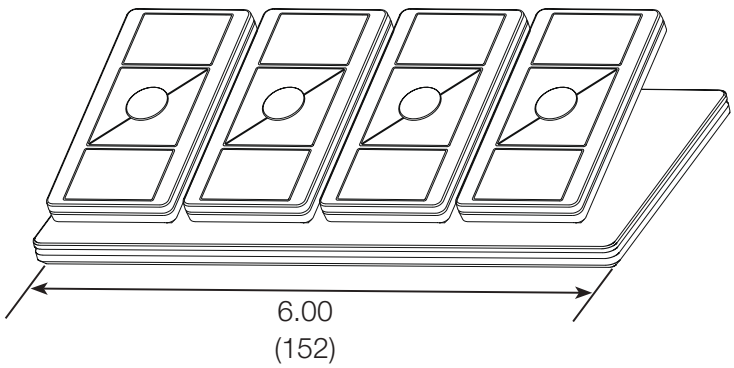
Triple Pedestal

Pedestals sold separately.



Quadruple Pedestal

Pedestals sold separately.

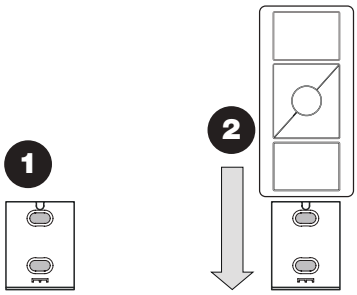


Job Name:	Model Numbers:	
Job Number:		

Mounting Options

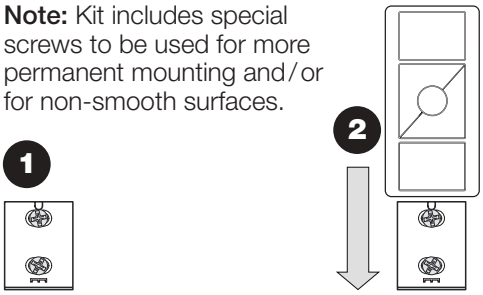
Stand Alone Mounting

Adhesive Mount (included with Pico®)



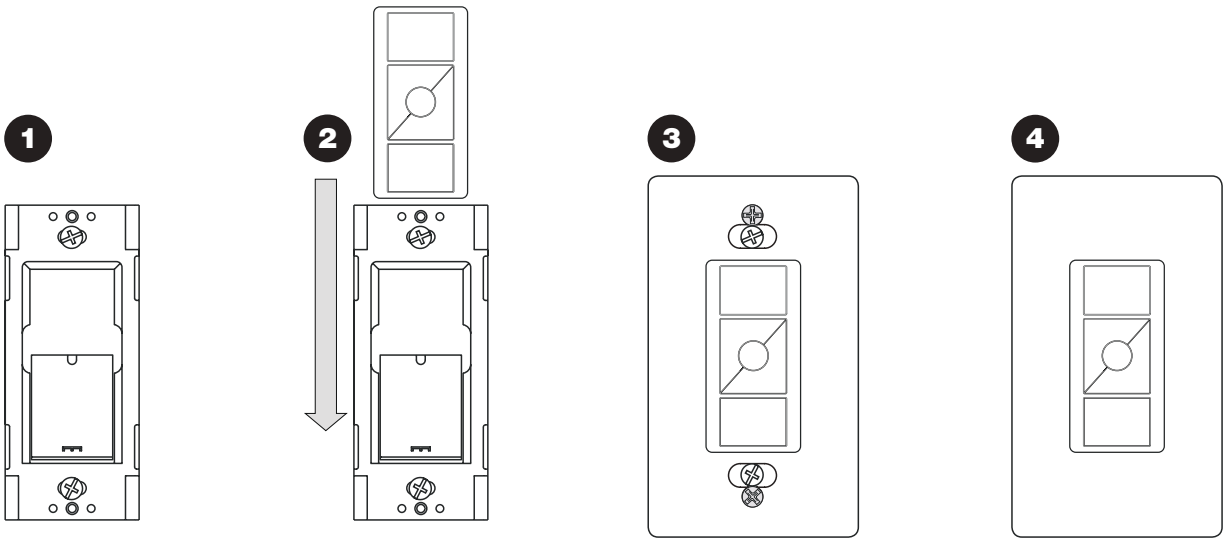
Screw Mount (sold separately)
Model PICO-SM-KIT

Note: Kit includes special screws to be used for more permanent mounting and/or for non-smooth surfaces.



Wallplate Adapter

Model PICO-FP-ADAPT (sold separately)



*Wallplate adapter/wallplate sold separately

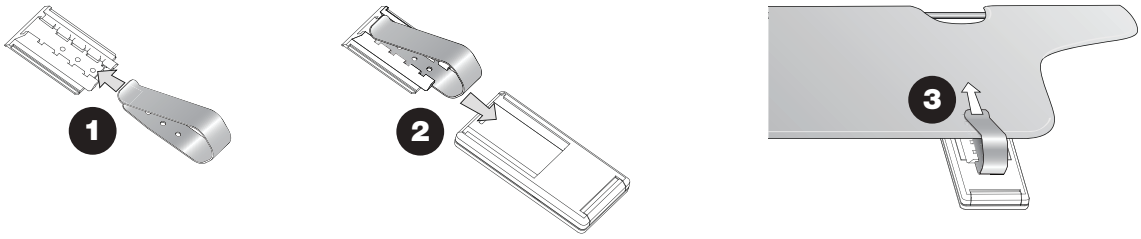
Continued on next page...

Job Name:	Model Numbers:	
Job Number:		

Mounting Options (continued)

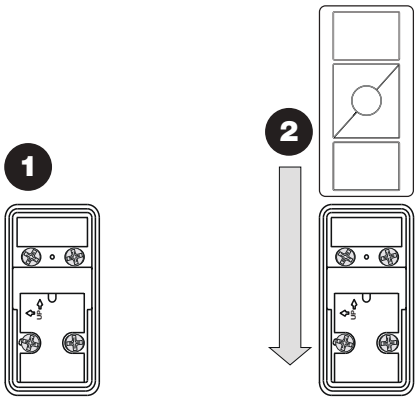
Car Visor

Model PICO-CARVISOR-CL (sold separately)



Mounting to Metal Surfaces

Coming Soon (sold separately)

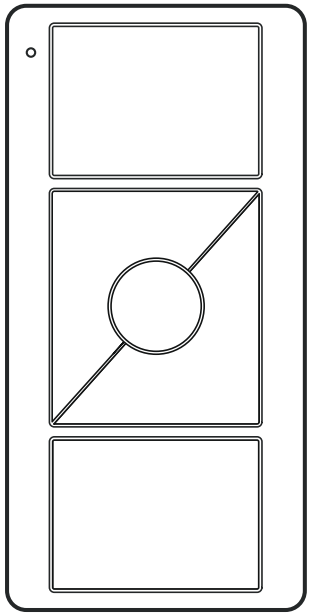


Job Name:	Model Numbers:	
Job Number:		

369612c 1 04.19.13

Pico® Wireless Control (for North, Central, and South America)

The Pico® wireless control is a flexible and easy to use device that allows the user to control Lutron® wireless load-control devices from anywhere in the space. This battery-operated control requires no external power or communication wiring.



Pico® wireless control

Features

- Provides control for the following:
  - Maestro Wireless® controls
  - PowPak® Modules
  - Sivoia® QS wireless systems
  - Serena® RF remote control shades
  - Energi Savr Node™ and Quantum® systems, through the use of a QS sensor module (QSM)
  - GRAFIK Eye® QS wireless systems
  - RadioRA® 2 systems
  - HomeWorks® QS wireless systems
- Control available in a variety of button marking options.
- Easy reconfiguration for use as:
  - Handheld remote
  - Wall mount control (with or without faceplate; faceplate adapter kit sold separately)
  - Car visor control (car visor clip sold separately)
  - A table top control (table top pedestal sold separately).
- Battery-powered. Requires no wiring.
- 10 year battery life (one CR2032 battery included).
- Can provide control of blinds, curtains or lighting devices within a 30 ft (9 m) range.

LUTRON® SPECIFICATION SUBMITTAL Page:

Job Name:	Model Numbers:
Job Number:	

Specifications

Regulatory Approvals

- Lutron® Quality Systems registered to ISO 9001:2008.
- FCC Certified (U.S.A.)
  - IC Certified (Canada)
  - COFETEL Certified (Mexico)
  - SUTEL Certified (Costa Rica)

Power

- Operating Voltage 3 V⎓
- (1) CR2032 Battery (included)

System Communication and Capacity

- Communicates using Radio Frequency (RF) at 431 MHz to 437 MHz.
- Thousands of system addresses prevent interference between systems.
- Can be assigned to control blinds, curtains or lighting devices that are within a 30 ft (9 m) range.
- Can be configured as a scene or zone control in GRAFIK Eye® QS wireless applications.

Mounting Considerations

- Mounting of any RF devices on or in close proximity to a metal surface will drastically reduce the effective range of radio signal transmission or reception.
- All RF devices must be mounted on non-conductive materials to ensure proper performance.

Environment

- Ambient operating temperature: 32 ˚F to 140 ˚F (0 ˚C to 60 ˚C)
- Maximum 90% non-condensing relative humidity
- Indoor use only

Warranty

- 1 Year Limited Warranty
  For additional Warranty information, please visit http://www.lutron.com/TechnicalDocumentLibrary/369-119_Wallbox_Warranty.pdf

LUTRON® SPECIFICATION SUBMITTAL Page:

Job Name:	Model Numbers:
Job Number:	

Model Number

For order quantities of 96 pieces or greater of the same model number, bulk packaging may be available. Mounting hardware is not included with bulk packaging. Please contact Lutron® Customer Service for availability at 1.888.LUTRON1 (1.888.588.7661).

PJ2-XXXX-GXX-XXX

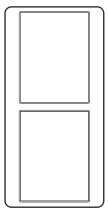
- XXXX — Button Marking Code (see next page)
- XX — Color Code
- XXX — Button Configuration Code
- PJ2- — Frequency/Channel Code

Frequency/Channel Codes:

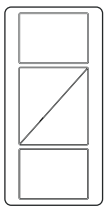
Code	
J	431.0 - 437.0 MHz

Button Configuration Codes:

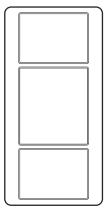
Button Configuration	Code
2 Button	2B
2 Button with Raise/Lower	2BRL
3 Button	3B
3 Button with Raise/Lower	3BRL



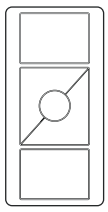
2 Button (2B)



2 Button with Raise/Lower (2BRL)



3 Button (3B)



3 Button with Raise/Lower (3BRL)

Color Codes:

Gloss Color	Code
White	WH
Black	BL
Ivory	IV
Light Almond	LA
White/Gray	WG (Top and Raise buttons are White; Preset, Lower, and Bottom buttons are Gray)

Continued on next page...

Job Name:	Model Numbers:
Job Number:	

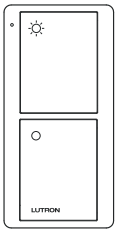
Model Number (continued)

PJ2-XXXX-GXX-XXX

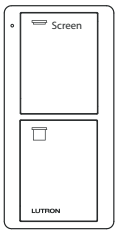
- Button Marking Code
- Color Code (see previous page)
- Button Configuration Code (see previous page)
- Frequency/Channel Code (see previous page)

Button Marking Codes:

2 Button

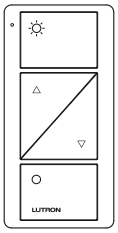


Light
(L01)



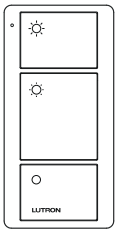
Screen
(S08)

2 Button with Raise/Lower



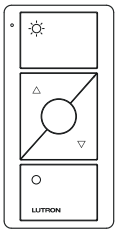
Light
(L01)

3 Button

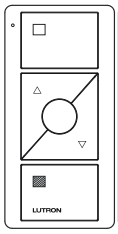


Light
(L01)

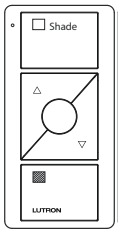
3 Button with Raise/Lower



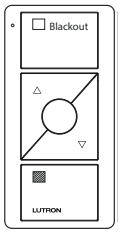
Light
(L01)



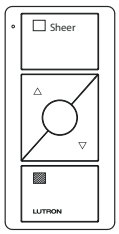
Shade (icons)
(S01)



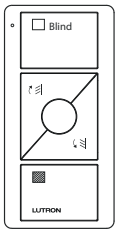
Shade (text)
(S02)



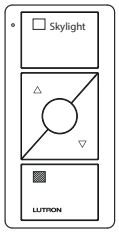
Blackout
(S03)



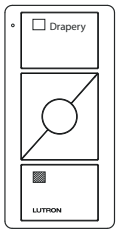
Sheer
(S04)



Blind
(S05)



Skylight
(S06)

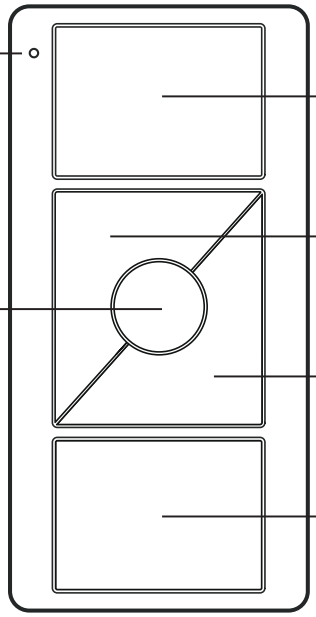


Drapery
(S07)

LUTRON® SPECIFICATION SUBMITTAL Page:

Job Name:	Model Numbers:
Job Number:	

Operation



Indicator LED
Flashes to indicate a button press or when unit is in programming mode.

Preset Button
(3B & 3BRL models only)

Tap once:
Devices go to preset levels/positions. Activates scene 16 when used in scene mode with GRAFIK Eye® QS wireless applications.

Press and hold:
To save new preset level or position, press and hold for 6 seconds.

Top Button
Lights brighten to full intensity and shades/draperies go to open limit. Activates scene 1 when used in scene mode with GRAFIK Eye® QS wireless applications.

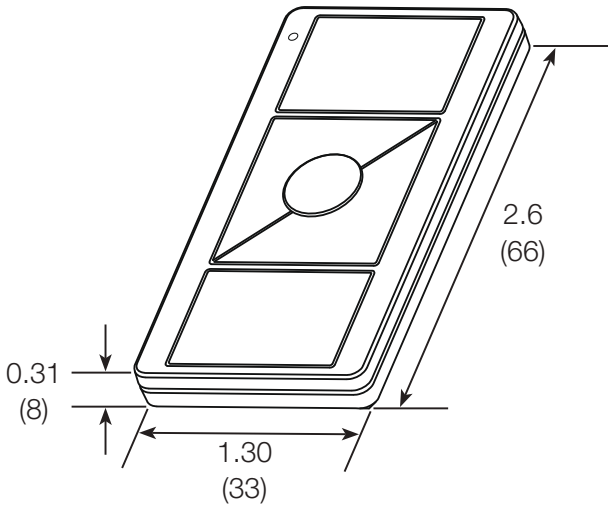
Raise Button (2BRL & 3BRL models only)
Lights increase in intensity and shades/draperies move towards open limit.

Lower Button (2BRL & 3BRL models only)
Lights decrease in intensity and shades/draperies move towards close limit.

Bottom Button
Lights dim to off and shades/draperies go to close limit. Activates "OFF" scene when used in scene mode with GRAFIK Eye® QS wireless applications.

Dimensions

Measurements shown as: in (mm)



LUTRON® SPECIFICATION SUBMITTAL Page:

Job Name:	Model Numbers:
Job Number:	

Pico® Pedestal Model Number

Pedestals sold separately. Available in gloss finish only.

L-PEDX-XX

Color Code
Capacity Code

Capacity Codes:

Capacity	Code
Single	1
Double	2
Triple	3
Quadruple	4

Color Codes:

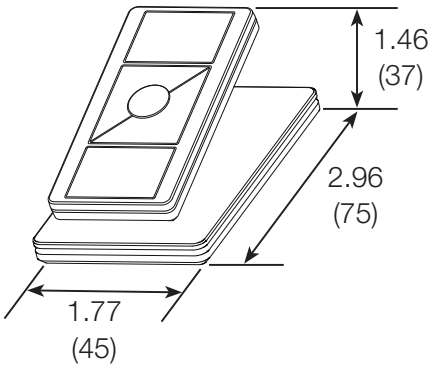
Gloss Color	Code
White	WH
Black	BL

Dimensions

Measurements shown as: in (mm)

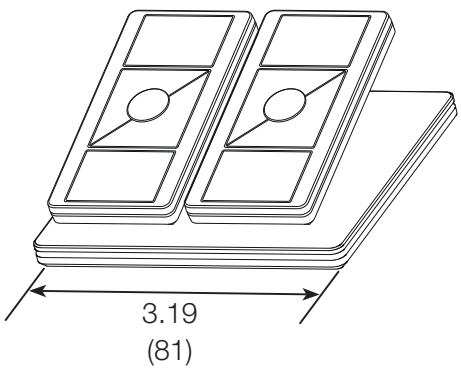
Single Pedestal

Pedestals sold separately.



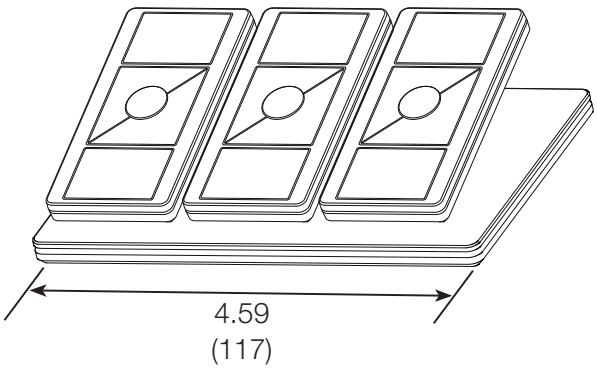
Double Pedestal

Pedestals sold separately.



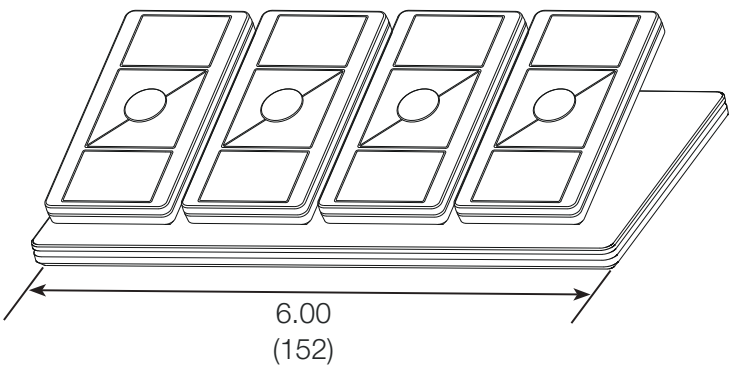
Triple Pedestal

Pedestals sold separately.



Quadruple Pedestal

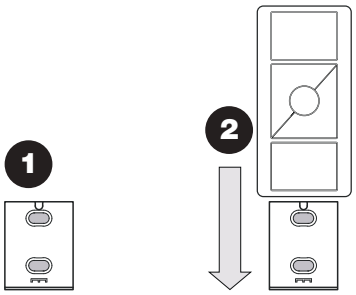
Pedestals sold separately.



Job Name:	Model Numbers:
Job Number:	

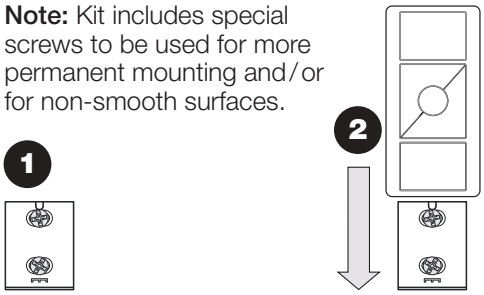
Mounting Options

Stand Alone Mounting
Adhesive Mount
(included with Pico®)

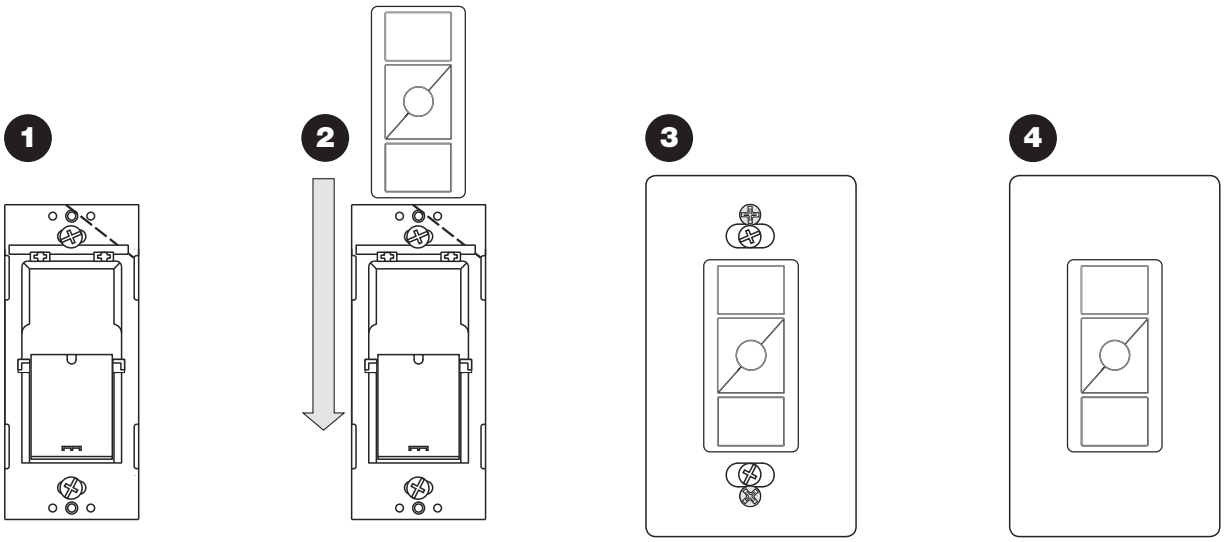


Screw Mount (sold separately)
Model PICO-SM-KIT

Note: Kit includes special screws to be used for more permanent mounting and/or for non-smooth surfaces.



Wallplate Adapter
Model PICO-WBX-ADAPT
(sold separately)



*Wallplate adapter/wallplate sold separately

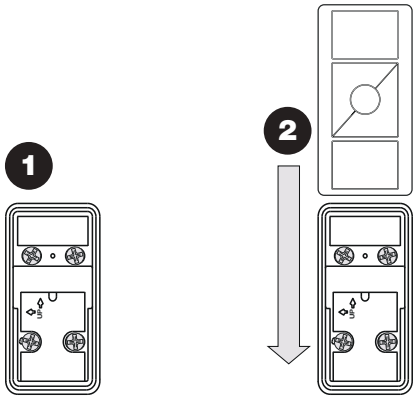
Continued on next page...

Job Name:	Model Numbers:
Job Number:	

Mounting Options (continued)

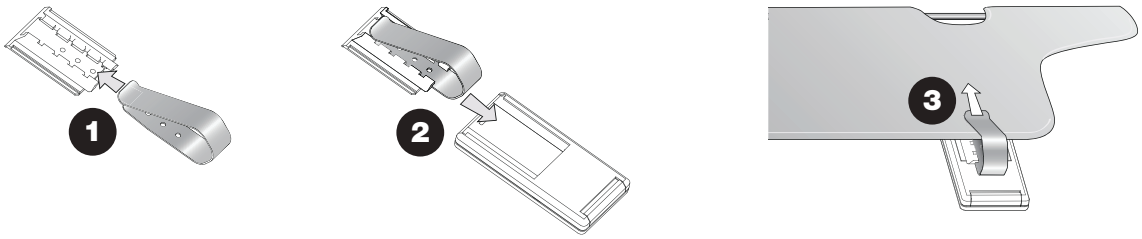
Mounting to Metal Surfaces

Coming Soon (sold separately)



Car Visor

Model PICO-CARVISOR-CL (sold separately)

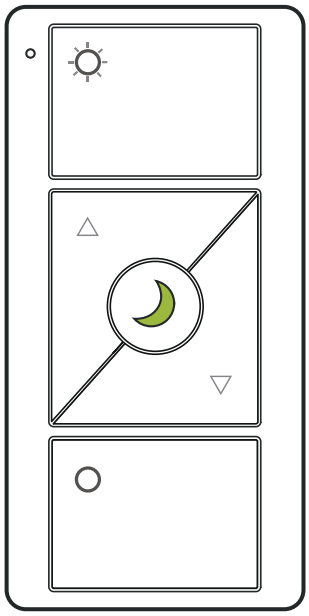


Job Name:	Model Numbers:
Job Number:	

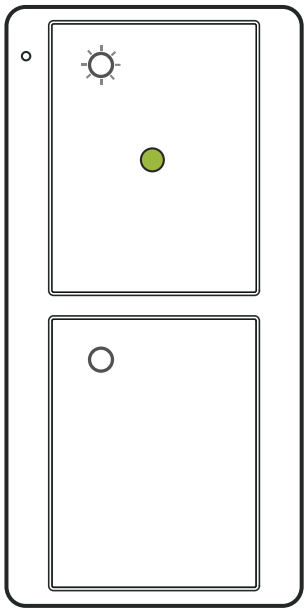
369760a 1 04.18.13

Pico® Wireless Control with Nightlight (for North, Central, and South America)

The Pico® wireless control with nightlight is a flexible and easy to use device that allows the user to control Lutron® wireless load-control devices from anywhere in the space. This battery-operated control requires no external power or communication wiring.



Pico® wireless control with nightlight 3 Button with Raise/Lower



Pico® wireless control with nightlight 2 Button

Features

- Provides control for the following:
  - Maestro Wireless® controls
  - PowPak® Modules
  - Energi Savr Node™ and Quantum® systems, through the use of a QS sensor module (QSM)
  - GRAFIK Eye® QS wireless systems
  - RadioRA® 2 systems
  - HomeWorks® QS wireless systems
- Easy reconfiguration for use as:
  - Handheld remote
  - Wall mount control (with or without faceplate; faceplate adapter kit sold separately)
  - Car visor control (car visor clip sold separately)
  - A table top control (table top pedestal sold separately).
- Battery-powered. Requires no wiring.
- 3 year battery life (one CR2032 battery included).
- Can provide control of lighting devices within a 30 ft (9 m) range.

LUTRON® SPECIFICATION SUBMITTAL Page:

Job Name:	Model Numbers:
Job Number:	

Specifications

Regulatory Approvals

- Lutron® Quality Systems registered to ISO 9001:2008.
- FCC Certified (U.S.A.)
- IC Certified (Canada)
- COFETEL Certified (Mexico)
- SUTEL Certified (Costa Rica)

Power

- Operating Voltage 3 V⎓
- (1) CR2032 Battery (included)

System Communication and Capacity

- Communicate using Radio Frequency (RF) at 431 to 437 MHz.
- Thousands of system addresses prevent interference between systems.
- Can be assigned to control lighting devices that are within a 30 ft (9 m) range.
- Can be configured as a scene or zone control in GRAFIK Eye® QS wireless applications.

Mounting Considerations

- Mounting of any RF devices on or in close proximity to a metal surface will drastically reduce the effective range of radio signal transmission or reception.
- All RF devices must be mounted on non-conductive materials to ensure proper performance.

Environment

- Ambient operating temperature: 32 ˚F to 140 ˚F (0 ˚C to 60 ˚C)
- Maximum 90% non-condensing relative humidity
- Indoor use only

Warranty

- 1 Year Limited Warranty
  For additional Warranty information, please visit http://www.lutron.com/TechnicalDocumentLibrary/369-119_Wallbox_Warranty.pdf

LUTRON® SPECIFICATION SUBMITTAL Page:

Job Name:	Model Numbers:
Job Number:	

369760a 3 04.18.13

Model Number

For order quantities of 96 pieces or greater of the same model number, bulk packaging may be available. Mounting hardware is not included with bulk packaging. Please contact Lutron® Customer Service for availability at 1.888.LUTRON1 (1.888.588.7661).

PJN-XXXX-GXX-L01

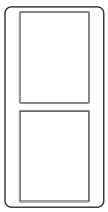
- Color Code
- Button Configuration Code
- Frequency/Channel Code

Frequency/Channel Codes:

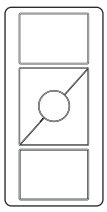
Code
J — 431.0 - 437.0 MHz

Button Configuration Codes:

Button Configuration	Code
2 Button	2B
3 Button with Raise/Lower	3BRL



2 Button (2B)



3 Button with Raise/Lower (3BRL)

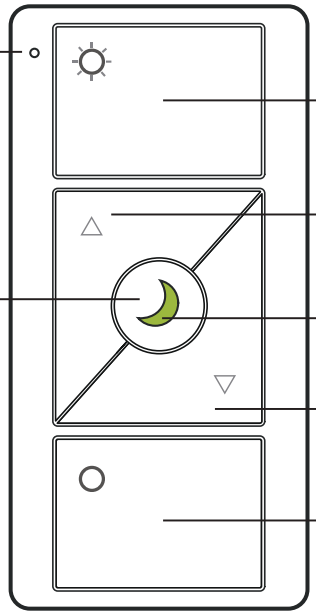
Color Codes:

Gloss Color	Code
White	WH
Black	BL
Ivory	IV
Light Almond	LA
White/Gray	WG (Top and Raise buttons are White; Preset, Lower, and Bottom buttons are Gray)

LUTRON® SPECIFICATION SUBMITTAL Page:

Job Name:	Model Numbers:
Job Number:	

Operation



Indicator LED
Flashes to indicate a button press or when unit is in programming mode.

Preset Button
(3BRL models only)

Tap once:
Devices go to preset levels/positions. Activates scene 16 when used in scene mode with GRAFIK Eye® QS wireless applications.

Press and hold:
To save new preset level or position, press and hold for 6 seconds.

Top Button
Lights brighten to full intensity. Activates scene 1 when used in scene mode with GRAFIK Eye® QS wireless applications.

Raise Button (3BRL models only)
Lights increase in intensity.

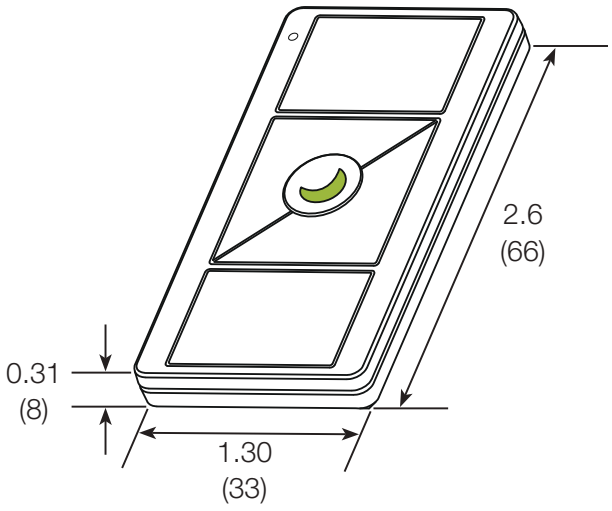
Nightlight
Glows a soft green color.

Lower Button (3BRL models only)
Lights decrease in intensity.

Bottom Button
Lights dim to off.
Activates "OFF" scene when used in scene mode with GRAFIK Eye® QS wireless applications.

Dimensions

Measurements shown as: in (mm)



LUTRON® SPECIFICATION SUBMITTAL Page:

Job Name:	Model Numbers:
Job Number:	

369760a 5 04.18.13

Nightlight Pico® Pedestal Model Number

Pedestals sold separately. Available in gloss finish only.

L-PED<u>X</u>-<u>XX</u>

- Color Code
- Capacity Code

Capacity Codes:

Capacity	Code
Single	1
Double	2
Triple	3
Quadruple	4

Color Codes:

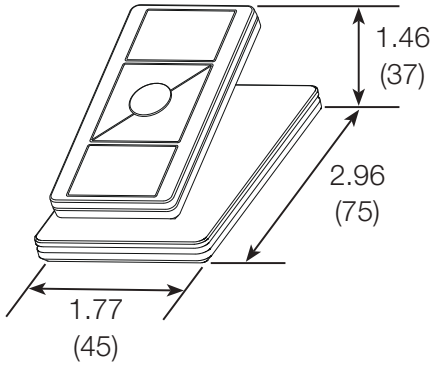
Gloss Color	Code
White	WH
Black	BL

Dimensions

Measurements shown as: in (mm)

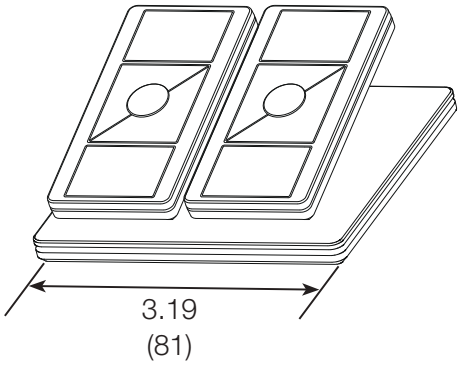
Single Pedestal

Pedestals sold separately.



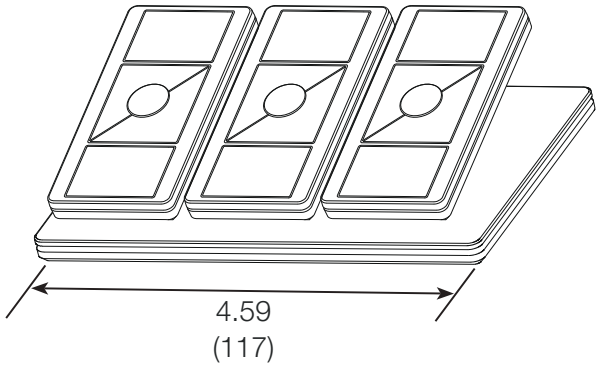
Double Pedestal

Pedestals sold separately.



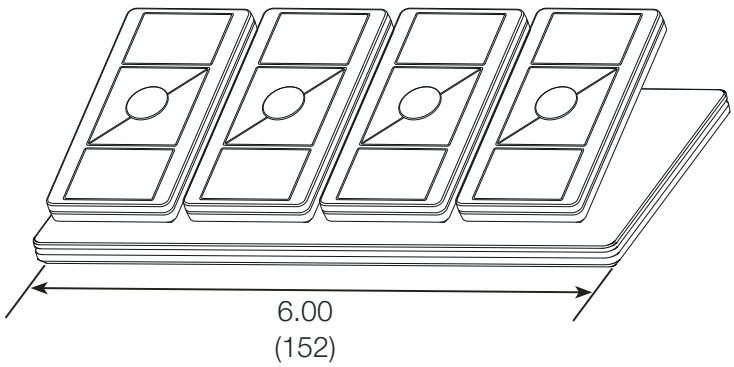
Triple Pedestal

Pedestals sold separately.



Quadruple Pedestal

Pedestals sold separately.



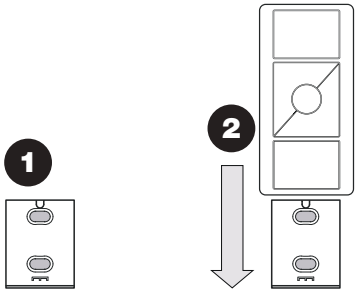
LUTRON® SPECIFICATION SUBMITTAL Page:

Job Name:	Model Numbers:
Job Number:	

Mounting Options

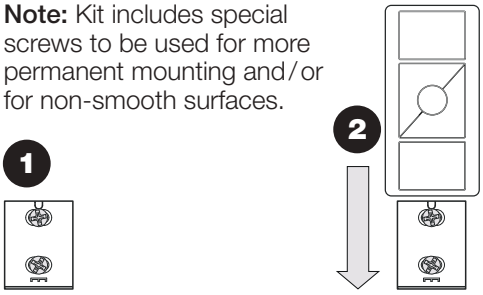
Stand Alone Mounting

Adhesive Mount
(included with Pico® Wireless Control with nightlight)



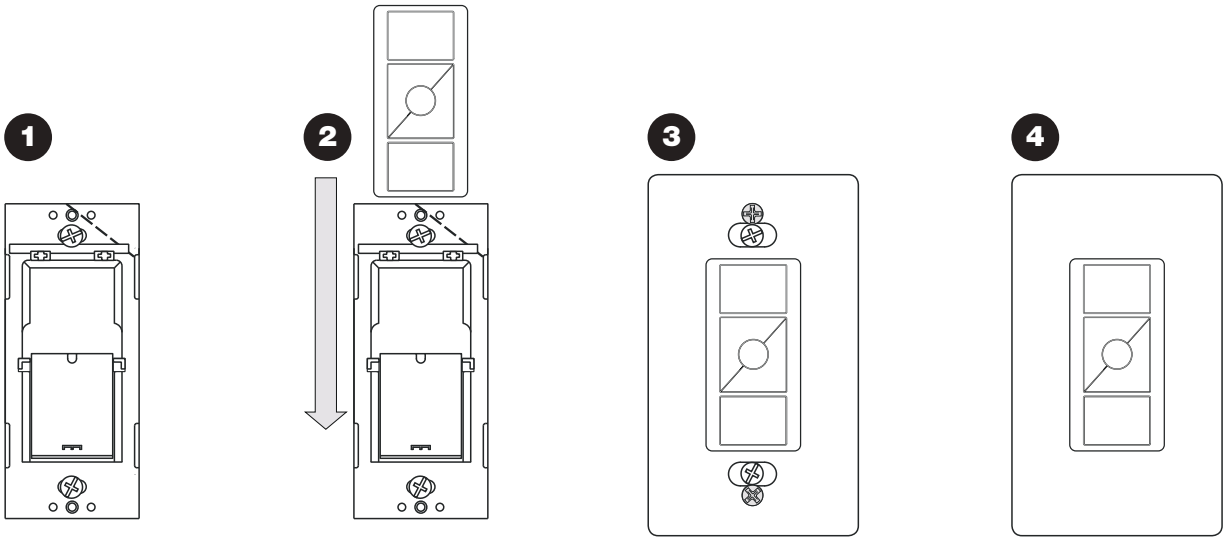
Screw Mount (sold separately)
Model PICO-SM-KIT

Note: Kit includes special screws to be used for more permanent mounting and/or for non-smooth surfaces.



Wallplate Adapter

Model PICO-WBX-ADAPT
(sold separately)



*Wallplate adapter/wallplate sold separately

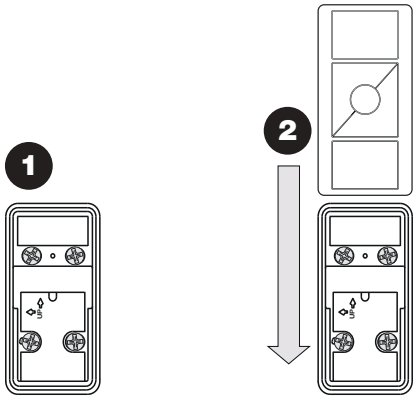
Continued on next page...

Job Name:	Model Numbers:
Job Number:	

Mounting Options (continued)

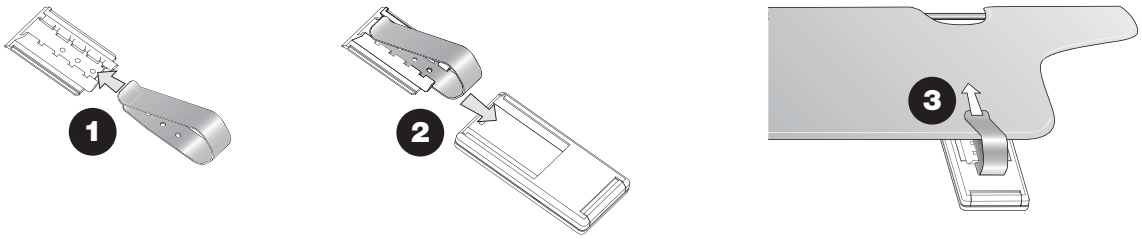
Mounting to Metal Surfaces

Coming Soon (sold separately)



Car Visor

Model PICO-CARVISOR-CL (sold separately)



Job Name:	Model Numbers:
Job Number:	

HomeWorks® QS RF Hybrid seeTouch® Keypads

HomeWorks® QS RF Hybrid Keypads function as a dimmer and keypad combined into a single device. RF Hybrid Keypads are great for retrofit applications since they eliminate the need to install two separate devices.

HomeWorks® QS RF Hybrid Keypads have an available neutral wire terminal that allows them to be installed in either two-wire or neutral wire installations. Connecting the neutral wire to a Hybrid Keypad allows a lower minimum load to be used. Also, normal keypad operation will be available even if the lighting load is not installed or if the lamp is burned out. If a neutral wire is available in the wallbox it should be connected to the silver terminal on the Hybrid Keypad. If a neutral wire is not available and not desired, then the silver terminal should be tightened without any wires connected to it. RF Hybrid Keypads can be installed in either single location or multi-location (with Remote Dimmer) installations.

HomeWorks® QS RF Hybrid Keypads can be controlled as part of a lighting control system and incorporate advanced features such as fade on/fade off and rapid full on.

HomeWorks® QS RF Hybrid Keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes them readable any time of the day or night. The Hybrid Keypad buttons are rounded, allowing engraving to be displayed at an upward angle, increasing readability. HomeWorks® QS RF Hybrid Keypads include a Front Accessible Service Switch (FASS™) for safe lamp replacement.

Use only Lutron® Designer (Claro® or Satin Colors®) wallplates. The mechanical design of the keypad is ONLY compatible with Lutron® wallplates and is NOT compatible with any other manufacturer's wallplate. Wallplates are sold separately. Lutron® Claro® and Satin Colors® wallplates snap on with no visible means of attachment. Replacement Kits are available in a variety of colors and with custom engraving to clearly identify each button's function.

Hybrid Keypads

HQRD-H1RLD

HQRD-H2RLD

HQRD-H3BSRL

HQRD-H4S

HQRD-H5BRL

HQRD-H6BRL

Remote Dimmer

HQD-RD

Model Numbers

HQRD-H1RLD-XX[1]	Dual Group with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent/Halogen/Magnetic Low-Voltage)
RKD-H1RLD-XX[1]-E	Engraved Replacement Kit
HQRD-H2RLD-XX[1]	Dual Group with Dual Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent/Halogen/Magnetic Low-Voltage)
RKD-H2RLD-XX[1]-E	Engraved Replacement Kit
HQRD-H3BSRL-XX[1]	3 Button with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent/Halogen/Magnetic Low-Voltage)
RKD-H3BSRL-XX[1]-E	Engraved Replacement Kit
HQRD-H4S-XX[1]	4 Scene with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent/Halogen/Magnetic Low-Voltage)
RKD-H4S-XX[1]-E	Engraved Replacement Kit
HQRD-H5BRL-XX[1]	5 Button with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent/Halogen/Magnetic Low-Voltage)
RKD-H5BRL-XX[1]-E	Engraved Replacement Kit
HQRD-H6BRL-XX[1]	6 Button with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent/Halogen/Magnetic Low-Voltage)
RKD-H6BRL-XX[1]-E	Engraved Replacement Kit
HQD-RD-XX[1]	Remote Dimmer for multi-location installations

[1] "XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document

HomeWorks® QS RF Hybrid seeTouch® Keypads

Specifications

Model Numbers	Keypads: HQRD-H1RLD-XX, HQRD-H2RLD-XX, HQRD-H3BSRL-XX, HQRD-H4S-XX, HQRD-H5BRL-XX, HQRD-H6BRL-XX, Engraved Replacement Kit: RKD-H1RLD-XX-E, RKD-H2RLD-XX-E, RKD-H3BSRL-XX-E, RKD-H4S-XX-E, RKD-H5BRL-XX-E, RKD-H6BRL-XX-E Remote Dimmer: HQD-RD-XX
Power	120 V~ 50/60 Hz
Typical Power Consumption	0.75 W Test conditions: load is off, all backlights on medium intensity, two status LEDs on (two presets active), keypad powered at 120 V~.
Regulatory Approvals	UL, CSA, NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Hybrid Keypads communicate with the HomeWorks® QS system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater. Remote dimmers are not required to be within a specific range of a repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the control will return to its previous state when power is restored.
Mounting	Requires a U.S. wallbox. 3½ in (89 mm) deep recommended, 2¼ in (57 mm) deep minimum. If mounting one control above another, leave at least 4½ in (114 mm) vertical space between them.
Wiring	Uses conventional 3-way and 4-way wiring.
Warranty	8 Year Limited Warranty. http://www.lutron.com/resiinfo

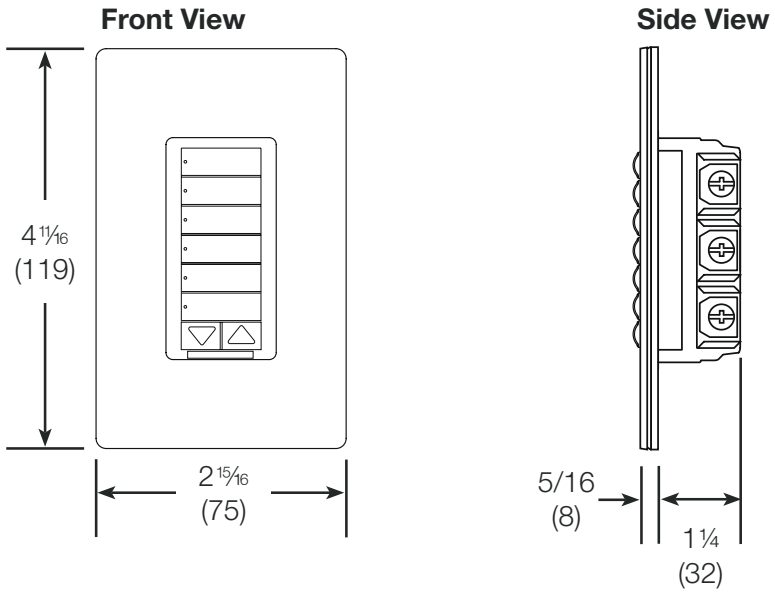
Design Features

- Keypad buttons are programmable to select scene or room preset levels or positions.
- At the press of a keypad button, lights fade ON or OFF to desired levels and shades/draperies open or close to desired positions.
- Adjustable backlight intensity.
- Prepaid engraving included. Redeemable for one engraved Replacement Kit.
- Internal dimmer is assigned to top button by default, but can be reassigned to any button on the Hybrid Keypad. Tap top button to toggle load ON/OFF.
- Internal dimmer can be assigned to any programmable input.
- Can be installed in two-wire or neutral wire applications.
- Can be installed in either single location or multi-location (with Remote Dimmer) installations.

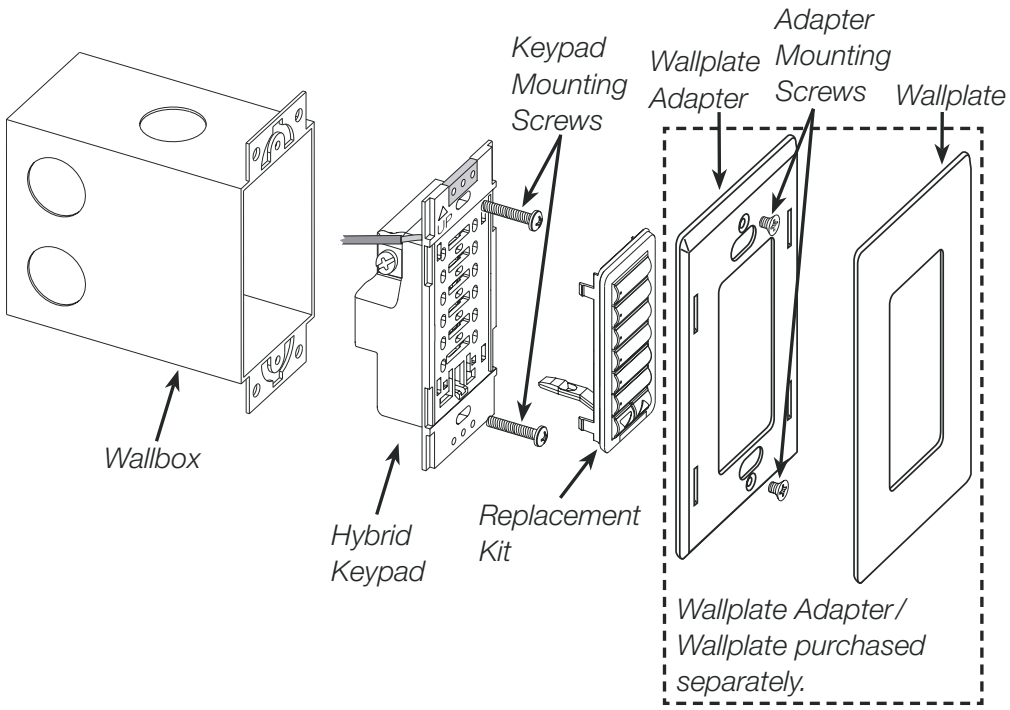
HomeWorks® QS RF Hybrid seeTouch® Keypads

Dimensions

All dimensions are shown as in (mm)



Mounting and Parts Identification



HomeWorks® QS RF Hybrid seeTouch® Keypads

Load Type and Capacity

Load Type	Minimum Load		Not Ganged	End of Gang	Middle of Gang
	With Neutral	Without Neutral			
Incandescent[1]	15 W	50 W	450 W	350 W	250 W
MLV[2]	15 W/VA	50 W/VA	350 W/ 450 VA	250 W/ 350 VA	200 W/ 250 VA

1 Load Type: RF Hybrid Keypads are designed for use with permanently installed incandescent, magnetic low-voltage, or tungsten halogen only. To reduce the risk of overheating and possible damage to other equipment, do not install RF Hybrid Keypads to control receptacles or motor-operated appliances.

2 Low-Voltage Applications: Use RF Hybrid Keypads with magnetic (core and coil) low-voltage transformers only. Not for use with electronic (solid-state) low-voltage transformers. Operation of a low-voltage circuit with lamps inoperative or removed may result in transformer overheating and premature failure. Lutron strongly recommends the following:

- Do not operate low-voltage circuits without operative lamps in place.
- Replace burned-out lamps as quickly as possible.
- Use transformers that incorporate thermal protection or fused transformer primary windings to prevent transformer failure due to overcurrent.

Compatible Power Boosters and Load Interfaces

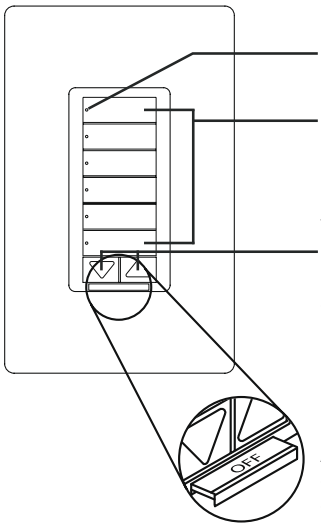
Some local controls can be used to control power boosters or load interfaces. Up to three power boosters or load interfaces can be used with one control. See table below for a list of compatible power boosters and load interfaces.

Control	Phase Adaptive Power Modules (PHPM-PA-120-WH & PHPM-PA-DV-WH)	3-wire Fluorescent Power Modules (PHPM-3F-120-WH & PHPM-3F-DV-WH)	Switched Power Module (PHPM-SW-DV-WH)	0-10 V Interface and Switching Module (GRX-TVI)
HQRD-H1RLD HQRD-H2RLD HQRD-H3BSRL HQRD-H4S HQRD-H5BRL HQRD-H6BRL	✓	✓	✓	✓

HomeWorks® QS RF Hybrid seeTouch® Keypads

Operation

Hybrid Keypad



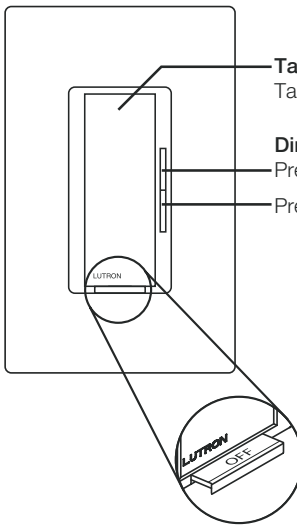
Status LEDs
Show which button has been activated.

Keypad Buttons
Press to activate desired levels of lighting or positions of shades/draperies.
By default, the internal dimmer is controlled by the top keypad button. Tap to toggle load ON/OFF.

Raise/Lower Buttons
Lights increase/decrease in intensity and shades/draperies raise/lower.

FASS™
Front
Accessible
Service
Switch

Remote Dimmer



Tapswitch
Tap on/off

Dimming Rocker
Press to brighten

Press to dim

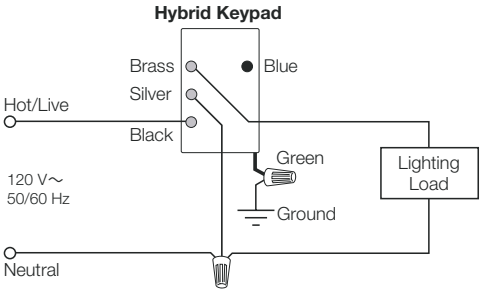
FASS™
Front
Accessible
Service
Switch

IMPORTANT NOTICE:
FASS™ – Front Accessible Service Switch
To replace bulbs, remove power by pulling the FASS™ out fully on all controlling devices. After replacing bulbs, push every FASS™ back in fully to restore power to the controls.

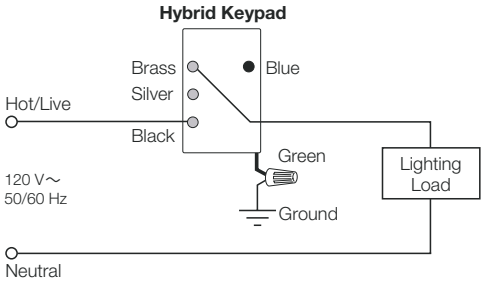
HomeWorks® QS RF Hybrid seeTouch® Keypads

Wiring Diagrams

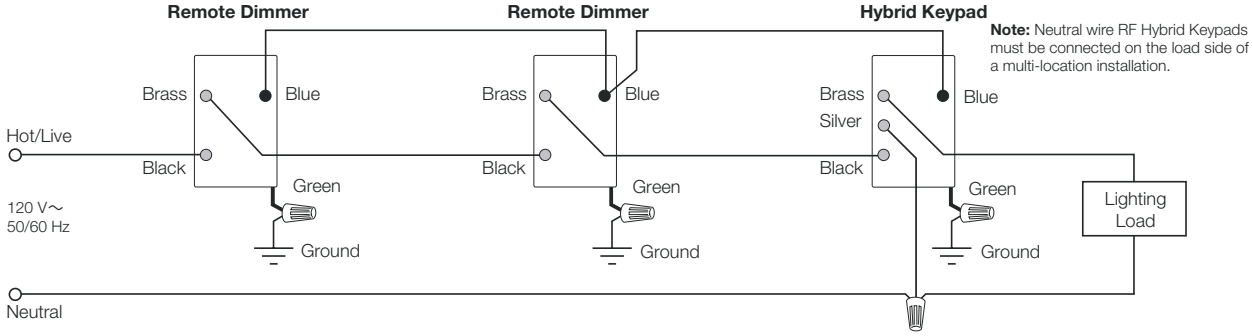
Single Location Installation with Neutral [1]



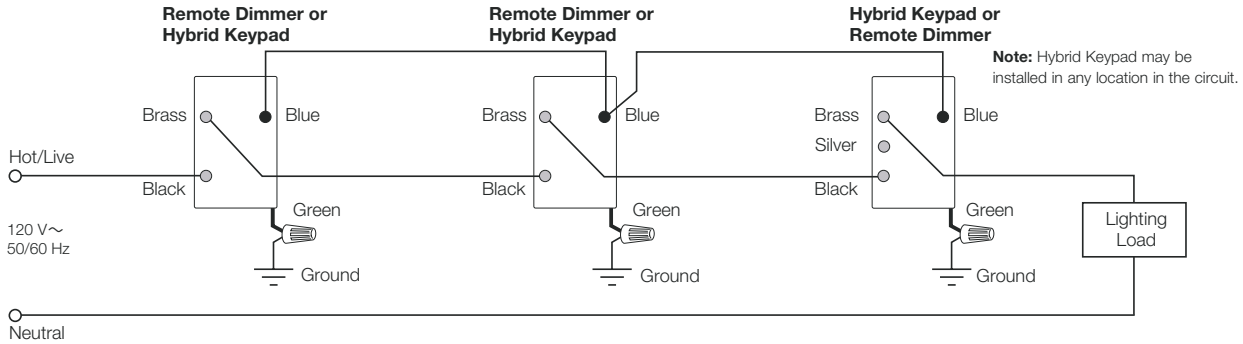
Single Location Installation without Neutral [1, 2]



Multi-Location Installation with Neutral [3, 4]



Multi-Location Installation without Neutral [2, 3]



1 When using controls in single location installations, tighten the blue terminal without any wires attached. DO NOT connect the blue terminal to any other wiring or to ground.

2 In installations without a neutral wire connection, tighten the silver terminal without any wires attached. DO NOT connect the silver terminal to any other wiring or to ground.

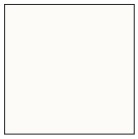
3 Up to 9 Remote Dimmers may be connected to the Hybrid Keypad. Total blue terminal wire length may be up to 250 ft (76 m).

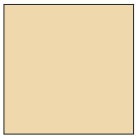
4 Neutral wire RF Hybrid Keypads must be connected on the load side of a multi-location installation.

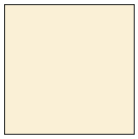
HomeWorks® QS RF Hybrid seeTouch® Keypads

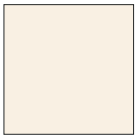
Colors and Finishes

Gloss Finishes


White
WH


Ivory
IV


Almond
AL


Light Almond
LA


Gray
GR


Brown
BR

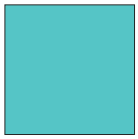

Black
BL

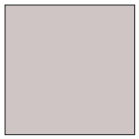
Satin Finishes

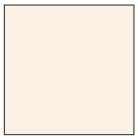

Hot
HT

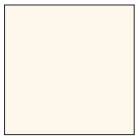

Merlot
MR

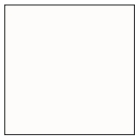

Plum
PL

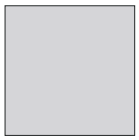

Turquoise
TQ


Taupe
TP


Eggshell
ES


Biscuit
BI


Snow
SW


Palladium
PD


Midnight
MN


Sienna
SI


Terracotta
TC


Greenbriar
GB


Bluestone
BG


Mocha Stone
MS


Goldstone
GS


Desert Stone
DS


Stone
ST


Limestone
LS

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:
  Gloss Finishes - DG-CK-1
  Satin Finishes - SC-CK-1

Metal Finish (wallplate only)


Stainless Steel SS

When using Stainless Steel wallplates, it is recommended to order the keypad in Midnight (MN).

HomeWorks® QS Architectural RF Hybrid seeTouch® Keypads

HomeWorks® QS RF Hybrid Keypads function as a dimmer and keypad combined into a single device. RF Hybrid Keypads are great for retrofit applications since they eliminate the need to install two separate devices.

HomeWorks® QS RF Hybrid Keypads have an available neutral wire terminal that allows them to be installed in either two-wire or neutral wire installations. Connecting the neutral wire to a Hybrid Keypad allows a lower minimum load to be used. Also, normal keypad operation will be available even if the lighting load is not installed or if the lamp is burned out. If a neutral wire is available in the wallbox it should be connected to the silver terminal on the Hybrid Keypad. If a neutral wire is not available and not desired, then the silver terminal should be tightened without any wires connected to it. RF Hybrid Keypads can be installed in either single location or multi-location (with Remote Dimmer) installations.

HomeWorks® QS RF Hybrid Keypads can be controlled as part of a lighting control system and incorporate advanced features such as fade on/fade off and rapid full on.

HomeWorks® QS RF Hybrid Keypads feature large, easy-to-use buttons, plus a unique backlit engraving option that makes them readable any time of the day or night. The Hybrid Keypad buttons are rounded, allowing engraving to be displayed at an upward angle, increasing readability. HomeWorks® QS RF Hybrid Keypads include a Front Accessible Service Switch (FASS™) for safe lamp replacement.

Use only Lutron® Nova T☆® wallplates. The mechanical design of the keypad is ONLY compatible with Lutron® wallplates and is NOT compatible with any other manufacturer's wallplate. Wallplates are sold separately. Lutron® Nova T☆® wallplates snap on with no visible means of attachment. Replacement Kits are available in a variety of colors and with custom engraving to clearly identify each button's function.

Hybrid Keypads

HQRA-H1RLD

HQRA-H2RLD

HQRA-H3BSRL

HQRA-H4S

HQRA-H5BRL

HQRA-H6BRL

Remote Dimmer

HQA-RD

HomeWorks® QS Architectural RF Hybrid seeTouch® Keypads

Model Numbers

HQRA-H1RLD-XX[1]	Dual Group with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent / Halogen / Magnetic Low-Voltage)
RKA-H1RLD-XX[1]	Replacement Kit[2]
HQRA-H2RLD-XX[1]	Dual Group with Dual Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent / Halogen / Magnetic Low-Voltage)
RKA-H2RLD-XX[1]	Replacement Kit[2]
HQRA-H3BSRL-XX[1]	3 Button with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent / Halogen / Magnetic Low-Voltage)
RKA-H3BSRL-XX[1]	Replacement Kit[2]
HQRA-H4S-XX[1]	4 Scene with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent / Halogen / Magnetic Low-Voltage)
RKA-H4S-XX[1]	Replacement Kit[2]
HQRA-H5BRL-XX[1]	5 Button with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent / Halogen / Magnetic Low-Voltage)
RKA-H5BRL-XX[1]	Replacement Kit[2]
HQRA-H6BRL-XX[1]	6 Button with Raise/Lower Keypad and 450 W Neutral Optional Dimmer (Incandescent / Halogen / Magnetic Low-Voltage)
RKA-H6BRL-XX[1]	Replacement Kit[2]
HQA-RD-XX[1]	Remote Dimmer for multi-location installations

[1] "XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document.
[2] To order an engraved Replacement Kit, add "-E" to the end of the model number.

Design Features

- Keypad buttons are programmable to select scene or room preset levels or positions.
- At the press of a keypad button, lights fade ON or OFF to desired levels and shades/draperies open or close to desired positions.
- Adjustable backlight intensity.
- Prepaid engraving included. Redeemable for one engraved Replacement Kit.
- Internal dimmer is assigned to top button by default, but can be reassigned to any button on the Hybrid Keypad. Tap top button to toggle load ON / OFF.
- Internal dimmer can be assigned to any programmable input.
- Can be installed in two-wire or neutral wire applications.
- Can be installed in either single location or multi-location (with Remote Dimmer) installations.

HomeWorks® QS Architectural RF Hybrid seeTouch® Keypads

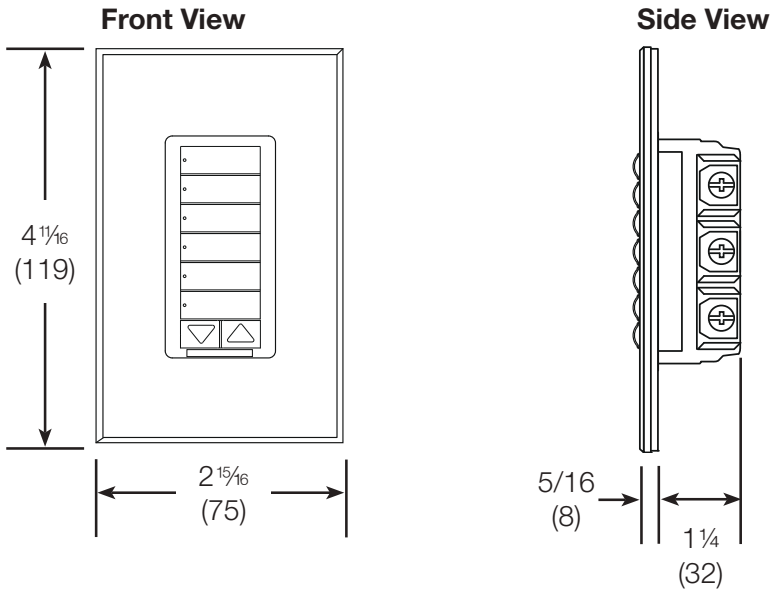
Specifications

Model Numbers	Keypads: HQRA-H1RLD-XX, HQRA-H2RLD-XX, HQRA-H3BSRL-XX, HQRA-H4S-XX, HQRA-H5BRL-XX, HQRA-H6BRL-XX, Replacement Kit: RKA-H1RLD-XX, RKA-H2RLD-XX, RKA-H3BSRL-XX, RKA-H4S-XX, RKA-H5BRL-XX, RKA-H6BRL-XX Remote Dimmer: HQA-RD-XX
Power	120 V~ 50/60 Hz
Typical Power Consumption	0.75 W Test conditions: load is off, all backlights on medium intensity, two status LEDs on (two presets active), keypad powered at 120 V~.
Regulatory Approvals	UL, CSA, NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Hybrid Keypads communicate with the HomeWorks® QS system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater. Remote dimmers are not required to be within a specific range of a repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the control will return to its previous state when power is restored.
Mounting	Requires a U.S. wallbox. 3½ in (89 mm) deep recommended, 2¼ in (57 mm) deep minimum. If mounting one control above another, leave at least 4½ in (114 mm) vertical space between them.
Wiring	Uses conventional 3-way and 4-way wiring.
Warranty	http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf

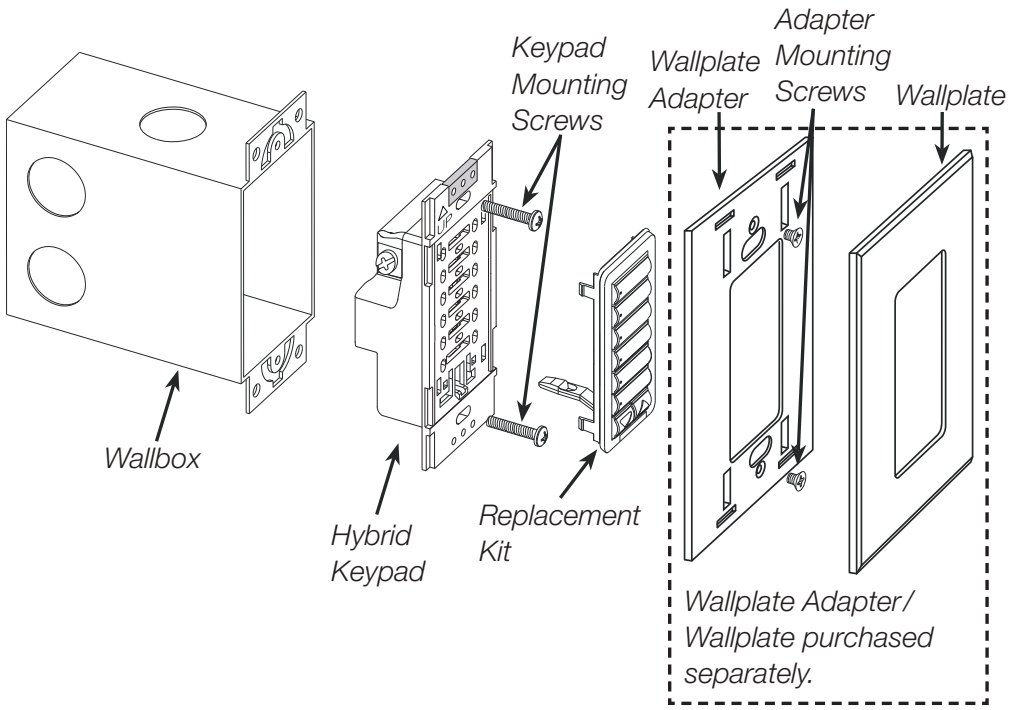
HomeWorks® QS Architectural RF Hybrid seeTouch® Keypads

Dimensions

All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$



Mounting and Parts Identification



HomeWorks® QS Architectural RF Hybrid seeTouch® Keypads

Load Type and Capacity

Load Type	Minimum Load		Not Ganged	End of Gang	Middle of Gang
	With Neutral	Without Neutral			
Incandescent[1]	15 W	50 W	450 W	350 W	250 W
MLV[2]	15 W/VA	50 W/VA	350 W/ 450 VA	250 W/ 350 VA	200 W/ 250 VA

1 Load Type: RF Hybrid Keypads are designed for use with permanently installed incandescent, magnetic low-voltage, or tungsten halogen only. To reduce the risk of overheating and possible damage to other equipment, do not install RF Hybrid Keypads to control receptacles or motor-operated appliances.

2 Low-Voltage Applications: Use RF Hybrid Keypads with magnetic (core and coil) low-voltage transformers only. Not for use with electronic (solid-state) low-voltage transformers. Operation of a low-voltage circuit with lamps inoperative or removed may result in transformer overheating and premature failure. Lutron strongly recommends the following:

- Do not operate low-voltage circuits without operative lamps in place.
- Replace burned-out lamps as quickly as possible.
- Use transformers that incorporate thermal protection or fused transformer primary windings to prevent transformer failure due to overcurrent.

Compatible Power Boosters and Load Interfaces

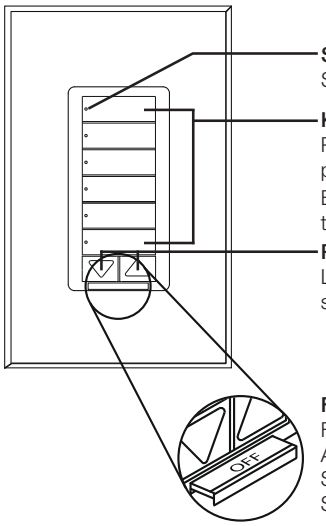
Some local controls can be used to control power boosters or load interfaces. Up to three power boosters or load interfaces can be used with one control. See table below for a list of compatible power boosters and load interfaces.

Control	Phase Adaptive Power Modules (PHPM-PA-120-WH & PHPM-PA-DV-WH)	3-wire Fluorescent Power Modules (PHPM-3F-120-WH & PHPM-3F-DV-WH)	Switched Power Module (PHPM-SW-DV-WH)	0-10 V Interface and Switching Module (GRX-TVI)
HQRA-H1RLD HQRA-H2RLD HQRA-H3BSRL HQRA-H4S HQRA-H5BRL HQRA-H6BRL	✓	✓	✓	✓

HomeWorks® QS Architectural RF Hybrid seeTouch® Keypads

Operation

Hybrid Keypad



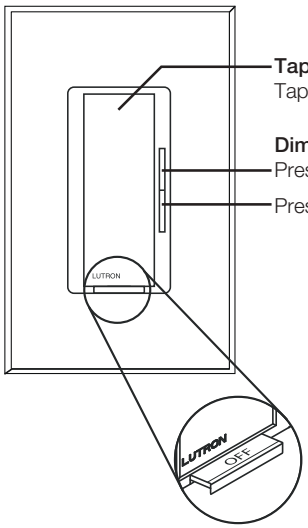
Status LEDs
Show which button has been activated.

Keypad Buttons
Press to activate desired levels of lighting or positions of shades/draperies.
By default, the internal dimmer is controlled by the top keypad button. Tap to toggle load ON/OFF.

Raise/Lower Buttons
Lights increase/decrease in intensity and shades/draperies raise/lower.

FASS™
Front Accessible Service Switch

Remote Dimmer



Tapswitch
Tap on/off

Dimming Rocker
Press to brighten

Press to dim

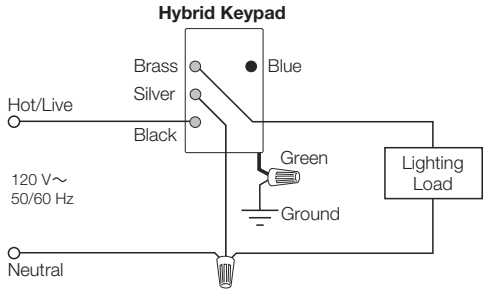
FASS™
Front Accessible Service Switch

IMPORTANT NOTICE:
FASS™ – Front Accessible Service Switch
To replace bulbs, remove power by pulling the FASS™ out fully on all controlling devices. After replacing bulbs, push every FASS™ back in fully to restore power to the controls.

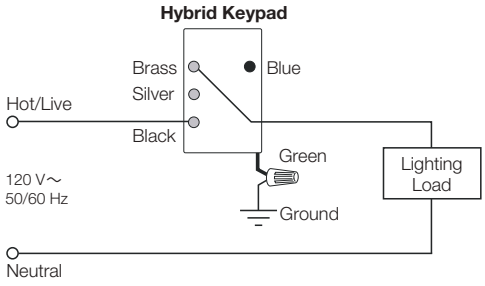
HomeWorks® QS Architectural RF Hybrid seeTouch® Keypads

Wiring Diagrams

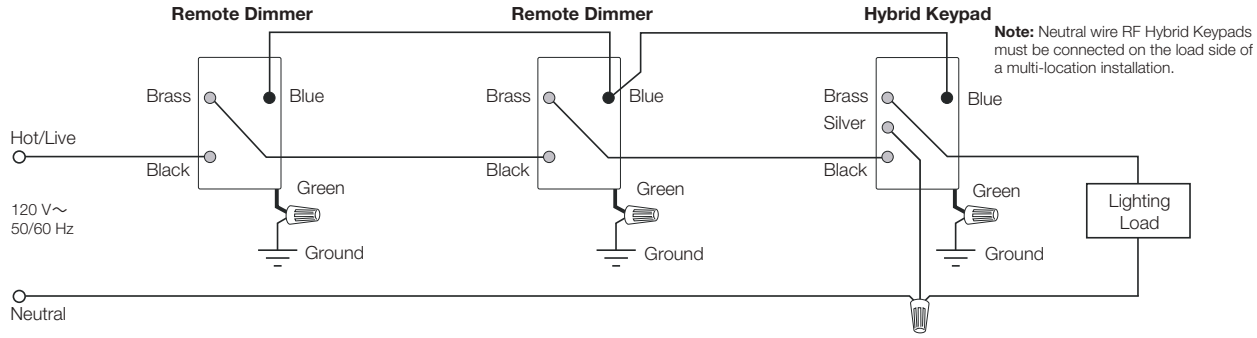
Single Location Installation with Neutral [1]



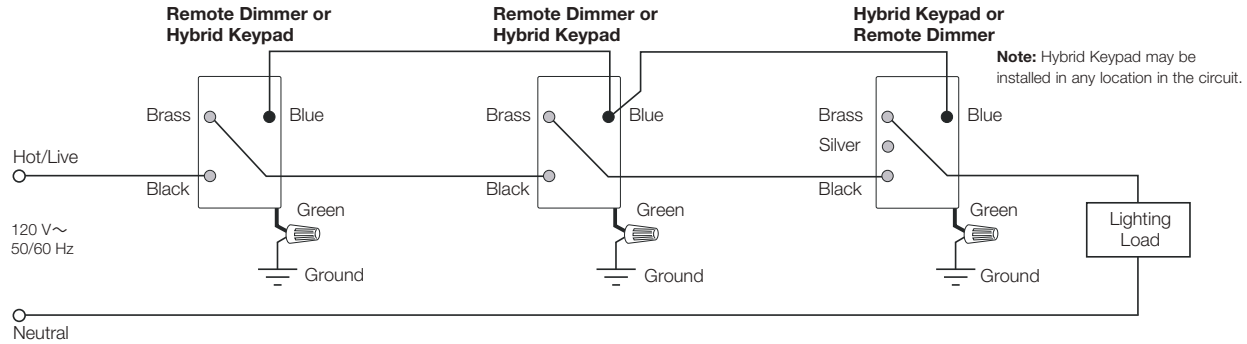
Single Location Installation without Neutral [1, 2]



Multi-Location Installation with Neutral [3, 4]



Multi-Location Installation without Neutral [2, 3]



1 When using controls in single location installations, tighten the blue terminal without any wires attached. DO NOT connect the blue terminal to any other wiring or to ground.

2 In installations without a neutral wire connection, tighten the silver terminal without any wires attached. DO NOT connect the silver terminal to any other wiring or to ground.

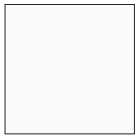
3 Up to 9 Remote Dimmers may be connected to the Hybrid Keypad. Total blue terminal wire length may be up to 250 ft (76 m).

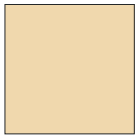
4 Neutral wire RF Hybrid Keypads must be connected on the load side of a multi-location installation.

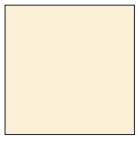
HomeWorks® QS Architectural RF Hybrid seeTouch® Keypads

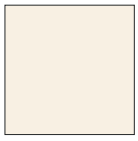
Colors and Finishes

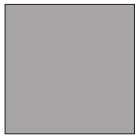
Architectural Matte Finishes


White
WH

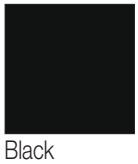

Ivory
IV

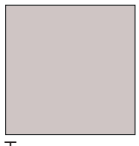

Almond
AL


Light Almond
LA

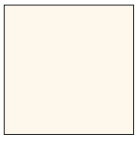

Gray
GR


Brown
BR


Black
BL

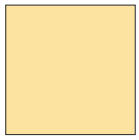

Taupe
TP

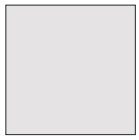

Sienna
SI


Beige
BE

Architectural Metal Finishes (wallplates only)


Satin Brass
SB


Bright Brass
BB


Bright Chrome
BC


Clear Anodized Aluminum
CLA


Black Anodized Aluminum
BLA

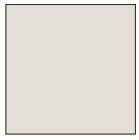

Brass Anodized Aluminum
BRA

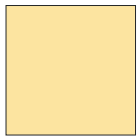

Antique Brass
QB


Antique Bronze
QZ


Satin Chrome
SC


Satin Nickel
SN


Bright Nickel
BN


Gold
AU

When ordering metal wallplates, it is recommended to order the keypad in Black (BL).

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:
  Architectural Matte Finishes- AM-CK-1
  Architectural Metal Finishes - AMTL-CK-1

Lutron® Comfort Controls

seeTemp™ Wall Display

Add Lutron® Comfort Controls to your light and shade/drapery systems for convenient control of all aspects of an environment—natural light, artificial light, and temperature—from the touch of a button. Lutron® Comfort Controls allow heating and cooling systems to integrate seamlessly with Lutron® systems and must be located within 30 ft (9 m) of an RF signal repeater.

The seeTemp™ Wall Display provides control of thermostat settings from a convenient location. Its sleek design blends in with the décor while the intuitive interface shows the current temperature and set point at a glance. System mode buttons are available and concealed by a door that opens 180 degrees for easy access.

Press the “eco” button on the seeTemp™ Wall Display to trim HVAC settings automatically. The “eco” button trim is controlled by RadioRA® 2 and HomeWorks® QS systems. Lutron® Comfort Controls can only be used in systems that are programmed using the PC Programming Tool.

LRD-WST-F-XX

LRA-WST-F-XX

LRD-WST-C-XX

LRA-WST-C-XX

Model Numbers

Designer:

LRD-WST-F-XX[1]	seeTemp™ Wall Display (°F)[2]
LRD-WST-C-XX[1]	seeTemp™ Wall Display (°C)[2]
RKD-WST-F-XX[1]	seeTemp™ Color Change Kit (°F)[2]
RKD-WST-C-XX[1]	seeTemp™ Color Change Kit (°C)[2]

Architechtural:

LRA-WST-F-XX[1]	seeTemp™ Wall Display (°F)[2]
LRA-WST-C-XX[1]	seeTemp™ Wall Display (°C)[2]
RKA-WST-F-XX[1]	seeTemp™ Color Change Kit (°F)[2]
RKA-WST-C-XX[1]	seeTemp™ Color Change Kit (°C)[2]

Packages:[3]

LR-HVAC-PKG-WH[4]

LR-HVAC-PKG-C-WH[4]

[1]”XX” in the model number represents color/finish code. See **Colors and Finishes** at end of document.

[2]Requires an HVAC Controller or TouchPRO Wireless™ Thermostat (not included).

[3]For more information regarding packages, refer to Lutron® P/N 369272.

[4]Available with Designer white wallplates only.

Lutron® Comfort Controls

seeTemp™ Wall Display

Specifications

Model Numbers	**Designer:** LRD-WST-F-XX, LRD-WST-C-XX, RKD-WST-F-XX, RKD-WST-C-XX **Architectural:** LRA-WST-F-XX, LRA-WST-C-XX, RKA-WST-F-XX, RKA-WST-C-XX **Packages:** LR-HVAC-PKG-WH, LR-HVAC-PKG-C-WH
Power	120 V~ 50/60 Hz or 24 V~ IEC PELV/NEC® Class 2
Typical Power Consumption	1 W (120 V~), 0.5 W (24 V~); Test conditions: all backlights on medium intensity, two LEDs on
Regulatory Approvals	UL, cUL, FCC, NOM, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Lutron® Comfort Controls communicate with the system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater. System devices operate on frequencies between 431.0 MHz and 437.0 MHz.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the seeTemp™ Wall Display will retain its programming when power is restored.
Mounting	120 V~ requires U.S. wallbox 3½ in (89 mm) deep recommended. 24 V~ can be used with Low-Voltage mounting bracket.
Wiring	120 V~ requires hot and neutral wiring; 24 V~ requires transformer common IEC PELV/NEC® Class 2, 22 AWG (0.5 mm^2) to 18 AWG (0.75 mm^2) solid wiring.
Warranty	For warranty information, please see the Warranty enclosed with the product, or visit: www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf Warranty only valid if installed by climate control specialist.

Design Features

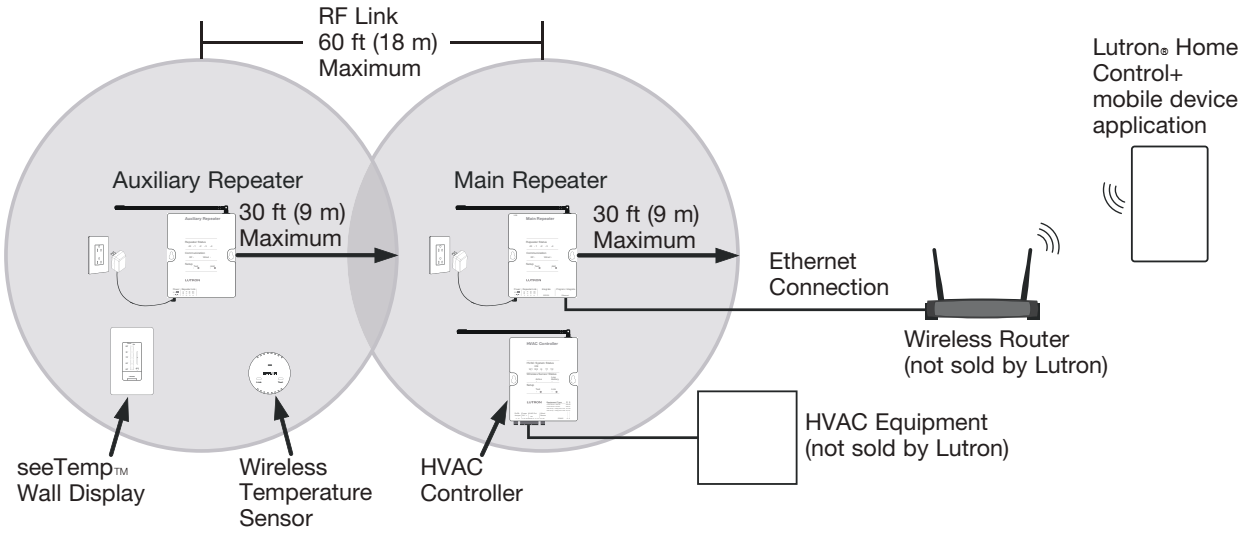
seeTemp™ Wall Display

- Designer or Architechtural style opening that can be ganged with other devices like dimmers and keypads.
- Installs in a standard wallbox for low-profile appearance.
- Celsius and Fahrenheit models available.
- Multiple seeTemp™ Wall Displays can be used to control 1 HVAC Controller or TouchPRO Wireless™ Thermostat from multiple locations.
- Pressing the “eco” button saves energy by trimming the temperature a programmed amount. Default is +/- 2 °F (1 °C).
- 120 V~ wiring requires hot and neutral wiring.
- 24 V~ wiring requires 24 V~ and common wiring from HVAC equipment transformer or other 24 V~ IEC PELV / NEC® Class 2 transformer.

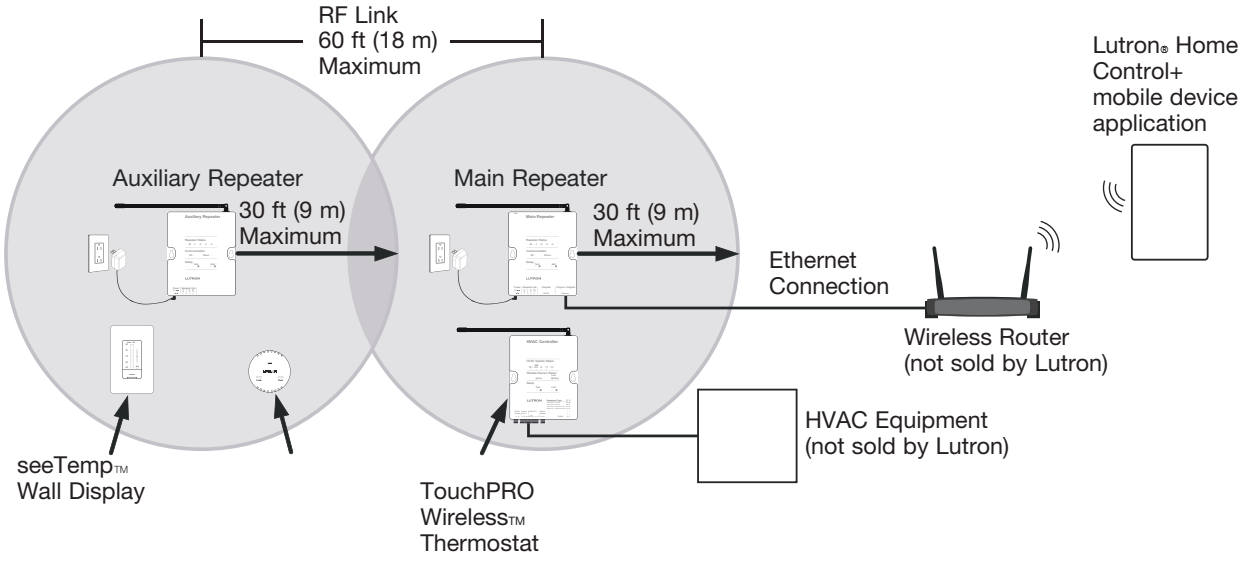
Lutron® Comfort Controls
seeTemp™ Wall Display

RadioRA® 2 System Examples

HVAC Controller



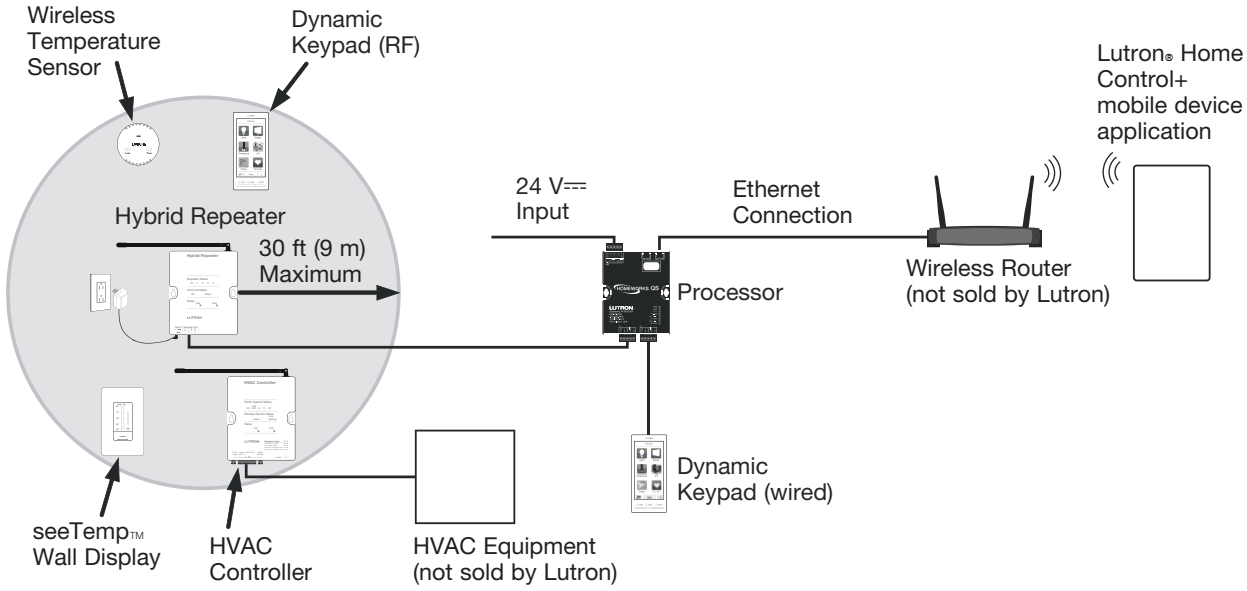
TouchPRO Wireless™ Thermostat



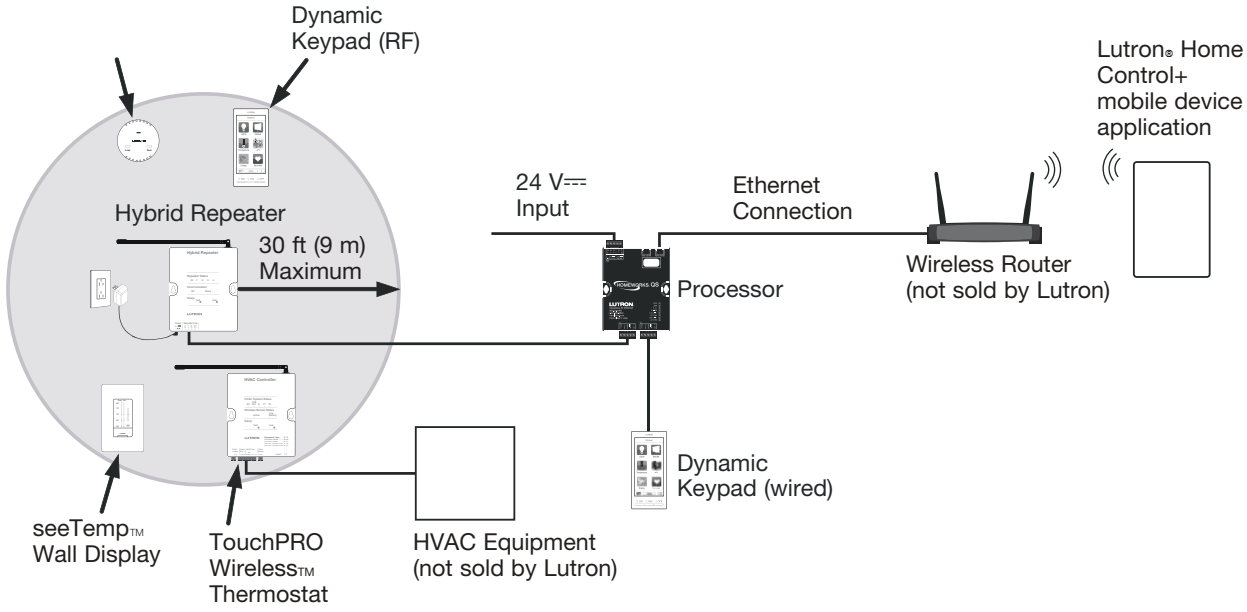
Lutron® Comfort Controls
seeTemp™ Wall Display

HomeWorks® QS System Examples

HVAC Controller



TouchPRO Wireless™ Thermostat



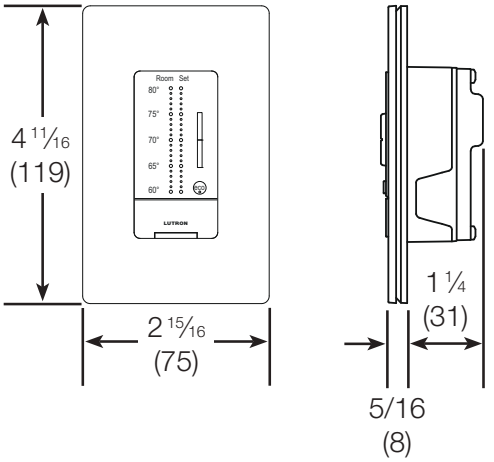
Lutron® Comfort Controls

seeTemp™ Wall Display

Dimensions

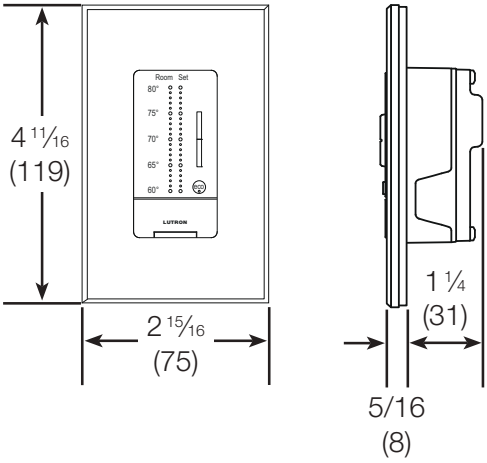
All dimensions are shown as in (mm) unless otherwise noted.

Front View **Side View**



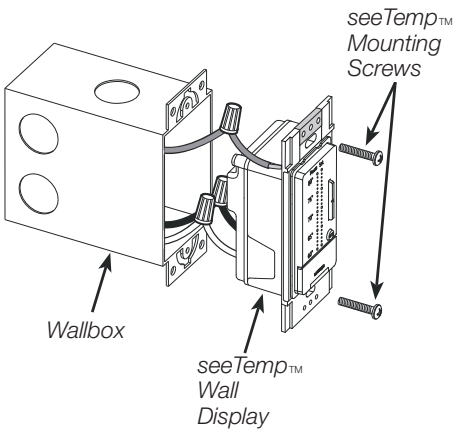
Designer Style Wallplate

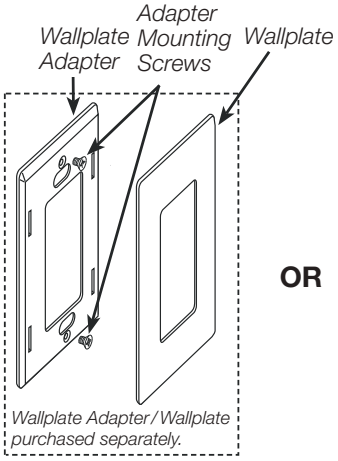
Front View **Side View**



Architectural Style Wallplate

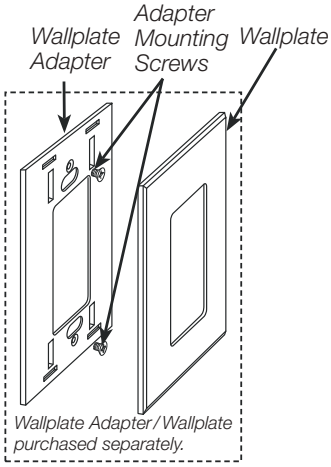
Mounting and Parts Identification





Designer Style Wallplate

OR

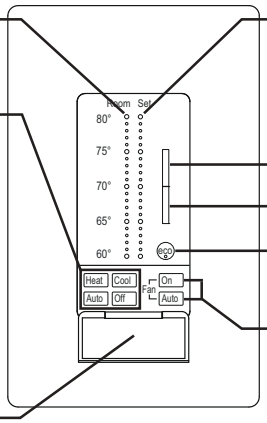


Architectural Style Wallplate

Note: 120 V~ installation shown

Lutron® Comfort Controls
seeTemp™ Wall Display

Operation



Room Temperature LEDs
Column of LEDs that display the current room temperature. Available in °F or °C.

System Buttons
Indicates the current system setting. When selected, buttons will light up according to the following:
Heat - Red
- Slow flash = actively heating
- Rapid flash = emergency heat

Cool - Blue
- Slow flash = actively cooling

Auto - Orange
Off - Orange

Flip-Down Door
Covers the System and Fan Buttons.

Set Temperature LEDs
Column of LEDs that display the current temperature set point. Set LED turns off when system is turned off.

Raise/Lower Rocker
Press to raise the Set temperature.

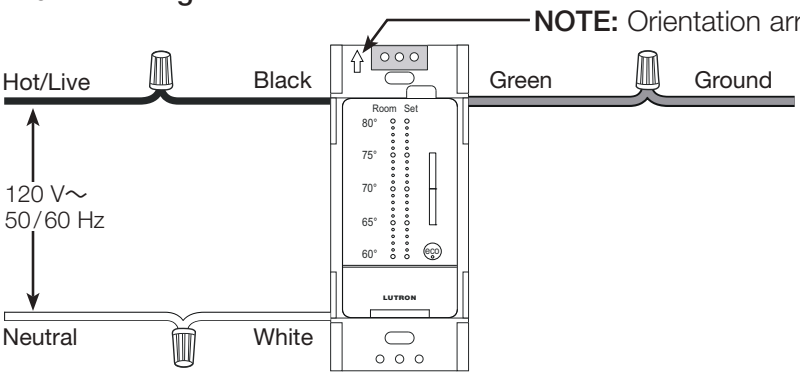
Press to lower the Set temperature.

eco Button
Press to toggle eco mode on/off.

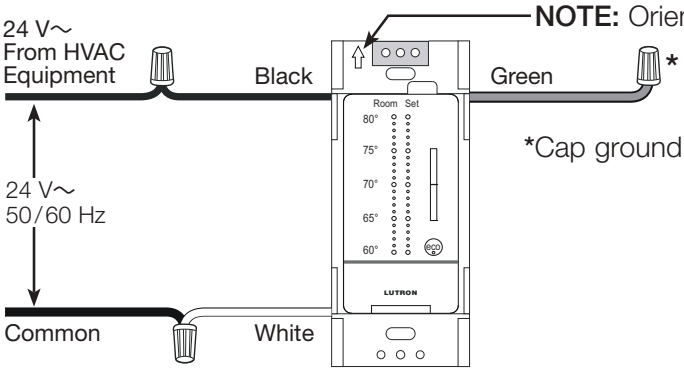
Fan Buttons
Indicates the current fan setting. Button will light up when selected.
On - Fan is constantly on.
Auto - Fan is on only when Heat/Cool is active.

Wiring Diagrams

120 V~ Wiring



24 V~ Wiring



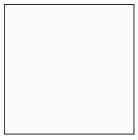
*Cap ground wire for 24 V~ wiring applications.

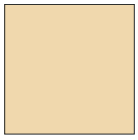
Lutron® Comfort Controls
seeTemp™ Wall Display

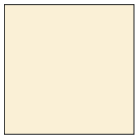
Colors and Finishes

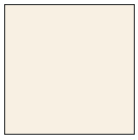
Designer Style

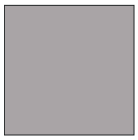
Gloss Finishes


White
WH


Ivory
IV


Almond
AL


Light
Almond
LA

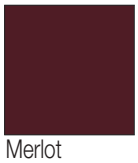

Gray
GR


Brown
BR


Black
BL

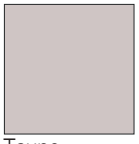
Satin Finishes

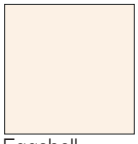

Hot
HT

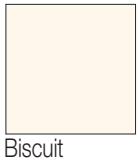

Merlot
MR


Plum
PL


Turquoise
TQ


Taupe
TP


Eggshell
ES


Biscuit
BI


Snow
SW


Palladium
PD


Midnight
MN


Sienna
SI


Terracotta
TC


Greenbriar
GB


Bluestone
BG


Mocha
Stone
MS


Goldstone
GS


Desert Stone
DS


Stone
ST


Limestone
LS

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

  Gloss Finishes- DG-CK-1
  Satin Finishes - SC-CK-1

Metal Finish (wallplate only)


Stainless
Steel SS

When using Stainless Steel wallplates, it is recommended to order the controls in Black (BL) or Midnight (MN).

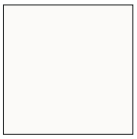
(continued on next page...)

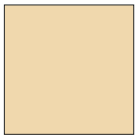
Lutron® Comfort Controls
seeTemp™ Wall Display

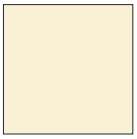
Colors and Finishes (continued)

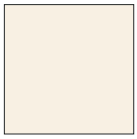
Architectural Style

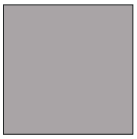
Architectural Matte Finishes


White
WH


Ivory
IV

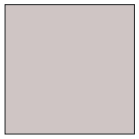

Almond
AL


Light Almond
LA

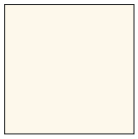

Gray
GR


Brown
BR


Black
BL

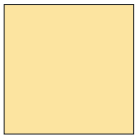

Taupe
TP

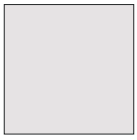

Sienna
SI


Beige
BE

Architectural Metal Finishes (wallplates only)


Satin Brass
SB


Bright Brass
BB


Bright Chrome
BC


Clear Anodized Aluminum
CLA


Black Anodized Aluminum
BLA

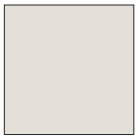

Brass Anodized Aluminum
BRA

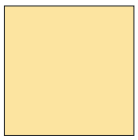

Antique Brass
QB


Antique Bronze
QZ


Satin Chrome
SC


Satin Nickel
SN


Bright Nickel
BN


Gold
AU

When ordering metal wallplates, it is recommended to order the control in Black (BL).

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

  Architectural Matte Finishes- AM-CK-1
  Architectural Metal Finishes - AMTL-CK-1

Lutron® Comfort Controls

TouchPRO Wireless™ Thermostat

TouchPRO Wireless™ Thermostat

Add Lutron® Comfort Controls to your light and shade/drapery systems for convenient control of all aspects of an environment—natural light, artificial light, and temperature—from the touch of a button. Lutron® Comfort Controls allow heating and cooling systems to integrate seamlessly with Lutron® systems and must be located within 30 ft (9 m) of an RF signal repeater.

The TouchPRO Wireless™ Thermostat is designed by Honeywell and utilizes Lutron® Clear Connect™ technology. The TouchPRO Wireless™ Thermostat installs like a conventional thermostat, and when used with a seeTemp™ Wall Display, it puts temperature control and measurement where it makes sense. In a RadioRA® 2 or HomeWorks® QS system, the TouchPRO Wireless™ Thermostat allows the ability to adjust heating and cooling systems any time of the day—even from your mobile device when you're away from home.

Press the "eco" button on the seeTemp™ Wall Display to trim HVAC settings automatically. The "eco" button trim is controlled by RadioRA® 2 and HomeWorks® QS systems. The TouchPRO Wireless™ Thermostat can only be used in systems that are programmed using the PC Programming Tool.

The TouchPRO Wireless™ Thermostat is easy to use and provides superior product quality and aesthetics.

Model Number

LR-HWLV-HVAC*	TouchPRO Wireless™ Thermostat

*Available in white.

Lutron® Comfort Controls

TouchPRO Wireless™ Thermostat

Specifications

Model Number	LR-HWLV-HVAC
Power	24 V⁓ IEC PELV / NEC® Class 2
Typical Power Consumption	820 mW Test conditions: 24 V⁓ input, backlight on full, four relays active.
Regulatory Approvals	FCC, IC, COFETEL
Environment	Ambient operating temperature: 0 ºF to 120 ºF (-18 ºC to 49 ºC), 5% to 90% humidity, non-condensing. Indoor use only.
Communications	TouchPRO Wireless™ Thermostat communicates with the system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater. System devices operate on frequencies between 431.0 MHz and 437.0 MHz.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the TouchPRO Wireless™ Thermostat will retain its programming when power is restored.
Mounting	Mount on a wall using conventional thermostat mounting methods.
Wiring	IEC PELV / NEC® Class 2, 22 AWG (0.5 mm^2) to 18 AWG (0.75 mm^2) solid wiring. Requires transformer common connection or accessory converter (included).
Warranty	For warranty information, please see the Warranty enclosed with the product, or visit www.lutron.com/resiinfo Warranty only valid if installed by a properly trained climate control specialist.

Lutron® Comfort Controls
TouchPRO Wireless™ Thermostat

Design Features

TouchPRO Wireless™ Thermostat

- Wires to HVAC equipment.
- Uses RF to communicate with seeTemp™ Wall Displays, and other Lutron® wireless devices.
- Requires 24 V⁓ common connection from the HVAC equipment or use of the included wiring module. The wiring module can be mounted easily on or near HVAC equipment and is to be used when a 24 V⁓ common connection is not available. For more information, refer to the instructions included with the wiring module.

seeTemp™ Wall Display

- Designer style opening that can be ganged with other devices like dimmers and keypads.
- Installs in a standard wallbox for low-profile appearance.
- Celsius and Fahrenheit models available.
- Multiple seeTemp™ Wall Displays can be used to control one TouchPRO Wireless™ Thermostat from multiple locations.
- Pressing the “eco” button saves energy by trimming the temperature a programmed amount. Default is +/- 2 °F (1 °C).
- 120 V⁓ wiring requires hot and neutral wiring.
- 24 V⁓ wiring requires 24 V⁓ and common wiring from HVAC equipment transformer or other 24 V⁓ IEC PELV / NEC® Class 2 transformer.

Lutron® System Features

- 7-day programmable schedule.
- Select alternate set points to save energy when on vacation or away from home.
- System features are programmed in the PC tool.

Control from Dynamic Keypads in HomeWorks® QS systems

- Control temperature from Dynamic Keypads.
- The Dynamic Keypad provides full control of multiple TouchPRO Wireless™ Thermostats from a single location without the need for seeTemp™ Wall Displays.
- Multiple Dynamic Keypads can be used to control one TouchPRO Wireless™ Thermostat from multiple locations.

Control from Mobile Devices

- Control temperature from Lutron® Home Control+ mobile device applications.
- Set and edit up to seven different daily schedules from your mobile device.

Lutron® Comfort Controls

TouchPRO Wireless™ Thermostat

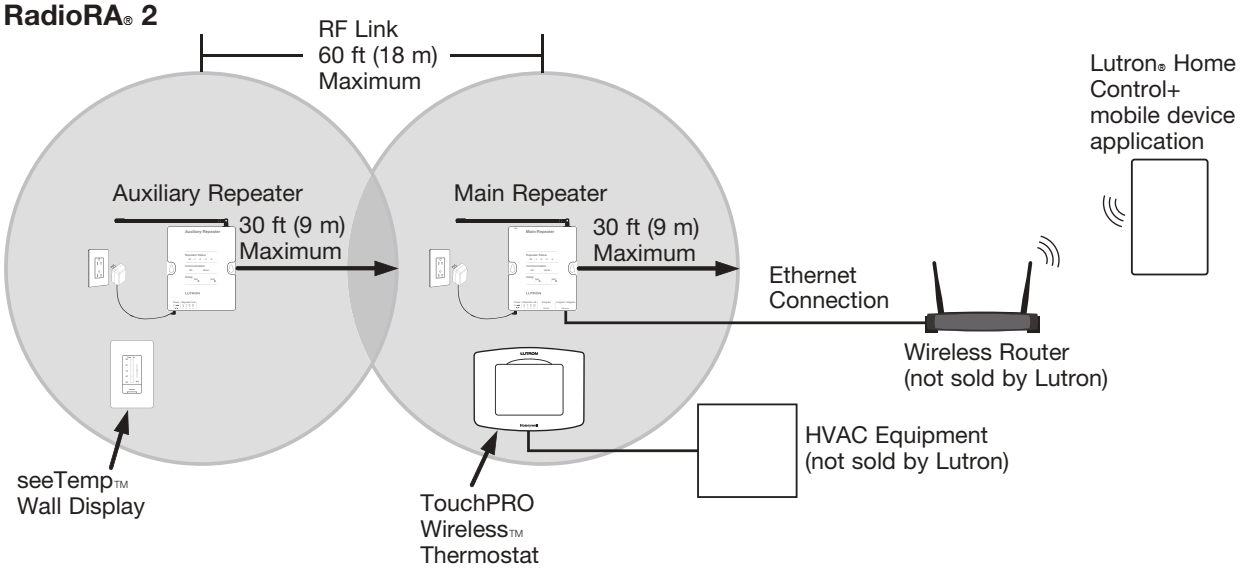
Compatibility

HVAC Type	Compatible?
Single Stage Cool	Yes
Two Stage Cool	Yes
Single Stage Heat	Yes
Two Stage Heat	Yes
Packaged Roof Top Units	Yes
Heat Pump	Yes
Dual Fuel Systems	Yes
Geothermal Heat Pump	Yes
Heat Pump with Auxiliary Electric (Emergency) Heat	Yes
Typical Variable Speed Fan (Equipment Controlled)	Yes
Multi-Zone Systems (Controllable Dampers)	Yes - Requires a separate Zone Controller (not sold by Lutron)
In-Floor Radiant Heat	Yes
Line Voltage Electric Baseboard	No
Mili-Volt System	No
Proprietary/Digital Control systems	No
Variable Speed Fan (Independent Relays)	No
Humidity Control	No
Humidity Sensing	No
Outdoor Temperature Sensing	Yes
VAV/VRV Systems	No

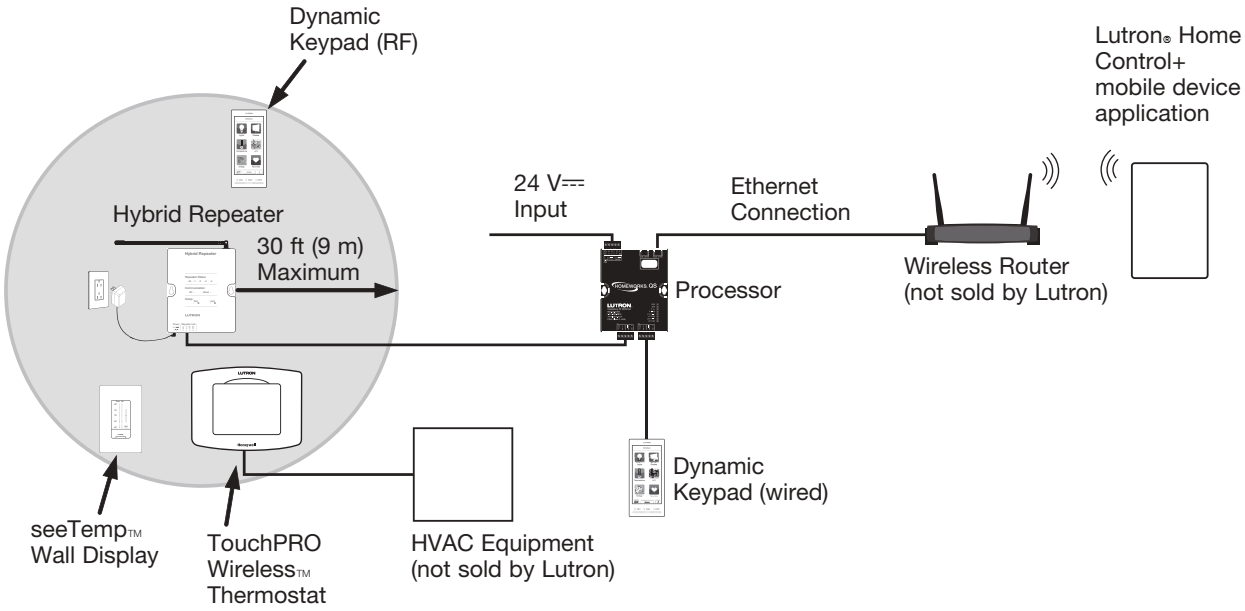
Lutron® Comfort Controls
TouchPRO Wireless™ Thermostat

System Examples

RadioRA® 2



HomeWorks® QS



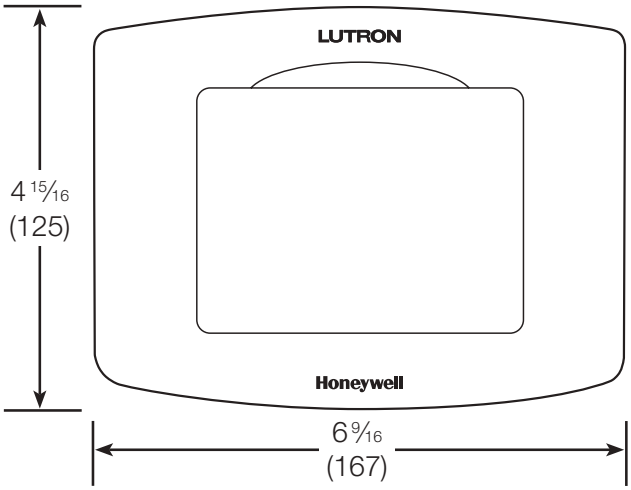
Lutron® Comfort Controls

TouchPRO Wireless™ Thermostat

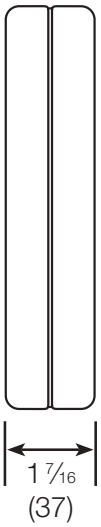
Dimensions

All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$ unless otherwise noted.

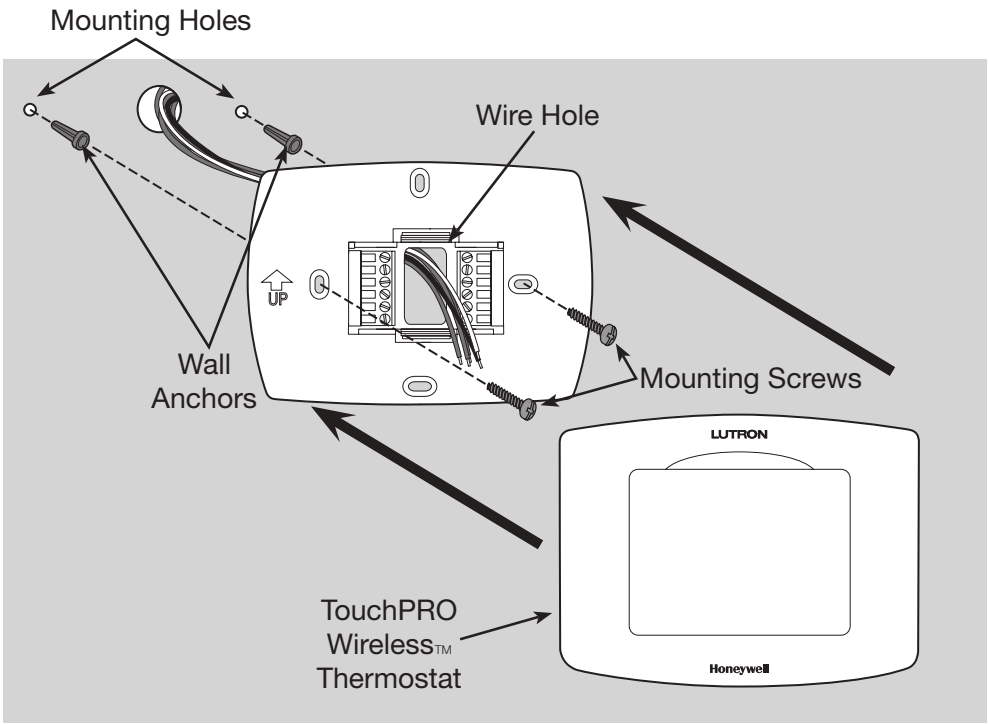
Front View



Side View

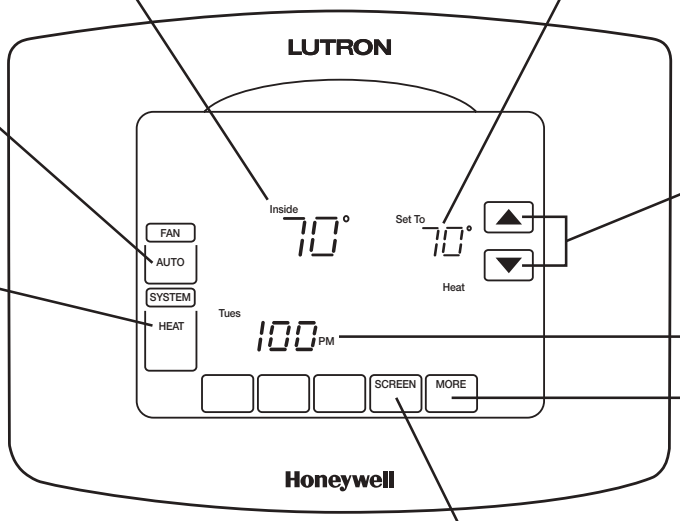


Mounting and Parts Identification



Lutron® Comfort Controls
TouchPRO Wireless™ Thermostat

Operation



Current Inside Temperature

Temperature Setting

Fan Setting Button
Press to select fan operation.

On - Fan is always on.

Auto - Fan runs only when the heating or cooling system is on.

System Setting Button
Press to select system type.

Heat - Thermostat only controls the heating system.

Cool - Thermostat only controls the cooling system.

Off - Heating and cooling systems are off.

Auto - Thermostat automatically selects heating or cooling depending on indoor temperature.

Em Heat - Thermostat controls emergency and auxiliary heat (only for heat pumps with auxiliary heat).

Temperature Adjust Buttons
Press to adjust temperature settings.

Current Time

More Button

Before addressing to a Lutron® system - Press the MORE button to view the wireless connection screen.

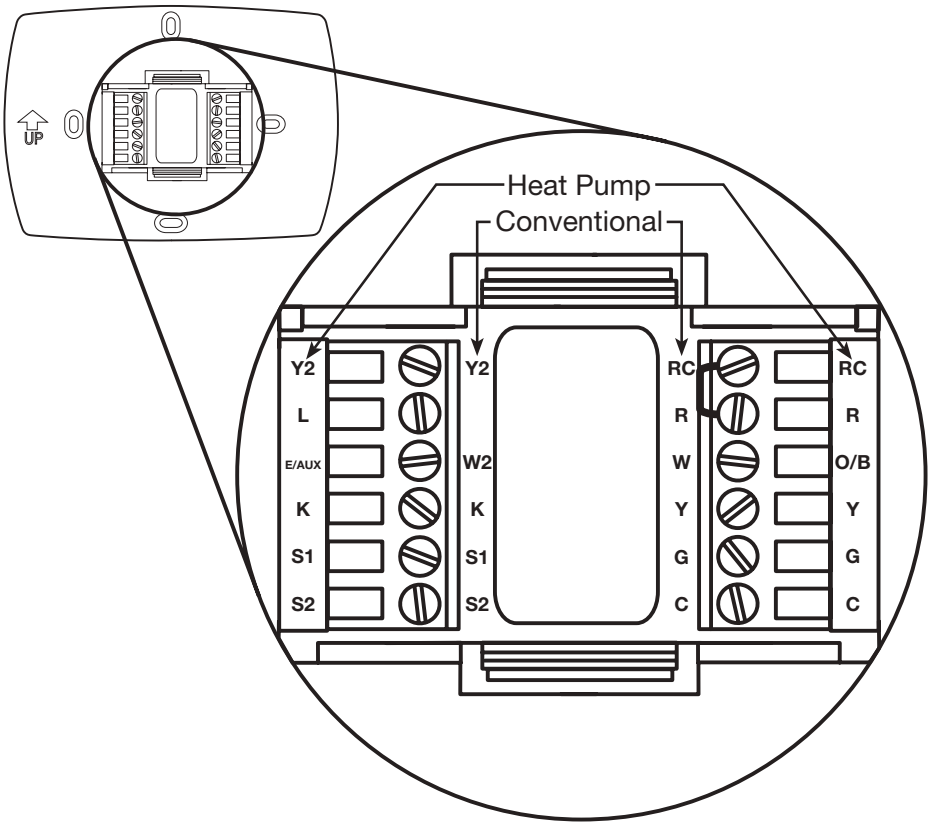
Also, the MORE button can be programmed to cycle through the replacement schedules for the filter pad, UV lamp, and humidity pad.

Screen Cleaning Button
Press to lock thermostat keypad for 30 seconds to clean screen.

Lutron® Comfort Controls

TouchPRO Wireless™ Thermostat

Terminal Designations



Terminal	Description
R	Heating power. Connect to secondary side of heating system transformer.
Rc	Cooling power. Connect to secondary side of cooling system transformer.
C	Required common wire from secondary side of cooling transformer (if 2 transformers)
W	1st stage heat relay.
W2	2nd stage heat relay.
Y	1st stage compressor contactor.
Y2	2nd stage compressor contactor.
G	Fan relay.
L	Heat pump reset (powered continuously when system is set to Em Heat; system monitor when set to Heat, Cool or Off).
O/B	Changeover valve for heat pumps.
K	Optional wiring module terminal.
S1/S2	Optional remote sensor.

Lutron® Comfort Controls
TouchPRO Wireless™ Thermostat

Wiring Guide

Conventional Systems

1H/1C System (1 transformer)

Rc	Power
R	R and Rc joined by jumper
W	Heat relay
Y	Compressor contactor
G	Fan relay
C	24 V⁓ common
K	Optional wiring module terminal
S1 / S2	Optional remote sensor

1H/1C System (2 transformers)

Rc	Power (cooling transformer)
R	Power (heating transformer)
W	Heat relay
Y	Compressor contactor
G	Fan relay
C	24 V⁓ common
K	Optional wiring module terminal
S1 / S2	Optional remote sensor

Heat Only System

Rc	Power
R	R and Rc joined by jumper
W	Heat relay
C	24 V⁓ common
S1 / S2	Optional remote sensor

Heat Only System With Fan

Rc	Power
R	R and Rc joined by jumper
W	Heat relay
G	Fan relay
C	24 V⁓ common
S1 / S2	Optional remote sensor

Heat Only System (Series 20)

Rc	R and Rc joined by jumper
R	Series 20 valve terminal “R”
W	Series 20 valve terminal “B”
Y	Series 20 valve terminal “W”
C	24 V⁓ common
S1 / S2	Optional remote sensor

Cool Only System

Rc	Power
R	R and Rc joined by jumper
Y	Compressor contactor
G	Fan relay
C	24 V⁓ common
K	Optional wiring module terminal
S1 / S2	Optional remote sensor

2H/2C System (1 transformer)

Y2	Cool relay 2
W2	Heat relay 2
Rc	Power
R	R and Rc joined by jumper
W	Heat relay 1
Y	Cool relay 1
G	Fan relay
C	24 V⁓ common
K	Optional wiring module terminal
S1 / S2	Optional remote sensor

2H/2C System (2 transformers)

Y2	Cool relay 2
W2	Heat relay 2
Rc	Power (cooling transformer)
R	Power (heating transformer)
W	Heat relay 1
S1 / S2	Optional remote sensor
Y	Cool relay 1
G	Fan relay
C	24 V⁓ common
K	Optional wiring module terminal
S1 / S2	Optional remote sensor

Continued on next page...

Lutron® Comfort Controls
TouchPRO Wireless™ Thermostat

Wiring Guide *(continued)*

Heat Pump Systems

1H/1C System (1 transformer)

Rc	Power
R	R and Rc joined by jumper
O/B	Changeover valve
Y	Compressor relay
G	Fan relay
C	24 V⁓ common
K	Optional wiring module terminal
S1/S2	Optional remote sensor

1H/1C System (2 transformers)

Y2	Compressor 2 relay
Rc	Power
R	R and Rc joined by jumper
O/B	Changeover valve
Y	Compressor 1 relay
G	Fan relay
C	24 V⁓ common
K	Optional wiring module terminal
S1/S2	Optional remote sensor

Heat Only System

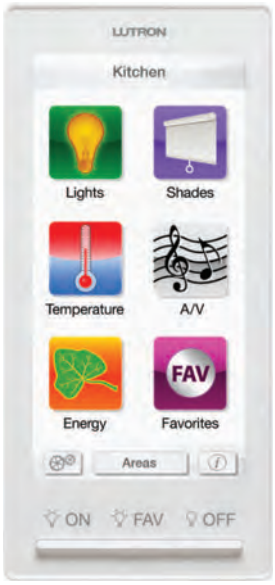
L	Equipment monitor
E/Aux	Auxiliary heat relay (heat 2)
Rc	Power
R	R and Rc joined by jumper
O/B	Changeover valve
Y	Compressor relay
G	Fan relay
C	24 V⁓ common
K	Optional wiring module terminal
S1/S2	Optional remote sensor

Heat Only System With Fan

Y2	Compressor 2 relay
L	Equipment monitor
E/Aux	Auxiliary heat relay (heat 2)
Rc	Power
R	R and Rc joined by jumper
O/B	Changeover valve
Y	Compressor 1 relay
G	Fan relay
S1/S2	Optional remote sensor
C	24 V⁓ common
K	Optional wiring module terminal

HomeWorks® QS Dynamic Keypads

Dynamic Keypads provide the functionality of multiple Lutron® keypads in an easy-to-navigate, intuitive arrangement. Dynamic Keypads help reduce wall clutter by combining control of several functions into a convenient, single point of control for multiple systems including: lights, shades/draperies, and HVAC equipment.



Dynamic Keypads are easy to set up and are simple and intuitive to program and adjust to your specific needs. The display screen clearly displays the system and device status. The intuitive user interface combines the cognition of a seeTouch® keypad with the flexibility of an LCD screen touch interface.

Dynamic Keypads combine superior aesthetics with energy savings. On screen button labeling for the Dynamic Keypad is done automatically while you program the system.

Model Number

HQ-J-DK420-XX* Dynamic Keypad (434 MHz/wired)

HQ-W-DK420-XX* Dynamic Keypad (wired only)

* "XX" in the model number represents color/finish code.
See **Colors and Finishes** below.

Colors and Finishes

Dynamic Keypads are available in 2 colors.

White
WH

Black
BL

HomeWorks® QS Dynamic Keypads

Specifications

Model Number	HQ-J-DK420-XX, HQ-W-DK420-XX
Power	24 V⎓ 113 mA
Typical Power Consumption	1.5 W; 6 Power Draw Units* (PDUs). Test conditions: LCD backlight on at 80%, buttons backlight on at 28%, while in use. *For more information about PDUs, please see the HomeWorks® QS Wiring and Power Guidelines document on the HomeWorks® QS Resource Website.
Regulatory Approvals	UL, cUL, FCC, IC, SCT, CE, CTICK
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0%-90% humidity, non-condensing. Indoor use only.
Communications	Dynamic Keypads communicate with the system through the Wired QS Link or through Radio Frequency (RF). When using RF (HQ-J models only), the Dynamic Keypad must be located within 30 ft (9 m) of a repeater. System devices operate on frequencies between 431.0 MHz and 437.0 MHz. To improve system commissioning time, Lutron recommends no more than ten Dynamic Keypads per RF Link. QS Link wired installations offer faster commissioning time.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the Dynamic Keypad will return to its previous state when power is restored.
Mounting	The Dynamic Keypad must be installed in a flat, hollow wall (i.e. not concrete wall). If gap between wall and mounting frame is larger than the thickness of a credit card, wall must be repaired to eliminate gap. Otherwise, damage to the Keypad may result. Custom mounting frame included. Minimum wall depth: 2¼ in (57 mm). Wall thickness range: 1/4 in (6 mm) to 1 in (25 mm).
Wiring	**RF:** Two 18 AWG (1.0 mm^2) IEC PELV / NEC® Class 2 cable. **Wired:** Two 22 AWG (0.5 mm^2) twisted shielded and two 18 AWG (1.0 mm^2) IEC PELV / NEC® Class 2 cable. Use Lutron® cable GRX-CBL-346S.
Warranty	8 Year Limited Warranty. www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf

Design Features

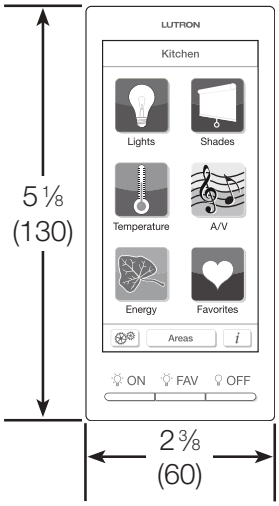
- Simple, intuitive control of lights, shades/draperies, compatible HVAC equipment, and Audio/Visual equipment from a single location.
- The capacitive touch interface provides a rich user experience and flexible control for a single room or an entire home.
- Use individual pages for simple control of lighting, shades/draperies, and temperature in rooms throughout the home.
- Wireless or wired installation.
- Three hard buttons provide instant access to frequently used lighting functions.
- Ensures reliable system control through Lutron's patented Clear Connect™ RF technology (HQ-J models only) or through wired QS link.
- Slim 0.5 in (13 mm) profile off the wall.
- Reduces wall clutter by combining multiple controls into one control.
- Create or modify on-screen buttons easily through system Design and Programming Utility.

HomeWorks® QS Dynamic Keypads

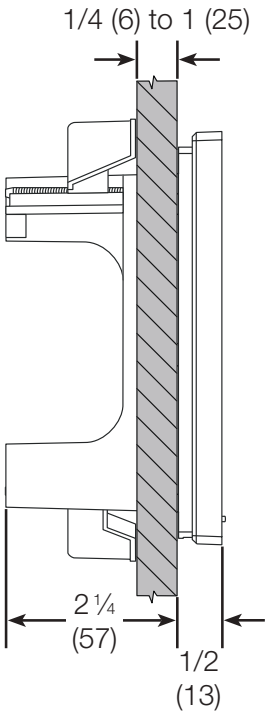
Dimensions

All dimensions are shown as in (mm)

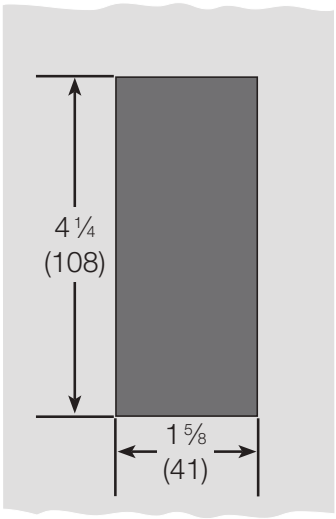
Front View



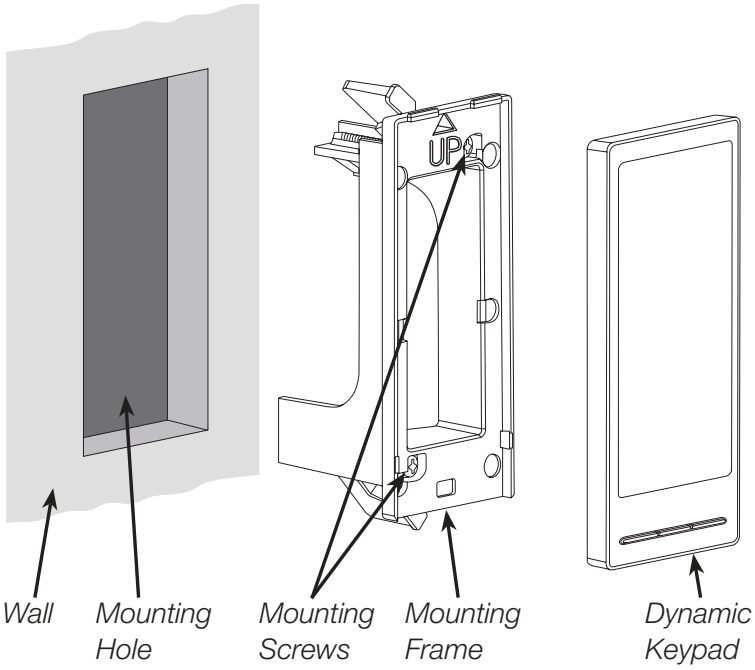
Side View



Mounting Hole



Mounting and Parts Identification

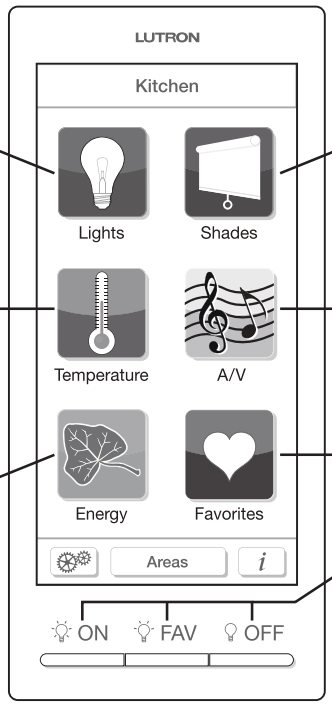


Note: The Dynamic Keypad must be installed in a flat, hollow wall (i.e. not concrete wall). If gap between wall and mounting frame is larger than the thickness of a credit card, wall must be repaired to eliminate gap. Otherwise, damage to the Keypad may result.

HomeWorks® QS Dynamic Keypads

Operation

Front View



Lights
Control and monitor lighting scenes or individual lights in multiple areas of the home.

Temperature
View the current temperature and adjust set point, system mode, and schedule.

Energy
View current energy saving mode and adjust "Green" button settings.

Shades
Control and monitor individual or groups of shades/draperies in multiple areas of the home.

Audio/Video
Access basic controls or A/V equipment by integrating with a third-party A/V control processor.

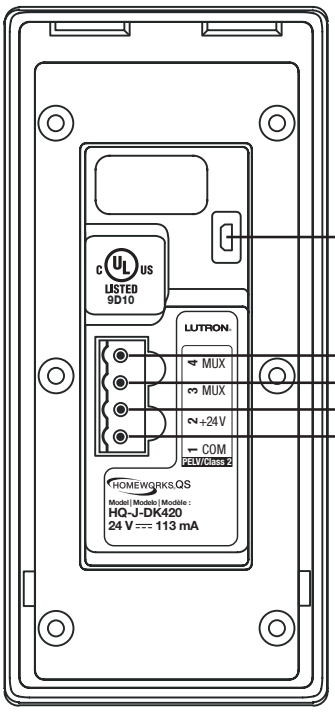
Favorites
Quickly access most frequently used system functions.

Backlit Hard Buttons
Provide instant access to frequently used lighting functions.

Note: Backlighting is adjustable and can be programmed to turn off when in standby mode.

Connections

Rear View

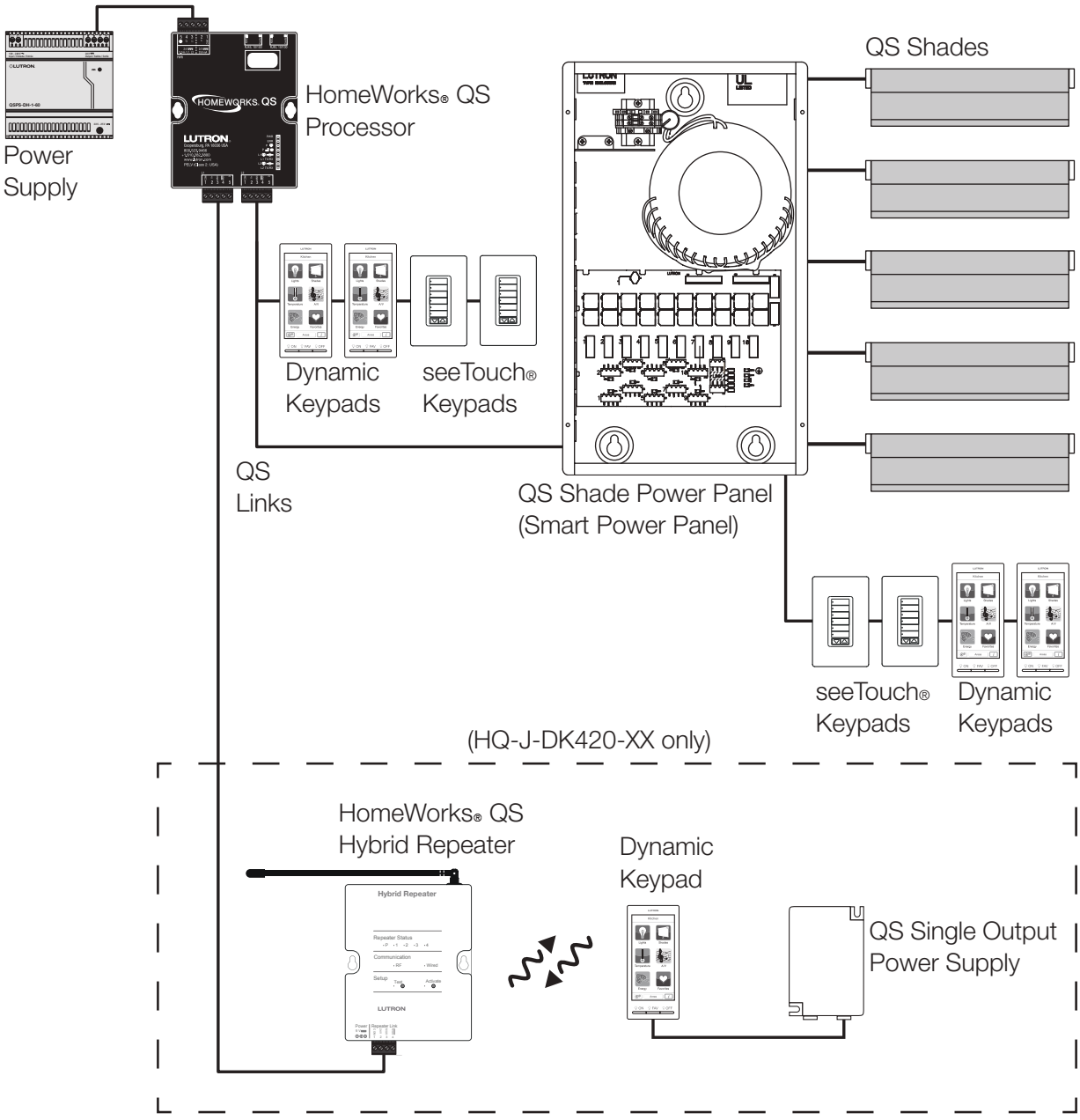


Mini-B USB
For firmware upgrade.

Control Link Wiring
MUX
MUX
+24 V⎓
COM

HomeWorks® QS Dynamic Keypads

Wiring Diagram



Note: To improve system commissioning time, Lutron recommends no more than ten Dynamic Keypads per RF Link. QS Link wired installations offer faster commissioning time.

Dimmers and Switches

HomeWorks® QS Wired Maestro® Architectural Local Controls

HomeWorks® QS Wired Maestro® local controls function much like standard dimmers and switches, but can be controlled as part of a lighting control system. Local lighting controls are useful in locations where single circuits of lighting need to be dimmed or switched. Local fan speed controls are useful in locations where control of a single ceiling paddle fan is needed.

HomeWorks® QS Wired Maestro® dimmers incorporate advanced features such as fade on/fade off, delayed long fade to off, and rapid full on.

HomeWorks® QS Wired Maestro® local controls include a Front Accessible Service Switch (FASS™) for safe lamp replacement. HomeWorks® QS RF Maestro® local controls install in single-pole or multi-location applications. Remote dimmers/switches are available for multi-location control.

Use Lutron® Nova T☆® wallplates. Wallplates are sold separately. Lutron® Nova T☆® wallplates snap on with no visible means of attachment. HomeWorks® QS Wired Maestro® local controls support color change kits.

Dimmer

Switch

Fan Speed

Remote Dimmer

Remote Switch

Model Numbers

Dimmers

Incandescent/Magnetic Low-voltage

HWA-6D-XX*	600 W/600 VA Dimmer
HWA-6ND-XX*	600 W/600 VA Dimmer
HWA-10D-XX*	1000 W/1000 VA Dimmer
HWA-10ND-XX*	1000 W/1000 VA Dimmer

Switches

HWA-8ANS-XX*	8 A Lighting, 5.8 A Motor Neutral Electronic Switch

Fan Speed Control

Single ceiling paddle fan only (120 V~)

HWA-2ANF-XX*	2 A Neutral Fan Speed Control

Remotes (for multi-location installations)

HQA-RD-XX*	Remote Dimmer (120 V~)
HQA-RS-XX*	Remote Switch (120 V~)

Color Change Kits

RKA-D-XX*	Dimmers (-6D, -6ND, -10D, -10ND)
RKA-S-XX*	Switches (-8ANS)
RKA-AD-XX*	Remote Dimmer (-RD)
RKA-AS-XX*	Remote Switch (-RS)
RKA-F-XX*	Fan Speed Control (-2ANF)

*"XX" in the model number represents color/finish code.
See **Colors and Finishes** at end of document.

HomeWorks® QS Wired Maestro® Architectural Local Controls

Specifications

Model Numbers	**Dimmer:** HWA-6D-XX, HWA-6ND-XX, HWA-10D-XX, HWA-10ND-XX **Switch:** HWA-8ANS-XX **Fan Speed Control:** HWA-2ANF-XX **Remote:** HQA-RD-XX, HQA-RS-XX **Color Change Kits:** RKA-D-XX, RKA-S-XX, RKA-AD-XX, RKA-AS-XX, RKA-F-XX
Power	120 V~ 50/60 Hz (-6D, -6ND, -10D, -10ND, -2ANF, -8ANS, -RD, -RS)
Typical Power Consumption	**Dimmer/Switch/Fan Speed Control:** 0.75 W Test conditions: load is off and nightlight mode is enabled. **Remote Dimmer/Switch:** 0 W Test conditions: load is off.
Regulatory Approvals	UL, CSA, and NOM
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Wired Local Controls are wired to a HomeWorks® dimmer Hub (HWI-H48). One pair twisted shielded 22 AWG to 18 AWG (0.5 mm^2 to 1.0 mm^2) IEC PELV/NEC® Class 2 wiring.
Capacity	Each HomeWorks® Dimmer Hub (HWI-H48) is capable of directly controlling up to 48 Wired Maestro® Local Controls. Up to 8 Wired Local Controls may be wired to a single bus on the HWI-H48. Refer to IEC PELV/NEC® Class 2 wiring.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the control will return to its previous state when power is restored.
Mounting	Requires a U.S. wallbox. 3½ in (89 mm) deep recommended, 2¼ in (57 mm) deep minimum.
Wiring	Uses conventional 3-way and 4-way wiring.
Warranty	http://www.lutron.com/TechnicalDocumentLibrary/warranty.pdf

HomeWorks® QS Wired Maestro® Architectural Local Controls

Design Features

Dimmer

- On a single-tap, lights fade ON or OFF.
- On a double-tap, lights go to full ON.
- When ON, press and hold the tapswitch to engage the delayed long fade to OFF.
- Light levels can be fine-tuned by pressing and holding the dimming rocker until the desired light level is reached.
- Neutral and two-wire dimmers available.

Switch

- On a single-tap, lights or motors turn ON or OFF.
- Requires a neutral connection.

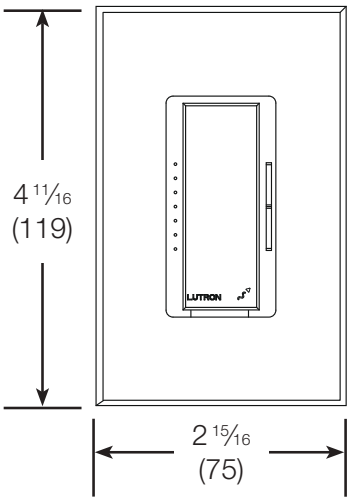
Fan Speed Control

- On a single-tap, fan turns ON or OFF.
- Fan speeds can be selected by pressing and holding the fan speed control rocker until the desired fan speed is reached.
- Controls one paddle type ceiling fan (Permanent split-capacitor motor) up to 2 A. Not for use with shaded-pole type motors (i.e. bath exhaust fans).
- Provides four (4) quiet speeds plus OFF.
- Not for use with fans that have integrated fan speed and/or light control modules.
- Requires a neutral connection.

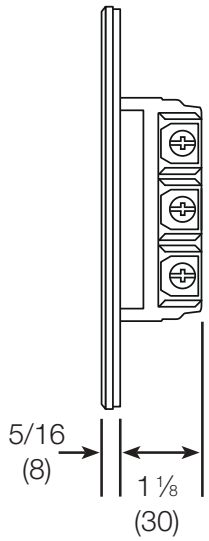
Dimensions

All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$

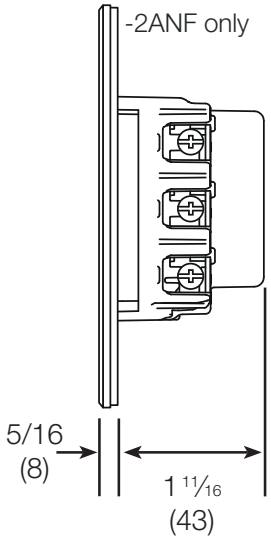
Front View



Side View

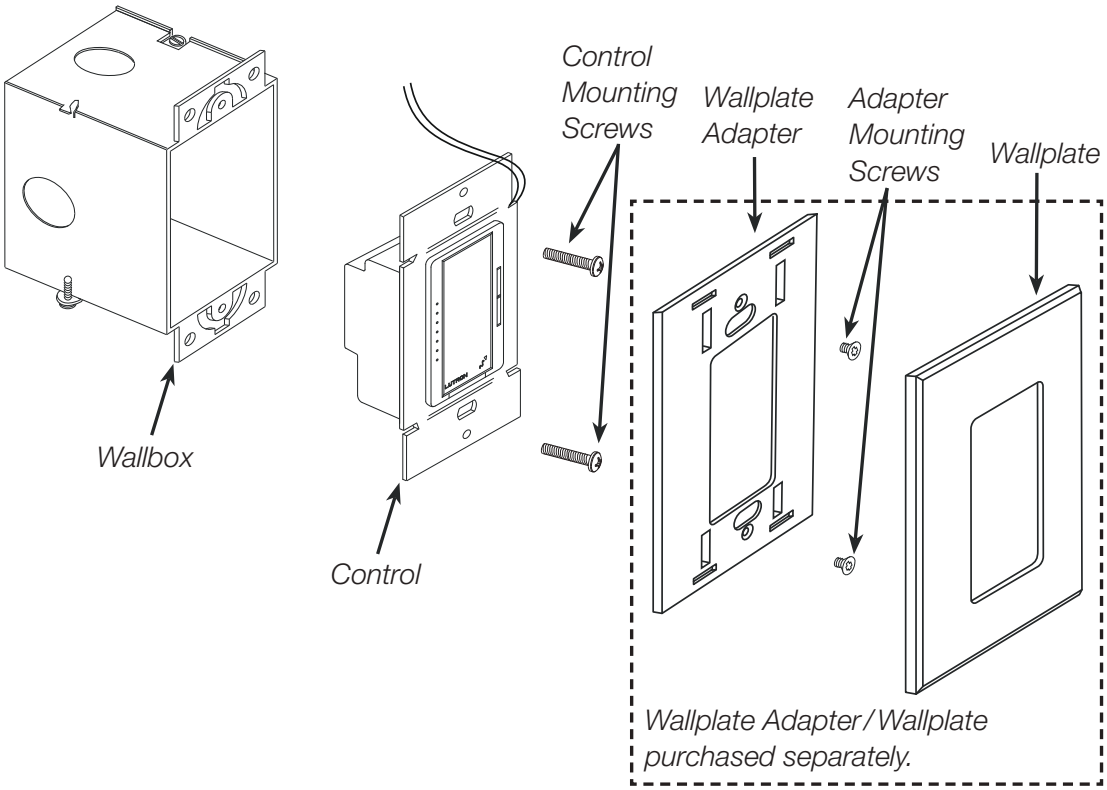


Side View



HomeWorks® QS Wired Maestro® Architectural Local Controls

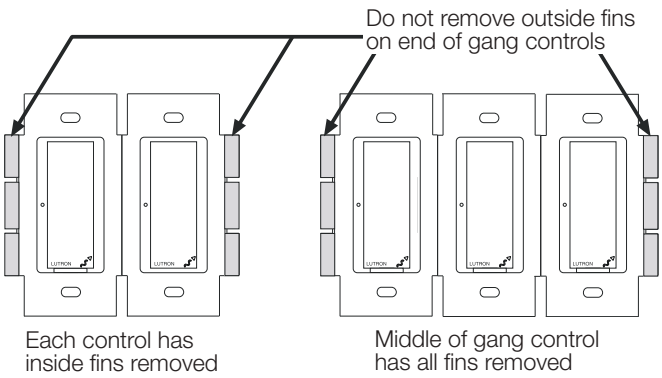
Mounting and Parts Identification



Ganging and Derating

When combining controls in the same wallbox, derating is required. See **Load Type and Capacity**. No derating is required for remote dimmers/switches/fan speed controls. -8ANS has fins that need to be removed for multigang installations.

-8ANS only:



HomeWorks® QS Wired Maestro® Architectural Local Controls

Load Type and Capacity

Control	Load Type	Minimum Load	Not Ganged	End of Gang	Middle of Gang	Neutral Connection
HWA-6D[1]	Incand.	50 W	600 W	500 W	400 W	NO
	MLV[2]	50 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HWA-6ND[1, 5]	Incand.	10 W	600 W	500 W	400 W	YES
	MLV[2]	10 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HWA-10D[1]	Incand.	50 W	1000 W	800 W	650 W	NO
	MLV[2]	50 W/VA	800 W/ 1000 VA	600 W/ 800 VA	500 W/ 650 VA	
HWA-10ND[1, 5]	Incand.	10 W	1000 W	800 W	650 W	YES
	MLV[2]	10 W/VA	800 W/ 1000 VA	600 W/ 800 VA	500 W/ 650 VA	
HWA-8ANS[4, 7]	Lighting	10 W	8 A	6.5 A	5 A	YES
	Motor	0.083 A	1/4 HP 5.8 A	5.8 A	5 A	
HWA-2ANF[6]	Ceiling Fan	0.083 A	2 A	2 A	2 A	YES

1 Dimmer Load Type: -6D, -6ND,-10D, and -10ND are designed for use with permanently installed incandescent, magnetic low-voltage, or tungsten halogen only. Do not install dimmers to control receptacles or motor-operated appliances.

2 Low-Voltage Applications: Use -6D, -6ND, -10D and -10ND with magnetic (core and coil) low-voltage transformers only. Not for use with electronic (solid-state) low-voltage transformers.

Operation of a low-voltage circuit with lamps inoperative or removed may result in transformer overheating and premature failure. Lutron strongly recommends the following:

- Do not operate low-voltage circuits without operative lamps in place.
- Replace burned-out lamps as soon as possible.
- Use transformers that incorporate thermal protection or fused transformer primary windings to prevent transformer failure due to overcurrent.

3 Switch Load Type: -8ANS is designed for use with all permanently installed lighting loads and with motor loads up to 1/4 HP (5.8 A)

4 Ceiling Fan Application (HWA-2ANF):

- Use to control one paddle-type ceiling fan (permanent split-capacitor).
- Use the ceiling fan's pull chain to set its speed to the highest setting*.
- Do not use to control fans that use shaded-pole motors (i.e. bath exhaust fans).
- Do not use to control fans that have integrated fan speed controls (i.e. fans that have a remote control), unless the integrated control is removed from the ceiling fan.
- Do not connect to any other motor-operated appliance or to any lighting load type.
- Do not use to control a fan lighting load (i.e. lighting kit).

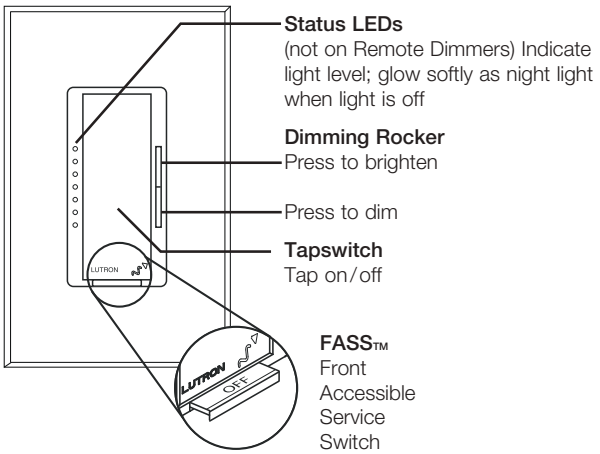
*See Application Note # 217 – "HomeWorks® Maestro® Controls Reference" for more information.

5 Can control the following power boosters/load interfaces: Hi-Power Boosters (HP-2, HP-4, HP-6), 0-10 Volt Interface (GFX-TVI), Minimum Load Interface (LUT-LBX), Phase Adaptive Power Module (PHPM-PA), Switched Power Module (PHPM-SW), 3-Wire Flourescent Power Module (PHPM-3F).

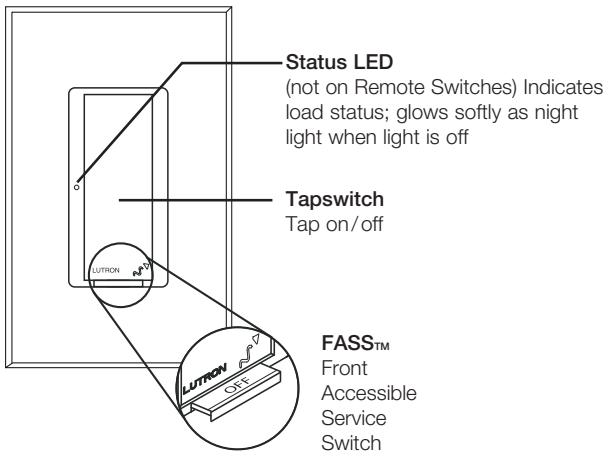
HomeWorks® QS Wired Maestro® Architectural Local Controls

Operation

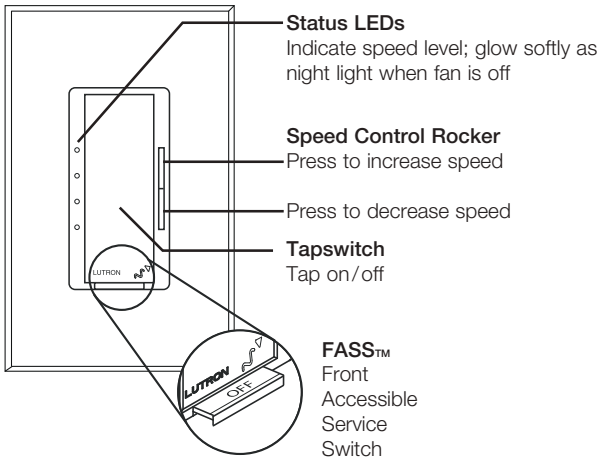
Dimmer



Switch



Fan Speed Control



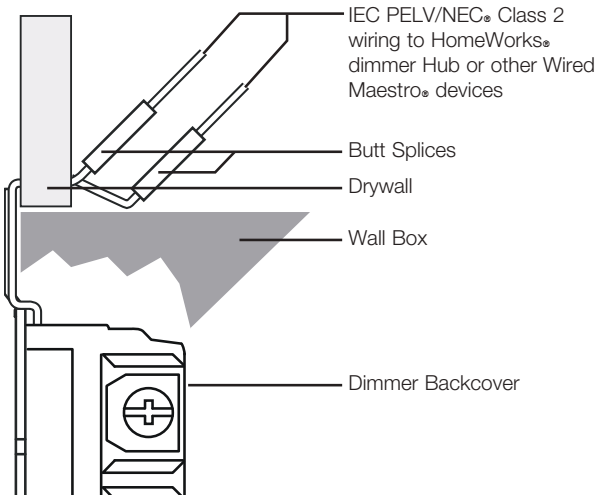
IMPORTANT NOTICE:
FASS™ - Front Accessible Service Switch
To replace bulb, remove power by pulling the FASS™ switch out fully on all controlling devices.
After replacing bulb(s), push the FASS™ switch(es) back in fully to restore power to the control(s).

HomeWorks® QS Wired Maestro® Architectural Local Controls

Wiring

Dimmer communications wiring may be in a daisy chain, star, or t-tap configuration. Each home run on a bus may be up to 500 ft (152 m) and may contain up to 8 devices. The total length of wire on each bus (all home runs) may be up to 1000 ft (305 m). Up to 48 HomeWorks® Wired Maestro® Local Controls may be wired to the HomeWorks® Dimmer Hub (HWI-H48). Up to four HWI-H48's may be placed on each processor link configured as an H48 link in the HomeWorks® software.

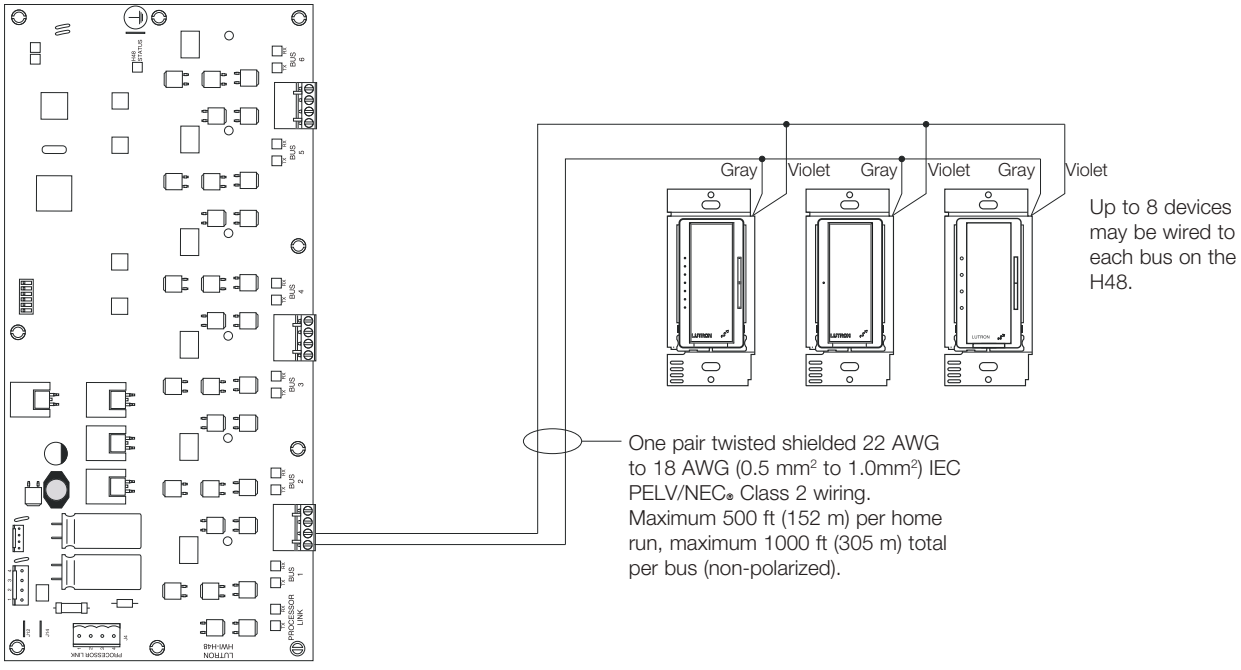
Dimmer Side View



IEC PELV/NEC® Class 2 Wire Type

One pair twisted shielded 22 AWG to 18 AWG (0.5 mm^2 to 1.0 mm^2) IEC PELV/NEC® Class 2 wiring.

HWI-H48 Dimmer Hub

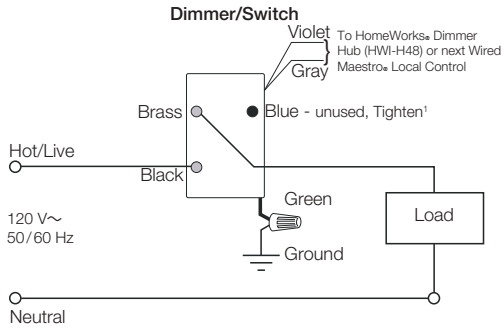


HomeWorks® QS Wired Maestro® Architectural Local Controls

Wiring Diagrams

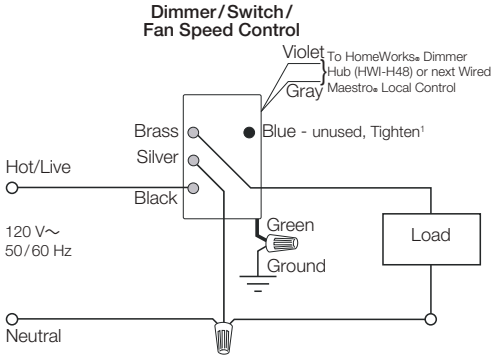
Wiring Diagram 1

Single Location Installation without Neutral[1]
-6D and -10D



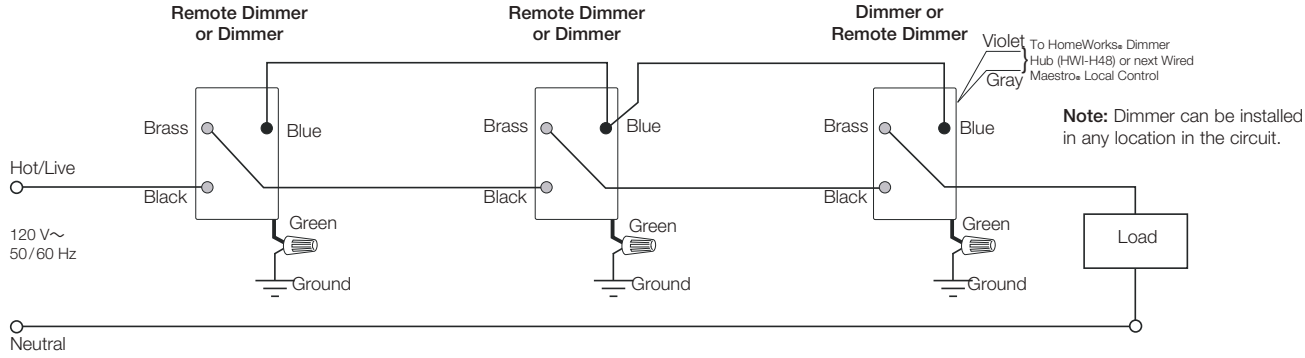
Wiring Diagram 2

Single Location Installation with Neutral[1]
-6ND, -10ND, -2ANF and -8ANS



Wiring Diagram 3

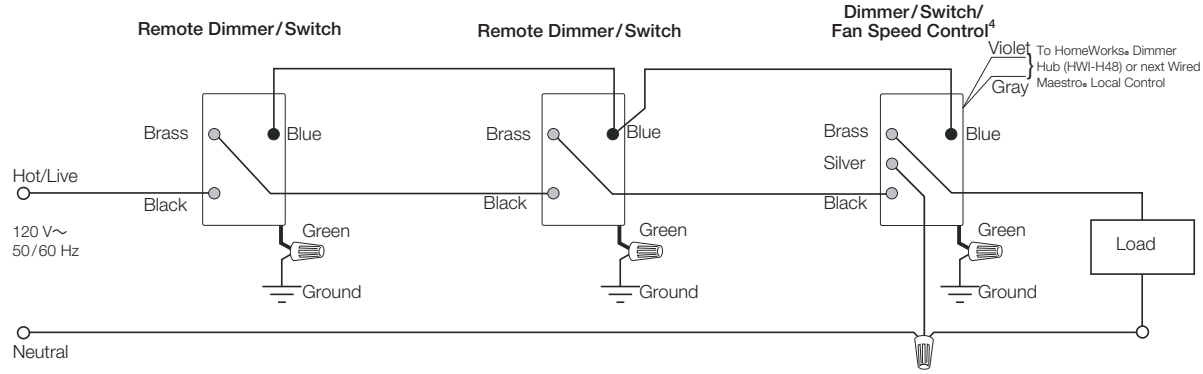
Multi-Location Installation without Neutral[2]
-6D and -10D with HQA-RD



Note: Dimmer can be installed in any location in the circuit.

Wiring Diagram 4

Multi-Location Installation with Neutral[2, 3]
-6ND, -10ND, and -2ANF with HQA-RD; -8ANS with HQA-RS



[1] When using controls in single location installations, tighten the blue terminal. **DO NOT** connect the blue terminal to any other wiring or to ground.

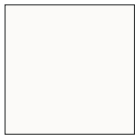
[2] Up to 9 HomeWorks® Maestro® Remote Dimmers/Switches may be connected to the HomeWorks® Wired Maestro® Dimmer/Switch/Fan Speed Controls. Total blue terminal wire length may be up to 250 ft (76 m).

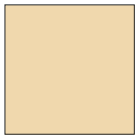
[4] Neutral wire Dimmers/Switches/Fan Speed Controls must be connected on the Load side of a multi-location installation.

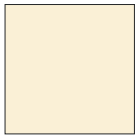
HomeWorks® QS Wired Maestro® Architectural Local Controls

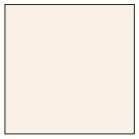
Colors and Finishes

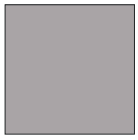
Architectural Matte Finishes


White
WH


Ivory
IV

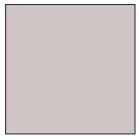

Almond
AL


Light
Almond
LA

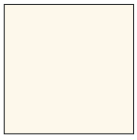

Gray
GR


Brown
BR


Black
BL

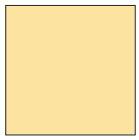

Taupe
TP

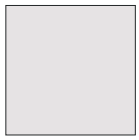

Sienna
SI


Beige
BE

Architectural Metal Finishes (wallplates only)


Satin Brass
SB


Bright Brass
BB


Bright Chrome
BC

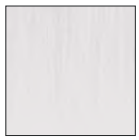

Clear Anodized
Aluminum
CLA


Black Anodized
Aluminum
BLA

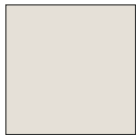

Brass Anodized
Aluminum
BRA

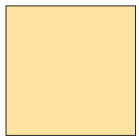

Antique Brass
QB


Antique Bronze
QZ


Satin Chrome
SC


Satin Nickel
SN


Bright Nickel
BN


Gold
AU

When ordering metal wallplates,it is recommended to order the Maestro® Control in Black (BL).

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

  Architectural Matte Finishes- AM-CK-1
  Architectural Metal Finishes - AMTL-CK-1

HomeWorks® QS Wired Maestro® Designer Local Controls

HomeWorks® QS Wired Maestro® local controls function much like standard dimmers and switches, but can be controlled as part of a lighting control system. Local lighting controls are useful in locations where single circuits of lighting need to be dimmed or switched. Local fan speed controls are useful in locations where control of a single ceiling paddle fan is needed.

HomeWorks® QS Wired Maestro® dimmers incorporate advanced features such as fade on/fade off, delayed long fade to off, and rapid full on.

HomeWorks® QS Wired Maestro® local controls include a Front Accessible Service Switch (FASS™) for safe lamp replacement. HomeWorks® QS Wired Maestro® local controls install in single-pole or multi-location applications. Remote dimmers/switches are available for multi-location control.

Use Lutron® Designer (Claro® or Satin Colors®) wallplates or designer-style wallplates from other manufacturers. Wallplates are sold separately. Lutron® Claro® and Satin Colors® wallplates snap on with no visible means of attachment. HomeWorks® QS Wired Maestro® local controls support color change kits.

Dimmer

Switch

Fan Speed

Remote Dimmer

Remote Switch

Model Numbers

Dimmers

Incandescent/Magnetic Low-voltage

HWD-6D-XX*	600 W/600 VA Dimmer
HWD-6ND-XX*	600 W/600 VA Dimmer
HWD-10D-XX*	1000 W/1000 VA Dimmer
HWD-10ND-XX*	1000 W/1000 VA Dimmer

Electronic Low-voltage

HWD-5NE-XX*	500 W Neutral Dimmer

Switches

HWD-8ANS-XX*	8 A Lighting, 5.8 A Motor Neutral Electronic Switch

Fan Speed Control

Single ceiling paddle fan only (120 V~)

HWD-2ANF-XX*	2 A Neutral Fan Speed Control

Remotes (for multi-location installations)

HQD-RD-XX*	Remote Dimmer (120 V~)
HQD-RS-XX*	Remote Switch (120 V~)

Color Change Kits

RK-D-XX*	Dimmers (-6D, -6ND, -10D, -10ND)
RK-S-XX*	Switches (-8ANS)
RK-AD-XX*	Remote Dimmer (-RD)
RK-AS-XX*	Remote Switch (-RS)
RK-F-XX*	Fan Speed Control (-2ANF)

Note: No color change kit is available for -5NE

*"XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document.

HomeWorks® QS Wired Maestro® Designer Local Controls

Specifications

Model Numbers	**Dimmer:** HWD-6D-XX, HWD-6ND-XX, HWD-10D-XX, HWD-10ND-XX, HWD-5NE-XX **Switch:** HWD-8ANS-XX **Fan Speed Control:** HWD-2ANF-XX **Remote:** HQD-RD-XX, HQD-RS-XX **Color Change Kits:** RK-D-XX, RK-S-XX, RK-AD-XX, RK-AS-XX, RK-F-XX
Power	120 V~ 50/60 Hz
Typical Power Consumption	**Dimmer/Switch/Fan Speed Control:** 0.75 W Test conditions: load is off and nightlight mode is enabled. **Remote Dimmer/Switch:** 0 W Test conditions: load is off.
Regulatory Approvals	UL, CSA (all except -5NE), and NOM
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Wired Local Controls are wired to a HomeWorks® dimmer Hub (HWI-H48). One pair twisted shielded 22 AWG to 18 AWG (0.5 mm^2 to 1.0 mm^2) IEC PELV/NEC® Class 2 wiring.
Capacity	Each HomeWorks® Dimmer Hub (HWI-H48) is capable of directly controlling up to 48 Wired Maestro® Local Controls. Up to 8 Wired Local Controls may be wired to a single bus on the HWI-H48. Refer to IEC PELV/NEC® Class 2.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the control will return to its previous state when power is restored.
Mounting	Requires a U.S. wallbox. 3½ in (89 mm) deep recommended, 2¼ in (57 mm) deep minimum.
Wiring	Uses conventional 3-way and 4-way wiring.
Warranty	http://www.lutron.com/TechnicalDocumentLibrary/warranty.pdf

HomeWorks® QS Wired Maestro® Designer Local Controls

Design Features

Dimmer

- On a single-tap, lights fade ON or OFF.
- On a double-tap, lights go to full ON.
- When ON, press and hold the tapswitch to engage the delayed long fade to OFF.
- Light levels can be fine-tuned by pressing and holding the dimming rocker until the desired light level is reached.
- Two-wire dimmers available.
- Electronic low voltage dimmer available.

Switch

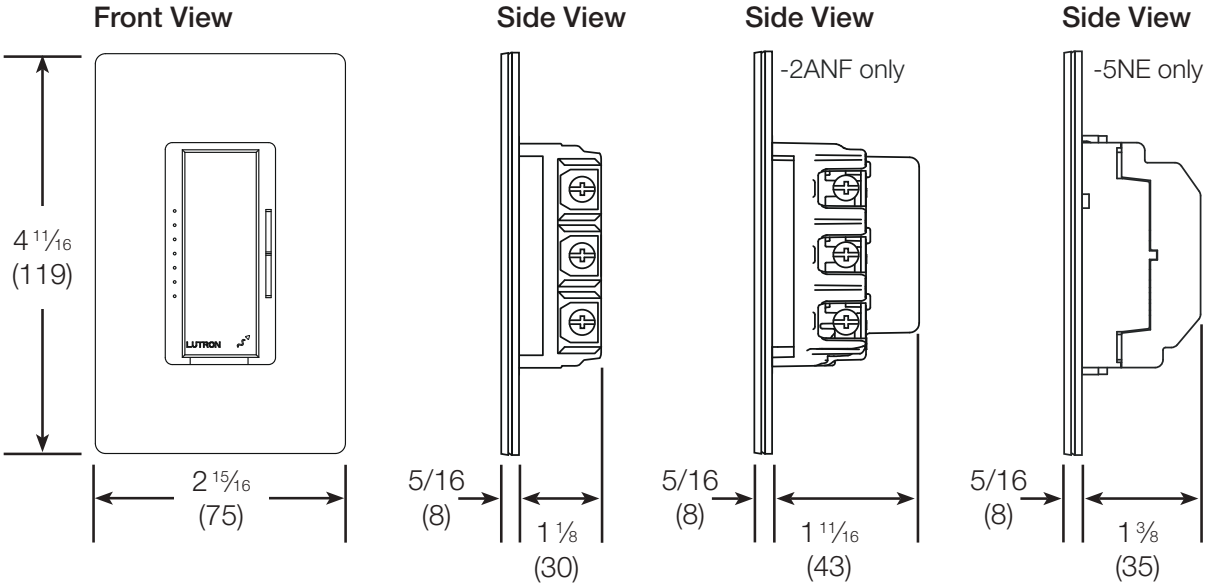
- On a single-tap, lights or motors turn ON or OFF.
- Requires a neutral connection.

Fan Speed Control

- On a single-tap, fan turns ON or OFF.
- Fan speeds can be selected by pressing and holding the fan speed control rocker until the desired fan speed is reached.
- Controls one paddle type ceiling fan (Permanent split-capacitor motor) up to 2 A. Not for use with shaded-pole type motors (i.e. bath exhaust fans).
- Provides four (4) quiet speeds plus OFF.
- Not for use with fans that have integrated fan speed and/or light control modules.
- Requires a neutral connection.

Dimensions

All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$



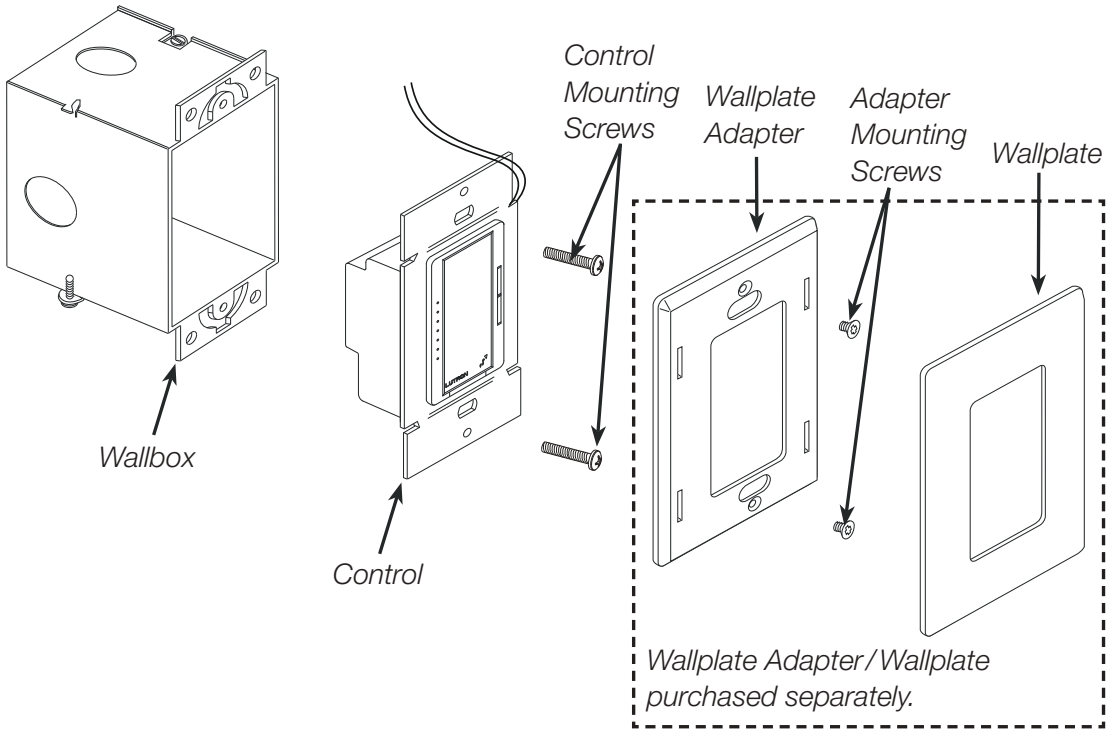
Terminal / Wire Color

The HWD-5NE dimmer does not have terminals - it has wires. Refer to the chart to the right for wire color equivalents when viewing the wiring diagrams for the -5NE.

Terminal Color	-5NE Wire Color
Black	Black
Brass	Yellow
Silver	White
Blue	Blue

HomeWorks® QS Wired Maestro® Designer Local Controls

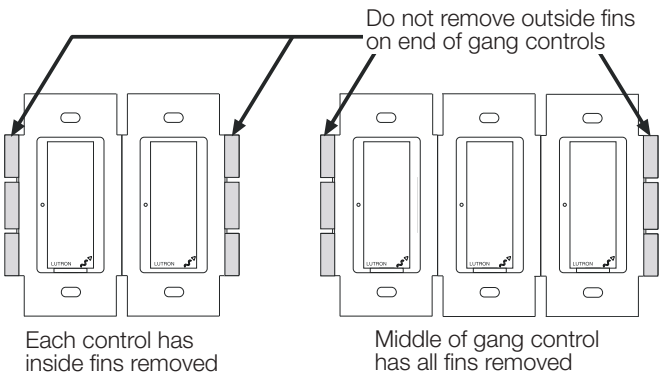
Mounting and Parts Identification



Ganging and Derating

When combining controls in the same wallbox, derating is required. See **Load Type and Capacity**. No derating is required for remote dimmers/switches/fan speed controls. -8ANS has fins that need to be removed for multigang installations.

-8ANS only:



HomeWorks® QS Wired Maestro® Designer Local Controls

Load Type and Capacity

Control	Load Type	Minimum Load	Not Ganged	End of Gang	Middle of Gang	Neutral Connection
HWD-6D[1]	Incand.	50 W	600 W	500 W	400 W	NO
	MLV[2]	50 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HWD-6ND[1, 5]	Incand.	10 W	600 W	500 W	400 W	YES
	MLV[2]	10 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HWD-10D[1]	Incand.	50 W	1000 W	800 W	650 W	NO
	MLV[2]	50 W/VA	800 W/ 1000 VA	600 W/ 800 VA	500 W/ 650 VA	
HWD-10ND[1, 5]	Incand.	10 W	1000 W	800 W	650 W	YES
	MLV[2]	10 W/VA	800 W/ 1000 VA	600 W/ 800 VA	500 W/ 650 VA	
HWD-5NE	ELV/Incand.	10 W	500 W	450 W	400 W	YES
HWD-8ANS[4, 7]	Lighting	10 W	8 A	6.5 A	5 A	YES
	Motor	0.083 A	1/4 HP 5.8 A	5.8 A	5 A	
HWD-2ANF[6]	Ceiling Fan	0.083 A	2 A	2 A	2 A	YES

1 Dimmer Load Type: -6D, -6ND,-10D, and -10ND are designed for use with permanently installed incandescent, magnetic low-voltage, or tungsten halogen only. Do not install dimmers to control receptacles or motor-operated appliances.

2 Low-Voltage Applications: Use -6D, -6ND, -10D and -10ND with magnetic (core and coil) low-voltage transformers only. Not for use with electronic (solid-state) low-voltage transformers. To control electronic low-voltage transformers, use the HWD-5NE control.

Operation of a low-voltage circuit with lamps inoperative or removed may result in transformer overheating and premature failure. Lutron strongly recommends the following:

- Do not operate low-voltage circuits without operative lamps in place.
- Replace burned-out lamps as soon as possible.
- Use transformers that incorporate thermal protection or fused transformer primary windings to prevent transformer failure due to overcurrent.

3 Switch Load Type: -8ANS is designed for use with all permanently installed lighting loads and with motor loads up to 1/4 HP (5.8 A)

4 Ceiling Fan Application (HWD-2ANF):

- Use to control one paddle-type ceiling fan (permanent split-capacitor).
- Use the ceiling fan's pull chain to set its speed to the highest setting*.
- Do not use to control fans that use shaded-pole motors (i.e. bath exhaust fans).
- Do not use to control fans that have integrated fan speed controls (i.e. fans that have a remote control), unless the integrated control is removed from the ceiling fan.
- Do not connect to any other motor-operated appliance or to any lighting load type.
- Do not use to control a fan lighting load (i.e. lighting kit).

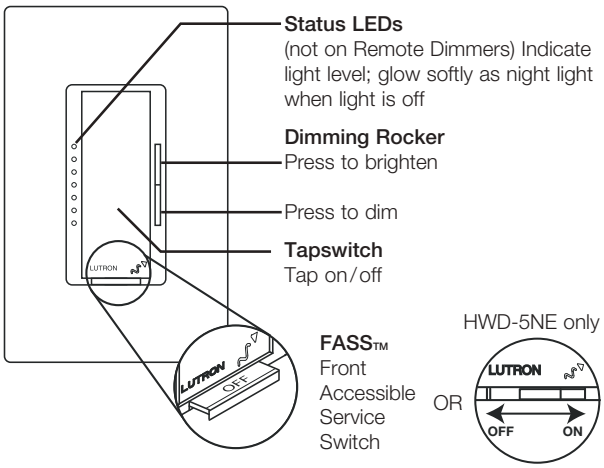
*See Application Note # 217 – "HomeWorks® Maestro® Controls Reference" for more information.

5 Can control the following power boosters/load interfaces: Hi-Power® Boosters (HP-2, HP-4, HP-6), 0-10 Volt Interface (GRX-TVI), Minimum Load Interface (LUT-LBX), Phase Adaptive Power Module (PHPM-PA), Switched Power Module (PHPM-SW), and 3-Wire Flourescent Power Module (PHPM-3F).

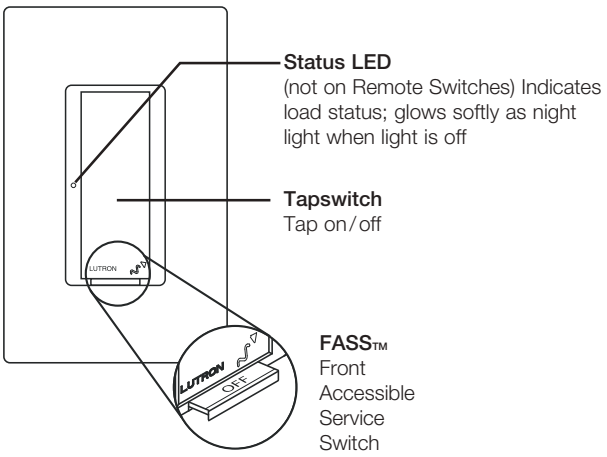
HomeWorks® QS Wired Maestro® Designer Local Controls

Operation

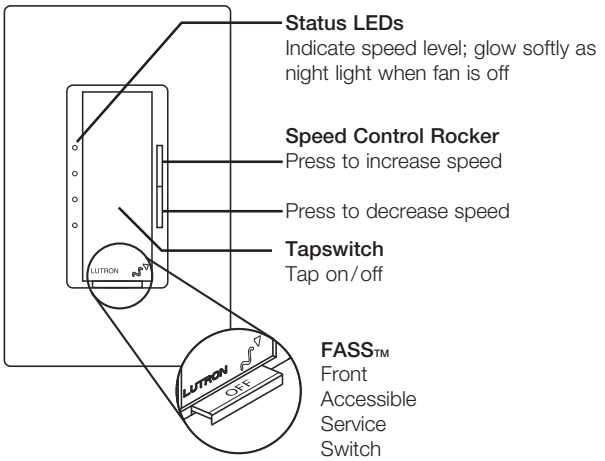
Dimmer



Switch



Fan Speed Control



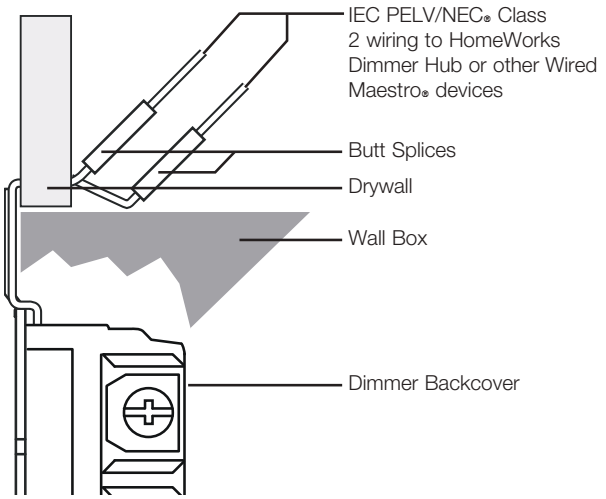
IMPORTANT NOTICE:
FASS™ - Front Accessible Service Switch
To replace bulb, remove power by pulling the FASS™ switch out fully on all controlling devices.
After replacing bulb(s), push the FASS™ switch(es) back in fully to restore power to the control(s).

HomeWorks® QS Wired Maestro® Designer Local Controls

Wiring

Dimmer communications wiring may be in a daisy chain, star, or t-tap configuration. Each home run on a bus may be up to 500 ft (152 m) and may contain up to 8 devices. The total length of wire on each bus (all home runs) may be up to 1000 ft (305 m). Up to 48 HomeWorks® Wired Maestro® Local Controls may be wired to the HomeWorks® Dimmer Hub (HWI-H48). Up to four HWI-H48 Dimmer Hubs may be placed on each processor link configured as an H48 link in the HomeWorks® software.

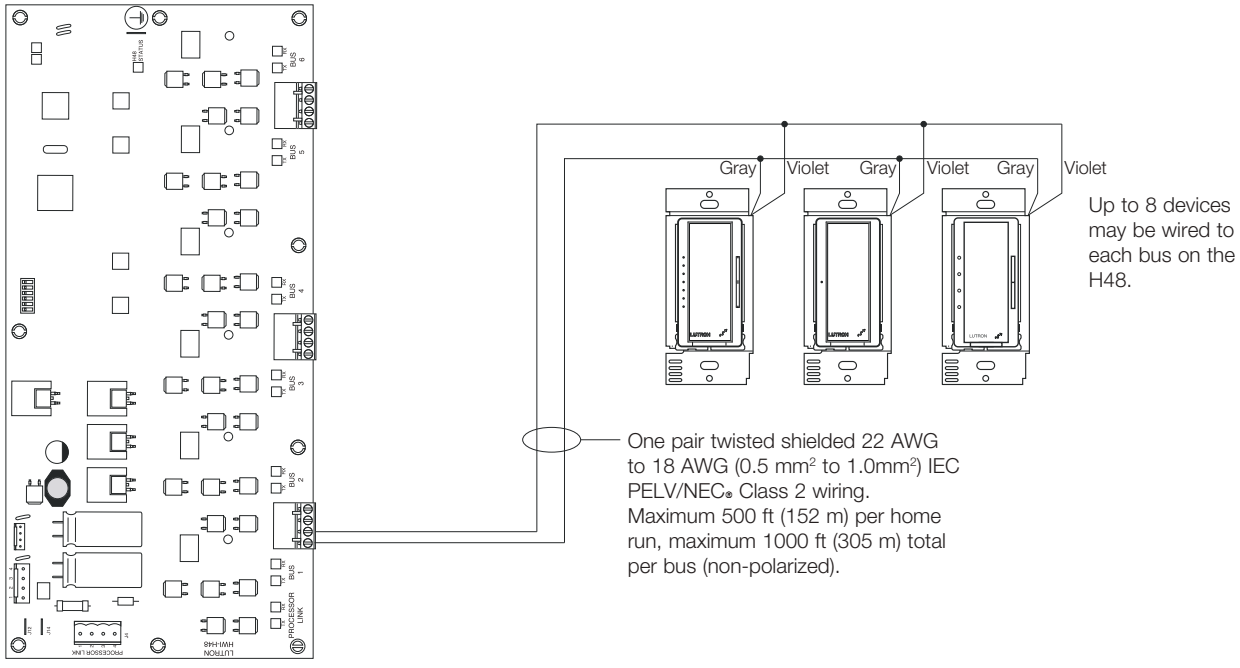
Dimmer Side View



IEC PELV/NEC® Class 2 Wire Type

One pair twisted shielded 22 AWG to 18 AWG (0.5 mm^2 to 1.0 mm^2) IEC PELV/NEC® Class 2 wiring.

HWI-H48 Dimmer Hub

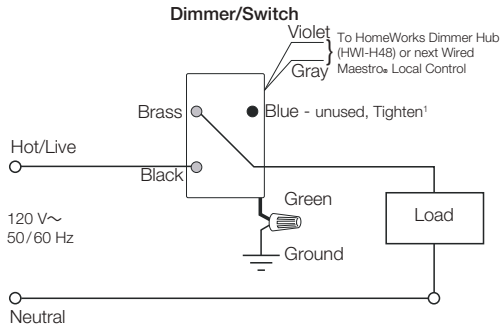


HomeWorks® QS Wired Maestro® Designer Local Controls

Wiring Diagrams

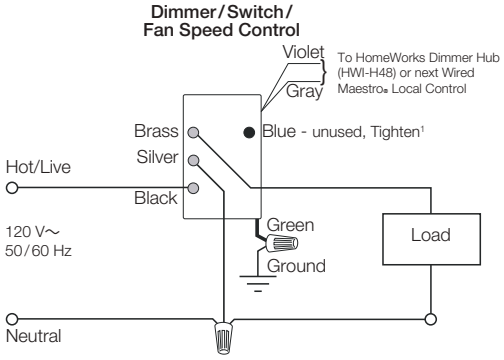
Wiring Diagram 1

Single Location Installation without Neutral[1]
-6D and -10D



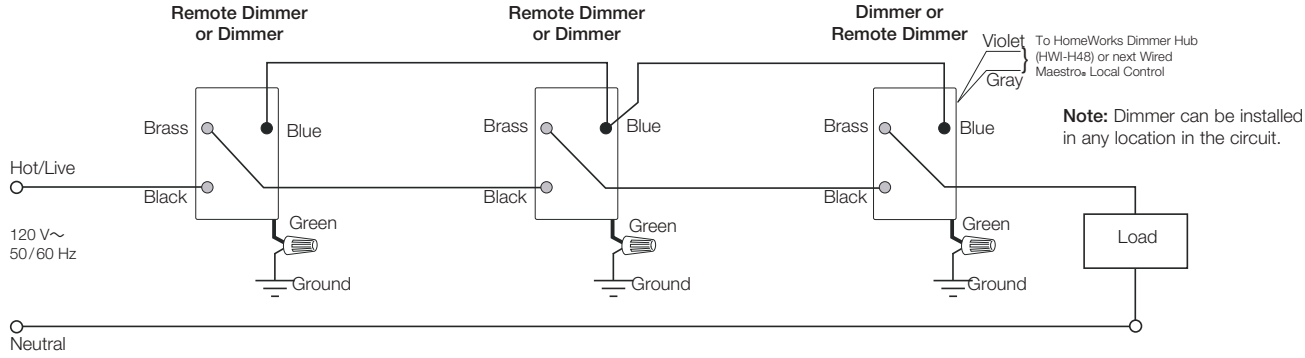
Wiring Diagram 2

Single Location Installation with Neutral[1]
-6ND, -10ND, -5NE, -2ANF and -8ANS



Wiring Diagram 3

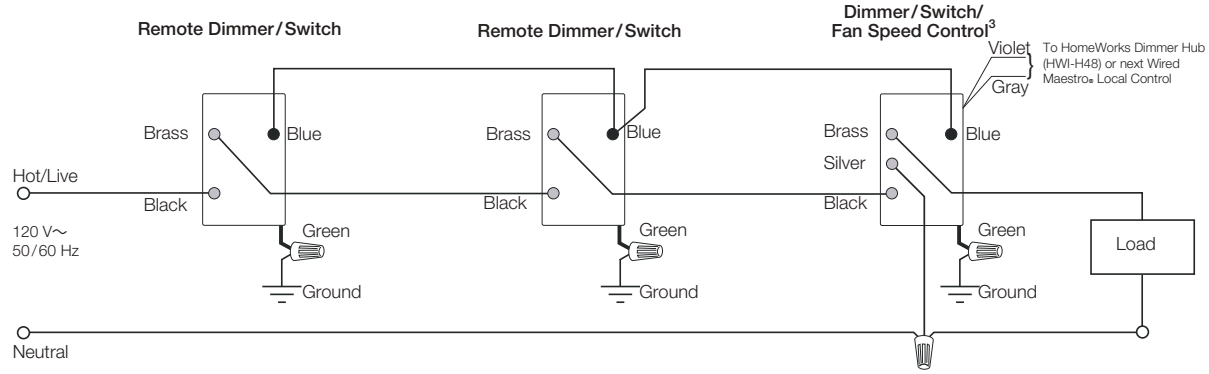
Multi-Location Installation without Neutral[2]
-6D and -10D with HQD-RD



Note: Dimmer can be installed in any location in the circuit.

Wiring Diagram 4

Multi-Location Installation with Neutral[2, 3]
-6ND, -10ND, -5NE and -2ANF with HQD-RD; -8ANS with HQD-RS



[1] When using controls in single location installations, tighten the blue terminal. **DO NOT** connect the blue terminal to any other wiring or to ground.

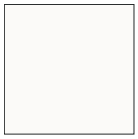
[2] Up to 9 HomeWorks® Maestro® Remote Dimmers/Switches may be connected to the HomeWorks® Wired Maestro® Dimmer/Switch/Fan Speed Controls. Total blue terminal wire length may be up to 250 ft (76 m).

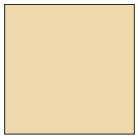
[3] Neutral wire Dimmers/Switches/Fan Speed Controls must be connected on the Load side of a multi-location installation.

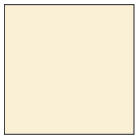
HomeWorks® QS Wired Maestro® Designer Local Controls

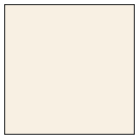
Colors and Finishes

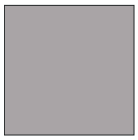
Gloss Finishes


White
WH


Ivory
IV


Almond
AL


Light
Almond
LA


Gray
GR


Brown
BR

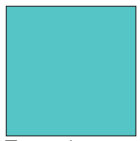

Black
BL

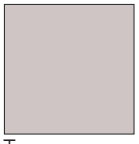
Satin Finishes

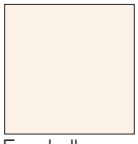

Hot
HT

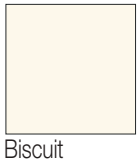

Merlot
MR


Plum
PL


Turquoise
TQ


Taupe
TP


Eggshell
ES


Biscuit
BI


Snow
SW


Palladium
PD


Midnight
MN


Sienna
SI


Terracotta
TC


Greenbriar
GB


Bluestone
BG


Mocha
Stone
MS


Goldstone
GS


Desert Stone
DS


Stone
ST


Limestone
LS

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

  Gloss Finishes - DG-CK-1
  Satin Finishes - SC-CK-1

Metal Finish (wallplate only)


Stainless
Steel SS

When using Stainless Steel wallplates, it is recommended to order the Maestro® Control in Midnight (MN).

HomeWorks® QS Architectural RF Maestro® Local Controls

HomeWorks® QS RF Maestro® local controls function much like standard dimmers and switches, but can be controlled as part of a lighting control system. Local lighting controls are useful in locations where single circuits of lighting need to be dimmed or switched. Local fan speed controls are useful in locations where control of a single ceiling paddle fan is needed.

HomeWorks® QS RF Maestro® dimmers incorporate advanced features such as fade on/fade off, delayed long fade to off, and rapid full on.

HomeWorks® QS RF Maestro® local controls include a Front Accessible Service Switch (FASS™) for safe lamp replacement. HomeWorks® QS RF Maestro® local controls install in single-pole or multi-location applications. Remote dimmers/switches are available for multi-location control.

Use Lutron® Nova T☆® wallplates. Wallplates are sold separately. Lutron® Nova T☆® wallplates snap on with no visible means of attachment. HomeWorks® QS RF Maestro® local controls support color change kits.

Dimmer

Switch

Fan Speed

Remote Dimmer

Remote Switch

Model Numbers

Dimmers

HQRA-6D-XX*	600 W Two-Wire Dimmer
HQRA-6ND-XX*	600 W Neutral Wire Dimmer
HQRA-10D-XX*	1000 W Two-Wire Dimmer
HQRA-10ND-XX*	1000 W Neutral Wire Dimmer
HQRA-6NA-XX*	600 W Neutral Phase Adaptive Dimmer
HQRA-F6AN-DV-XX*	6 A Fluorescent/LED 3-Wire Dimmer

Switches

HQRA-8ANS-XX*	Neutral Wire Electronic Switch
HQRA-8S-DV-XX*	Two-Wire Electronic Switch

Fan Speed Control

Single ceiling paddle fan only (120 V~)

HQRA-2ANF-XX*	2 A Fan Speed Control

Remotes (for multi-location installations)

HQA-RD-XX*	Remote Dimmer (120 V~)
HQA-RS-XX*	Remote Switch (120 V~)
HQA-RD-277-XX*	Remote Dimmer (277 V~ *(use only with -F6AN-DV)*
HQA-RS-277-XX*	Remote Switch (277 V~) *(use only with -8S-DV)*

Color Change Kits

RKA-D-XX*	Dimmers (-6D -6ND, -10D, -10ND, -6NA, and -F6AN-DV)
RKA-S-XX*	Switches (-8ANS and -8S-DV)
RKA-AD-XX*	Remote Dimmer (-RD)
RKA-AS-XX*	Remote Switch (-RS)
RKA-F-XX	Fan Speed Control (-2ANF)

*"XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document.

HomeWorks® QS Architectural RF Maestro® Local Controls

Specifications

Model Numbers	**Dimmer:** HQRA-6D-XX, HQRA-6ND-XX, HQRA-10D-XX, HQRA-10ND-XX, HQRA-6NA-XX, HQRA-F6AN-DV-XX **Switch:**HQRA-8ANS-XX, HQRA-8S-DV-XX **Fan Speed Control:** HQRA-2ANF-XX **Remote:** HQA-RD-XX, HQA-RS-XX, HQA-RD-277-XX, HQA-RS-277-XX **Color Change Kits:** RKA-D-XX, RKA-S-XX, RKA-AD-XX, RKA-AS-XX, RKA-F-XX
Power	120 V~ 50/60 Hz (-6D, -6ND, -10D, -10ND, -6NA, -2ANF, -8ANS, -RD, -RS) 120–277 V~ 50/60 Hz (-F6AN-DV, -8S-DV)
Typical Power Consumption	**Dimmer/Switch/Fan Speed Control:** 0.75 W Test conditions: load is off and nightlight mode is enabled. **Remote Dimmer/Switch:** 0 W Test conditions: load is off.
Regulatory Approvals	UL, CSA (all except -6NA), cUL (-6NA only), NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Dimmers and switches communicate with the HomeWorks® system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater. Remote dimmers/switches are not required to be within a specific range of a repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the control will return to its previous state when power is restored.
Mounting	Requires a U.S. wallbox. 3½ in (89 mm) deep recommended, 2¼ in (57 mm) deep minimum.
Wiring	Uses conventional 3-way and 4-way wiring.
Warranty	http://www.lutron.com/TechnicalDocumentLibrary/warranty.pdf

HomeWorks® QS Architectural RF Maestro® Local Controls

Design Features

Dimmer

- On a single-tap, lights fade ON or OFF.
- On a double-tap, lights go to full ON.
- When ON, press and hold the tapswitch to engage the delayed long fade to OFF.
- Light levels can be fine-tuned by pressing and holding the dimming rocker until the desired light level is reached.
- Neutral and two-wire dimmers available.

Switch

- On a single-tap, lights or motors turn ON or OFF.
- Neutral and two-wire switches available.

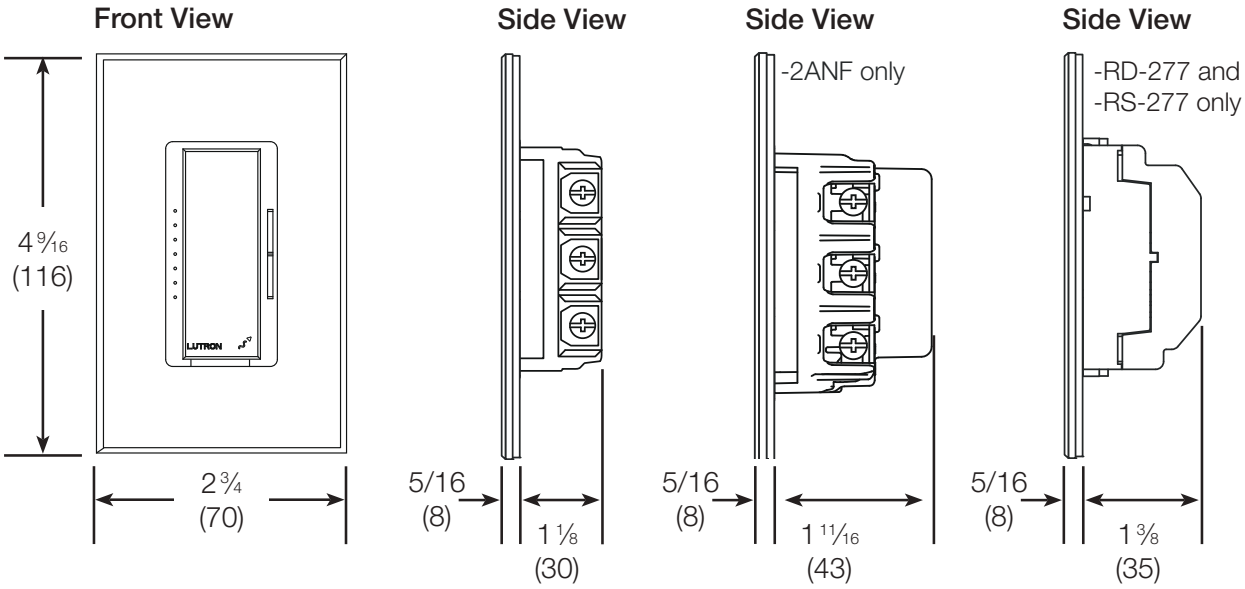
Fan Speed Control

- On a single-tap, fan turns ON or OFF.
- Fan speeds can be selected by pressing and holding the fan speed control rocker until the desired fan speed is reached.
- Controls one paddle type ceiling fan (Permanent split-capacitor motor) up to 2 A. Not for use with shaded-pole type motors (i.e. bath exhaust fans).
- Provides four (4) quiet speeds plus OFF.
- Not for use with fans that have integrated fan speed and/or light control modules.
- Requires a neutral connection.

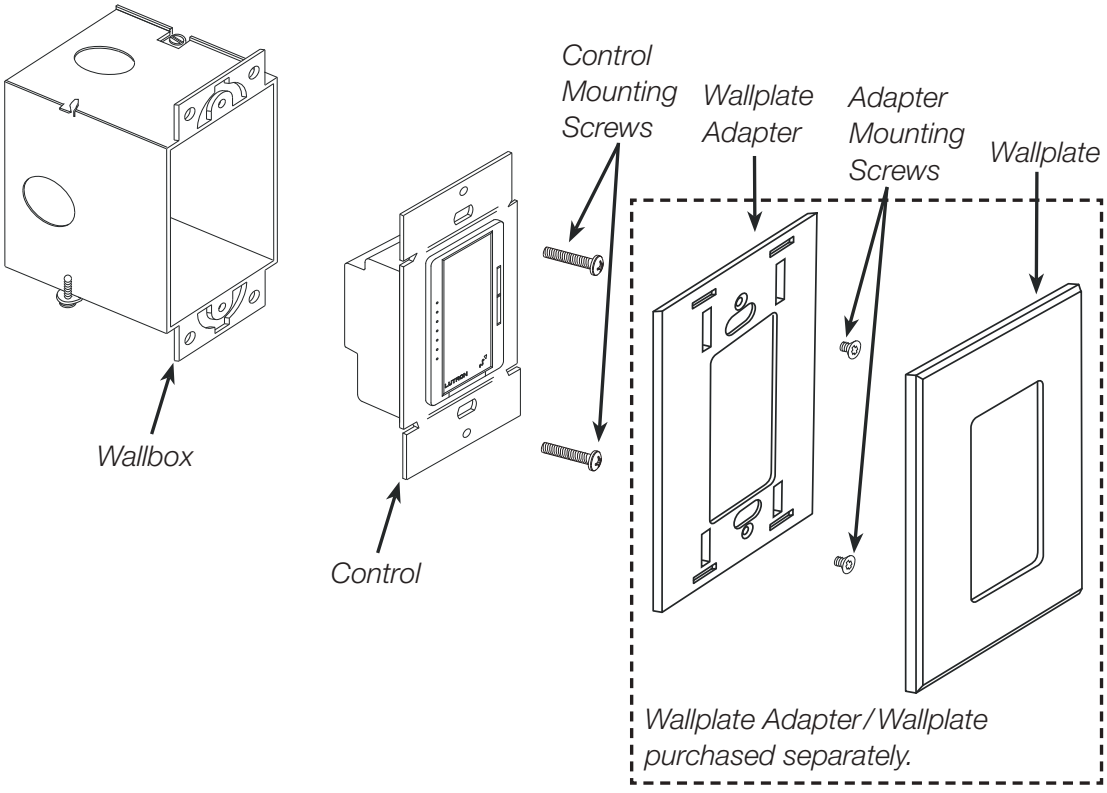
HomeWorks® QS Architectural RF Maestro® Local Controls

Dimensions

All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$



Mounting and Parts Identification

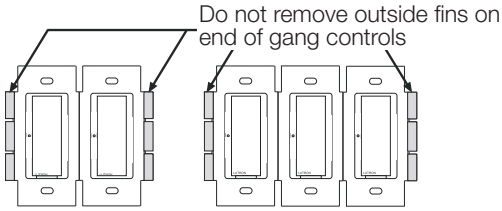


HomeWorks® QS Architectural RF Maestro® Local Controls

Ganging and Derating

When combining controls in the same wallbox, derating is required. See **Load Type and Capacity**. No derating is required for remote dimmers/switches/fan speed controls. -8ANS, -RD-277, and -RS-277 have fins that need to be removed for multigang installations.

-8ANS, -RD-277, and -RS-277 only:



Each control has inside fins removed

Middle of gang control has all fins removed

Load Type and Capacity

Control	Load Type	Minimum Load	Not Ganged	End of Gang	Middle of Gang	Neutral Connection
HQRA-6D[1]	Incand.	50 W	600 W	500 W	400 W	NO
	MLV[2]	50 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HQRA-6ND[1, 4]	Incand.	10 W	600 W	500 W	400 W	YES
	MLV[2]	10 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HQRA-10D[1]	Incand.	50 W	1000 W	800 W	650 W	NO
	MLV[2]	50 W/VA	800 W/ 1000 VA	600 W/ 800 VA	500 W/ 650 VA	
HQRA-10ND[1, 4]	Incand.	10 W	1000 W	800 W	650 W	YES
	MLV[2]	10 W/VA	800 W/ 1000 VA	600 W/ 800 VA	500 W/ 650 VA	
HQRA-6NA[1, 4]	Incand./ELV	5 W	600 W	500 W	400 W	YES
	MLV[2]	5 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HQRA-F6AN-DV[3, 4, 5]	Fluorescent/ LED	0.05 A	6 A	5 A	3.5 A	YES
		1 ballast	60 ballasts	50 ballasts	35 ballasts	
HQRA-2ANF[6]	Ceiling Fan	0.083 A	2 A	2 A	2 A	YES
HQRA-8ANS[4, 7]	Lighting	10 W	8 A	6.5 A	5 A	YES
	Motor	0.08 A	1/4 HP 5.8 A	1/4 HP 5.8 A	1/6 HP 4.4 A	
HQRA-8S-DV[7, 8]	Lighting	40 W/VA	8 A	8 A (2-gang) 7 A (3-gang)	7 A	NO
	Motor	0.4 A	1/10 HP 3 A			

Continued on next page...

HomeWorks® QS Architectural RF Maestro® Local Controls

Load Type and Capacity *(continued)*

1 Dimmer Load Type: -6D, -6ND,-10D, and -10ND are designed for use with permanently installed incandescent, magnetic low-voltage, or tungsten halogen only. -6NA is designed for use with permanently installed incandescent, electronic low-voltage, magnetic low-voltage, or tungsten halogen only. Do not install dimmers to control receptacles or motor-operated appliances.

2 Low-Voltage Applications: Use -6D, -6ND, -10D and -10ND with magnetic (core and coil) low-voltage transformers only. Not for use with electronic (solid-state) low-voltage transformers. Use -6NA with electronic (solid-state) or magnetic (core and coil) transformers.
Operation of a low-voltage circuit with lamps inoperative or removed may result in transformer overheating and premature failure. Lutron strongly recommends the following:
- Do not operate low-voltage circuits without operative lamps in place.
- Replace burned-out lamps as soon as possible.
- Use transformers that incorporate thermal protection or fused transformer primary windings to prevent transformer failure due to overcurrent.

3 Fluorescent Dimmer Load Type: -F6AN-DV is designed for use with permanently installed 3-wire 120 V~ or 277 V~ line voltage control fluorescent ballasts or LED drivers. Use only with Hi-lume®, Hi-lume® 3D, Compact SE™, Eco-10®, or EcoSystem® (H3D-, FDB-, ECO-, HL3-, EC5-, L3D). Do NOT use with any other ballasts or drivers. Do not install to control receptacles or motor-operated appliances.

4 Power Boosters/Load Interfaces: -6ND, -10ND, -6NA, -F6AN-DV, and -8ANS can be used to control power boosters/load interfaces. For a list of compatible power boosters/load interfaces see **Compatible Power Boosters and Load Interfaces**.

5 Maximum Load: The maximum load for the -F6AN-DV is either the derated load or the number of ballasts, whichever is LESS.

6 Ceiling Fan Application: -2ANF
- Use to control one paddle-type ceiling fan (Permanent split-capacitor).
- Use the ceiling fan's pull chain to set its speed to the highest setting.
- Do not use to control fans that use shaded-pole motors (i.e. bath exhaust fans).
- Do not use to control fans that have integrated fan speed controls (i.e. fans that have a remote control), unless the integrated control is removed from the ceiling fan.
- Do not connect to any other motor-operated appliance or to any lighting load type.
- Do not use to control a fan lighting load (i.e. light kit).

7 Switch Load Type: -8ANS and -8S-DV are designed for use with permanently installed 120 V~ incandescent, magnetic low-voltage, electronic low-voltage, tungsten halogen, fluorescent, or motor loads. -8S-DV can also be used with permanently installed 277 V~ magnetic low-voltage or fluorescent loads.

8 Shunt Capacitor: Some -8S-DV installations may require the use of a shunt capacitor. This is especially necessary for load types sensitive to leakage current (i.e. fluorescent ballasts). If load flickers, install a shunt capacitor. Optional shunt capacitor must be installed inside the load fixture or in a separate J-box. For shunt capacitor installation see **Wiring Diagram 4**, **9**, or **10**.

HomeWorks® QS Architectural RF Maestro® Local Controls

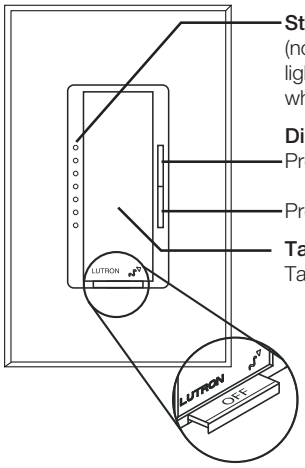
Compatible Power Boosters and Load Interfaces

Some local controls can be used to control power boosters or load interfaces. Up to three power boosters or load interfaces can be used with one control. See table below for a list of controls and compatible power boosters and load interfaces.

Control	Phase Adaptive Power Modules (PHPM-PA-120-WH & PHPM-PA-DV-WH)	3-wire Fluorescent Power Modules (PHPM-3F-120-WH & PHPM-3F-DV-WH)	Switched Power Module (PHPM-SW-DV-WH)	0-10 V Interface and Switching Module (GRX-TVI)
HQRA-6ND	✓	✓		✓
HQRA-10ND	✓	✓		✓
HQRA-6NA	✓	✓		✓
HQRA-F6AN-DV	✓	✓		✓
HQRA-8ANS			✓	

Operation

Dimmer



Status LEDs
(not on Remote Dimmers) Indicate light level; glow softly as night light when light is off

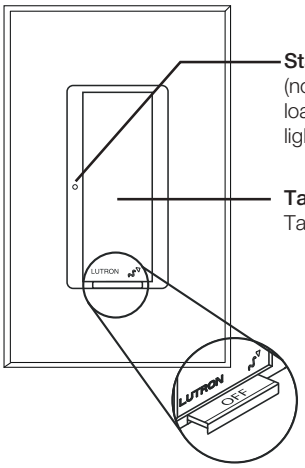
Dimming Rocker
Press to brighten

Press to dim

Tapswitch
Tap on/off

FASS™
Front Accessible Service Switch

Switch



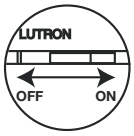
Status LED
(not on Remote Switches) Indicates load status; glows softly as night light when light is off

Tapswitch
Tap on/off

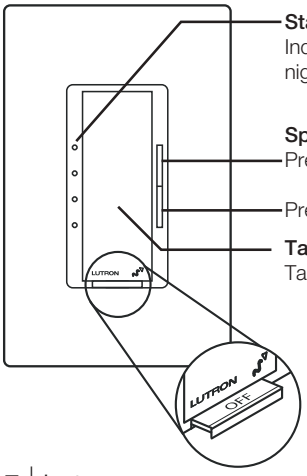
FASS™
Front Accessible Service Switch

OR

RD-277 and RS-277 only



Fan Speed Control



Status LEDs
Indicate speed level; glow softly as night light when fan is off

Speed Control Rocker
Press to increase speed

Press to decrease speed

Tapswitch
Tap on/off

FASS™
Front Accessible Service Switch

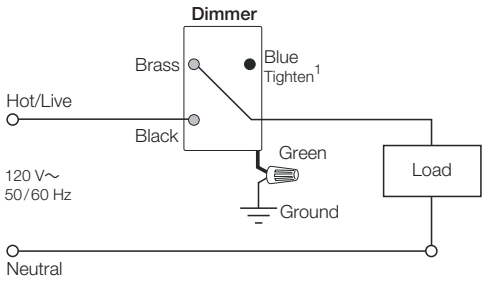
IMPORTANT NOTICE:
FASS™ - Front Accessible Service Switch
To replace bulb, remove power by pulling the FASS™ switch out fully on all controlling devices.
After replacing bulb(s), push the FASS™ switch(es) back in fully to restore power to the control(s).

HomeWorks® QS Architectural RF Maestro® Local Controls

Wiring Diagrams

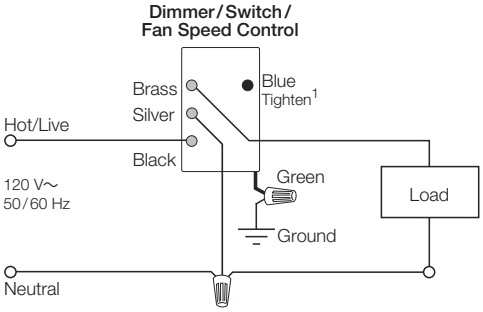
Wiring Diagram 1

Single Location Installation without Neutral[1]
-6D and -10D



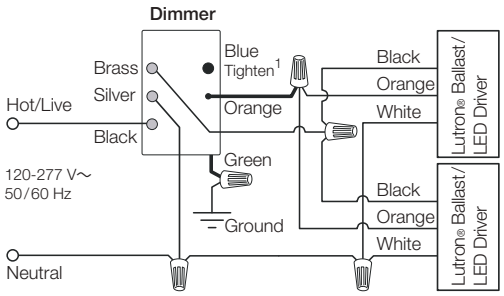
Wiring Diagram 2

Single Location Installation with Neutral[1]
-6ND, -10ND, -6NA, -2ANF and -8ANS



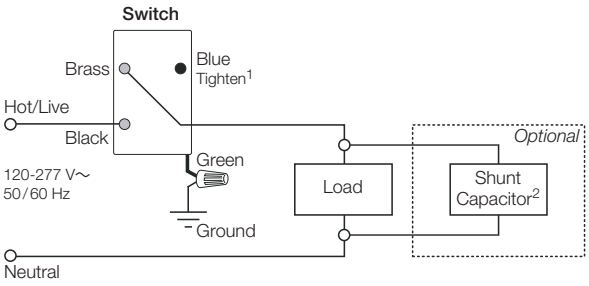
Wiring Diagram 3

Single Location Fluorescent Dimmer Installation[1]
-F6AN-DV with Lutron® Ballast/LED Driver



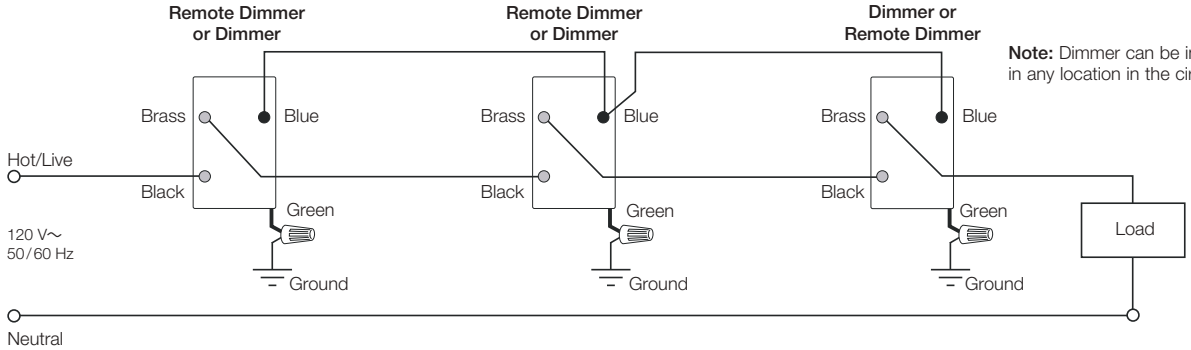
Wiring Diagram 4

Single Location 2-wire Switch Installation[1]
-8S-DV with optional shunt capacitor[2]



Wiring Diagram 5

Multi-Location Installation without Neutral[3]
-6D and -10D with HQD-RD



Note: Dimmer can be installed in any location in the circuit.

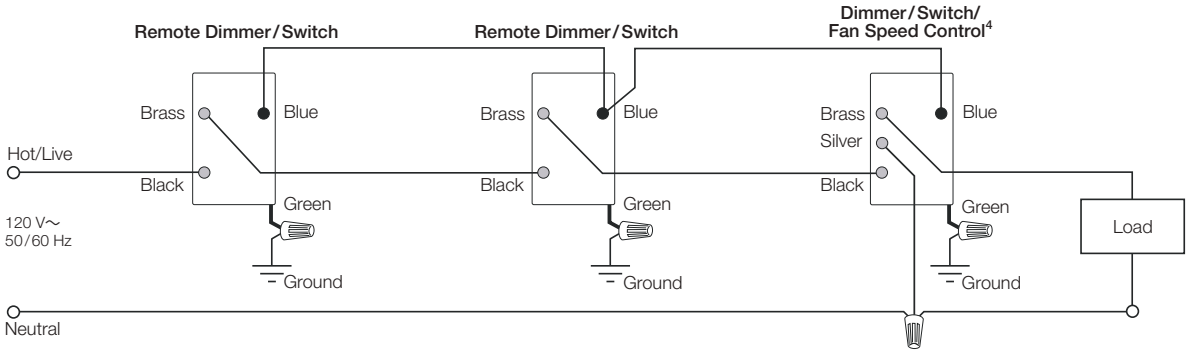
Continued on next page...

HomeWorks® QS Architectural RF Maestro® Local Controls

Wiring Diagrams *(continued)*

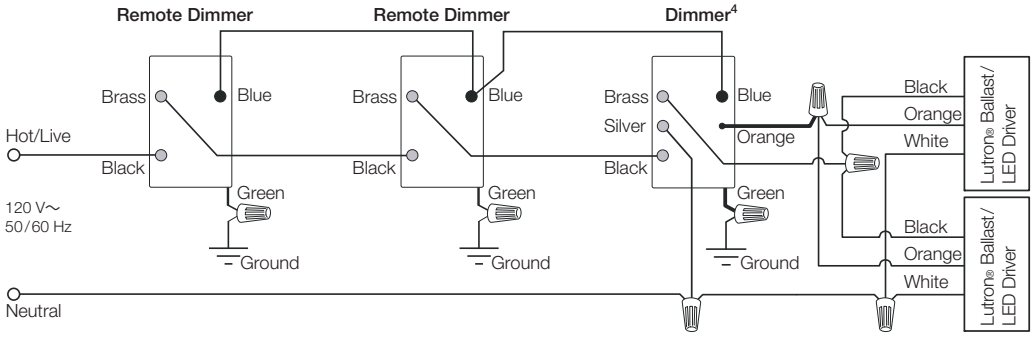
Wiring Diagram 6

Multi-Location Installation with Neutral[3, 4]
-6ND, -10ND, -6NA, and -2ANF with HQD-RD; -8ANS with HQD-RS



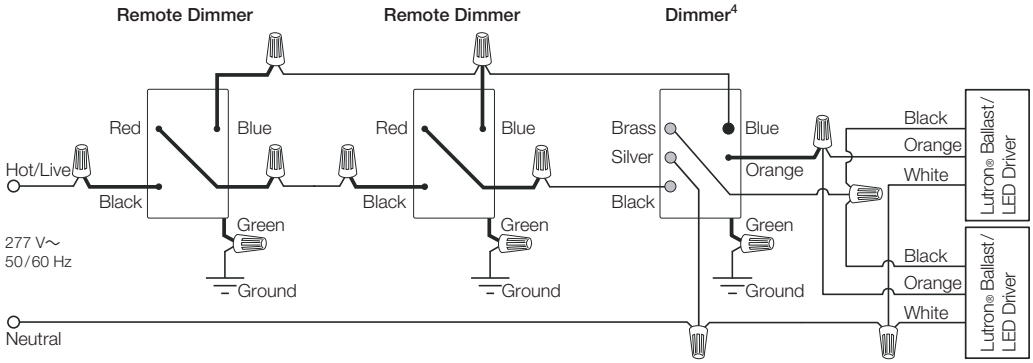
Wiring Diagram 7

Multi-Location Fluorescent Dimmer Installation[3, 4] (120 V~)
-F6AN with HQD-RD and Lutron® Ballast/LED Driver



Wiring Diagram 8

Multi-Location Fluorescent Dimmer Installation[3, 4] (277 V~)
-F6AN with HQD-RD-277 and Lutron® Ballast/LED Driver



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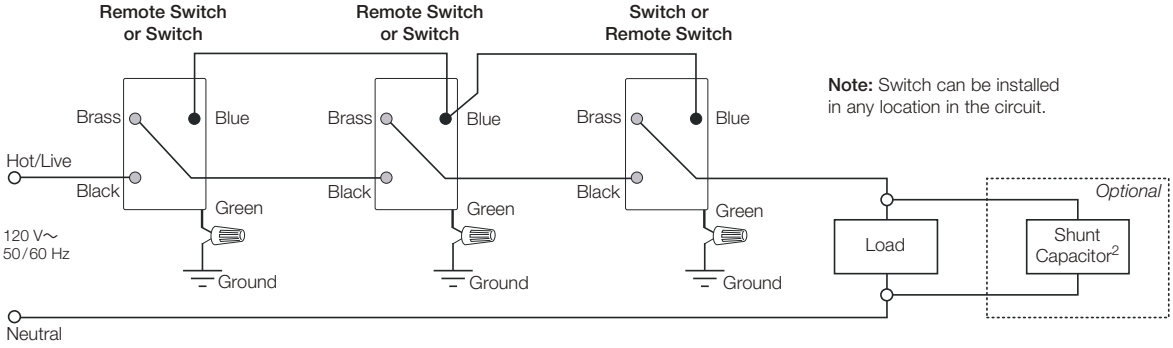
HomeWorks® QS Architectural RF Maestro® Local Controls

Wiring Diagrams *(continued)*

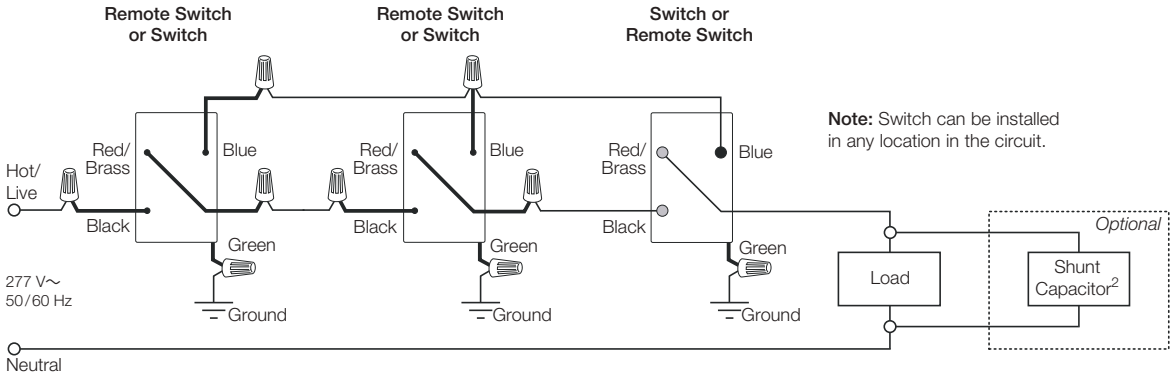
Wiring Diagram 9

Multi-Location 2-wire Switch Installation[3] (120 V~)
-8S-DV with HQD-RS and optional shunt capacitor



Wiring Diagram 10

Multi-Location 2-wire Switch Installation[3] (277 V~)
-8S-DV with HQD-RS-277 and optional shunt capacitor



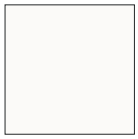
1 When using controls in single location installations, tighten the blue terminal. **Do not** connect the blue terminal to any other wiring or to ground.
2 Optional shunt capacitor must be installed inside the load fixture or in a separate J-box.
3 Up to 9 Remote Dimmers/Switches may be connected to the Dimmer/Switch/Fan Speed Controls. Total blue terminal wire length may be up to 250 ft (76 m).
4 Neutral wire Dimmers/Switches/Fan Speed Controls must be connected on the Load side of a multi-location installation.

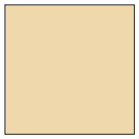
NOTE: Bolded lines in diagrams indicate leads on products.

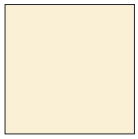
HomeWorks® QS Architectural RF Maestro® Local Controls

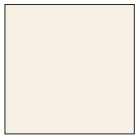
Colors and Finishes

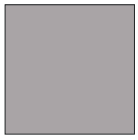
Architectural Matte Finishes


White
WH


Ivory
IV

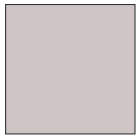

Almond
AL


Light Almond
LA

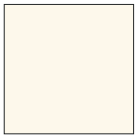

Gray
GR


Brown
BR


Black
BL

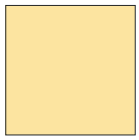

Taupe
TP

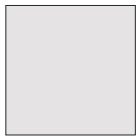

Sienna
SI


Beige
BE

Architectural Metal Finishes (wallplates only)


Satin Brass
SB


Bright Brass
BB


Bright Chrome
BC

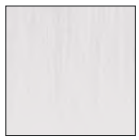

Clear Anodized Aluminum
CLA


Black Anodized Aluminum
BLA

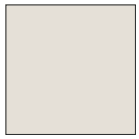

Brass Anodized Aluminum
BRA

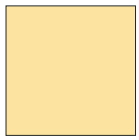

Antique Brass
QB


Antique Bronze
QZ


Satin Chrome
SC


Satin Nickel
SN


Bright Nickel
BN


Gold
AU

When ordering metal wallplates, it is recommended to order the Maestro® Control in Black (BL).

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

  Architectural Matte Finishes- AM-CK-1
  Architectural Metal Finishes - AMTL-CK-1

HomeWorks® QS RF Maestro® Designer Local Controls

HomeWorks® QS RF Maestro® local controls function much like standard dimmers and switches, but can be controlled as part of a lighting control system. Local lighting controls are useful in locations where single circuits of lighting need to be dimmed or switched. Local fan speed controls are useful in locations where control of a single ceiling paddle fan is needed.

HomeWorks® QS RF Maestro® dimmers incorporate advanced features such as fade on/fade off, delayed long fade to off, and rapid full on.

HomeWorks® QS RF Maestro® local controls include a Front Accessible Service Switch (FASS™) for safe lamp replacement. HomeWorks® QS RF Maestro® local controls install in single-pole or multi-location applications. Remote dimmers/switches are available for multi-location control.

Use Lutron® Designer (Claro® or Satin Colors®) wallplates or designer-style wallplates from other manufacturers. Wallplates are sold separately. Lutron® Claro® and Satin Colors® wallplates snap on with no visible means of attachment. HomeWorks® QS RF Maestro® local controls support color change kits.

Dimmer

Switch

Fan Speed

Remote Dimmer

Remote Switch

Model Numbers

Dimmers

HQRD-6D-XX*	600 W Two-Wire Dimmer
HQRD-6ND-XX*	600 W Neutral Wire Dimmer
HQRD-10D-XX*	1000 W Two-Wire Dimmer
HQRD-10ND-XX*	1000 W Neutral Wire Dimmer
HQRD-6NA-XX*	600 W Neutral Phase Adaptive Dimmer
HQRD-6NE-XX*	600 W/600 VA Neutral Wire Dimmer (ELV 120 V~)
HQRD-F6AN-DV-XX*	6 A Fluorescent/LED 3-Wire Dimmer

Switches

HQRD-8ANS-XX*	Neutral Wire Electronic Switch
HQRD-8S-DV-XX*	Two-Wire Electronic Switch

Fan Speed Control

Single ceiling paddle fan only (120 V~)

HQRD-2ANF-XX*	2 A Fan Speed Control

Remotes (for multi-location installations)

HQD-RD-XX*	Remote Dimmer (120 V~)
HQD-RS-XX*	Remote Switch (120 V~)
HQD-RD-277-XX*	Remote Dimmer (277 V~) *(use only with -F6AN-DV)*
HQD-RS-277-XX*	Remote Switch (277 V~) *(use only with -8S-DV)*

Color Change Kits

RK-D-XX*	Dimmers (-6D, -10D, -10ND, -6NA, -6NE, and -F6AN-DV)
RK-S-XX*	Switches (-8ANS and -8S-DV)
RK-AD-XX*	Remote Dimmer (-RD)
RK-AS-XX*	Remote Switch (-RS)
RK-F-XX*	Fan Speed Control (-2ANF)

*"XX" in the model number represents color/finish code. See **Colors and Finishes** at end of document.

HomeWorks® QS RF Maestro® Designer Local Controls

Specifications

Model Numbers	**Dimmer:** HQRD-6D-XX, HQRD-6ND-XX, HQRD-10D-XX, HQRD-10ND-XX, HQRD-6NA-XX, HQRD-F6AN-DV-XX, HQRD-6NE-XX **Switch:**HQRD-8ANS-XX, HQRD-8S-DV-XX **Fan Speed Control:** HQRD-2ANF-XX **Remote:** HQD-RD-XX, HQD-RS-XX, HQD-RD-277-XX, HQD-RS-277-XX **Color Change Kits:** RK-D-XX, RK-S-XX, RK-AD-XX, RK-AS-XX
Power	120 V~ 50/60 Hz (-6D, -10D, -10ND, -6NA, -6NE, -2ANF, -8ANS, -RD, -RS) 120–277 V~ 50/60 Hz (-F6AN-DV, -8S-DV)
Typical Power Consumption	**Dimmer/Switch/Fan Speed Control:** 0.75 W Test conditions: load is off and nightlight mode is enabled. **Remote Dimmer/Switch:** 0 W Test conditions: load is off.
Regulatory Approvals	UL, CSA (all except -6NA and -6NE), cUL (-6NA and -6NE only), NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Dimmers and switches communicate with the HomeWorks® system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater. Remote dimmers/switches are not required to be within a specific range of a repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the control will return to its previous state when power is restored.
Mounting	Requires a U.S. wallbox. 3½ in (89 mm) deep recommended, 2¼ in (57 mm) deep minimum.
Wiring	Uses conventional 3-way and 4-way wiring.
Warranty	8 Year Limited Warranty. http://www.lutron.com/TechnicalDocumentLibrary/warranty.pdf

HomeWorks® QS RF Maestro® Designer Local Controls

Design Features

Dimmer

- On a single-tap, lights fade ON or OFF.
- On a double-tap, lights go to full ON.
- When ON, press and hold the tapswitch to engage the delayed long fade to OFF.
- Light levels can be fine-tuned by pressing and holding the dimming rocker until the desired light level is reached.
- Neutral and two-wire dimmers available.

Switch

- On a single-tap, lights or motors turn ON or OFF.
- Neutral and two-wire switches available.

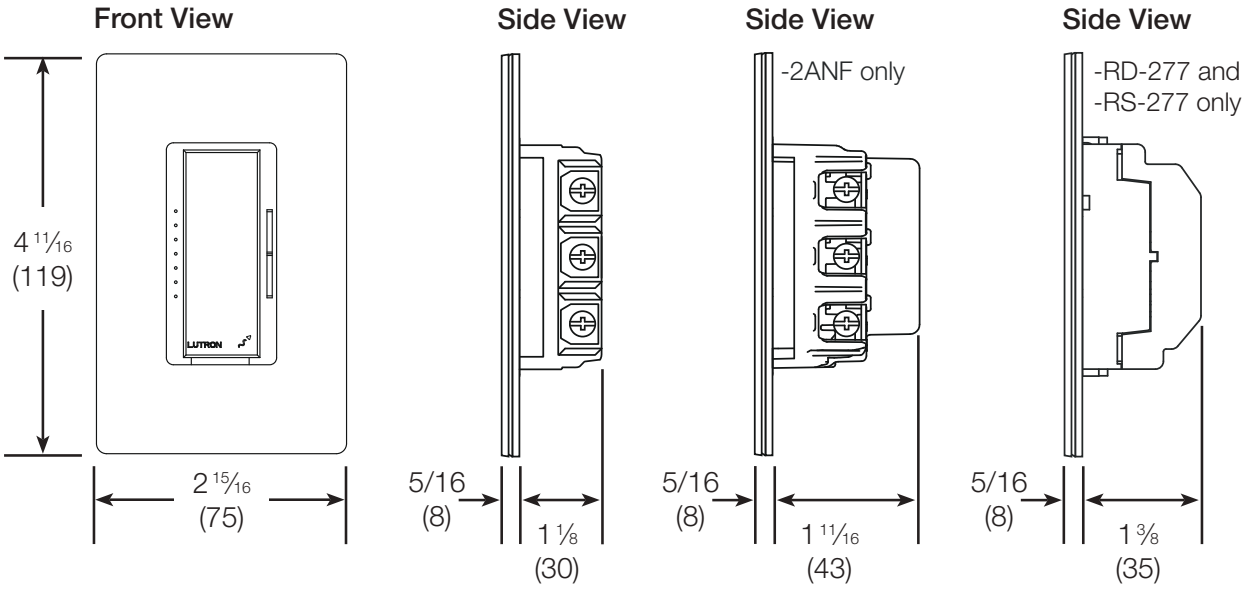
Fan Speed Control

- On a single-tap, fan turns ON or OFF.
- Fan speeds can be selected by pressing and holding the fan speed control rocker until the desired fan speed is reached.
- Controls one paddle -type ceiling fan (Permanent split-capacitor motor) up to 2 A. Not for use with shaded-pole type motors (i.e. bath exhaust fans).
- Provides four (4) quiet speeds plus OFF.
- Not for use with fans that have integrated fan speed and/or light control modules.
- Requires a neutral connection.

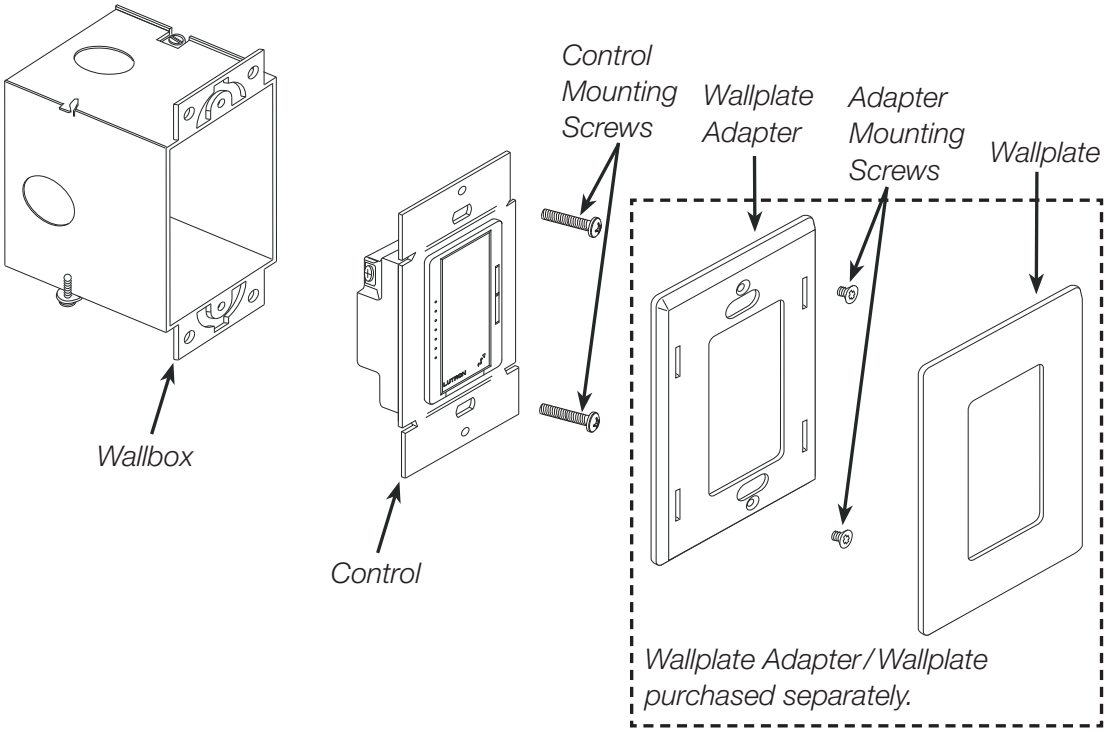
HomeWorks® QS RF Maestro® Designer Local Controls

Dimensions

All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$



Mounting and Parts Identification

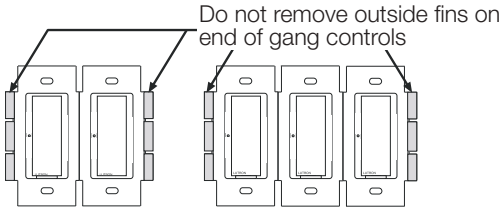


HomeWorks® QS RF Maestro® Designer Local Controls

Ganging and Derating

When combining controls in the same wallbox, derating is required. See **Load Type and Capacity**. No derating is required for remote dimmers/switches/fan speed controls. -8ANS, -RD-277, and -RS-277 have fins that need to be removed for multigang installations.

-8ANS, -RD-277, and -RS-277 only:



Load Type and Capacity

Control	Load Type	Minimum Load	Not Ganged	End of Gang	Middle of Gang	Neutral Connection
HQRD-6D[1]	Incand.	50 W	600 W	500 W	400 W	NO
	MLV[2]	50 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HQRD-6ND[1, 4]	Incand.	10 W	600 W	500 W	400 W	YES
	MLV[2]	10 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HQRD-10D[1]	Incand.	50 W	1000 W	800 W	650 W	NO
	MLV[2]	50 W/VA	800 W/ 1000 VA	600 W/ 800 VA	500 W/ 650 VA	
HQRD-10ND[1, 4]	Incand.	10 W	1000 W	800 W	650 W	YES
	MLV[2]	10 W/VA	800 W/ 1000 VA	600 W/ 800 VA	500 W/ 650 VA	
HQRD-6NA[1, 4]	Incand./ELV	5 W	600 W	500 W	400 W	YES
	MLV[2]	5 W/VA	450 W/ 600 VA	400 W/ 500 VA	300 W/ 400 VA	
HQRD-6NE[1, 4]	ELV	5 W	600 W	500 W	400 W	YES
HQRD-F6AN-DV[3, 4, 5]	Fluorescent/ LED	0.05 A	6 A	5 A	3.5 A	YES
		1 ballast	60 ballasts	50 ballasts	35 ballasts	
HQRD-2ANF[6]	Ceiling Fan	0.083 A	2 A	2 A	2 A	YES
HQRD-8ANS[4, 7]	Lighting	10 W	8 A	6.5 A	5 A	YES
	Motor	0.08 A	1/4 HP 5.8 A	1/4 HP 5.8 A	1/6 HP 4.4 A	
HQRD-8S-DV[7, 8]	Lighting	40 W/VA	8 A	8 A (2-gang) 7 A (3-gang)	7 A	NO
	Motor	0.4 A	1/10 HP 3 A			

Continued on next page...

HomeWorks® QS RF Maestro® Designer Local Controls

Load Type and Capacity *(continued)*

1 Dimmer Load Type: -6D, -6ND,-10D, and -10ND are designed for use with permanently installed incandescent, magnetic low-voltage, or tungsten halogen only. -6NA is designed for use with permanently installed incandescent, electronic low-voltage, magnetic low-voltage, or tungsten halogen only. Do not install dimmers to control receptacles or motor-operated appliances.

2 Low-Voltage Applications: Use -6D, -6ND, -10D and -10ND with magnetic (core and coil) low-voltage transformers only. Not for use with electronic (solid-state) low-voltage transformers. Use -6NA with electronic (solid-state) or magnetic (core and coil) transformers.
Operation of a low-voltage circuit with lamps inoperative or removed may result in transformer overheating and premature failure. Lutron strongly recommends the following:

- Do not operate low-voltage circuits without operative lamps in place.
- Replace burned-out lamps as soon as possible.
- Use transformers that incorporate thermal protection or fused transformer primary windings to prevent transformer failure due to overcurrent.

3 Fluorescent Dimmer Load Type: -F6AN-DV is designed for use with permanently installed 3-wire 120 V~ or 277 V~ line voltage control fluorescent ballasts or LED drivers. Use only with Hi-lume®, Hi-lume® 3D, Compact SE™, Eco-10®, or EcoSystem® (H3D-, FDB-, ECO-, HL3-, EC5-, L3D). Do NOT use with any other ballasts or drivers. Do not install to control receptacles or motor-operated appliances.

4 Power Boosters/Load Interfaces: -6ND, -10ND, -6NA, -6NE, -F6AN-DV, and -8ANS can be used to control power boosters/load interfaces. For a list of compatible power boosters/load interfaces see **Compatible Power Boosters and Load Interfaces**.

5 Maximum Load: The maximum load for the -F6AN-DV is either the derated load or the number of ballasts, whichever is **LESS**.

6 Ceiling Fan Application: -2ANF

- Use to control one paddle-type ceiling fan (Permanent split-capacitor).
- Use the ceiling fan's pull chain to set its speed to the highest setting.
- Do not use to control fans that use shaded-pole motors (i.e. bath exhaust fans).
- Do not use to control fans that have integrated fan speed controls (i.e. fans that have a remote control), unless the integrated control is removed from the ceiling fan.
- Do not connect to any other motor-operated appliance or to any lighting load type.
- Do not use to control a fan lighting load (i.e. light kit).

7 Switch Load Type: -8ANS and -8S-DV are designed for use with permanently installed 120 V~ incandescent, magnetic low-voltage, electronic low-voltage, tungsten halogen, fluorescent, or motor loads. -8S-DV can also be used with permanently installed 277 V~ magnetic low-voltage or fluorescent loads.

8 Shunt Capacitor: Some -8S-DV installations may require the use of a shunt capacitor. This is especially necessary for load types sensitive to leakage current (i.e. fluorescent ballasts). If load flickers, install a shunt capacitor. Optional shunt capacitor must be installed inside the load fixture or in a separate J-box. For shunt capacitor installation see **Wiring Diagram 4**, **9**, or **10**.

HomeWorks® QS RF Maestro® Designer Local Controls

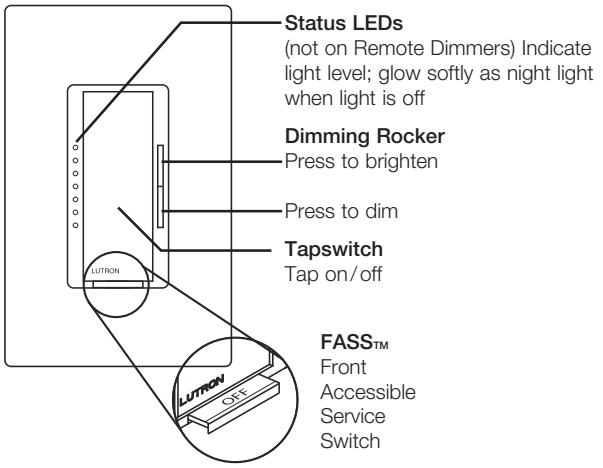
Compatible Power Boosters and Load Interfaces

Some local controls can be used to control power boosters or load interfaces. Up to three power boosters or load interfaces can be used with one control. See table below for a list of controls and compatible power boosters and load interfaces.

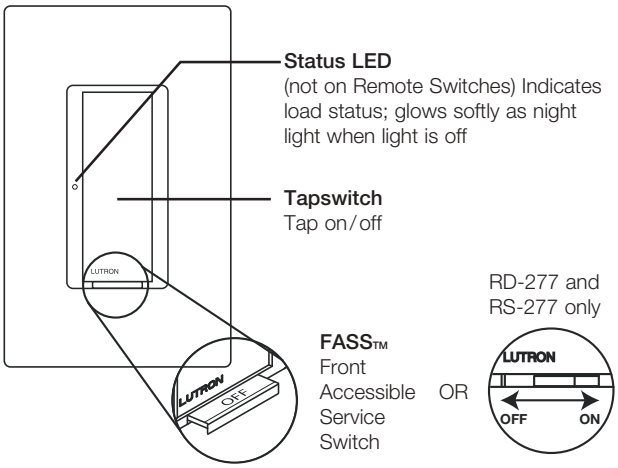
Control	Phase Adaptive Power Modules (PHPM-PA-120-WH & PHPM-PA-DV-WH)	3-wire Fluorescent Power Modules (PHPM-3F-120-WH & PHPM-3F-DV-WH)	Switched Power Module (PHPM-SW-DV-WH)	0-10 V Interface and Switching Module (GRX-TVI)
HQRD-6ND	✓	✓		✓
HQRD-10ND	✓	✓		✓
HQRD-6NA	✓	✓		✓
HQRD-6NE	✓	✓		✓
HQRD-F6AN-DV	✓	✓		✓
HQRD-8ANS			✓	

Operation

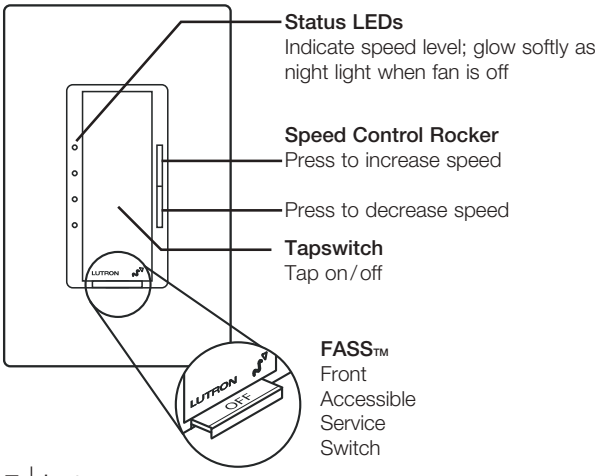
Dimmer



Switch



Fan Speed Control



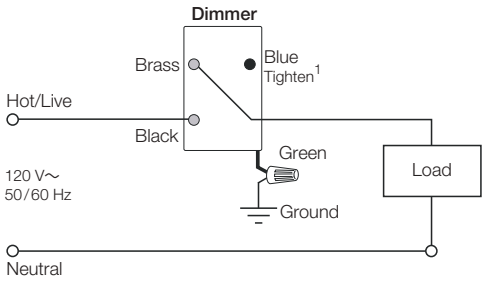
IMPORTANT NOTICE:
FASS™ - Front Accessible Service Switch
To replace bulb, remove power by pulling the FASS™ switch out fully on all controlling devices.
After replacing bulb(s), push the FASS™ switch(es) back in fully to restore power to the control(s).

HomeWorks® QS RF Maestro® Designer Local Controls

Wiring Diagrams

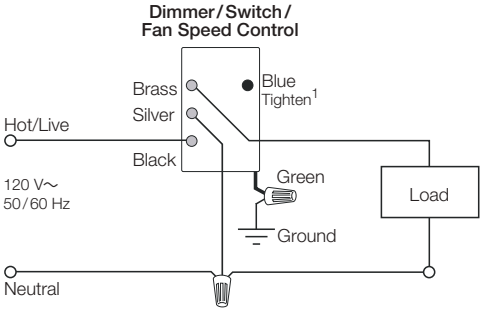
Wiring Diagram 1

Single Location Installation without Neutral[1]
-6D and -10D



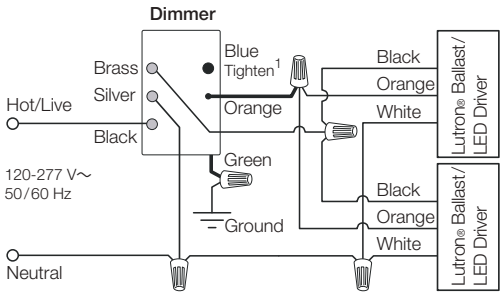
Wiring Diagram 2

Single Location Installation with Neutral[1]
-6ND, -10ND, -6NA, 6NE, -2ANF and -8ANS



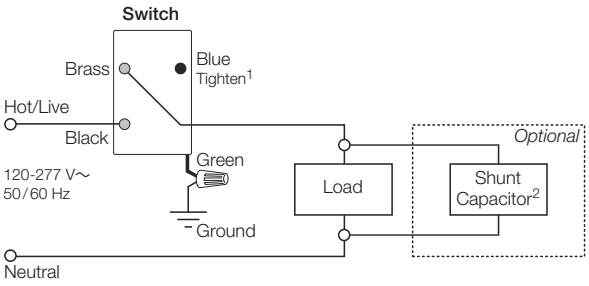
Wiring Diagram 3

Single Location Fluorescent Dimmer Installation[1]
-F6AN-DV with Lutron® Ballast/LED Driver



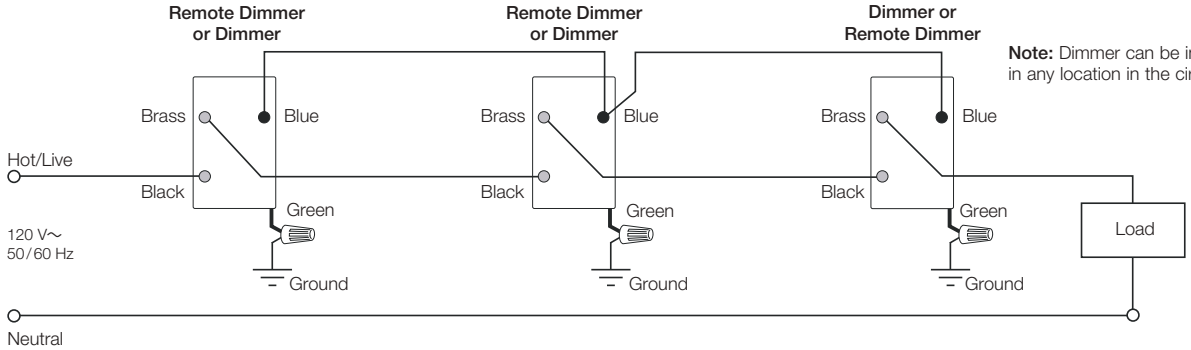
Wiring Diagram 4

Single Location 2-wire Switch Installation[1]
-8S-DV with optional shunt capacitor[2]



Wiring Diagram 5

Multi-Location Installation without Neutral[3]
-6D and -10D with HQD-RD



Note: Dimmer can be installed in any location in the circuit.

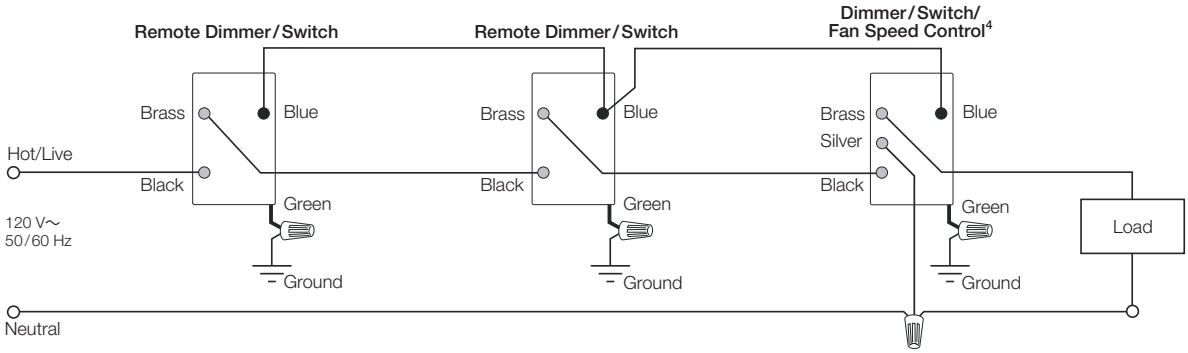
Continued on next page...

HomeWorks® QS RF Maestro® Designer Local Controls

Wiring Diagrams *(continued)*

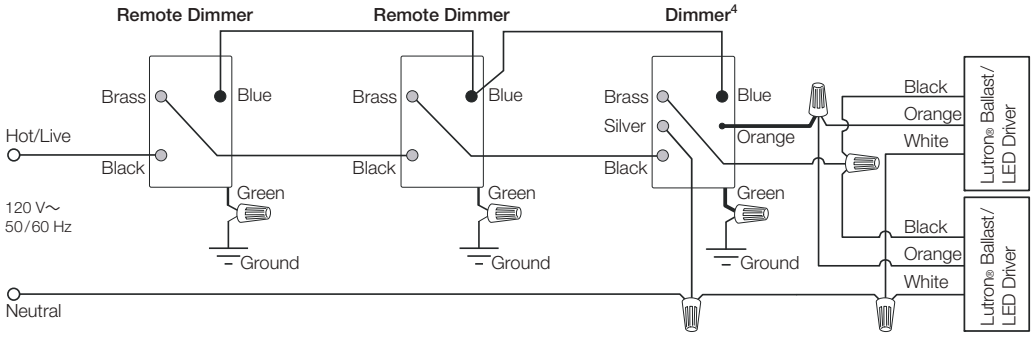
Wiring Diagram 6

Multi-Location Installation with Neutral[3, 4]
-6ND, -10ND, -6NA, -6NE and -2ANF with HQD-RD; -8ANS with HQD-RS



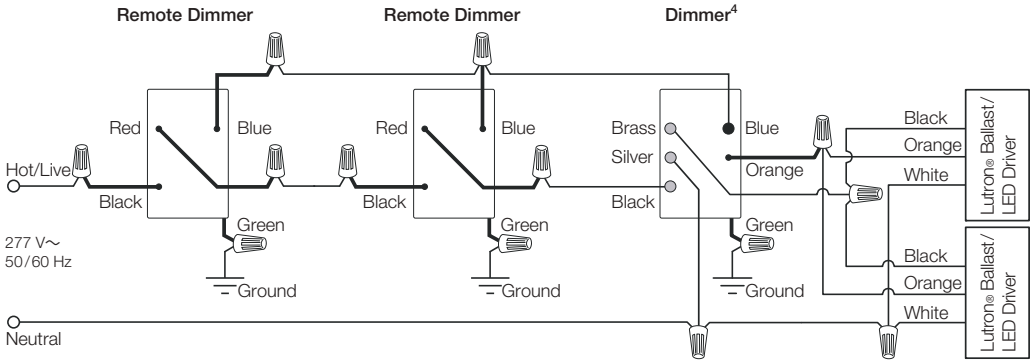
Wiring Diagram 7

Multi-Location Fluorescent Dimmer Installation[3, 4] **(120 V~)**
-F6AN with HQD-RD and Lutron® Ballast/LED Driver



Wiring Diagram 8

Multi-Location Fluorescent Dimmer Installation[3, 4] **(277 V~)**
-F6AN with HQD-RD-277 and Lutron® Ballast/LED Driver



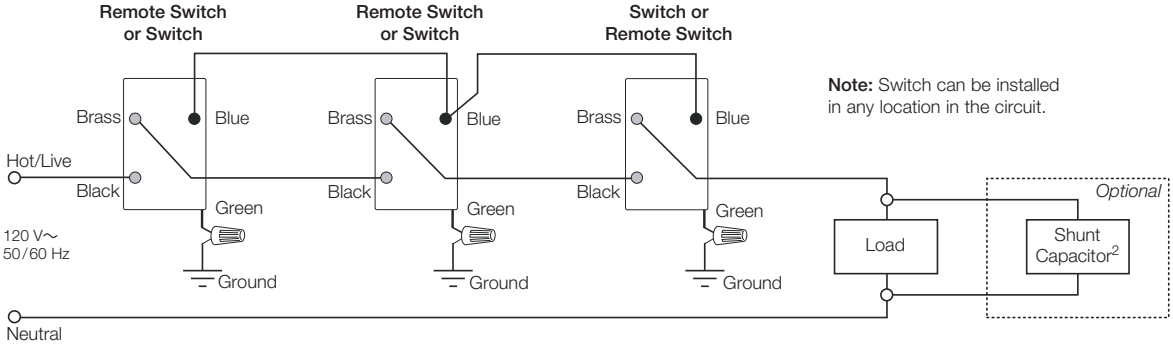
Continued on next page...

HomeWorks® QS RF Maestro® Designer Local Controls

Wiring Diagrams *(continued)*

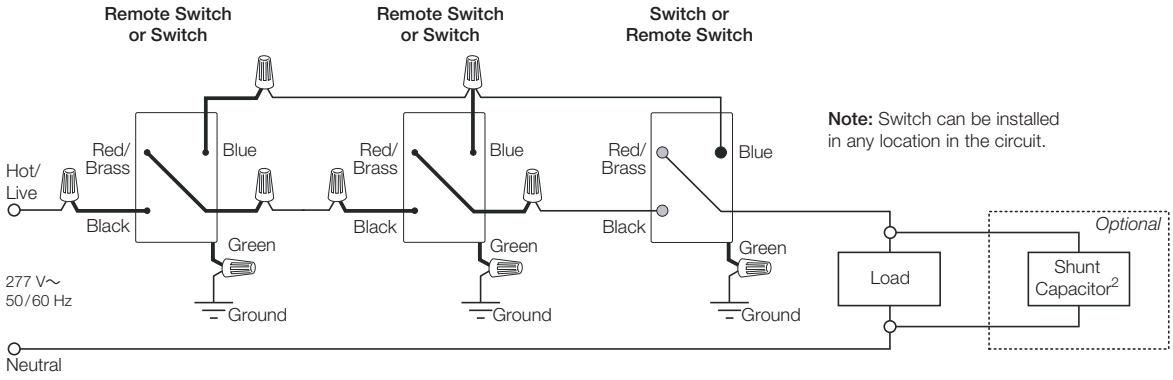
Wiring Diagram 9

Multi-Location 2-wire Switch Installation[3] (120 V~)
-8S-DV with HQD-RS and optional shunt capacitor



Wiring Diagram 10

Multi-Location 2-wire Switch Installation[3] (277 V~)
-8S-DV with HQD-RS-277 and optional shunt capacitor



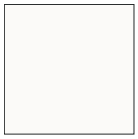
1 When using controls in single location installations, tighten the blue terminal. **Do not** connect the blue terminal to any other wiring or to ground.
2 3 Optional shunt capacitor must be installed inside the load fixture or in a separate J-box.
3 Up to 9 Remote Dimmers/Switches may be connected to the Dimmer/Switch/Fan Speed Controls. Total blue terminal wire length may be up to 250 ft (76 m).
4 Neutral wire Dimmers/Switches/Fan Speed Controls must be connected on the Load side of a multi-location installation.

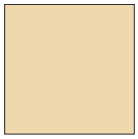
NOTE: Bolded lines in diagrams indicate leads on products.

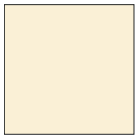
HomeWorks® QS RF Maestro® Designer Local Controls

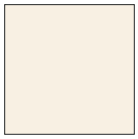
Colors and Finishes

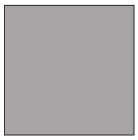
Gloss Finishes


White
WH


Ivory
IV


Almond
AL


Light
Almond
LA


Gray
GR


Brown
BR

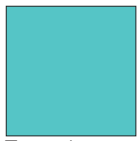

Black
BL

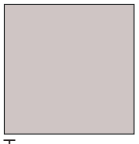
Finishes

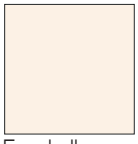

Hot
HT

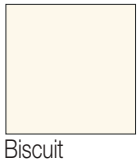

Merlot
MR


Plum
PL


Turquoise
TQ


Taupe
TP


Eggshell
ES


Biscuit
BI


Snow
SW


Palladium
PD


Midnight
MN


Sienna
SI


Terracotta
TC


Greenbriar
GB


Bluestone
BG


Mocha
Stone
MS


Goldstone
GS


Desert Stone
DS


Stone
ST


Limestone
LS

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

  Gloss Finishes - DG-CK-1
  Satin Finishes - SC-CK-1

Metal Finish (wallplate only)


Stainless
Steel SS

When using Stainless Steel wallplates, it is recommended to order the keypad in Midnight (MN).

HomeWorks® QS RF Lamp Dimmers

HomeWorks® QS RF Lamp Dimmers function much like standard lamp dimmers, but can be controlled as part of a lighting control system. Lamp Dimmers are useful in locations where single plug-in lamps need to be dimmed.

HomeWorks® QS RF Lamp Dimmers incorporate advanced features such as fade on/fade off, delayed long fade off, and rapid full on.

HomeWorks® QS RF Lamp Dimmers are simple to install and easy to use. Lamp Dimmers allow floor and table lamps to be added to a system quickly and easily.

HQR-3LD

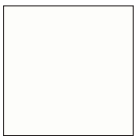
Model Numbers

HQR-3LD-XX* 300 W/300 VA Lamp Dimmer

* "XX" in the model number represents color/finish code.
See **Colors and Finishes** below.

Colors and Finishes

HomeWorks® QS RF Lamp Dimmers are available in two colors.



Snow
SW

Midnight
MN

HomeWorks® QS RF Lamp Dimmers

Specifications

Model Numbers	HQR-3LD-XX
Power	120 V~ 50/60 Hz
Typical Power Consumption	0.25 W Test conditions: load is off and nightlight mode enabled.
Regulatory Approvals	UL, CSA, NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Lamp Dimmers communicate with the HomeWorks® QS system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the Lamp Dimmer will return to its previous state when power is restored.
Warranty	8 Year Limited Warranty. http://www.lutron.com/resiinfo

Design Features

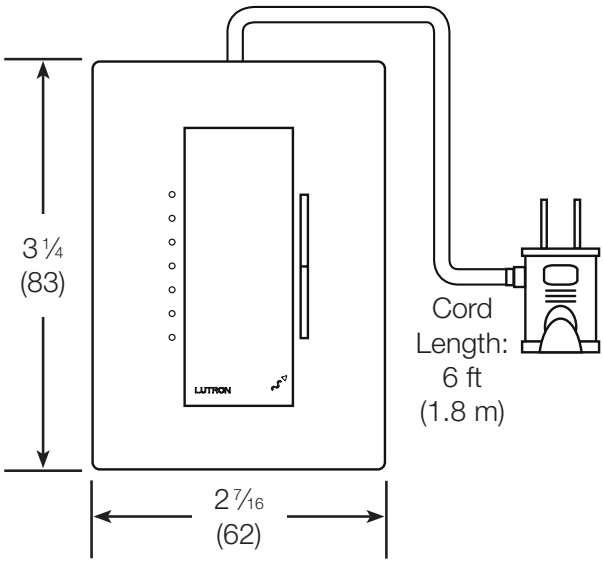
- On a single-tap, lights fade ON or OFF.
- On a double-tap, lights go to full ON.
- When ON, press and hold to engage the delayed long fade to OFF.
- Light levels can be fine-tuned by pressing and holding the dimming rocker until the desired light level is reached.

HomeWorks® QS RF Lamp Dimmers

Dimensions

All dimensions are shown as in (mm) unless otherwise noted.

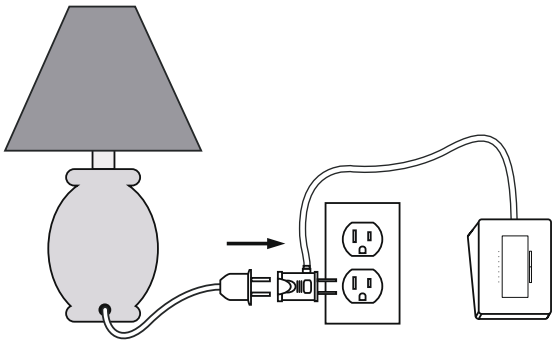
Front View



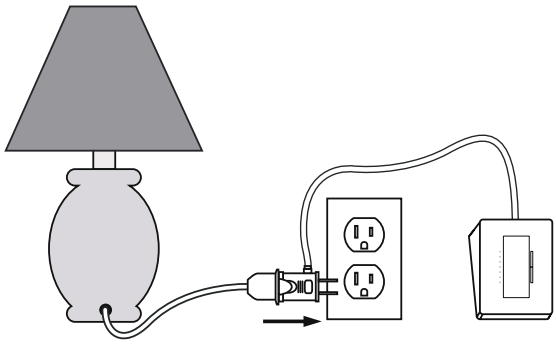
Side View

Installation

Plug lamp cord into the Lamp Dimmer plug.



Plug Lamp Dimmer into standard wall outlet.



NOTE: *This is a* ***POLARIZED*** *cord. It has a polarized plug (one blade is wider than the other) and outlet (one slot is wider than the other). The polarized plug is not intended to be mated with nonpolarized outlets (having both slots the same size). A polarized outlet is intended to mate with a polarized plug in only one way (the longer slot with the wider blade).*

HomeWorks® QS RF Lamp Dimmers

Load Type and Capacity

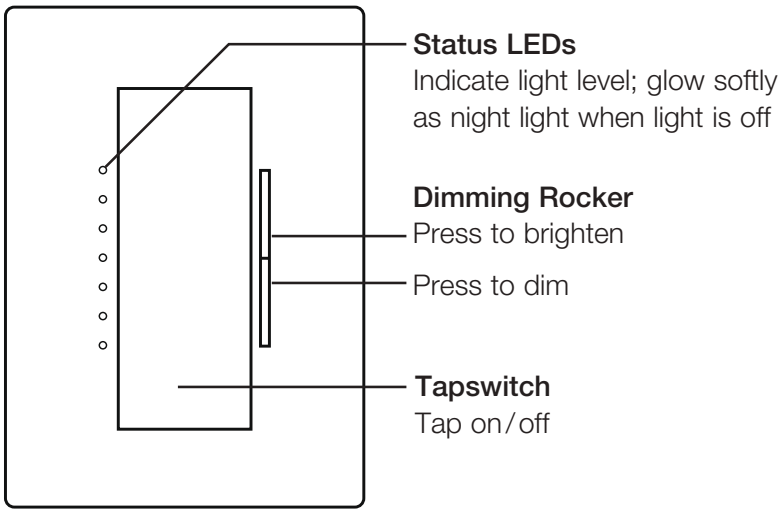
Load Type[1]	Minimum Load	Maximum Load
Incandescent	10 W	300 W
MLV[2]	10 W/VA	200 W/300 VA
CFL, Fluorescent, ELV (Switching Mode Only)	10 W	300 W

1 Lamp Dimmers are designed for use with incandescent, magnetic low-voltage, or tungsten halogen only. Do not use Lamp Dimmers to control receptacles or motor-operated appliances.

2 Low-Voltage Applications: Use Lamp Dimmers with magnetic (core and coil) low-voltage transformers only. Not for use with electronic (solid-state) low-voltage transformers. Operation of a low-voltage circuit with lamps inoperative or removed may result in transformer overheating and premature failure. Lutron strongly recommends the following:

- Do not operate low-voltage circuits without operative lamps in place.
- Replace burned-out lamps as quickly as possible.
- Use transformers that incorporate thermal protection or fused transformer primary windings to prevent transformer failure due to overcurrent.

Operation



HomeWorks QS RF Plug-In Modules

HomeWorks QS RF Plug-In Modules function much like standard lamp dimmers, but can be controlled as part of a lighting control system. RF Plug-In Modules are useful in locations where plug-in lamps need to be dimmed or non-dimmable loads need to be switched. RF Plug-In Modules can be hidden discretely behind furniture.

HomeWorks QS RF Plug-In Modules incorporate advanced features such as fade on/fade off, delayed long fade off, and rapid full on.

HomeWorks QS RF Plug-In Modules are simple to install and easy to use. RF Plug-In Modules allow floor and table lamps to be added to a system quickly and easily. RF Plug-In Modules can also be used to control non-dimming or general purpose loads.

HQR-3PD-1

HQR-15APS-1

Model Numbers

HQR-3PD-1-XX*	300 W/300 VA Plug-in Dimmer (1 receptacle)
HQR-15APS-1-XX*	1/2 HP or 15 A General Purpose Plug-In Switch (3 receptacles)

* "XX" in the model number represents color/finish code
See **Colors and Finishes** below.

Colors and Finishes

HomeWorks QS RF Plug-In Modules are available in two colors.

Snow
SW

Midnight
MN

HomeWorks QS RF Plug-In Modules

Specifications

Model Numbers	HQR-3PD-1-XX, HQR-15APS-1-XX
Power	120 V~ 50/60 Hz
Typical Power Consumption	0.3 W Test conditions: load is off and nightlight mode enabled.
Regulatory Approvals	cUL, UL, NOM, FCC, IC, COFETEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	RF Plug-In Modules communicate with the *HomeWorks* QS system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the RF Plug-In Module will return to its previous state when power is restored.
Warranty	8 Year Limited Warranty. http://www.lutron.com/resiinfo

Design Features

Dimmer (HQR-3PD-1)

- On a single-tap of the toggle button, lights fade ON or OFF.
- On a double-tap of the toggle button, lights go to full ON.
- When ON, press and hold the toggle button to engage the delayed long fade to OFF.
- Light levels can be fine-tuned by pressing and holding the raise/lower buttons until the desired light level is reached.
- Control non-dimmable lighting loads in switching mode.

Switch (HQR-15APS-1)

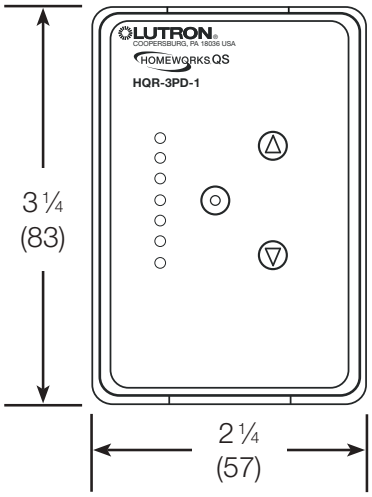
- On a single-tap of the toggle button, load toggles ON or OFF.

HomeWorks QS RF Plug-In Modules

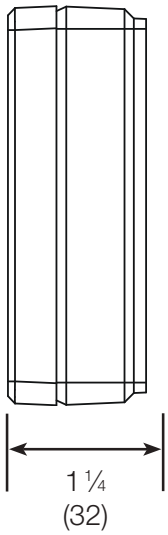
Dimensions

All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$ unless otherwise noted.

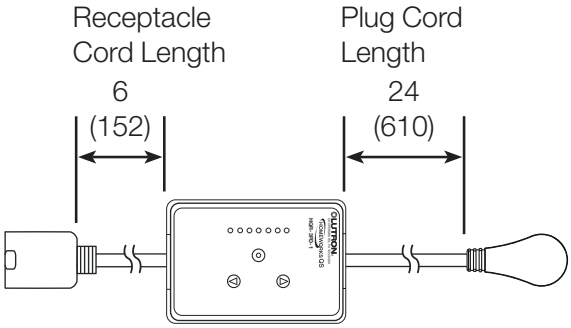
Front View



Side View

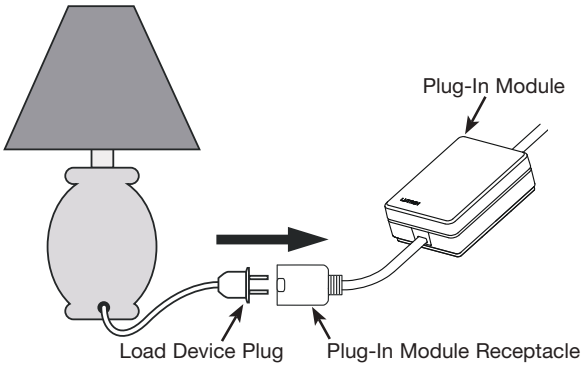


Cord Length

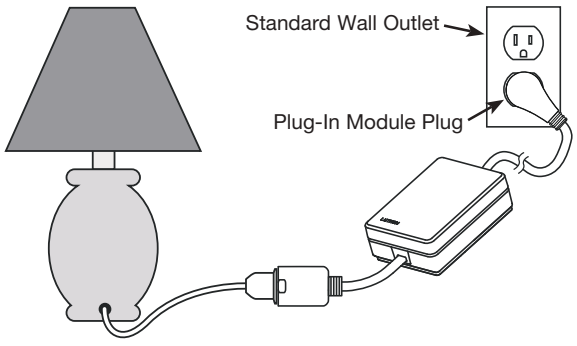


Installation

Insert the load device plug into a Plug-In Module receptacle.



Insert the Plug-In Module plug into any standard wall outlet.



NOTE: *This is a* ***POLARIZED*** *cord. It has a polarized plug (one blade is wider than the other) and outlet (one slot is wider than the other). The polarized plug is not intended to be mated with non-polarized outlets (having both slots the same size). The polarized outlet is intended to mate with a polarized plug in only one way (the longer slot with the wider blade).*

HomeWorks QS RF Plug-In Modules

Load Type and Capacity

Control	Load Type		Min. Load	Max. Load
3PD-1[1]		Incandescent, Halogen	10 W	300 W
		MLV[2]	10 W/VA	200 W / 300 VA
		CFL, Fluorescent, ELV (Switching Mode Only)	10 W	300 W
15APS-1[3]		General purpose	None	1/2 HP 15 A

[1] The HQR-3PD-1 is designed to dim one incandescent, magnetic low-voltage, or tungsten halogen table or floor lamp. The HQR-3PD-1 can be configured to switch a compact fluorescent, fluorescent, or electronic low-voltage load. Use with lighting loads only. Do not use to control a lamp that contains an integral dimmer or a touch lamp. For a lamp with an integral 3-way switch, the switch should be set to full on position. The HQR-3PD-1 may not work with dioded light bulbs. Always use a load that complies with the Load Specifications table above. Always use a light bulb that remains within the wattage rating of the light fixture.

[2] Low-Voltage Applications: The HQR-3PD-1 can be used with magnetic (core and coil) low-voltage transformers in both dimming and switching modes. Use with electronic (solid-state) low-voltage transformers in switching mode only. Operation of a low-voltage circuit with light bulbs inoperative or removed may result in transformer overheating and premature failure. Lutron strongly recommends the following:

a. Do not operate low-voltage circuits without operative light bulbs in place.

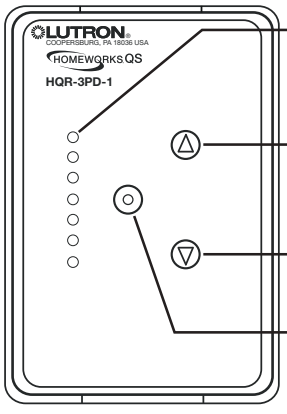
b. Replace burned-out light bulbs as soon as possible.

c. Use transformers that incorporate thermal protection or fused transformer primary windings to prevent transformer failure due to overcurrent.

[3] The HQR-15APS-1 is designed to simultaneously switch general purpose loads (lighting, non-lighting, motor-operated, or transformer supplied appliances). Total connected load can not exceed 1/2 HP, or 15 A.

Operation

Dimmer (HQR-3PD-1)



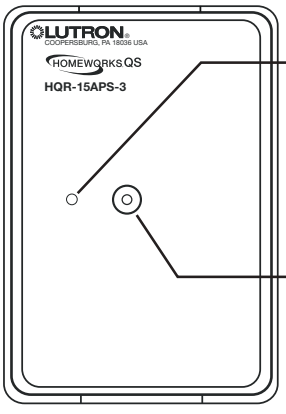
Status LEDs
Indicate light level; glow softly as night light when load is off

Raise Button
Press to brighten

Lower Button
Press to dim

Toggle Button
Press to toggle ON/OFF; double-tap for full ON; press and hold while ON for delayed long fade to OFF.

Switch (HQR-15APS-1)

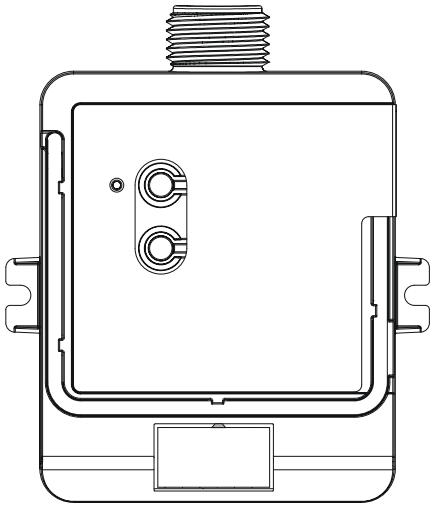


Status LED
Indicates load status; glows softly as night light when load is off

Toggle Button
Press to toggle ON/OFF.

RF Relay Module with Softswitch®

The RF Relay Module with Softswitch® is a radio frequency (RF) device that uses Lutron® patented Softswitch® technology to control up to 16 A of general-purpose load based on input from RadioRA® 2 and HomeWorks® QS systems.



- Lutron® patented Softswitch® technology prevents arcing of relay contacts, extending product lifetime.
- Various operating voltages available — refer to model number chart below for details on voltage requirements.
- Capable of switching 16 A of general-purpose loads.
- Utilizes Lutron® Clear Connect® RF Technology— refer to model number chart below for frequency band data and Lutron® system compatibility.
- Mounts to an electrical junction box through a 1/2 in or 21 mm trade size knockout opening.
- Complies with requirements for use in a compartment handling environmental air (plenum) per NEC® 2011 300.22(C)(3) (LMJ- model only).

Models

Model Number	Region	Operating Voltage	Frequency Band	Compatible Systems
LMJ-16R-DV-B	U.S.A., Canada, Mexico	120/277 V~	431.0 – 437.0 MHz	RadioRA® 2, HomeWorks® QS
LMQ-16R-DV-B	Hong Kong	220-240 V~	433.05 – 434.79 MHz	
LMK-16R-DV-B	Europe, U.A.E.	220-240 V~	868.125 – 869.850 MHz	

NOTE: Contact Lutron for frequency band compatibility for your geographic region if it is not indicated above.

RF Relay Module with Softswitch®

Specification

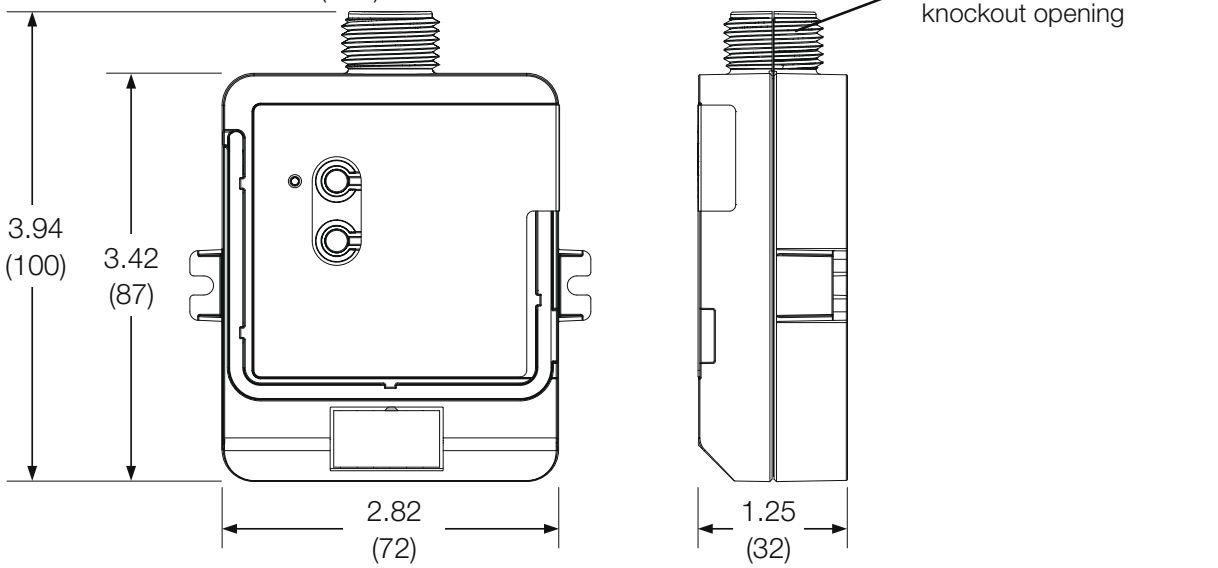
Model Number	LMJ-16R-DV-B, LMQ-16R-DV-B, LMK-16R-DV-B
Power	120/277 V~ 50/60 Hz 16 A (LMJ- model) 220-240 V~ 50/60 Hz 16 A (LMQ-, LMK- models)
Typical Power Consumption	< 1.0 W Typical power test conditions: all loads off, top LED on
Regulatory Approvals	UL®, UL 2043 Plenum Rated, FCC Approved. Complies with the limits for a Class B device, pursuant to Part 15 of the FCC rules, CSA, IC, COFETEL (LMJ- model) CE, TRA, CITC (LMK- model)
Environment	Ambient operating temperature: 32 °F to 131 °F (0 °C to 55 °C) Ambient operating humidity: 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Operates using Clear Connect RF Technology for reliable wireless communication; refer to model number chart on page 1 for band frequency details. RF range is 30 ft (9 m) from repeaters. Contact Lutron for applications using foil-backed or metallic ceiling tiles.
Load	Maximum load: 16 A general purpose. No minimum load requirements. Load types include (but are not limited to): Incandescent, MLV, ELV, Resistive, Inductive, Magnetic fluorescent, and Electronic fluorescent.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Mounting	Mounts to an electrical junction box through a 1/2 in or 21 mm trade size knockout opening.
Warranty	www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf www.lutron.com/TechnicalDocumentLibrary/Intl_Warranty.pdf

Technical Support—800.523.9466 (USA)
+44.(0)20.7702.0657 (Europe)

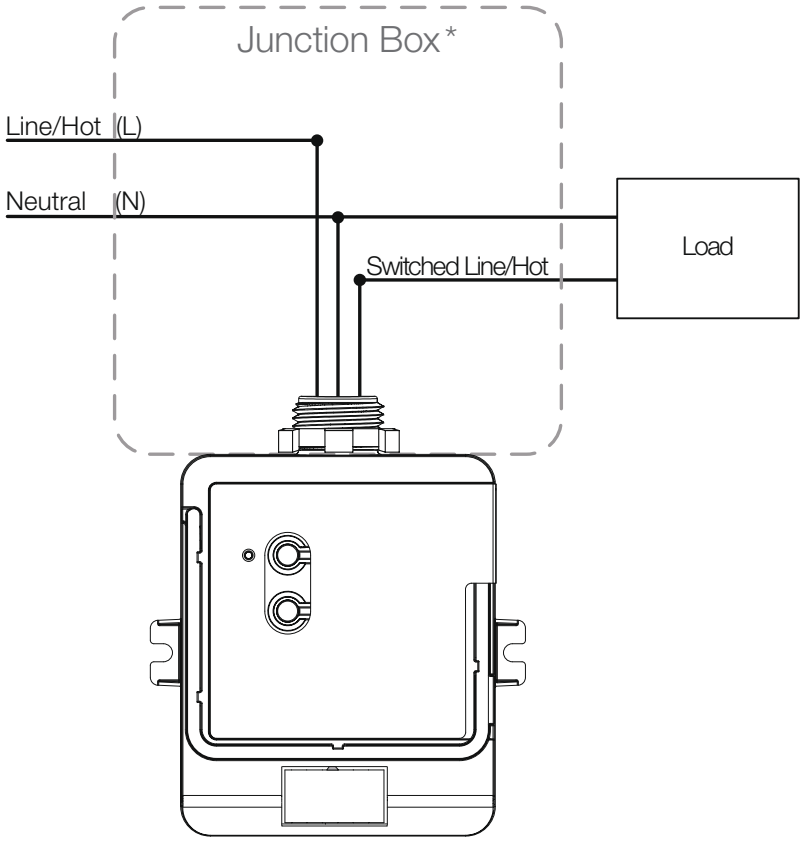
RF Relay Module with Softswitch®

Dimensions

Dimensions shown as: in (mm)



Wiring Diagram

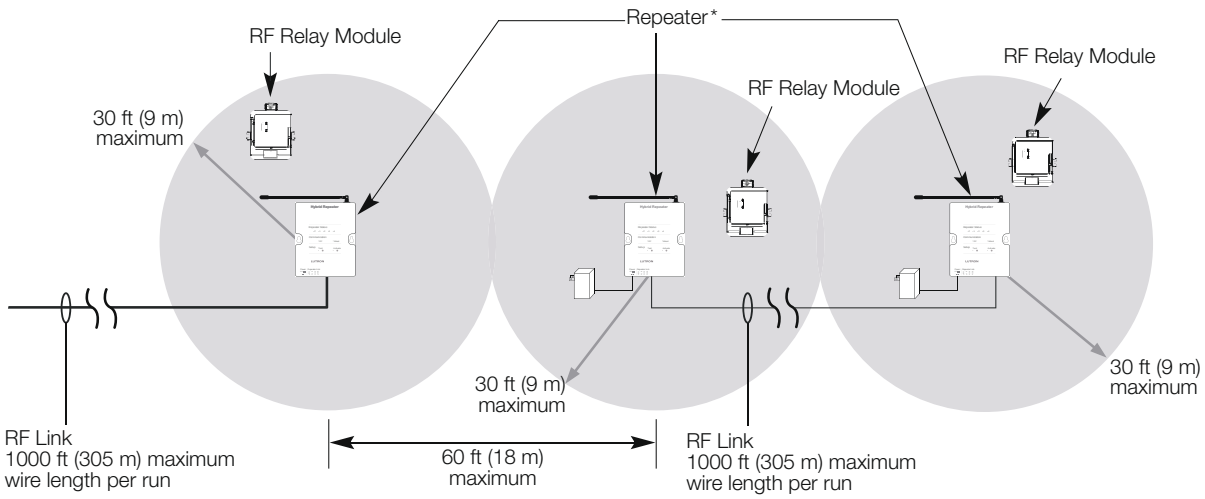


* **NOTE:** Some applications (in USA) require the RF module to be installed inside an additional junction box. For information about how to perform this installation, please visit www.lutron.com, Application Note #423 (P/N 048423). Please consult all local and national electric codes for proper installation methods.

RF Relay Module with Softswitch®

Communications

Wired and RF Configuration (RadioRA® 2 and HomeWorks® QS)



* In HomeWorks® QS systems, use Hybrid Repeaters for range extension. In RadioRA® 2, the repeater shown may be either a main repeater (1 required) or auxiliary repeater (up to 4 permitted).

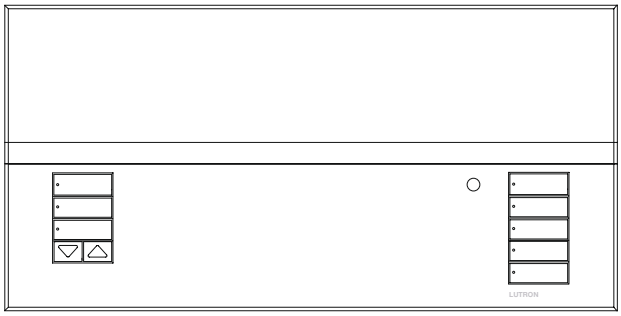
Technical Support—800.523.9466 (USA)
+44.(0)20.7702.0657 (Europe)

GRAFIK Eye® QS

The GRAFIK Eye® QS controls up to six zones of light and will operate the following sources with a continuous Square Law dimming curve or on a full conduction non-dim basis:

- Incandescent
- Tungsten Halogen
- Electronic Low-Voltage (ELV) Switched
- Magnetic Low-Voltage (MLV) Transformer
- Metal Halide/High Pressure Sodium Switched
- Neon/Cold Cathode
- Lutron Tu-Wire® Electronic Fluorescent Dimming Ballasts

The GRAFIK Eye® QS can be configured for wired, QS link (HomeWorks® QS only), or wireless, RF link (HomeWorks® QS and RadioRA® 2), communication.



GRAFIK Eye® QS

Models

Model Number	Zones	Voltage	Additional Features
QSGRJ-4P-XX*	4	120 V~, 220-240 V~	-
QSGRJ-6P-XX*	6	120 V~, 220-240 V~	-
QSGRJ-3P-1XX*	3	120 V~, 220-240 V~	1 extra button column
QSGRJ-3P-TXX*	3	120 V~, 220-240 V~	translucent cover
QSGRJ-3P-1XX*	3	120 V~, 220-240 V~	1 extra button column, translucent cover
QSGRJ-4P-1XX*	4	120 V~, 220-240 V~	1 extra button column
QSGRJ-4P-TXX*	4	120 V~, 220-240 V~	translucent cover
QSGRJ-4P-1XX*	4	120 V~, 220-240 V~	1 extra button column, translucent cover
QSGRJ-6P-1XX*	6	120 V~, 220-240 V~	1 extra button column
QSGRJ-6P-TXX*	6	120 V~, 220-240 V~	translucent cover
QSGRJ-6P-1XX*	6	120 V~, 220-240 V~	1 extra button column, translucent cover
QSGP-	Faceplate kit		

* "XX" in the model number represents color/finish code. See **Colors and Finishes** at the end of the document.

GRAFIK Eye® QS

Specifications

Model Numbers	See previous page
Power	120 V~ 50/60 Hz 220–240 V~ (non CE) 50/60 Hz
Typical Power Consumption	7 W, 0 Power Draw Units (PDUs). **The GRAFIK Eye® QS is not powered from the link, Pin 2 should not be connected.** Typical Power Consumption test conditions: all loads off, one button LED on.
Regulatory Approvals	UL, CSA, FCC, IC, SCT, NOM, CEC (Title 24)
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C) Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Communications	**Wired (HomeWorks® QS only)** - Low-voltage type IEC PELV/NEC® Class 2 wiring connects GRAFIK Eye® QS to processor. Each HomeWorks® QS processor has two configurable links. GRAFIK Eye® QS communicates with the processor via the QS link. **RF (RadioRA® 2 and HomeWorks® QS)** - Lutron® wireless Clear Connect® Technology
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 801-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Provides 10-year power failure memory: Automatically restores lighting to levels prior to power interruption.
Mounting	Installs in a standard 4-gang U.S. wallbox, 3½ in (89 mm) deep is strongly recommended. Always allow at least 4½ in (114 mm) clearance above and below the control unit to provide adequate space for cooling. Wallplate snaps on with no visible means of attachment.
Line Voltage Wiring	Each line voltage terminal can accept one 12 AWG (4.0 mm^2) wire.
IEC PELV/NEC® Class 2 QS System Low-Voltage Wiring (HomeWorks® QS only)	System communication uses low-voltage wiring. Wiring can be daisy-chained or T-tapped. Wiring must be run separately from line/mains voltage. IEC PELV/NEC® Class 2 wiring link requires: Two 18 AWG (0.75 mm^2) conductors for control power. One twisted, shielded pair of 22 AWG (0.34 mm^2) for data link. Available from Lutron, P/N GRX-CBL-346S; check compatibility in your area. Total length of control link must not exceed 2000 ft (610 m).
Warranty	www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf www.lutron.com/TechnicalDocumentLibrary/Intl_Warranty.pdf

Technical Support—800.523.9466 (USA)
+44.(0)20.7702.0657 (Europe)

GRAFIK Eye® QS

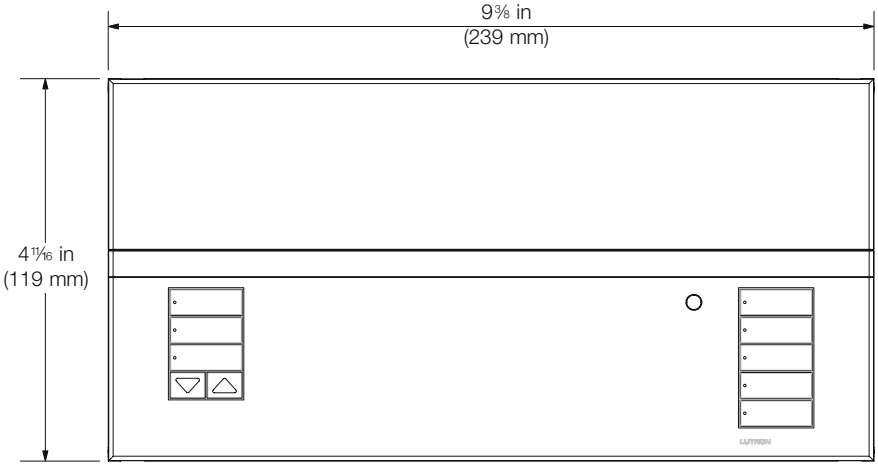
Design Features

- Contains RTISS Equipped® technology to compensate in real time for incoming line voltage variations: No visible flicker with +/-2% change in RMS voltage/cycle and +/-2% change in frequency/second.
- Buttons are programmable to select scene or room preset levels or positions
- Wallplate snaps on with no visible means of attachment.
- Can be configured for wired, QS link (HomeWorks® QS only), or wireless, RF link (HomeWorks® QS and RadioRA® 2), communication.

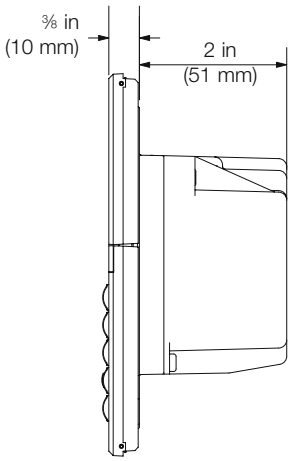
Dimensions

Dimensions shown as: in (mm)

Front View

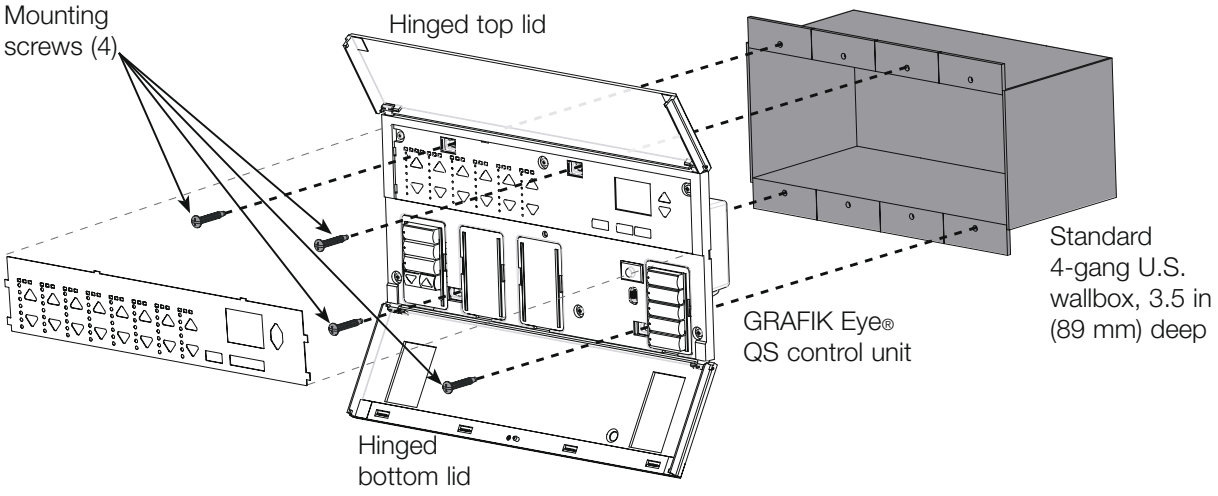


Side View



Fits into a 4-gang U.S. backbox, 3.5 in (89 mm) deep; Lutron® P/N 241400

Mounting



GRAFIK Eye® QS

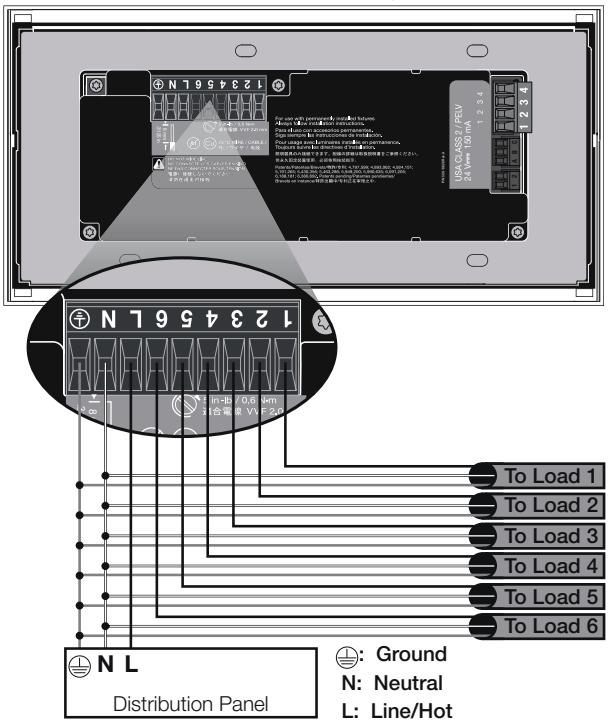
Load Capacity

	120 V~ 50/60 Hz	220–240 V~ 50/60 Hz
Unit Capacity (watts)	2000 W	3000 W
Magnetic Low-Voltage	2000 VA / 1600 W	3000 VA / 2400 W
Zone Capacity (watts)	25–800 W	40 – 1200 W
Magnetic Low-Voltage	25–800 VA / 25–600 W	40–1200 VA / 40–960 W

Load Type Notes

- When dimming Electronic Low-Voltage (ELV) lighting, an ELV interface (such as PHPM-PA-DV-WH) must be used with the control unit. Before installing an ELV light source, verify with the manufacturer that their transformer can be dimmed.
- When controlling 0–10 V loads, a Ten Volt Interface (GRX-TVI) must be used with the control unit.
- Not all zones must be connected; however, **connected zones must have a minimum load as specified above.**
- Maximum total lighting load for a Magnetic Low-Voltage (MLV) varies by input voltage **(specified above):**
  — 120 V~: 800 VA / 600 W
  — 220–240 V~: 1200 VA / 960 W
- No zone may be loaded with more than the capacity specified above. For higher wattage applications, or for 277 V~ applications, use Lutron® power module PHPM-PA, PHPM-WBX, PHPM-PA-DV, PHPM-SW, or PHPM-WBX-DV.

Power and Load Wiring



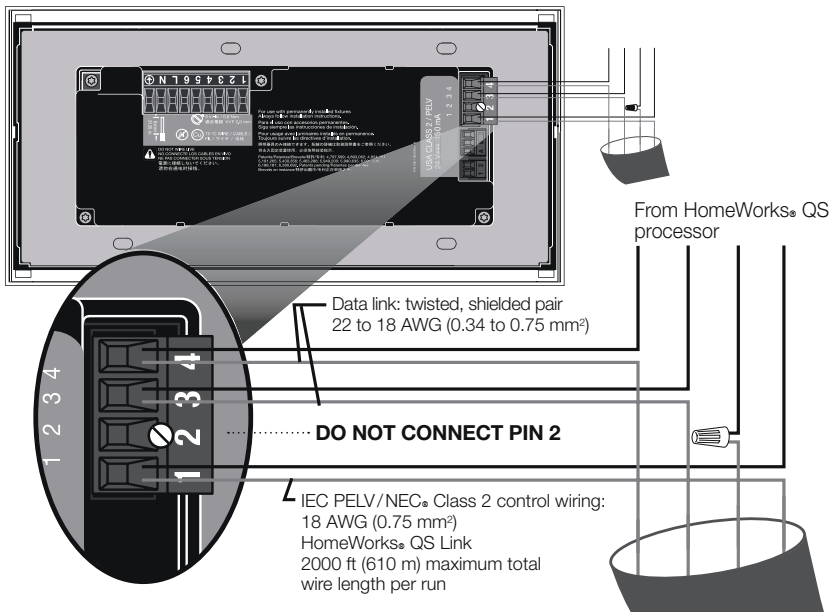
Technical Support—800.523.9466 (USA)
+44.(0)20.7702.0657 (Europe)

GRAFIK Eye® QS

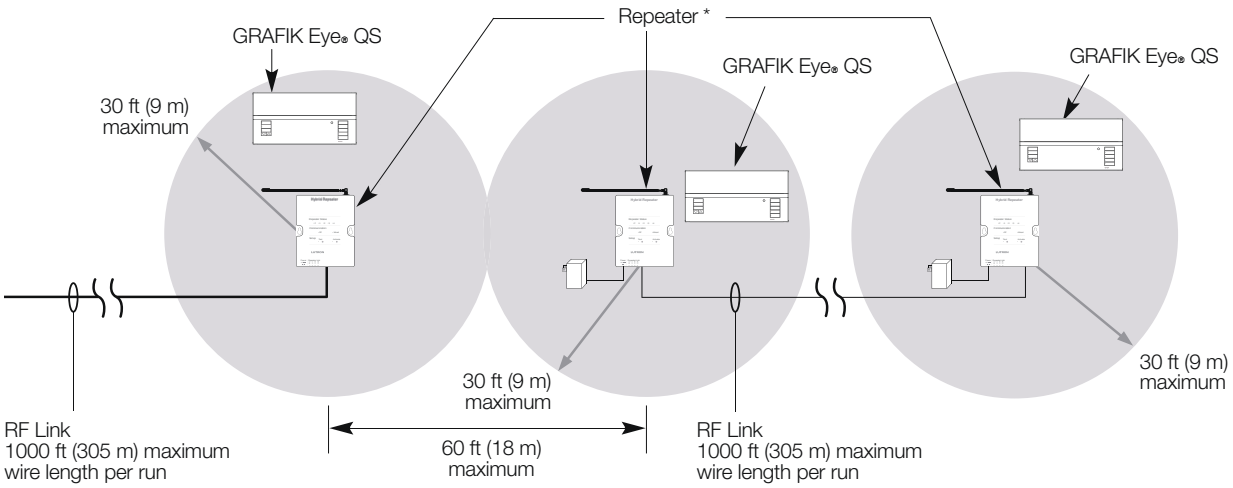
Communications

HomeWorks® QS supports selection of wired or RF communications. A GRAFIK Eye® main unit that communicates back to a HomeWorks® QS processor through the RF link should not have any QS wired link connections. In RadioRA® 2 only RF communication is available.

QS Link Wiring (HomeWorks® QS only)



RF Link (RadioRA® 2 and HomeWorks® QS)

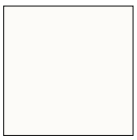


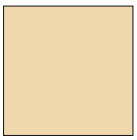
* In HomeWorks® QS systems, use Hybrid Repeaters for range extension. In RadioRA® 2, the repeater shown may be either a main repeater (1 required) of auxiliary repeater (up to 4 permitted).

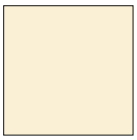
GRAFIK Eye® QS

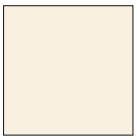
Colors and Finishes

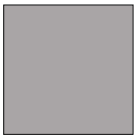
Architectural Matte Finishes (standard)


White
WH


Ivory
IV

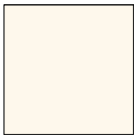

Almond
AL


Light
Almond
LA


Gray
GR


Brown
BR


Black
BL


Beige
BE

Architectural Metal Finishes (Faceplate kit only)


Satin Brass
SB


Bright Brass
BB


Bright Chrome
BC


Clear Anodized
Aluminum
CLA


Black Anodized
Aluminum
BLA


Brass Anodized
Aluminum
BRA


Antique Brass
QB


Antique Bronze
QZ


Satin Chrome
SC


Satin Nickel
SN


Bright Nickel
BN

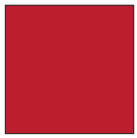
- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:
  Architectural Matte Finishes - AM-CK-1
  Architectural Metal Finishes - AMTL-CK-1

Technical Support—800.523.9466 (USA)
+44.(0)20.7702.0657 (Europe)

GRAFIK Eye® QS

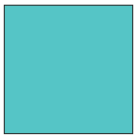
Colors and Finishes (continued)

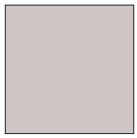
Satin Finishes (Faceplate kit only)

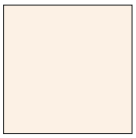

Hot
HT

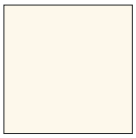

Merlot
MR

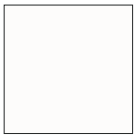

Plum
PL

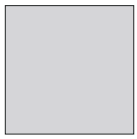

Turquoise
TQ


Taupe
TP


Eggshell
ES


Biscuit
BI


Snow
SW


Palladium
PD


Midnight
MN


Sienna
SI


Terracotta
TC


Greenbriar
GB


Bluestone
BG


Mocha Stone
MS


Goldstone
GS


Desert Stone
DS


Stone
ST


Limestone
LS

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

  Satin Finishes - SC-CK-1

Sensors

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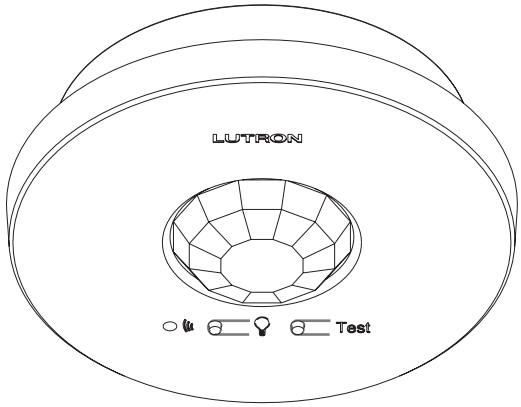
Radio Powr Savr™ Wireless Occupancy/Vacancy Ceiling Sensor

Lutron® Radio Powr Savr™ occupancy/vacancy sensors are wireless, battery-powered passive infrared (PIR) sensors that automatically control lights via RF communication to compatible dimming and switching devices. These sensors detect the heat from people (IR radiation of 9.5 µm) moving within an area to determine when the space is occupied. The sensors then wirelessly transmit the appropriate commands to the associated dimming and switching devices to turn the lights on or off automatically. They combine both convenience and exceptional energy savings potential along with ease of installation.



Features

- Wireless occupancy sensor has 3 settings available: Auto-On/Auto-Off, Auto-On Low-Light/Auto-Off, and Manual-On/Auto-Off
- Auto-On Low-Light feature will only turn lights on automatically if there is less than approximately 10 Lux (1 fc) of ambient light
- Vacancy only model available to meet California (U.S.A.) Title 24 requirements
- Uses Clear Connect® technology
- Passive infrared motion detection with exclusive Lutron® XCT™ Technology for fine motion detection
- 360˚ coverage ranges from 324 ft² (30.2 m²) to 676 ft² (62.4 m²), depending on mounting height
- Simple and intuitive adjustments available for Timeout, Auto-On, and Activity settings
- Supports advanced occupancy features, such as dependent occupancy groups and customizable occupied/unoccupied presets in some systems
- Multiple sensors can be added for extended coverage—refer to product specification submittal of receiving device to determine system limits
- Lens illuminates during test mode to verify ideal locations
- Multiple ceiling-mount methods available for different ceiling materials
- Front accessible test buttons make programming easy
- 10-year battery life design
- RoHS compliant

Models Available

- LRF__-OCR2B-P-WH
  - Color Code
  - Occupancy and Vacancy
  - Frequency/Channel Code
- LRF2-VCR2B-P-WH
  - Vacancy Only
  - Available for Channel Code 2 Only

Frequency/Channel Codes

Available

2 = 431.0 – 437.0 MHz (U.S.A., Canada, Mexico, Brazil)
5 = 865.5 – 866.5 MHz (India)
6 = 312.3 – 314.8 MHz (Japan)
7 = 433.05 – 434.79 MHz (Hong Kong)

Color Code

WH = White

Compatible RF Devices

- For use with Lutron® products only
- Communicates to various wireless Lutron® systems*

* *Contact Lutron® Customer Service at www.lutron.com for frequency/channel code compatibility with your particular geographic region, and for integrating with other Lutron® lighting and shading products.*

Job Name:	Model Numbers:	
Job Number:		

Specifications

Regulatory

- Lutron® Quality Systems Registered to ISO 9001:2008

Standards Approved

LRF2- (USA and Canada)

- FCC certified
- IC certified
- Meets CA (U.S.A.) Energy Commission Title 24 requirements
- COFETEL
- ANATEL
- SUTEL

LRF5-

- WPC Type (India)

LRF6-

- 007YUUL0689

LRF7-

- FCC

Power/Performance

- Operating voltage: 3 V ⎓
- Operating current: 14 µA nominal
- Requires one CR 123 lithium battery
- 10-year battery life
- Non-volatile memory (saved changes are stored during power loss)

Environment

- Temperature: 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C)
- For indoor use only

Range

- **LRF2-, LRF5-, LRF7-**
  Local load controls must be located within 60 ft (18 m) line of sight, or 30 ft (9 m), through walls, of a sensor.
- **LRF6-**
  Local load controls must be located within 40 ft (12.2 m) line of sight or 23 ft (7 m), through walls, of a sensor.

Sensor Coverage Test

- Front accessible test button
- Lens illuminates orange in response to motion during test mode and is visible from 60 ft (18 m)

Wireless Communication Test

- Front accessible test button
- Turn associated loads on and off

Timeout Options

- 1 minute *
- 5 minutes
- 15 minutes – default setting
- 30 minutes

Auto-On Options (Occupancy Versions Only)

- “Enabled” – Sensor turns lights ON and OFF automatically – default setting.
- “Low Light” – Sensor turns lights ON automatically only in low ambient light conditions. Sensor turns lights OFF automatically.
- “Disabled” ** – Lights must be turned ON manually from dimming or switching device. Sensor turns lights OFF automatically.

Activity Options

- Low Activity – default setting
- Medium Activity
- High Activity

* Intended for use in high-activity, briefly occupied areas only

** There is a 15-second grace period that begins when the lights are automatically turned off, during which the lights will automatically turn back on in response to motion. This grace period is provided as a safety and convenience feature in the event the lights turn off while the room is still occupied, so that the user does not need to manually turn the lights back on. After 15 seconds, the grace period expires and the lights must be manually turned on.

Job Name:	Model Numbers:	
Job Number:		

Installation Overview

Sensor Setup

- Sensor setup is available as a service by Lutron. For more information see the **Sensor Layout and Tuning** service document (Lutron® P/N 3601235).

Sensor Placement

- The ability of the sensor to detect motion requires line of sight of room occupants. The sensor must have an unobstructed view of the room. **DO NOT** mount behind or near tall cabinets, shelves, hanging fixtures, ceiling fans, etc. The sensor cannot see through glass objects such as patio or shower doors.
- Hot objects and moving air currents can affect the performance of the sensor. To ensure proper operation, the sensor should be mounted at least 4 ft (1.2 m) away from HVAC vents and light bulbs that are below the ceiling line.
- The performance of the sensor depends on a temperature differential between the ambient room temperature and that of room occupants. Warmer rooms may reduce the ability of the sensor to detect occupants.

Mounting

Temporary mounting is optional to test sensor coverage and wireless communication before permanently installing the sensor.

Drop Ceiling (Compressed Fiber Ceiling Tile)

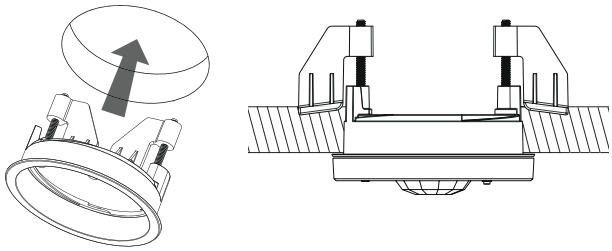
The mounting wire is provided for both temporary and permanent mounting of the sensor to ceiling tiles. It is designed to allow temporary mounting, testing, and repositioning (if necessary) of the sensor without damaging a ceiling tile. Once the final position of the sensor has been chosen, the mounting wire should be twisted together to permanently secure the sensor in place.

Solid Ceiling (Drywall, Plaster, Concrete, or Wood)

- Temporary mounting: Ten (10) temporary mounting strips can be purchased in the kit L-CMDPIRKIT for temporarily mounting and testing the sensor.
- Permanent mounting: Screws and anchors (for drywall or plaster) provided to mount the sensor.

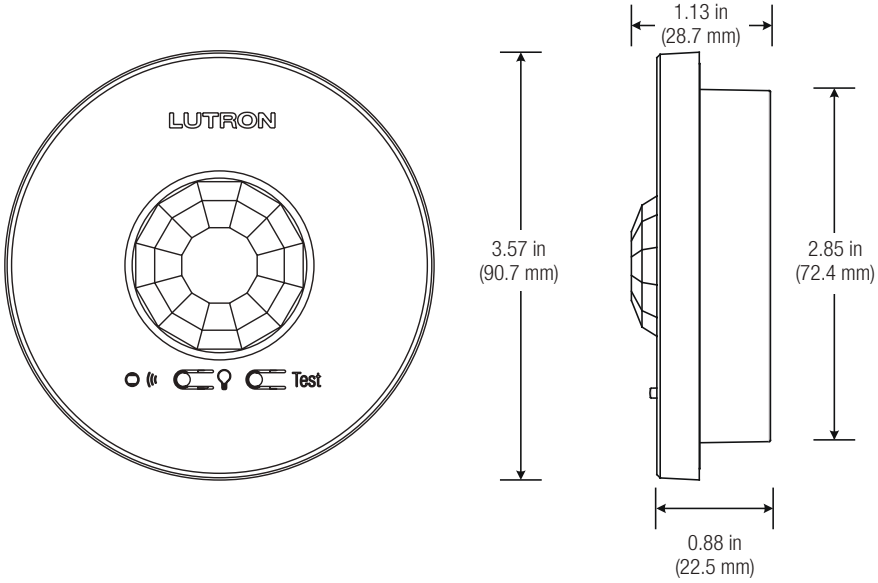
Recess Mount

- Do not recess mount sensor in a metal surface.
- Recess mounting ring requires an opening of 3 in (76 mm) in diameter.
- Recess mounting ring secures internally to ceiling. Sensor twists into the recess mounting ring and sits flush with ceiling (see image to right).
- Recess mounting ring purchased as a separate kit: L-CRMK-WH.



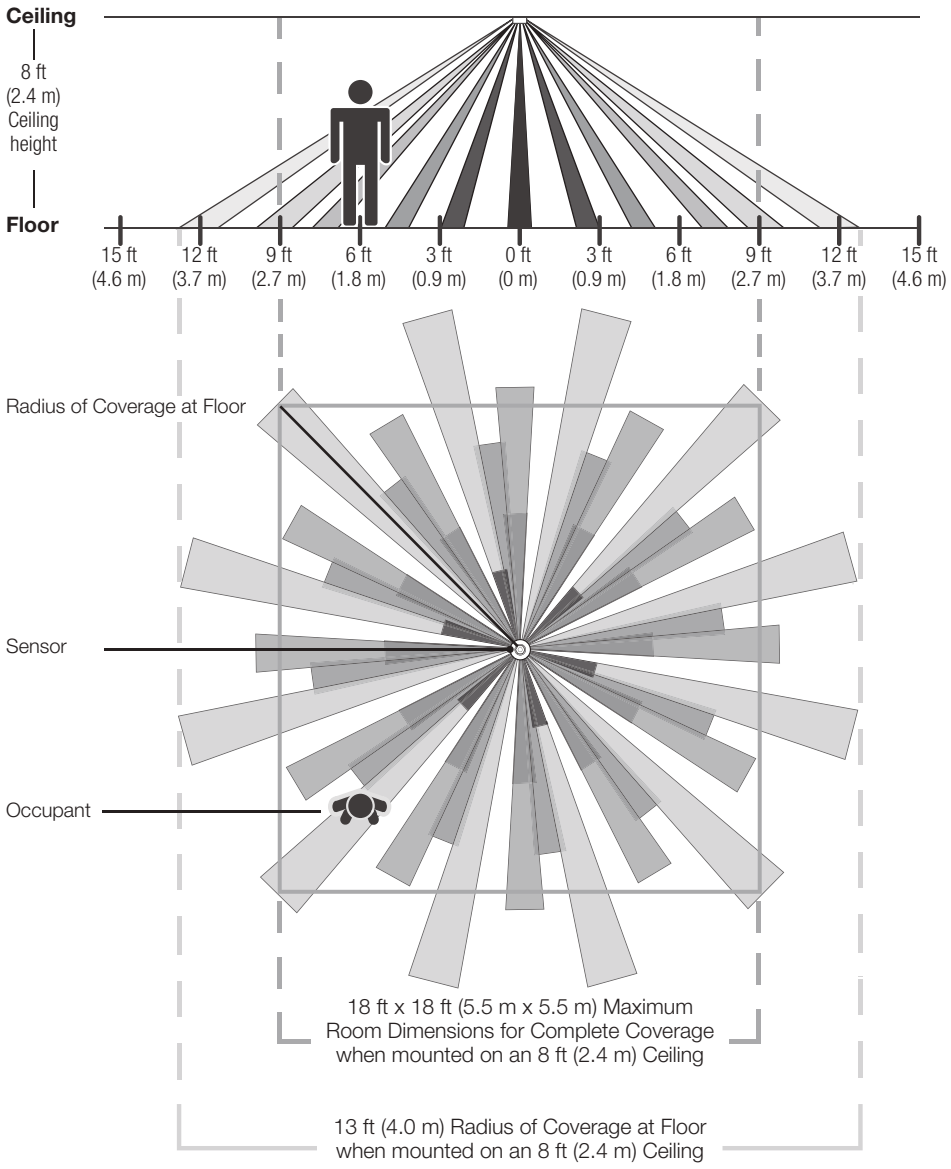
Job Name:	Model Numbers:	
Job Number:		

Dimensions



Job Name:	Model Numbers:	
Job Number:		

Range Diagrams



Sensor Coverage Chart (for sensor mounted in center of room)

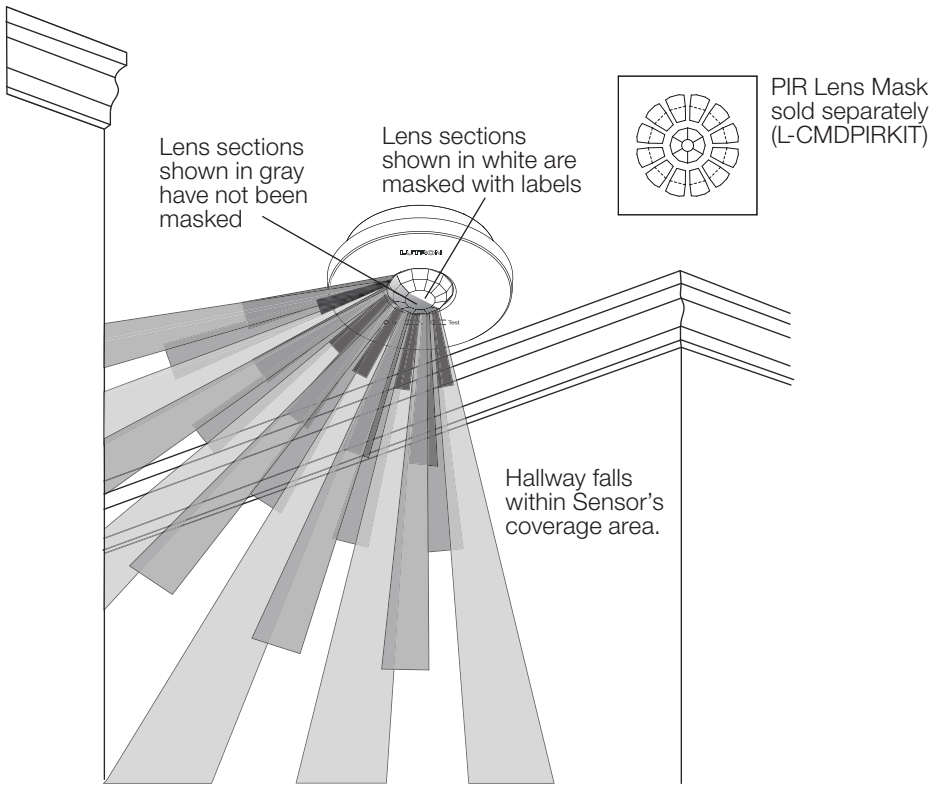
Ceiling Height	Maximum Room Dimensions for Complete Floor Coverage*	
8 ft (2.4 m)	18 ft x 18 ft (5.5 m × 5.5 m)	324 ft² (30.2 m²)
9 ft (2.7 m)	20 ft x 20 ft (6.1 m × 6.1 m)	400 ft² (37.2 m²)
10 ft (3.0 m)	22 ft x 22 ft (6.7 m × 6.7 m)	484 ft² (44.9 m²)
12 ft (3.7 m)	26 ft x 26 ft (7.9 m × 7.9 m)	676 ft² (62.4 m²)

* 12 ft (3.7 m) is the recommended maximum mounting height

Job Name:	Model Numbers:	
Job Number:		

Lens Masking

Whenever possible, the sensor should be installed in a location where it cannot view areas outside the intended space, such as hallways or adjacent rooms. If this situation cannot be avoided, portions of the lens may be masked to block the view of the sensor into undesired areas. Ten (10) PIR Lens Masks can be purchased in the kit L-CMDPIRKIT.



Job Name:	Model Numbers:	
Job Number:		

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Wireless Wall-Mount Sensor

Lutron® wall-mounted occupancy and vacancy sensors are wireless battery-powered passive infrared (PIR) sensors that automatically control lights via RF communication to compatible dimming or switching devices. These sensors detect the heat from people moving within an area to determine when the space is occupied. The sensors then wirelessly transmit the appropriate commands to the associated dimming or switching devices to turn the lights on or off automatically. They combine both convenience and exceptional energy savings along with ease of installation.

Features

- Wireless occupancy/vacancy sensor has 2 settings available: Auto-On/Auto-Off, and Manual-On/Auto-Off
- Vacancy model meets CA Title 24 requirements
- Passive infrared motion detection with exclusive Lutron® XCT™ Technology for fine motion detection
- 180˚ field of view model:
  Minor motion = 1500 ft² (139.4 m²)
  Major motion = 3000 ft² (278.7 m²)
- 90˚ field of view model:
  Minor motion = 1225 ft² (113.8 m²)
  Major motion = 2500 ft² (232.3 m²)
- Hallway model with long, narrow field of view:
  Major motion = coverage of up to 150 ft (45.7 m)
- Simple and intuitive adjustments available for Timeout, Activity, and Auto-On settings
- Accessible test buttons make setup easy
- Lens illuminates during test mode to verify ideal locations
- Multiple sensors can be added for extended coverage—refer to product specification submittal of receiving device to determine system limits
- 10-year battery life design
- RoHS compliant

Compatible RF Devices

- For use with Lutron® products only
- Communicates to various wireless Lutron® Clear Connect® systems*

* *Contact Lutron Customer Service at www.lutron.com for frequency/channel code compatibility with your particular geographic region, and for integrating with other Lutron® lighting and shading products.*

Models Available

LRF_-_ _LB-P-WH

- Coverage Type
- Sensor Type
- Frequency / Channel Code

Example:

LRF2-VHLB-P-WH
434 MHz White Hallway Vacancy Sensor

Frequency/Channel Codes

2 = 431.0 – 437.0 MHz (US, Canada, Mexico, Brazil) *
3 = 868.125 – 869.850 MHz (Europe and UAE)
4 = 868.125 – 868.475 MHz (China and Singapore)
5 = 865.5 – 866.5 MHz (India)
7 = 433.0 – 433.7 MHz (Hong Kong)

Sensor Type

O = Occupancy/Vacancy (Auto-On/Auto-Off)
V = Vacancy (Manual-On/Auto-Off) **

Coverage Type

H = Hallway
K = 90˚ Corner-Mount
W = 180˚ Wall-Mount

* BAA compliant models available for LRF2 configurations. Add a "U" prefix to your chosen model number. *Example: ULRF2-OWLB-P*

** Vacancy sensor type for LRF2 models only

LUTRON® SPECIFICATION SUBMITTAL

Job Name:	Model Numbers:	
Job Number:		

Specifications

Regulatory

- Lutron Quality Systems Registered to ISO 9001:2008

Regulatory Approvals

LRF2-

- cULus Listed
- FCC certified
- IC certified
- COFETEL certified
- ANATEL certified
- SUTEL certified
- Meets CA (U.S.A.) Energy Commission Title 24 requirements

LRF3-

- CE Marked (European Union) [expected Q1 2013]
- TRA Type Approved (United Arab Emirates) [expected Q2 2013]

LRF4-

- SRRC Type Approved (Mainland China) [pending]
- iDA Registered (Singapore) [pending]

LRF5-

- WPC Type Approved (India) [expected Q3 2013]

Power/Performance

- Operating voltage: 3 V ⎓
- Operating current: 14 µA nominal
- Requires one CR 123 lithium battery
- 10-year battery life design
- Non-volatile memory (saved changes are stored during power loss)

Environment

- Temperature: 32 ˚F to 104 ˚F (0 ˚C to 40 ˚C)
- For indoor use only

RF Range

- Distance between local load controls and sensor should not exceed 60 ft (18 m) line of sight or 30 ft (9 m) through walls.

Sensor Coverage Test

- Dedicated test button
- Lens illuminates orange in response to motion during test mode

Wireless Communication Test

- Dedicated test button
- Turn associated loads on and off

Timeout Options

- 1 minute *
- 5 minutes
- 15 minutes – default setting
- 30 minutes

Auto-On Options (Occupancy Versions Only)

- “Enabled” – Sensor turns lights ON and OFF automatically – default setting.
- “Disabled” ** – Lights must be turned ON manually from dimming or switching device. Sensor turns lights OFF automatically.

Sensitivity Options

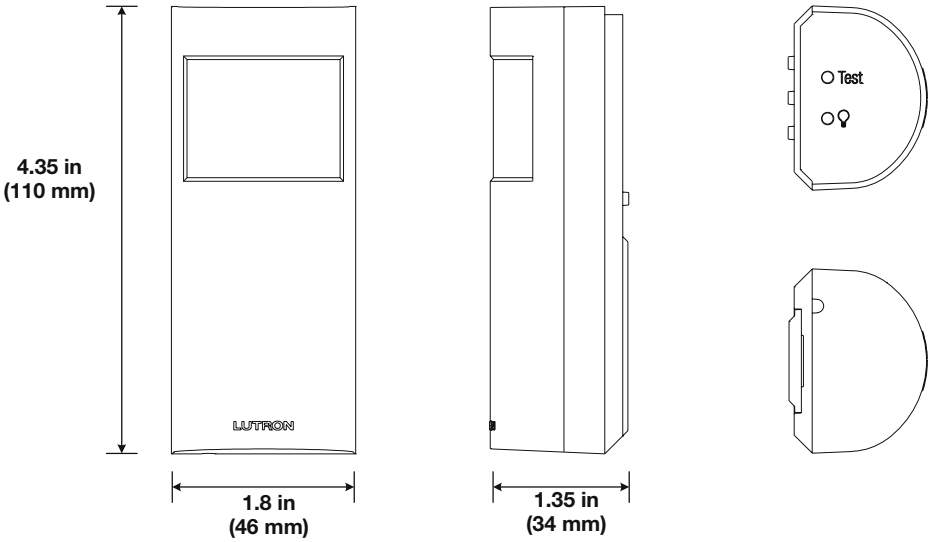
- Low Activity – default setting
- Medium Activity
- High Activity

* Intended for use in high-activity, briefly occupied areas only

** There is a 15-second grace period that begins when the lights are automatically turned off, during which the lights will automatically turn back on in response to motion. This grace period is provided as a safety and convenience feature in the event the lights turn off while the room is still occupied, so that the user does not need to manually turn the lights back on. After 15 seconds, the grace period expires and the lights must be manually turned on.

Job Name:	Model Numbers:	
Job Number:		

Dimensions



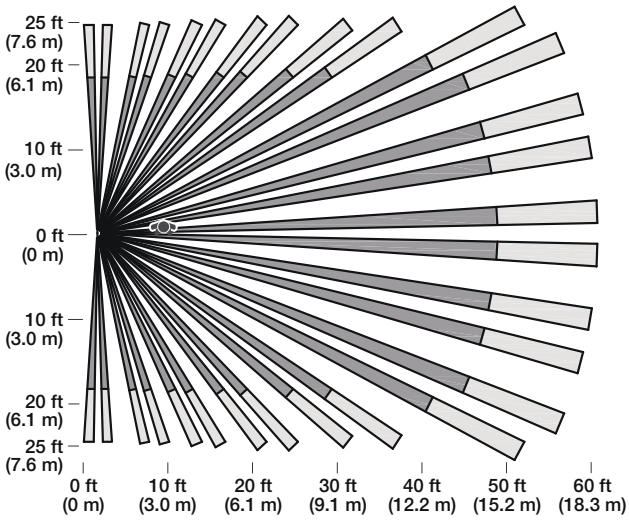
Job Name:	Model Numbers:	
Job Number:		

Coverage Diagrams

180° Wall-Mount Sensors

(Models: LRFX-OWLB-P-WH and LRFX-VWLB-P-WH)

Horizontal Beam Diagram

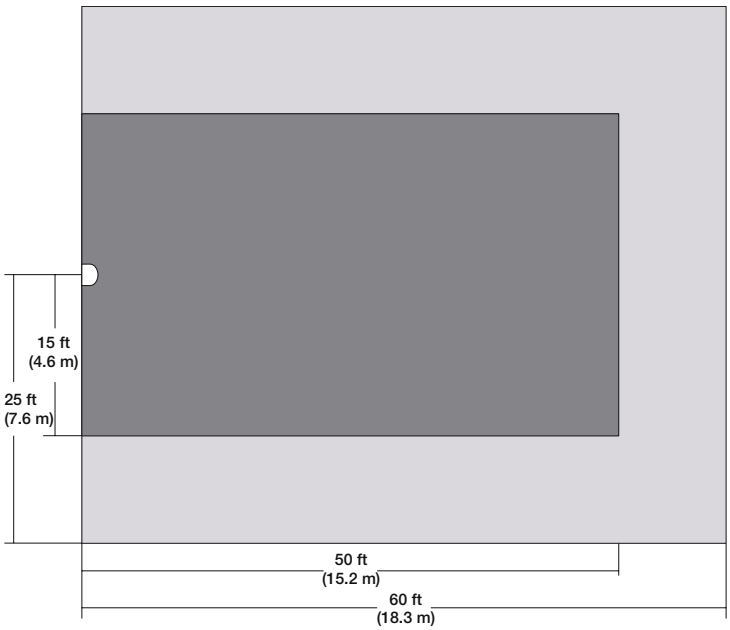


Tested Coverage Area

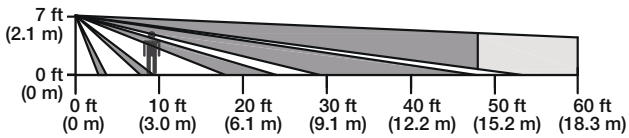
Major Motion 3000 ft² (278.7 m²) coverage

Minor Motion 1500 ft² (139.4 m²) coverage

Compliant to NEMA WD7 test grid shown below



Vertical Beam Diagram*



* Sensor mounting shown at 7 ft (2.1 m). Mounting height should be between 6 ft and 8 ft (1.6 m and 2.4 m).

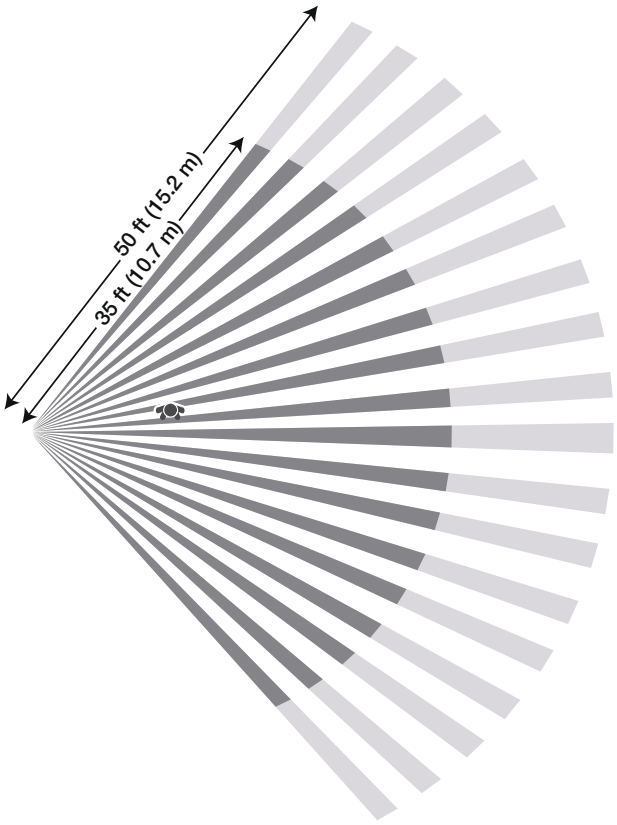
Job Name:	Model Numbers:	
Job Number:		

Coverage Diagrams

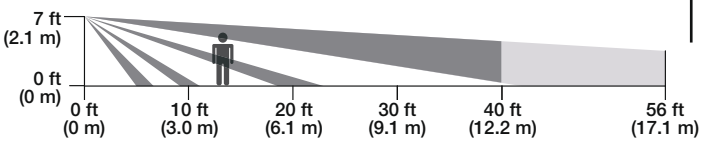
90° Corner-Mount Sensors

(Models: LRFX-OKLB-P-WH and LRFX-VKLB-P-WH)

Horizontal Beam Diagram



Vertical Beam Diagram*

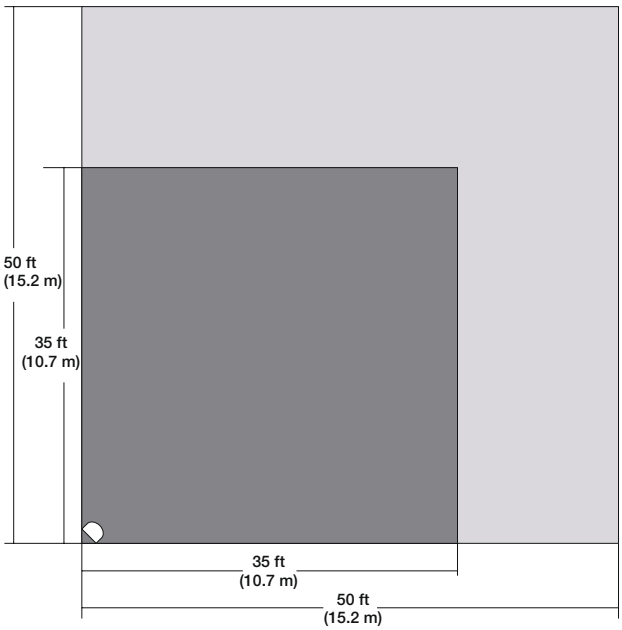


Tested Coverage Area

Major Motion 2500 ft² (232.3 m²) coverage

Minor Motion 1225 ft² (113.8 m²) coverage

Compliant to NEMA WD7 test grid shown below



* Sensor mounting shown at 7 ft (2.1 m). Mounting height should be between 6 ft and 8 ft (1.6 m and 2.4 m).

Job Name:	Model Numbers:	
Job Number:		

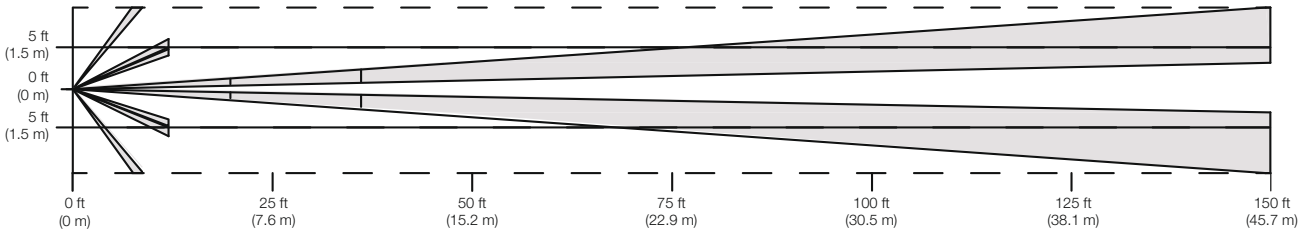
Coverage Diagrams

Hallway Sensors
(Models: LRFX-OHLB-P-WH and LRFX-VHLB-P-WH)

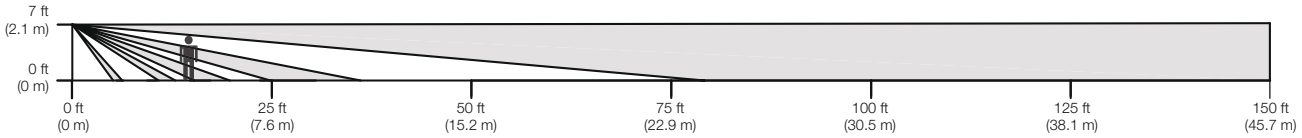
Maximum Recommended Hallway Length

Width of Hall	Length of Hall
6 ft (1.8 m) or less	50 ft (15.2 m)
8 ft (2.4 m)	100 ft (30.5 m)
10 ft (3.0 m) or more	150 ft (45.7 m)

Top View



Side View



* Sensor mounting shown at 7 ft (2.1 m). Mounting height should be between 6 ft and 8 ft (1.8 m and 2.4 m) and centered within hallway.

- Designed to mount at the end of a hallway with a clear view down the length of a hall.
- Detection at longer distances is best when motion occurs at right angles to the sensor.
- Multiple sensors can be used to extend coverage.

Job Name:	Model Numbers:	
Job Number:		

Installation Overview

Sensor Placement

- The mounting height of the sensor should be between 6 ft and 8 ft (1.6 m and 2.4 m)
- For smaller rooms less than 12 ft x 12 ft (3.7 m x 3.7 m), detection may be improved by mounting the sensor at 6 ft (1.8 m) from the floor.
- The ability to detect motion requires that the sensor have line-of-sight of all room occupants. The sensor must have an unobstructed view of the room. **DO NOT** mount behind or near tall cabinets, shelves, hanging fixtures, etc. The sensor cannot detect occupants through glass objects such as patio or shower doors.
- Hot objects and moving air currents can affect the performance of the sensor. To ensure proper operation, the sensor should be mounted at least 4 ft (1.2 m) away from light bulbs and HVAC vents.
- The performance of the sensor depends on a temperature differential between the ambient room temperature and that of room occupants. Warmer rooms may reduce the sensor's ability to detect occupants.
- Distance between local load controls and sensor should not exceed 60 ft (18 m) line of sight or 30 ft (9 m) through walls.

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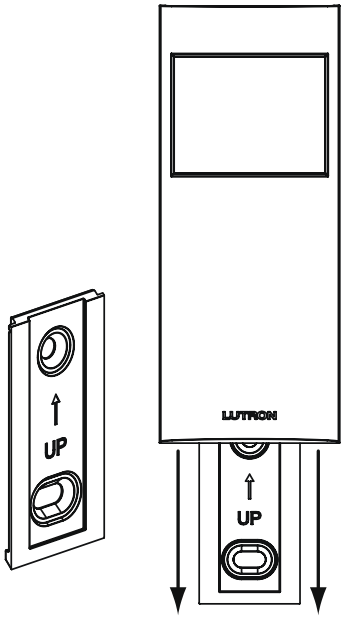
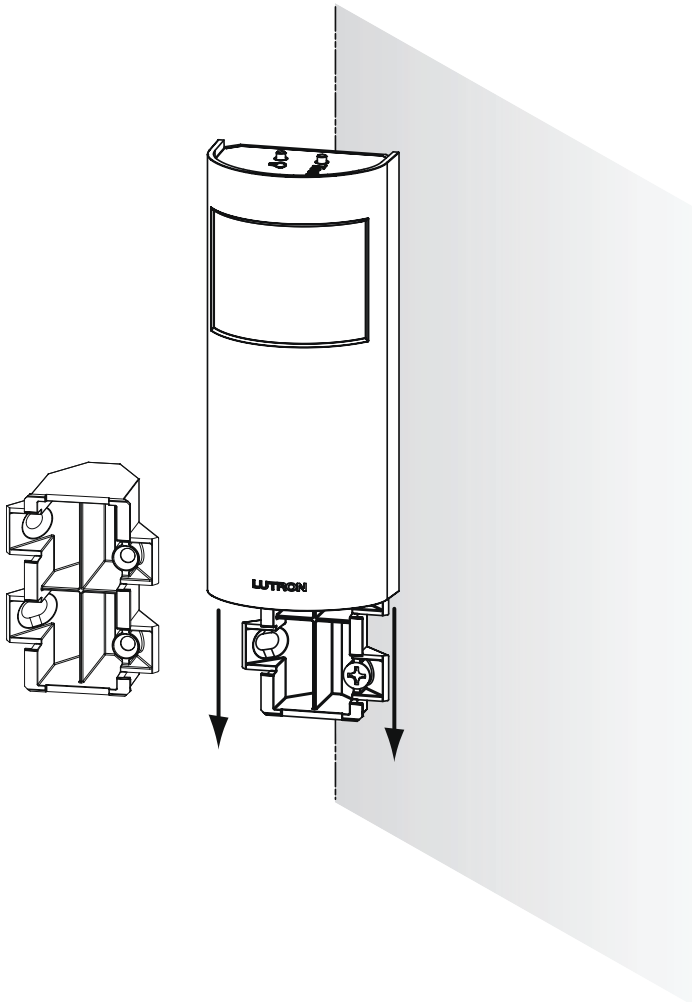
Mounting

- 180˚ and hallway sensors mount directly to wall with mounting bracket (included). See figure below.
- 90˚ sensors mount directly in corner or on wall offset away from corner with mounting bracket (included). See figure below.
- Temporary mounting is recommended to test sensor coverage and wireless communication before permanently installing the sensor.
  - Temporary mounting: A 3M™ Command™ adhesive strip is provided for temporarily mounting and testing the sensor. This strip is designed for easy, damage-free removal and is not reusable.
  - Permanent mounting: Mounting bracket, screws and anchors are provided to mount sensor.

180˚ Wall-Mount Sensor & Hallway Sensor



90˚ Corner-Mount Sensor



3M and Command are trademarks of 3M Company.

Job Name:	Model Numbers:	
Job Number:		

Dual Technology Ceiling Mount Sensor

The LOS-CDT Series ceiling-mount dual-technology sensors can integrate into Lutron systems or function as stand-alone controls using a Lutron power pack. The technology eliminates manual sensitivity and timer adjustments during installation and over the life of the product.

Features

- Intelligent, continually adapting sensor
- Ultrasonic (US) combined with passive infrared (PIR) sensing provide high sensitivity, high noise immunity, and excellent false tripping immunity
- Suited for complex environments that are difficult to control with single-technology sensors
- Snap-locks to ceiling-mounted cover plate
- Non-Volatile Memory: settings saved in protected memory are not lost during power outages
- 500 to 2000 sq.ft. (46 to 186 m^2) coverage when mounted on an 8 - 12 ft. (2.4 to 3.7 m) ceiling; 180° and 360° field of view
- Affords choice of turning lights off or dimming to a preset level in the unoccupied state when integrated with a Lutron system.

Models Available

Cat. No.	Color	Coverage	Field of View
LOS-CDT-500-WH	White	500 sq.ft. (46 m^2)	180°
LOS-CDT-500R-WH	White	500 sq.ft. (46 m^2)	180°
LOS-CDT-1000-WH	White	1000 sq.ft. (93 m^2)	180°
LOS-CDT-1000R-WH	White	1000 sq.ft. (93 m^2)	180°
LOS-CDT-2000-WH	White	2000 sq.ft. (186 m^2)	360°
LOS-CDT-2000R-WH	White	2000 sq.ft. (186 m^2)	360°

Self-Adaptive Feature

The LOS-CDT Series ceiling-mount occupant sensors combine both (US) motion detection for maximum sensitivity and passive infrared (PIR) motion detection for false triggering immunity. The self-adapting internal microprocessor analyzes the composite sum of both signals to eliminate time-consuming adjustments and callbacks found in non-intelligent sensors.

Job Name:	Model Numbers:	
Job Number:		

Specifications

Timer Adjustment

- Automatic mode: Continually adapting sensor automatically adjusts settings to the space
- Manual mode: 8 to 30 minutes
- Test mode: 8 seconds

LED Lamp

- Red: infrared motion detected
- Green: ultrasonic motion detected

Housing

- Rugged, high-impact, injection-molded plastic
- Color-coded leads 6 in. (15 cm)

Power

- Operating voltage: 20 - 24 V⎓, PELV (Class 2: USA) low-voltage
- Operating current: 33 mA nominal
- Control output: 20 - 24 V⎓ active high logic control signal with short-circuit protection, open collector when unoccupied

Operating Environment

- Temperature: 32 to 104 °F (0 to 40 °C)
- Relative humidity: less than 95%, non-condensing
- For indoor use only

Adaptive Functions

- Installation: 60 minutes
- Learning: 4 weeks for response to error conditions, air current adaptation, and timer optimization
- Post-learning occupancy periods
  - —24-hour circadian occupancy periods learned
  - —Weekly occupancy periods learned
- Adjustments in post-learning period
  - —Generally occupied periods (threshold = high-sensitivity mode)
  - —Generally unoccupied periods (threshold = miser mode)

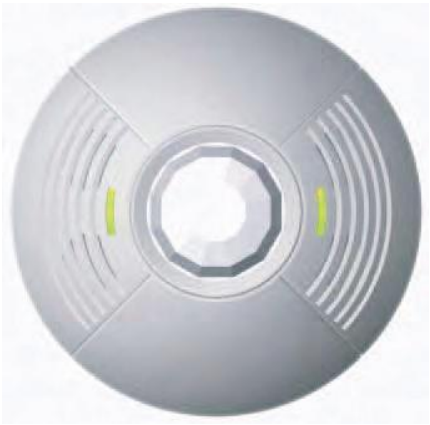
Contact Rating (R Models only)

- SPDT 500 mA rated at 24 V⎓ isolated relay

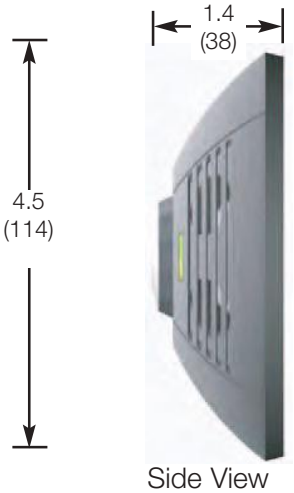
Photo Cell (R Models only)

- Prevents light from turning on when there is sufficient natural light
- Sensitivity: 0 - 1,000 LUX adjustable

Dimensions



Front View



Side View

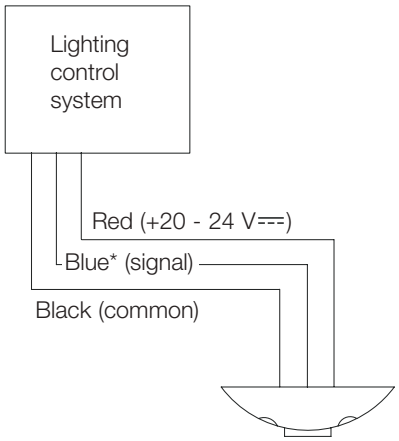
Measurements are in inches (mm)

Job Name:	Model Numbers:	
Job Number:		

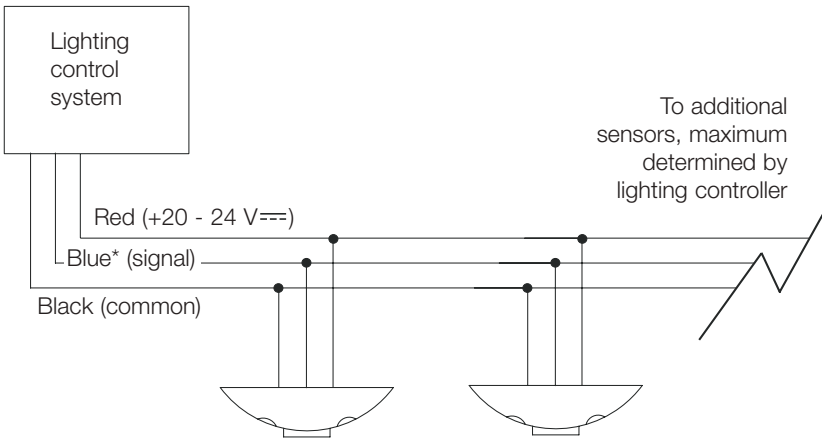
Wiring

Note: Power pack may be required when interfaced to lighting control system; see below.

Single Sensor to System



2 or More Sensors to System



*Note: Use gray wire for -R model.

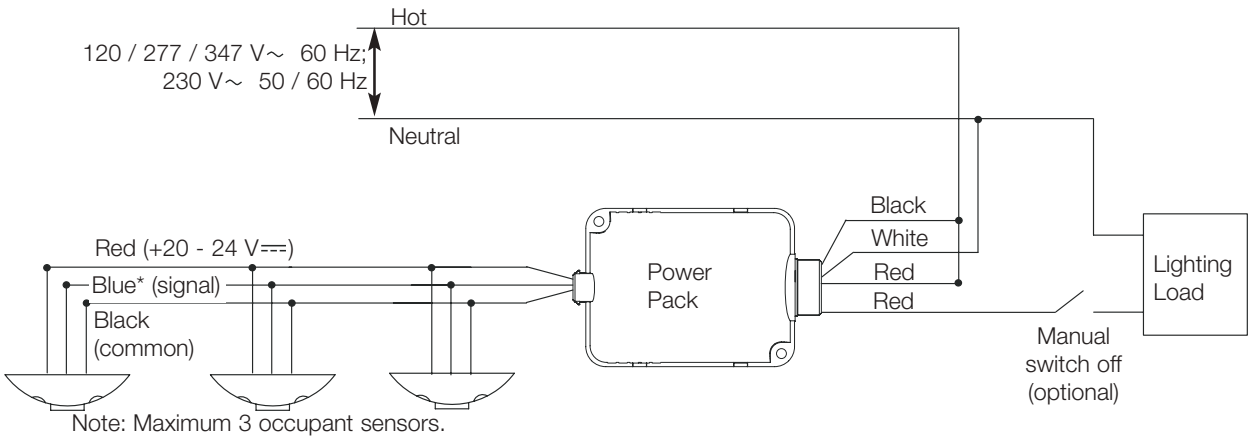
Power Supply Options

Lutron Lighting Control System	Power Pack Required?
Digital microWATT™	No
EcoSystem®	No
GRAFIK 5000 / 6000 / 7000™	No, when used with seeTouch® wallstations with occupant sensor connections.
GRAFIK Eye® 3000 / 4000	Yes
HomeWorks®	Yes
LCP128™	No, when used with *seeTouch* wallstations with occupant sensor connections.
microWATT®	No
RadioRA®	Yes
RadioTouch®	No
Softswitch128®	No, when used with *seeTouch* wallstations with occupant sensor connections.

Job Name:	Model Numbers:	
Job Number:		

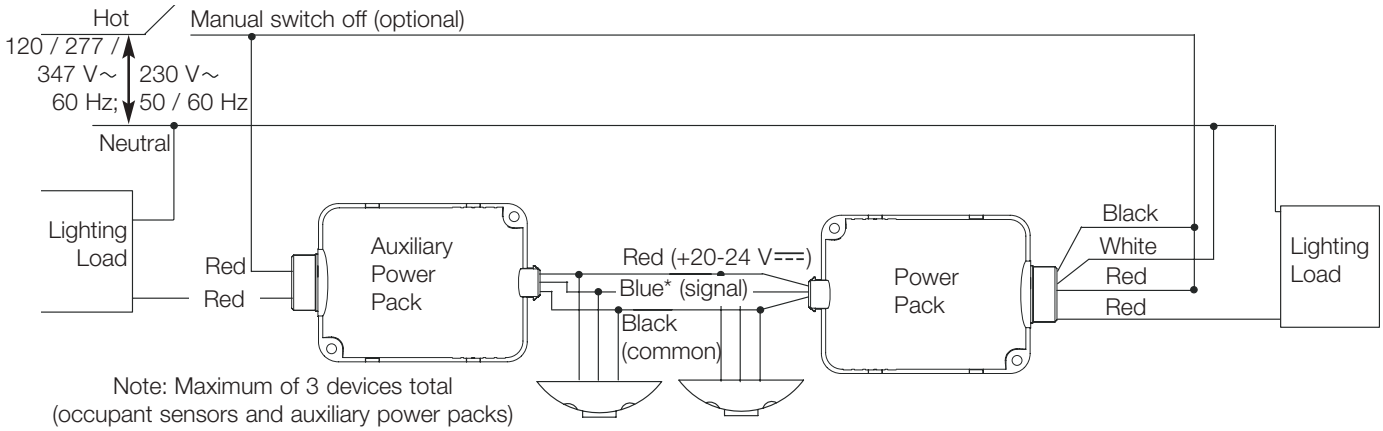
Wiring: Stand-Alone Control

1 to 3 Sensors with Power Pack



Note: Maximum 3 occupant sensors.

Switching Multiple Loads with Auxiliary Power Packs



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

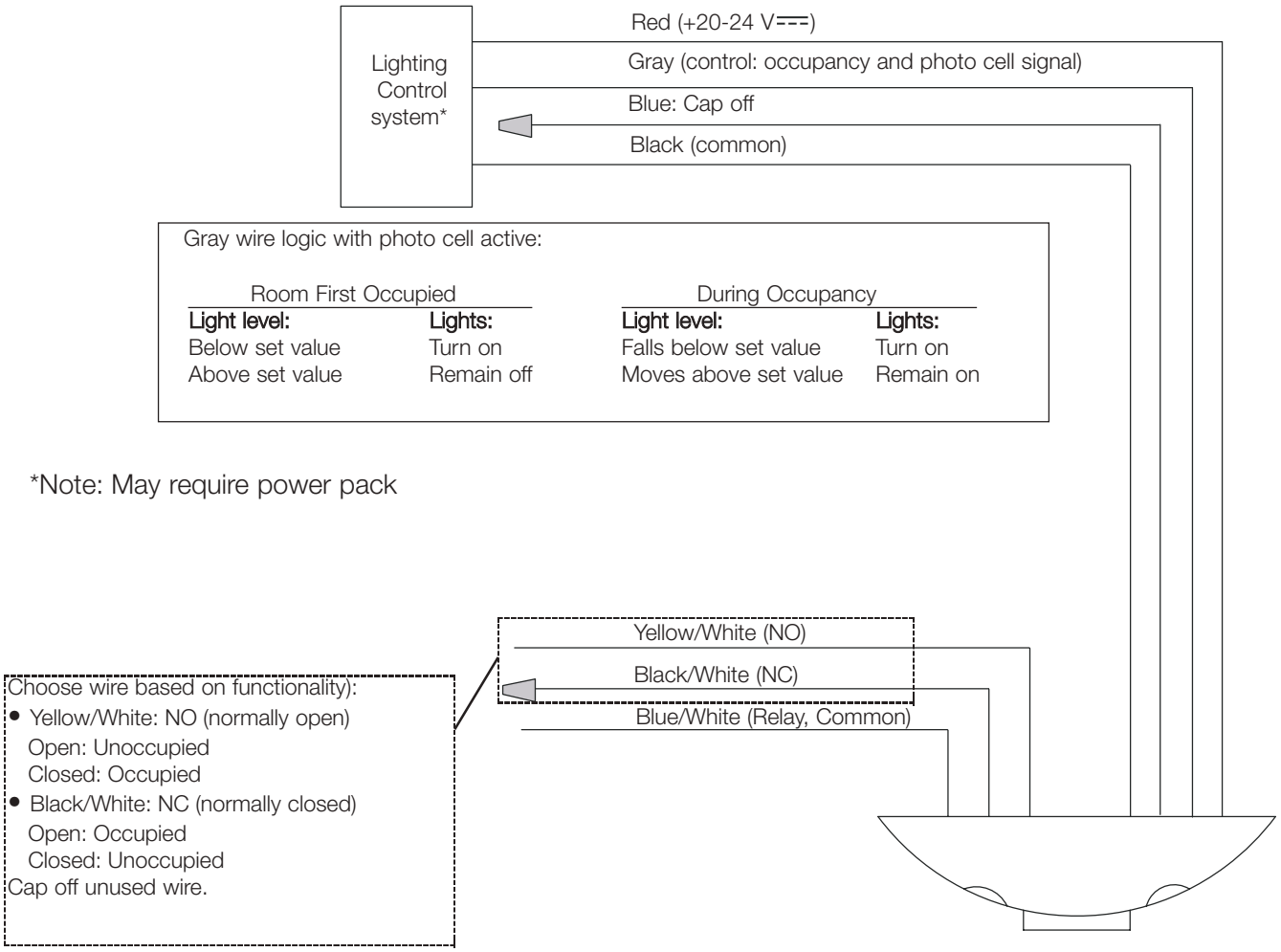
*Note: Use gray wire for -R model.

Job Name:	Model Numbers:	
Job Number:		

Wiring

Relay Model Option

LOS-CDT-xxxxR only



*Note: May require power pack

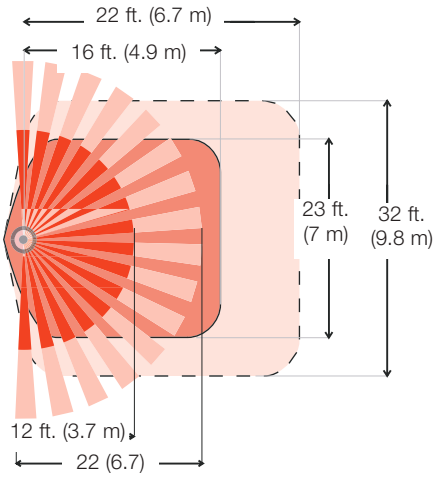
Job Name:	Model Numbers:	
Job Number:		

Installation

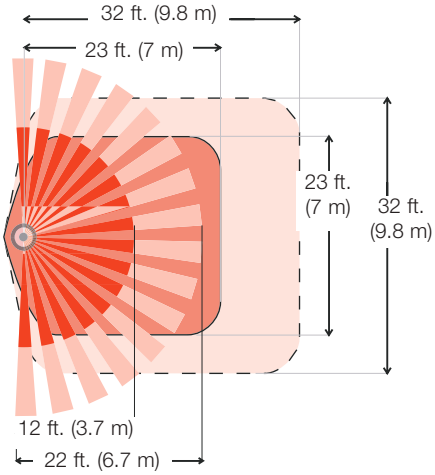
Sensor Placement

- The occupant sensor must have an unobstructed view of the room. Do not mount behind or near tall cabinets, shelves, indirect hanging fixtures, etc.
- Keep the occupant sensor away from air flow from ventilation outlets, windows, fans, etc.
- If installing a 180° occupant sensor (500 and 1000 models), place the sensor on the same wall as the doorway so that traffic in a hallway will not affect the sensor; otherwise, place in center of room.
- Closely follow the diagrams shown concerning major and minor motion coverage. The sensor can detect major motion (such as a person taking a half-step) at a greater distance than it can detect minor motion (such as writing or typing at a desk).
- Decrease total coverage area by 15% for “soft” rooms (for example, heavy draperies or heavy carpeting).

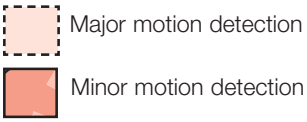
Range Diagrams

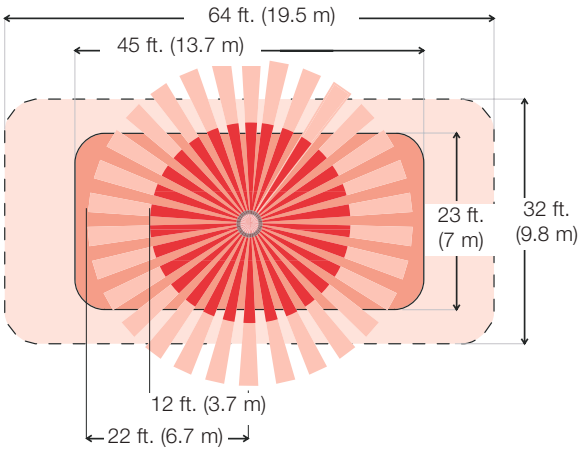


LOS-CDT-500



LOS-CDT-1000





LOS-CDT-2000

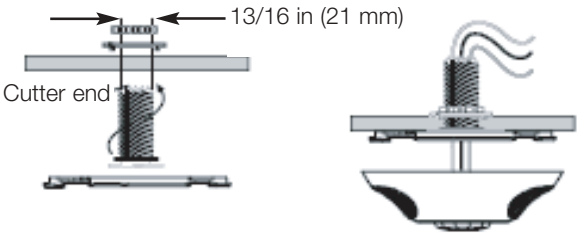
Job Name:	Model Numbers:	
Job Number:		

Installation

Mounting

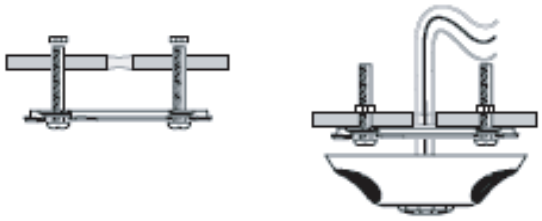
Normal Mounting

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



Mounting to Non-Standard Ceiling or Fixture

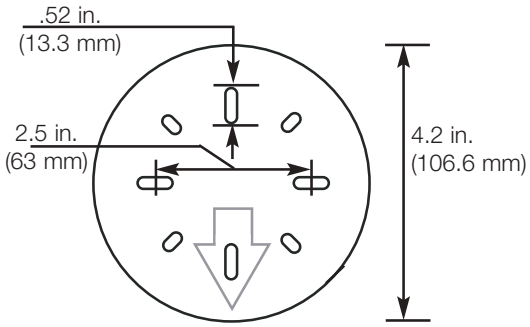
Mount twist-lock cover plate using mounting screws, nuts, and washers (included). Drill/punch wire routing hole through ceiling tile at center of cover plate.



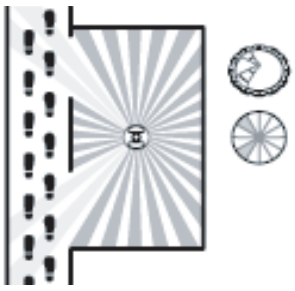
Wire Lengths

# Sensors	1	2	3	1	2	1
# Aux. PP	0	0	0	1	1	2
22 AWG	750 ft.	375 ft.	250 ft.	375 ft.	250 ft.	250 ft.
0.5 mm^2	365 m	180 m	120 m	90 m	120 m	120 m
20 AWG	1200 ft.	600 ft.	400 ft.	600 ft.	400 ft.	400 ft.
0.75 mm^2	730 m	365 m	240 m	365 m	240 m	365 m
18 AWG	2400 ft.	1200 ft.	800 ft.	1200 ft.	800 ft.	800 ft.

Mounting Plate Dimensions



Using the Infrared Mask



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

Corner Ceiling Mount
(No mask needed)

Typical Mask Patterns

Conference Room Mask

180° Mask

Full Mask

Rectangular Areas

Over the Door

Specific Areas You Wish to Mask

Job Name:	Model Numbers:	
Job Number:		

Sensor Adjustments

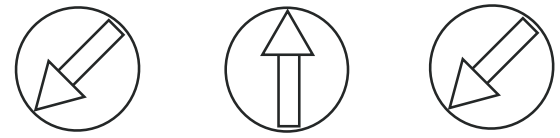
Override Settings

A		Off (Default)	On
Auto/Manual	1	Automatic (Normal)	Manual on/off (Override)
Threshold	2	Auto Threshold Adjustment	High Sensitivity (Low turn-on threshold)
LED Motion Indicator	3	Lights indicate motion	Disable LED Indicator
Reset Learned Settings	4	Retain Settings (Normal)	Erase all learned settings, restart Learning (Toggle On)

B		Off	On
Strong Airflow Compensation	1	Disable Compensation (Normal)	Enable Compensation
Over Doorway Installation	2	No (Normal)	Yes (Use increased turn-on threshold)
Timer Adjust	3	Adjust Timer Automatically	Use Manual Setting (No adjustment)
Auto Sensitivity	4	Adjust Sensitivity Automatically	Adjust Sensitivity Manually

Timer Test Mode

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

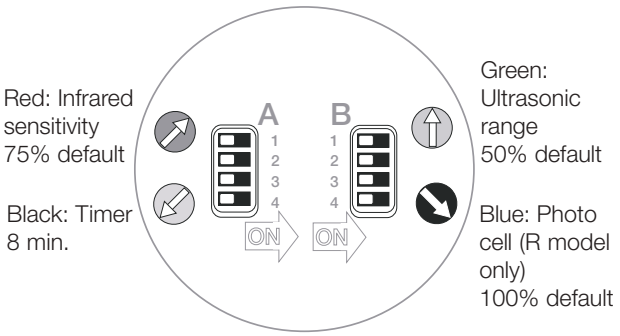


Factory Settings | 12 o'clock | Full CCW

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

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

Factory Settings



Job Name:	Model Numbers:	
Job Number:		

Installation

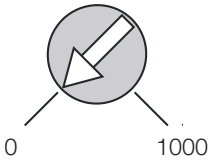
Adjusting the "Lights Not On" Level

LOS-CDT-xxxxR only

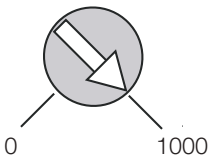
1. Place timer in Test Mode (see page 7).
2. Set photo cell to max.
   Turn the blue knob full clockwise (lights on no matter how bright the natural light is), then about 30 degrees counterclockwise.
3. Check for Lights-Out.
   Move from underneath the sensor, and remain still until the lights turn off. Move around normally to turn the light on.
4. Adjust to desired level.
   If lights remain off, adjust the blue knob another 30 degrees counterclockwise and repeat step 3 until the lights turn on.
   Note: Set blue knob to 100% to disable photo cell functionality and leave secondary dry contact closure output functionality intact.

Control Settings (Blue Knob)

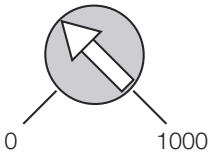
LOS-CDT-xxxxR only



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



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



Normal:
200 to 600 LUX is normal range.

Job Name:	Model Numbers:	
Job Number:		

Infrared Ceiling Mount Sensor

The LOS-CIR Series ceiling-mount passive infrared sensors can integrate into Lutron systems or function as stand-alone controls using a Lutron power pack. The sensor uses a small semiconductor heat detector that resides behind a multi-zone optical lens. The sensor's detector is sensitive to the heat emitted by the human body. In order to trigger the sensor, the source of heat must move from one range of detection to another. Non-moving hot objects will not cause the lights to turn on.

Features

- Intelligent, continually adapting passive infrared (PIR) sensor
- Passive infrared sensing
- Reliable motion detection with high error immunity
- Snap-locks to ceiling-mounted cover plate
- Non-Volatile Memory: settings saved in protected memory are not lost during power outages
- 450 to 1500 sq.ft. (42 to 140 m^2) coverage when mounted on an 8 - 12 ft. (2.4 - 3.7 m) ceiling
- Affords choice of turning lights off or dimming to a preset level in the unoccupied state when integrated with a Lutron system.

Models Available

Cat. No.	Color	Coverage	Field of View
LOS-CIR-450-WH	White	450 sq.ft. (42 m^2)	360°
LOS-CIR-1500-WH	White	1500 sq. ft. (140 m^2)	360°

Self-Adaptive Feature

The LOS-CIR Series ceiling-mount occupant sensors provides reliable detection with high error immunity. The internal microprocessor analyzes the information from the PIR technology and determines the optimum setting to use in order to properly cover the space.

Job Name:	Model Numbers:	
Job Number:		

Specifications

Timer Adjustment

- Automatic mode: Continually adapting sensor automatically adjusts settings to the space
- Manual mode: 8 to 30 minutes
- Test mode: 8 seconds

LED Lamp

- Red: infrared motion detected

Housing

- Rugged, high-impact, injection-molded plastic
- Color-coded leads 6 in. (15 cm)

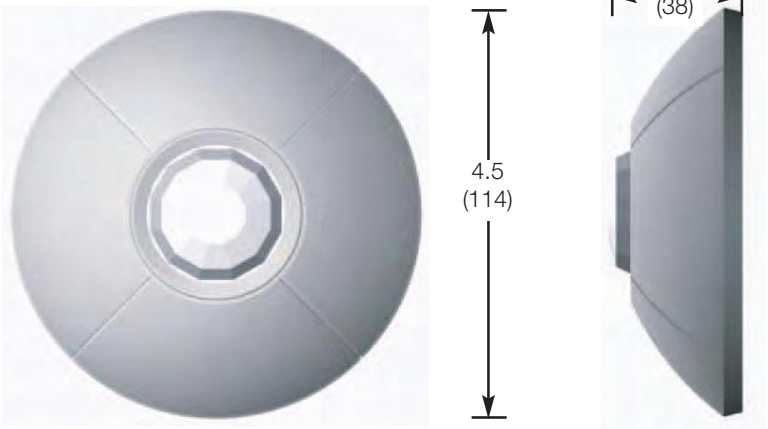
Power

- Operating voltage: 20 - 24 V⎓, PELV (Class 2: USA) low-voltage
- Operating current: 33 mA nominal
- Control output: 20 - 24 V⎓ active high logic control signal with short-circuit protection, open collector when unoccupied
- UL and CUL listed

Operating Environment

- Temperature: 32 to 104 °F (0 to 40 °C)
- Relative humidity: less than 95%, non-condensing
- For indoor use only

Dimensions



Front View Side View

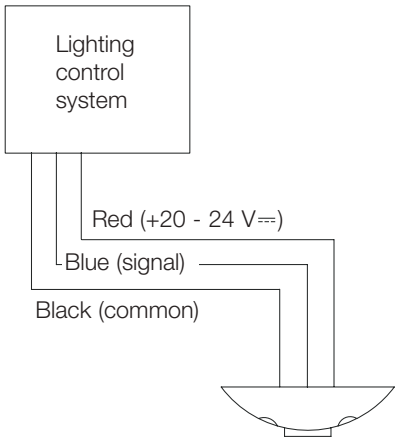
Measurements are in inches (mm)

Job Name:	Model Numbers:	
Job Number:		

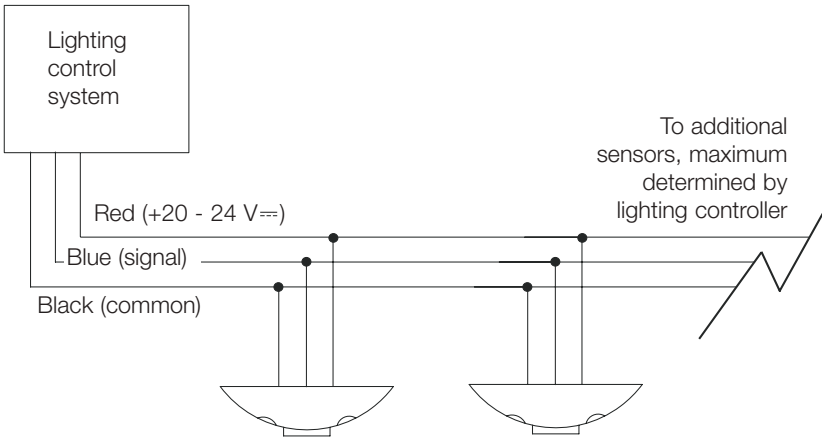
Wiring

Note: Power pack may be required when interfaced to lighting control system; see below.

Single Sensor to System



2 or More Sensors to System



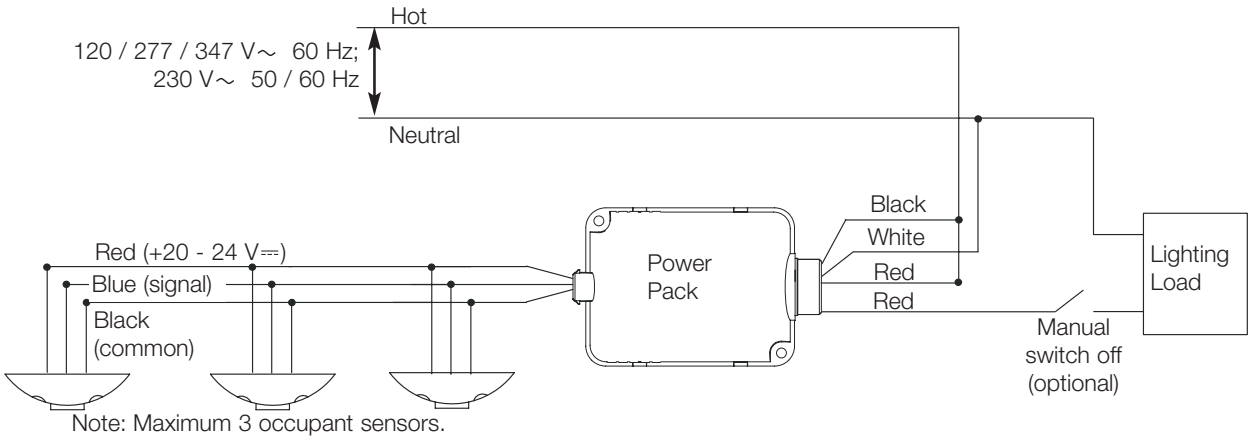
Power Supply Options

Lutron Lighting Control System	Power Pack Required?
Digital microWATT™	No
EcoSystem®	No
GRAFIK 5000 / 6000 / 7000	No, when used with seeTouch® wallstations with occupant sensor connections.
GRAFIK Eye® 3000 / 4000	Yes
HomeWorks®	Yes
LCP128™	No, when used with *seeTouch* wallstations with occupant sensor connections.
microWATT®	No
RadioRA®	Yes
RadioTouch®	No
Softswitch128®	No, when used with *seeTouch* wallstations with occupant sensor connections.

Job Name:	Model Numbers:	
Job Number:		

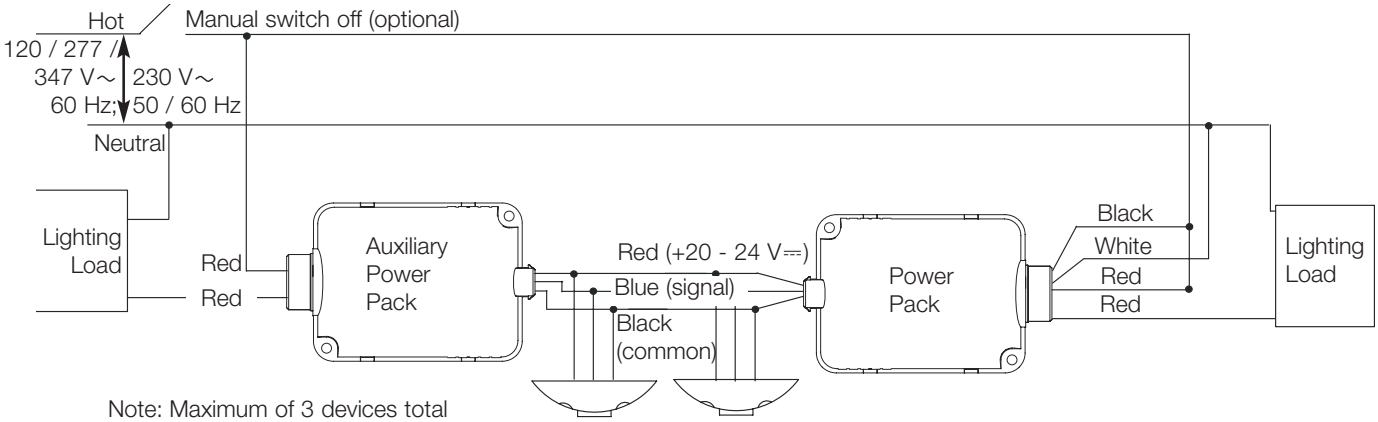
Wiring: Stand-Alone Control

1 to 3 Sensors with Power Pack



Note: Maximum 3 occupant sensors.

Switching Multiple Loads with Auxiliary Power Packs



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

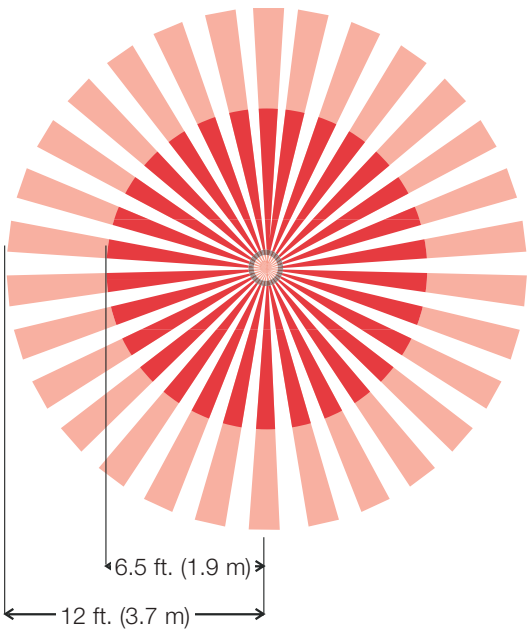
Job Name:	Model Numbers:	
Job Number:		

Installation

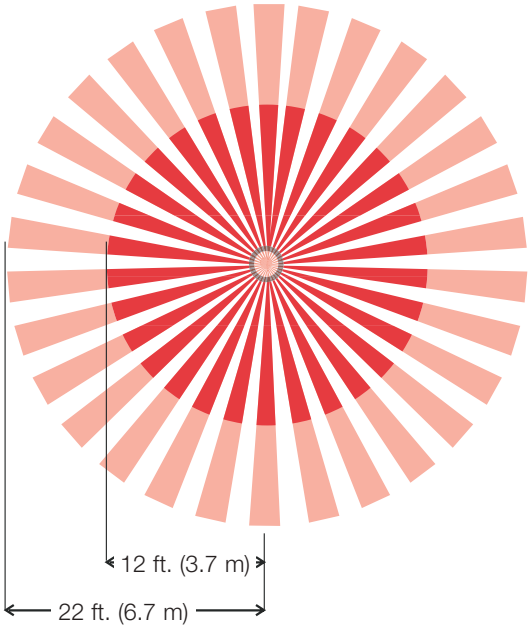
Sensor Placement

- The occupant sensor must have an unobstructed view of the room. Do not mount behind or near tall cabinets, shelves, indirect hanging fixtures, etc.
- Keep the occupant sensor away from air flow from ventilation outlets, windows, fans, etc.
- Closely follow the diagrams shown concerning major and minor motion coverage. The sensor can detect major motion (such as a person taking a half-step) at a greater distance than it can detect minor motion (such as writing or typing at a desk).
- May not detect occupancy with no significant difference between ambient and body temperatures.

Range Diagrams



LOS-CIR-450



LOS-CIR-1500

Major motion detection

Minor motion detection

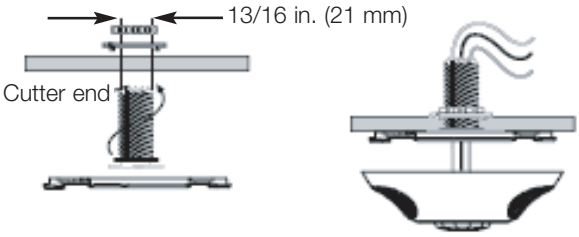
Job Name:	Model Numbers:	
Job Number:		

Installation

Mounting

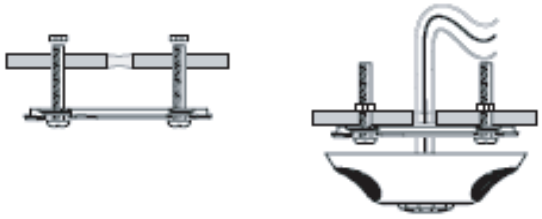
Normal Mounting

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



Mounting to Non-Standard Ceiling or Fixture

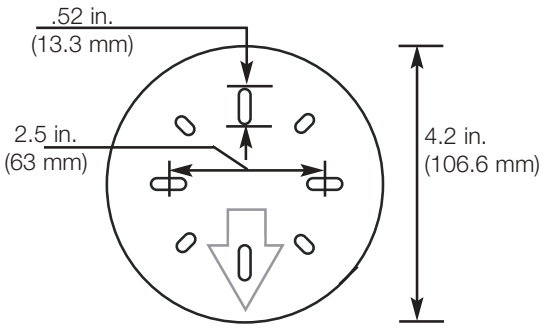
Mount twist-lock cover plate using mounting screws, nuts, and washers (included). Drill/punch wire routing hole through ceiling tile at center of cover plate.



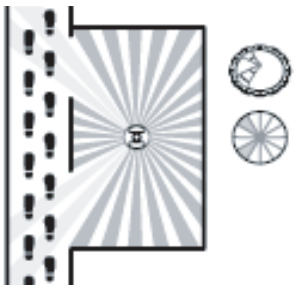
Wire Lengths

# Sensors	1	2	3	1	2	1
# Aux. PP	0	0	0	1	1	2
22 AWG	750 ft.	375 ft.	250 ft.	375 ft.	250 ft.	250 ft.
0.5 mm^2	365 m	180 m	120 m	90 m	120 m	120 m
20 AWG	1200 ft.	600 ft.	400 ft.	600 ft.	400 ft.	400 ft.
0.75 mm^2	730 m	365 m	240 m	365 m	240 m	365 m
18 AWG	2400 ft.	1200 ft.	800 ft.	1200 ft.	800 ft.	800 ft.

Mounting Plate Dimensions



Using the Infrared Mask



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

Corner Ceiling Mount
(No mask needed)

Typical Mask Patterns

Conference Room Mask

180° Mask

Full Mask

Rectangular Areas

Over the Door

Specific Areas You Wish to Mask

Job Name:	Model Numbers:	
Job Number:		

Sensor Adjustments

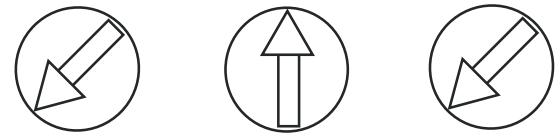
Override Settings

A		Off (Default)	On
Auto/Manual	1	Automatic (Normal)	Manual on/off (Override)
Threshold	2	Auto Threshold Adjustment	High Sensitivity (Low turn-on threshold)
LED Motion Indicator	3	Lights indicate motion	Disable LED Indicator
Reset Learned Settings	4	Retain Settings (Normal)	Erase all learned settings, Restart Learning (Toggle On)

B		Off	On
Strong Airflow Compensation	1	Disable Compensation (Normal)	Enable Compensation
Over Doorway Installation	2	No (Normal)	Yes (Use increased turn-on threshold)
Timer Adjust	3	Adjust Timer Automatically	Use Manual Setting (No adjustment)
Auto Sensitivity	4	Adjust Sensitivity Automatically	Adjust Sensitivity Manually

Timer Test Mode

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



Factory Settings | 12 o'clock | Full CCW

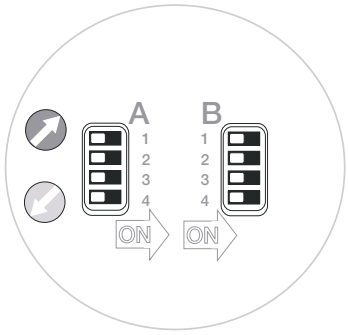
Note: The timer will remain in the 8-second test mode for 1 hour, then automatically reset to 8 minutes.

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

Factory Settings

Red: Infrared sensitivity 75% default

Black: Timer 8 min.



Job Name:	Model Numbers:	
Job Number:		

Ultrasonic Ceiling Mount Sensor

The LOS-CUS Series ceiling-mount ultrasonic sensors can integrate into Lutron systems or function as stand-alone controls using a Lutron power pack. Any movement within the sensor's range causes a shift in the original emitted frequency. The sensor's receiver identifies any change in frequency as motion and either turns the lights on or maintains lights on.

Features

- Intelligent, continually adapting ultrasonic sensor
- Snap-locks to ceiling-mounted cover plate
- Excellent minor motion sensitivity
- Non-Volatile Memory: settings saved in protected memory are not lost during power outages
- 500 to 2000 sq.ft. (46 to 186 m^2) coverage when mounted on an 8 - 12 ft. (2.4 to 3.7 m) ceiling
- Affords choice of turning lights off or dimming to a preset level in the unoccupied state when integrated with a Lutron system.

Models Available

Cat. No.	Color	Coverage	Field of View
LOS-CUS-500-WH	White	500 sq.ft. (46 m^2)	180°
LOS-CUS-1000-WH	White	1000 sq.ft. (93 m^2)	180°
LOS-CUS-2000-WH	White	2000 sq.ft. (186 m^2)	360°

Self-Adaptive Feature

Designed to meet the challenges found in a wide variety of spaces, the LOS-CUS Series provides reliable detection with high minor motion detection. The intelligent, continually adapting sensor technology eliminates manual sensitivity and timer adjustments during installation and over the life of the product. The internal microprocessor analyzes the information from the ultrasonic technology and determines the optimum setting to use in order to properly cover the space. Should the room be reconfigured (e.g., new furniture), the software will adapt to continue to provide correct time out for the lights.

Job Name:	Model Numbers:	
Job Number:		

Specifications

Timer Adjustment

- Automatic mode: Continually adapting sensor automatically adjusts settings to the space
- Manual mode: 8 to 30 minutes
- Test mode: 8 seconds

LED Lamp

- Green: ultrasonic motion detected

Housing

- Rugged, high-impact, injection-molded plastic
- Color-coded leads 6 in. (15 cm)

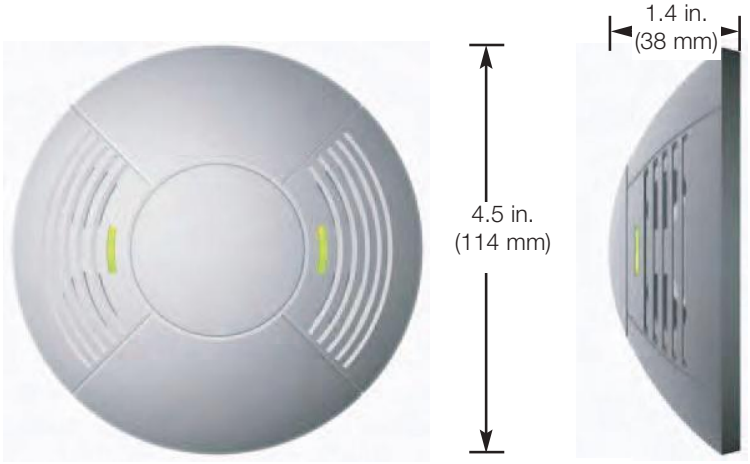
Power

- Operating voltage: 20 - 24 V⎓, PELV (Class 2: USA) low-voltage
- Operating current: 33 mA nominal
- Control output: 20 - 24 V⎓ active high logic control signal with short-circuit protection, open collector when unoccupied
- UL and CUL listed

Operating Environment

- Temperature: 32 to 104 °F (0 to 40 °C)
- Relative humidity: less than 95%, non-condensing
- For indoor use only

Dimensions



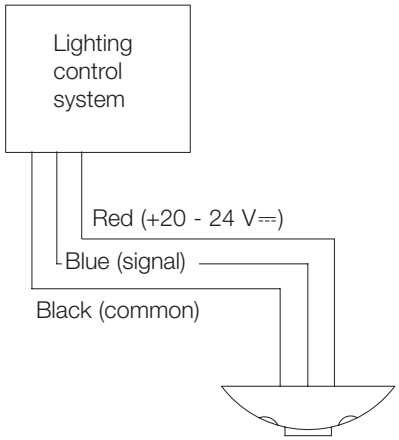
Front View Side View

Job Name:	Model Numbers:	
Job Number:		

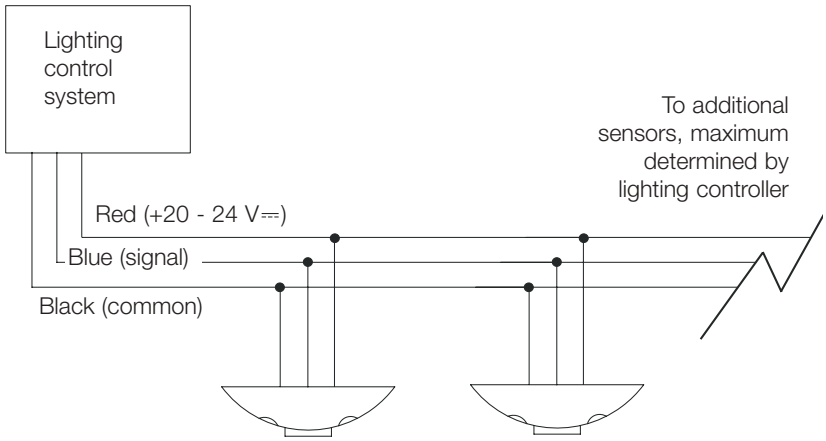
Wiring

Note: Power pack may be required when interfaced to lighting control system; see below.

Single Sensor to System



2 or More Sensors to System



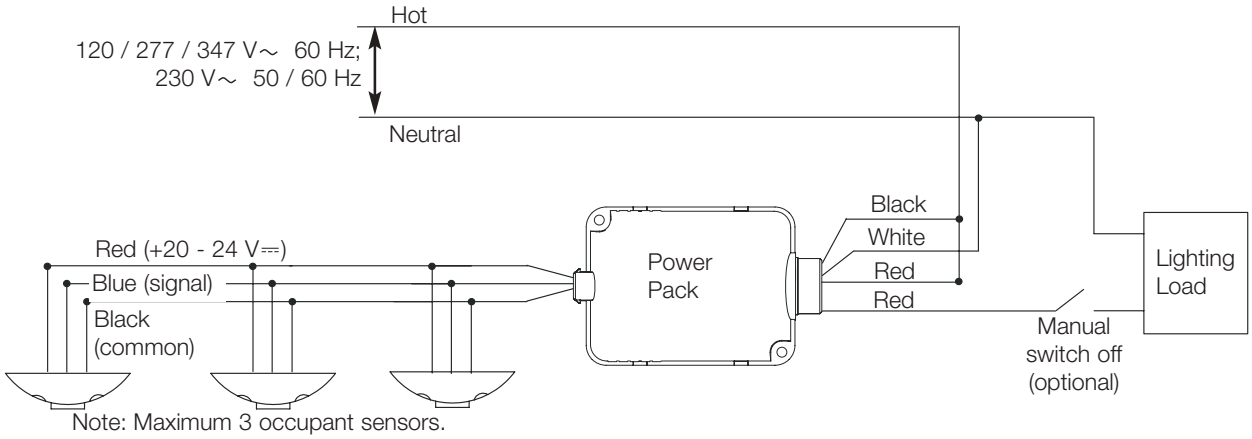
Power Supply Options

Lutron Lighting Control System	Power Pack Required?
Digital microWATT™	No
EcoSystem®	No
GRAFIK 5000 / 6000 / 7000	No, when used with seeTouch® wallstations with occupant sensor connections.
GRAFIK Eye® 3000 / 4000	Yes
HomeWorks®	Yes
LCP128™	No, when used with *seeTouch* wallstations with occupant sensor connections.
microWATT®	No
RadioRA®	Yes
RadioTouch®	No
Softswitch128®	No, when used with *seeTouch* wallstations with occupant sensor connections.

Job Name:	Model Numbers:	
Job Number:		

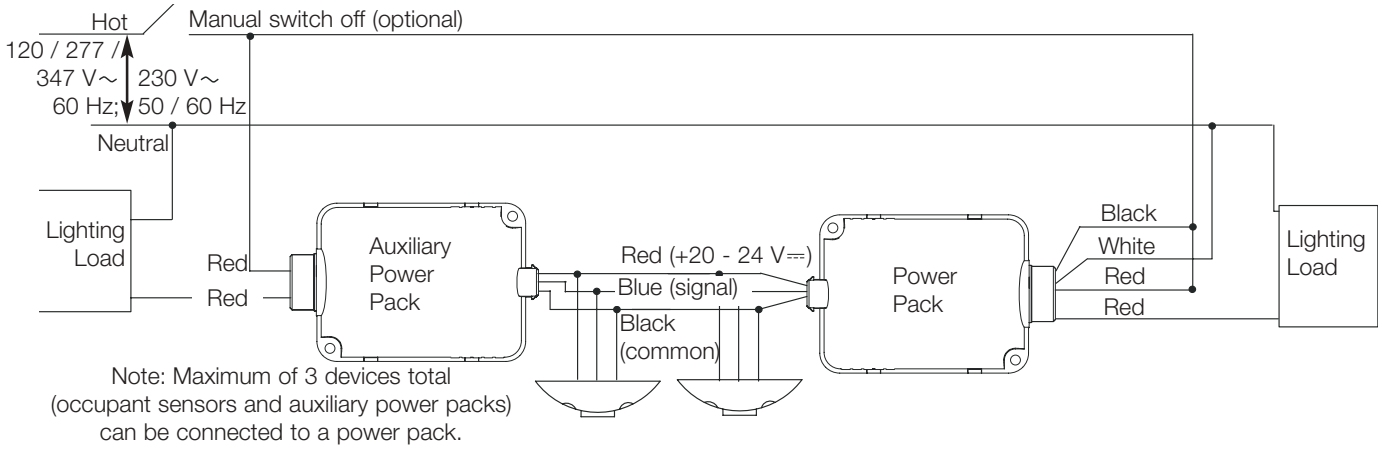
Wiring: Stand-Alone Control

1 to 3 Sensors with Power Pack



Note: Maximum 3 occupant sensors.

Switching Multiple Loads with Auxiliary Power Packs



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

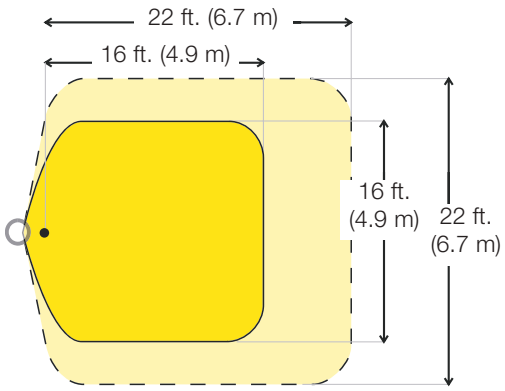
Job Name:	Model Numbers:	
Job Number:		

Installation

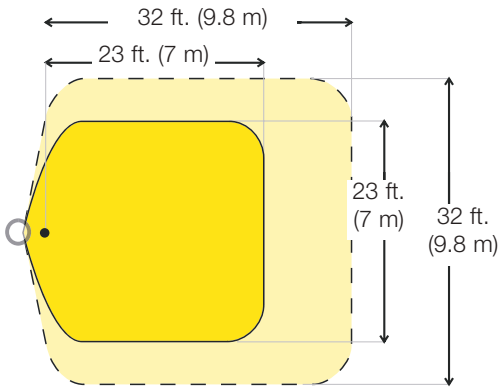
Sensor Placement

- Mount the sensor so the grilles face the open portion of the room and are not facing a nearby wall, window, or other obstructing object.
- Keep the occupant sensor away from air flow from ventilation outlets, windows, fans, etc.
- If installing a 180° occupant sensor (500 and 1000 models), place the sensor on the same wall as the doorway so that traffic in a hallway will not affect the sensor; otherwise, place in center of room.
- Closely follow the diagrams shown concerning major and minor motion coverage. The sensor can detect major motion (such as a person taking a half-step) at a greater distance than it can detect minor motion (such as writing or typing at a desk).
- Decrease total coverage area by 15% for “soft” rooms (for example, heavy draperies or heavy carpeting).

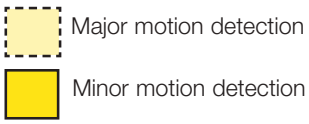
Range Diagrams

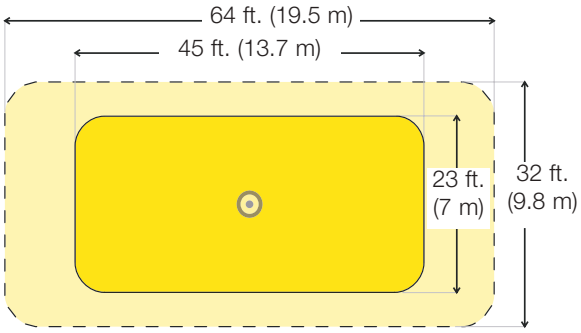


LOS-CUS-500



LOS-CUS-1000





LOS-CUS-2000

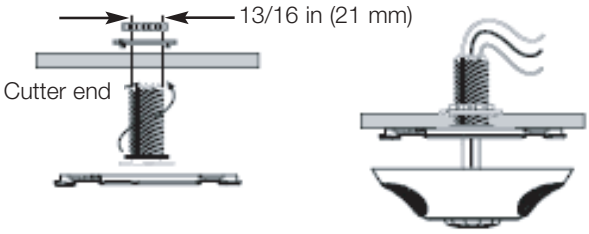
Job Name:	Model Numbers:	
Job Number:		

Installation

Mounting

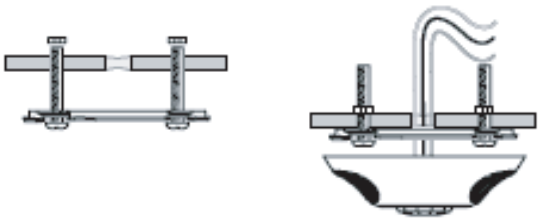
Normal Mounting

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



Mounting to Non-Standard Ceiling or Fixture

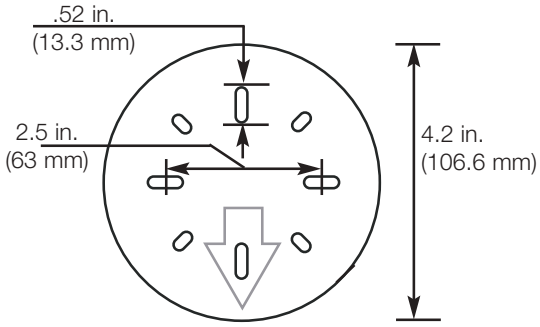
Mount twist-lock cover plate using mounting screws, nuts, and washers (included). Drill/punch wire routing hole through ceiling tile at center of cover plate.



Wire Lengths

# Sensors	1	2	3	1	2	1
# Aux. PP	0	0	0	1	1	2
22 AWG	750 ft.	375 ft.	250 ft.	375 ft.	250 ft.	250 ft.
0.5 mm^2	365 m	180 m	120 m	90 m	120 m	120 m
20 AWG	1200 ft.	600 ft.	400 ft.	600 ft.	400 ft.	400 ft.
0.75 mm^2	730 m	365 m	240 m	365 m	240 m	365 m
18 AWG	2400 ft.	1200 ft.	800 ft.	1200 ft.	800 ft.	800 ft.

Mounting Plate Dimensions



Job Name:	Model Numbers:	
Job Number:		

Sensor Adjustments

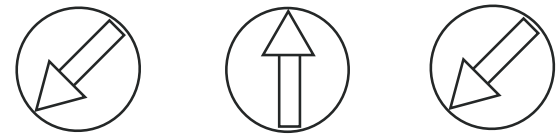
Override Settings

A		Off (Default)	On
Auto/Manual	1	Automatic (Normal)	Manual on/off (Override)
Threshold	2	Auto Threshold Adjustment	High Sensitivity (Low turn-on threshold)
LED Motion Indicator	3	Lights indicate motion	Disable LED Indicator
Reset Learned Settings	4	Retain Settings (Normal)	Erase all learned settings, Restart Learning (Toggle On)

B		Off	On
Strong Airflow Compensation	1	Disable Compensation (Normal)	Enable Compensation
Over Doorway Installation	2	No (Normal)	Yes (Use increased turn-on threshold)
Timer Adjust	3	Adjust Timer Automatically	Use Manual Setting (No adjustment)
Auto Sensitivity	4	Adjust Sensitivity Automatically	Adjust Sensitivity Manually

Timer Test Mode

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

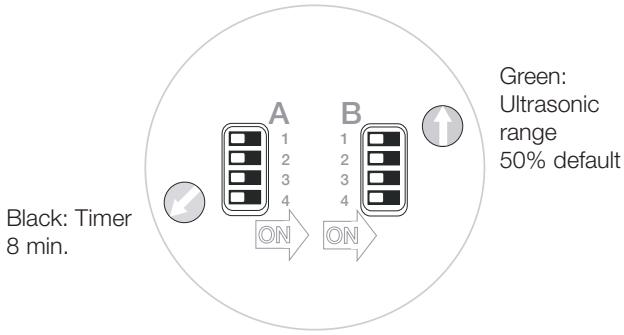


Factory Settings | 12 o'clock | Full CCW

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

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

Factory Settings



Job Name:	Model Numbers:	
Job Number:		

Dual Technology Wall Mount Occupancy Sensor

The LOS-WDT Series wall-mount dual-technology sensors are used to control lighting in spaces that have pendant fixtures, ceiling fans, or high ceilings (more than 12 ft./ 3.7 m), where ceiling-mount occupant sensors would not function reliably. The adaptive technology eliminates manual sensitivity and timer adjustments during installation and over the life of the product.

Features

- Intelligent, continually adapting sensor
- Ultrasonic (US) combined with passive infrared (PIR) sensing provide high sensitivity, high noise immunity, and excellent false tripping immunity
- Suited for complex environments that are difficult to control with single-technology sensors
- Flexible base mounting on wall or ceiling
- Aim and lock: base mount permits fast alignment
- Non-Volatile Memory: settings saved in protected memory are not lost during power outages
- 1600 sq.ft. (488 m^2) of coverage when used where the ceiling height is between 8 - 12 ft. (2.4 - 3.7 m)
- Affords choice of turning lights off or dimming to a preset level in the unoccupied state when integrated with a Lutron system.

Models Available

Cat. No.	Color	Coverage	Field of View
LOS-WDT-WH	White	1600 sq.ft. (488 m^2)	110°
LOS-WDT-R-WH	White	1600 sq.ft. (488 m^2)	110°

Self-Adaptive Feature

The LOS-WDT Series wall-mount occupancy sensors combine both ultrasonic (US) motion detection for maximum sensitivity and passive infrared (PIR) motion detection for false triggering immunity. The self-adapting internal microprocessor analyzes the composite sum of both signals to eliminate time-consuming adjustments and callbacks found in non-intelligent sensors.

Job Name:	Model Numbers:	
Job Number:		

Specifications

Timer Settings

- Automatic mode: Continually adapting sensor automatically adjusts settings to the space
- Manual mode: 4 to 30 minutes
- Test mode: 8 seconds

LED Lamp

- Red: infrared motion
- Green: ultrasonic motion

Housing

- High-impact, injection molded plastic housing
- 6 in. (15 cm) color-coded lead wires

Power

- Operating voltage: 20 - 24 V⎓, Class 2 (PELV) low-voltage
- Operating current: 33 mA nominal
- Control output: 20 - 24 V⎓ active high logic control signal with short-circuit protection, open collector when unoccupied
- UL and CUL listed

Operating Environment

- Temperature: 32 to 104 °F (0 to 40 °C)
- Relative humidity: 0% to 95%, non-condensing
- For indoor use only

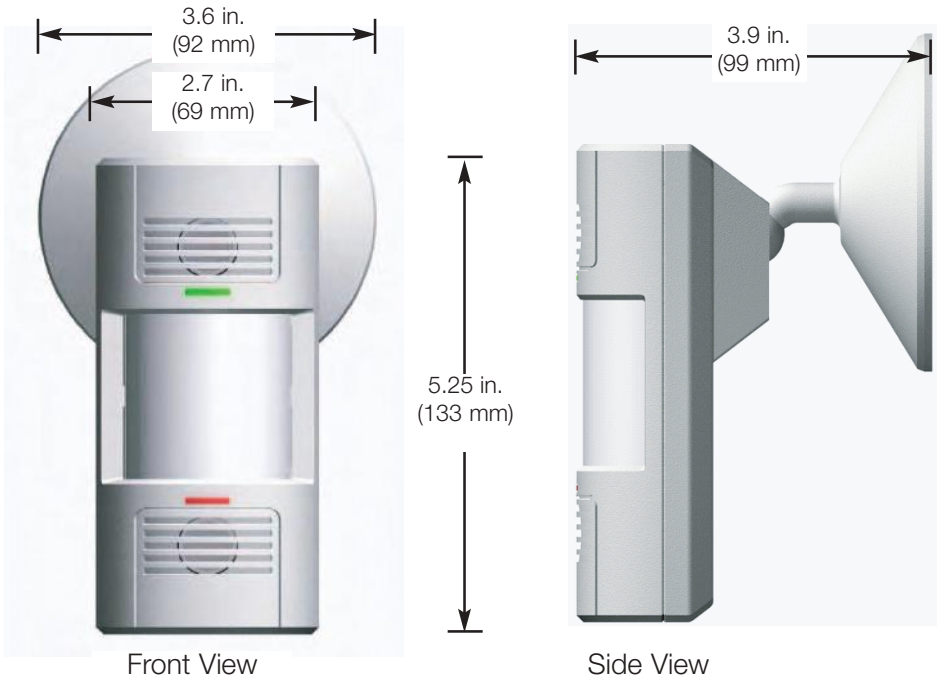
Contact Rating (R Models only)

- SPDT 500 mA rated at 24 V⎓ isolated relay

Photo Cell (R Models only)

- Prevents light from turning on when there is sufficient natural light
- Sensitivity: 20 - 3,000 LUX adjustable

Dimensions



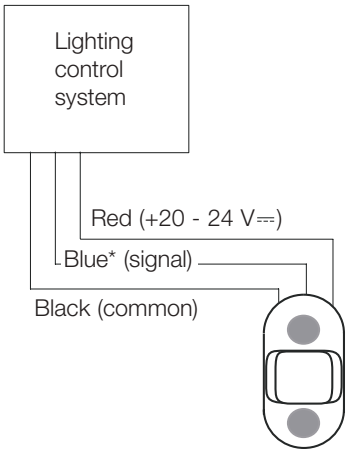
Front View Side View

Job Name:	Model Numbers:	
Job Number:		

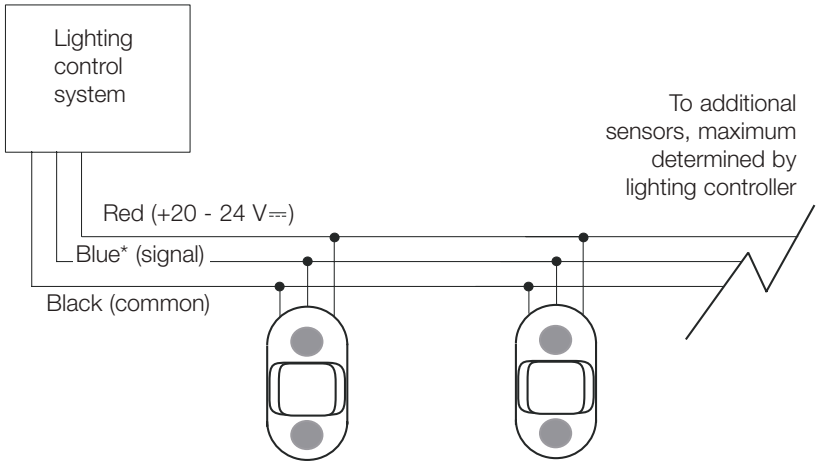
Wiring

Note: Power pack may be required when interfaced to lighting control system; see below.

Single Sensor to System



2 or More Sensors to System



*Note: Use gray wire for -R model.

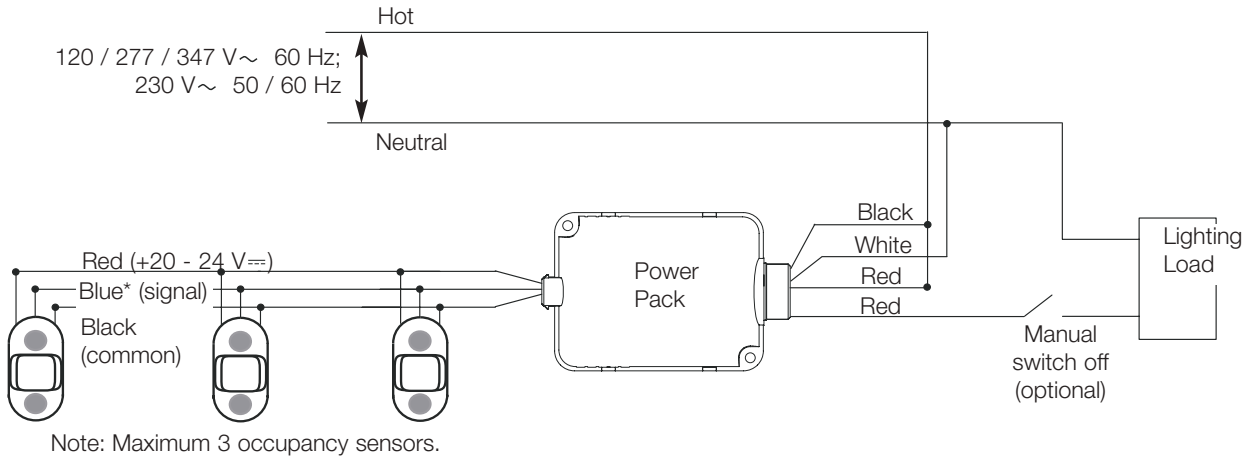
Power Supply Options

Lutron Lighting Control System	Power Pack Required?
Digital microWATT™	No
EcoSystem®	No
GRAFIK 5000 / 6000 / 7000	No, when used with seeTouch® wallstations with occupant sensor connections.
GRAFIK Eye® 3000 / 4000	Yes
HomeWorks®	Yes
LCP128™	No, when used with *seeTouch* wallstations with occupant sensor connections.
microWATT®	No
RadioRA®	Yes
RadioTouch®	No
Softswitch128®	No, when used with *seeTouch* wallstations with occupant sensor connections.

Job Name:	Model Numbers:	
Job Number:		

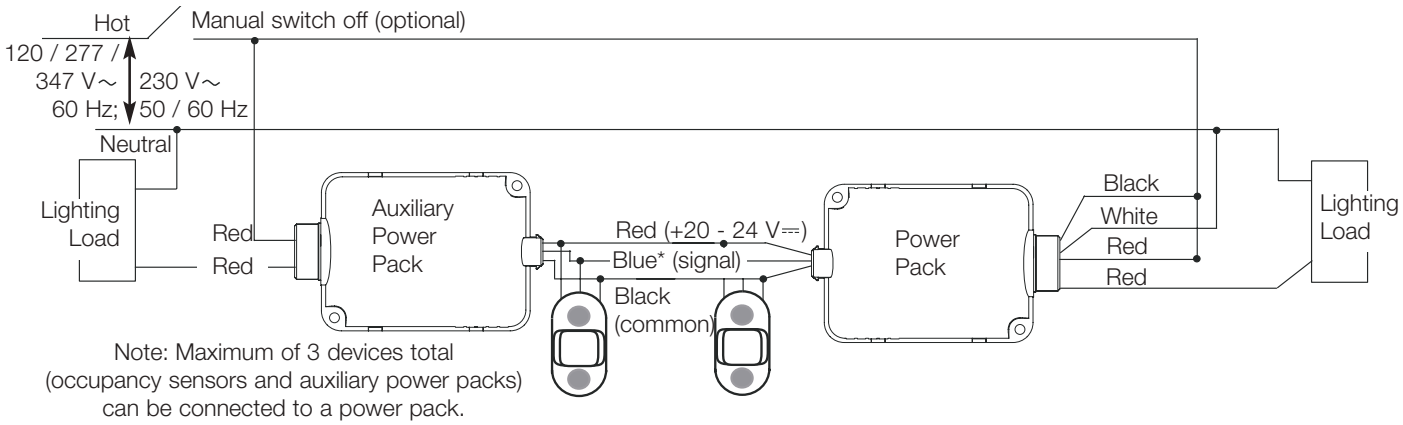
Wiring: Stand-Alone Control

1 to 3 Sensors with Power Pack



Note: Maximum 3 occupancy sensors.

Switching Multiple Loads with Auxiliary Power Packs



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

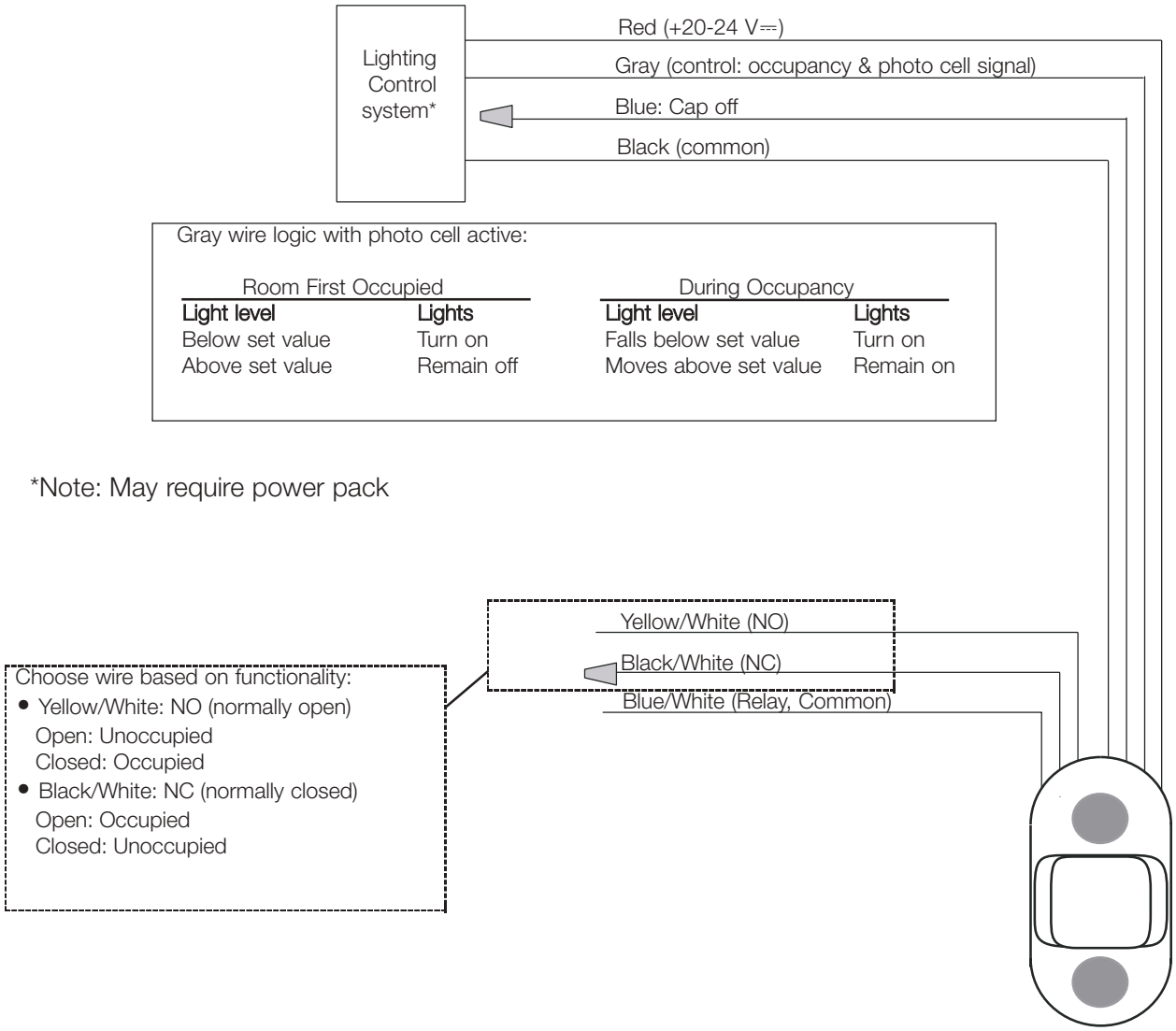
*Note: Use gray wire for -R model.

Job Name:	Model Numbers:	
Job Number:		

Wiring

Relay Model Option

LOS-WDT-R only



*Note: May require power pack

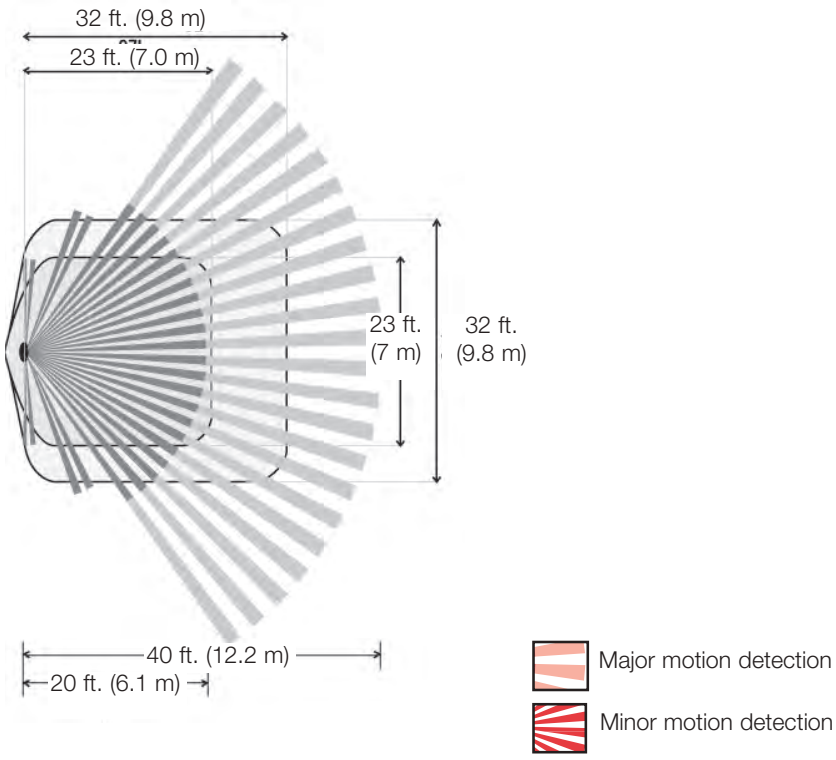
Job Name:	Model Numbers:	
Job Number:		

Installation

Sensor Placement

- The occupant sensor must have an unobstructed view of the room entrance. Do not mount behind or near tall cabinets, shelves, indirect hanging fixtures, etc.
- Keep the occupant sensor away from air flow from ventilation outlets, windows, fans, etc.
- Place the sensor on the same wall as the doorway so that traffic in a hallway will not affect the sensor.
- Closely follow the diagrams shown concerning major and minor motion coverage. The sensor can detect major motion (such as a person taking a half-step) at a greater distance than it can detect minor motion (such as writing or typing at a desk).
- Decrease total coverage area by 15% for “soft” rooms (for example, heavy draperies or heavy carpeting).

Range Diagrams



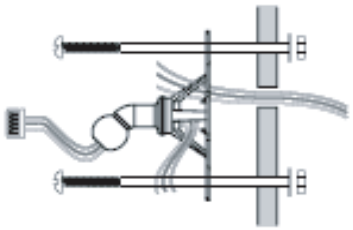
Job Name:	Model Numbers:	
Job Number:		

Installation

Mounting

Mounting to Wall or Ceiling Tile

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

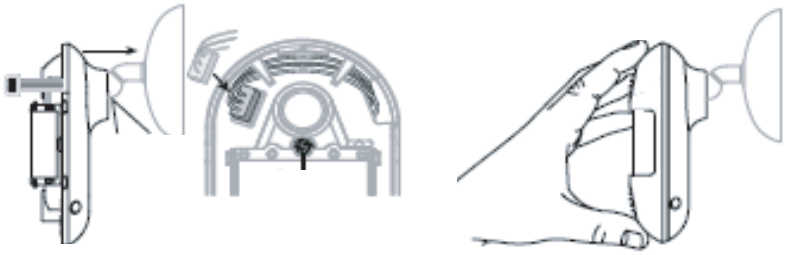


Mounting in Acoustic Ceiling Tile

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

Either Method

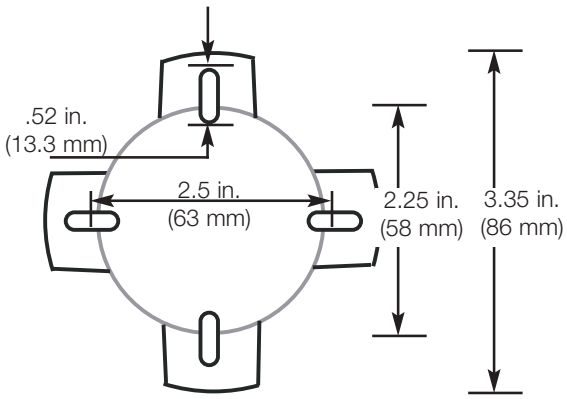
Feed wiring harness through the back of the sensor body and out the exit slot. Snap sensor onto mounting post. Plug wiring harness into connector on the left side (opposite exit slot) and place wiring under wire tabs. Align sensor and tighten position locking screw.



Wire Lengths

# Sensors	1	2	3	1	2	1
# Aux. PP	0	0	0	1	1	2
22 AWG	750 ft.	375 ft.	250 ft.	375 ft.	250 ft.	250 ft.
0.5 mm^2	365 m	180 m	120 m	90 m	120 m	120 m
20 AWG	1200 ft.	600 ft.	400 ft.	600 ft.	400 ft.	400 ft.
0.75 mm^2	730 m	365 m	240 m	365 m	240 m	365 m
18 AWG	2400 ft.	1200 ft.	800 ft.	1200 ft.	800 ft.	800 ft.

Mounting Plate Dimensions

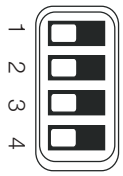


Job Name:	Model Numbers:	
Job Number:		

Sensor Adjustments

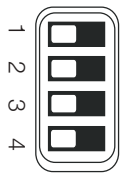
Override Settings

A



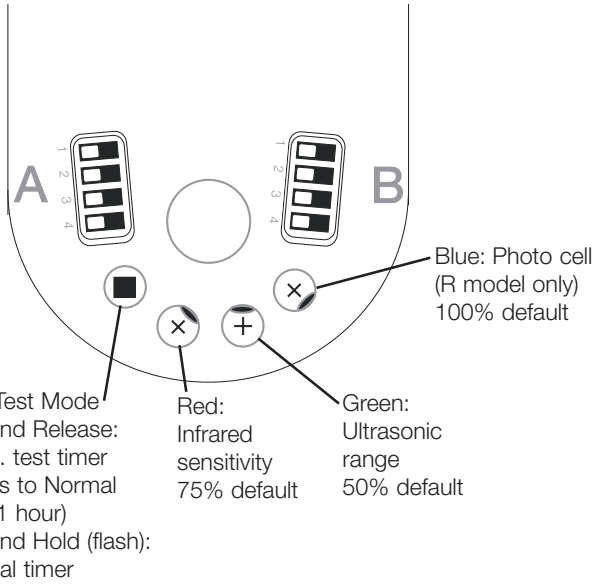
	Off (Default)	On
1	Automatic (Normal)	Manual lights on (Override)
2	Not used	Not used
3	LED on (Normal)	LED off
4	Retain Settings (Normal)	Any change resets learned settings

B



	Off		On	
1	OFF } 8 min.	OFF } 4 min.	ON } 15 min.	ON } 30 min.
2	OFF }	ON }	OFF }	ON }
3	Auto Timer Adjust On		Auto Timer Adjust Off	
4	Auto Sensitivity Adjust On		Auto Sensitivity Adjust Off	

Factory Settings



Job Name:	Model Numbers:	
Job Number:		

Installation

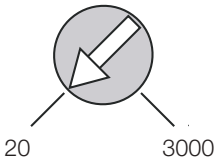
Adjusting the "Lights Not On" Level

LOS-WDT-R only

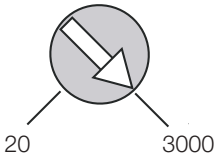
1. Place timer in Test Mode (see page 7).
2. Set photo cell to max.
   Turn the blue knob full clockwise (lights on no matter how bright the natural light is), then 30 degrees counterclockwise.
3. Check for Lights-Out.
   Move from underneath the sensor, and remain still until the lights turn off. Move around normally to turn the light on.
4. Adjust to desired level.
   If lights remain off, adjust the blue knob another 30 degrees counterclockwise and repeat step 3 until the lights turn on.
   Note: Set blue knob to 100% to disable photo cell functionality and leave secondary dry contact closure output functionality intact.

Control Settings (Blue Knob)

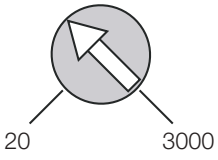
LOS-WDT-R only



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



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



Normal:
200 to 600 LUX is normal range.

Job Name:	Model Numbers:	
Job Number:		

Infrared Wall Mount Occupancy Sensor

The LOS-WIR wall-mounted passive infrared sensor is used in spaces with pendant fixtures, ceiling fans, or high ceilings (more than 12 ft./3.7 m). The sensor detects large body motions over 40 ft. (12 m) away, and smaller motions such as hand movements up to 25 ft. (7.6 m) away.

Features

- Intelligent, continually adapting sensor
- Passive infrared (PIR) sensing
- Excellent false tripping immunity
- Use in rooms with pendant fixtures and storage areas
- Flexible base mounting on wall or ceiling
- Aim and lock: base mount permits fast alignment
- Non-Volatile Memory: settings saved in protected memory are not lost during power outages
- 1,600 sq.ft. (488 m^2) of coverage when used where the ceiling height is between 8 - 12 ft. (2.4 - 3.7 m)
- Affords choice of turning lights off or dimming to a preset level in the unoccupied state when integrated with a Lutron system.

Models Available

Cat. No.	Color	Coverage	Field of View
LOS-WIR-WH	White	1600 sq.ft. (288 m^2)	110°

Self-Adaptive Feature

Designed to meet the challenges found in a wide variety of spaces, the LOS-WIR works well in spaces with overhead fans and space heaters. Work areas, storage facilities, storerooms, indoor garages, and rooms with pendant fixtures are ideal. The internal microprocessor analyzes the information from the PIR technology and determines the optimum setting to use in order to properly cover the space.

The LOS-WIR identifies, records, and learns normal occupancy cycles of a space. Over an initial 4-week period, the sensor logs room occupancy for each 24-hour period. The information gathered by the sensor is used to automatically adjust the dual internal sensitivity bias threshold. This technology eliminates time-consuming adjustments and callbacks found in non-intelligent sensors.

Job Name:	Model Numbers:	
Job Number:		

Specifications

Timer Settings

- Automatic mode: Continually adapting sensor automatically adjusts settings to the space
- Manual mode: 4 to 30 minutes
- Test mode: 8 seconds

Operating Environment

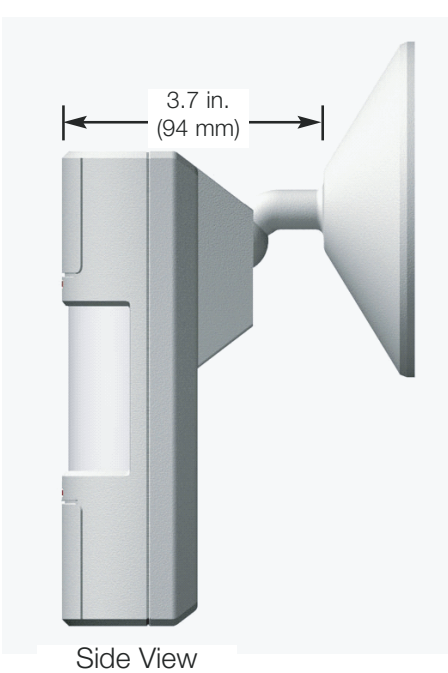
- Temperature: 32 to 104 °F (0 to 40 °C)
- Relative humidity: 0% to 95%, non-condensing
- For indoor use only

Power

- Operating voltage: 20 - 24 V⎓, PELV (Class 2: USA) low-voltage
- Operating current: 33 mA nominal
- Control output: 20 - 24 V⎓ active high logic control signal with short-circuit protection, open collector when unoccupied
- UL and CUL listed

Dimensions

Front View



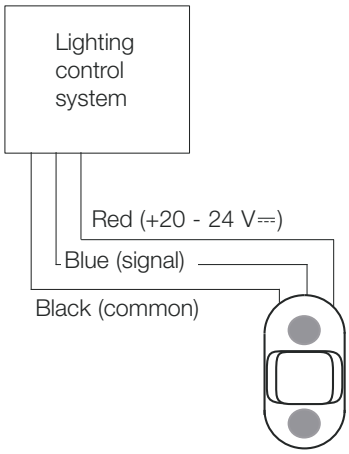
Side View

Job Name:	Model Numbers:	
Job Number:		

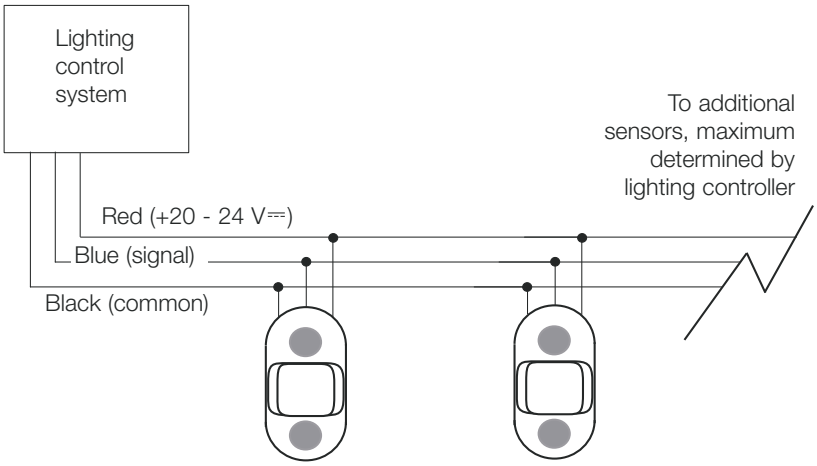
Wiring

Note: Power pack may be required when interfaced to lighting control system; see below.

Single Sensor to System



2 or More Sensors to System



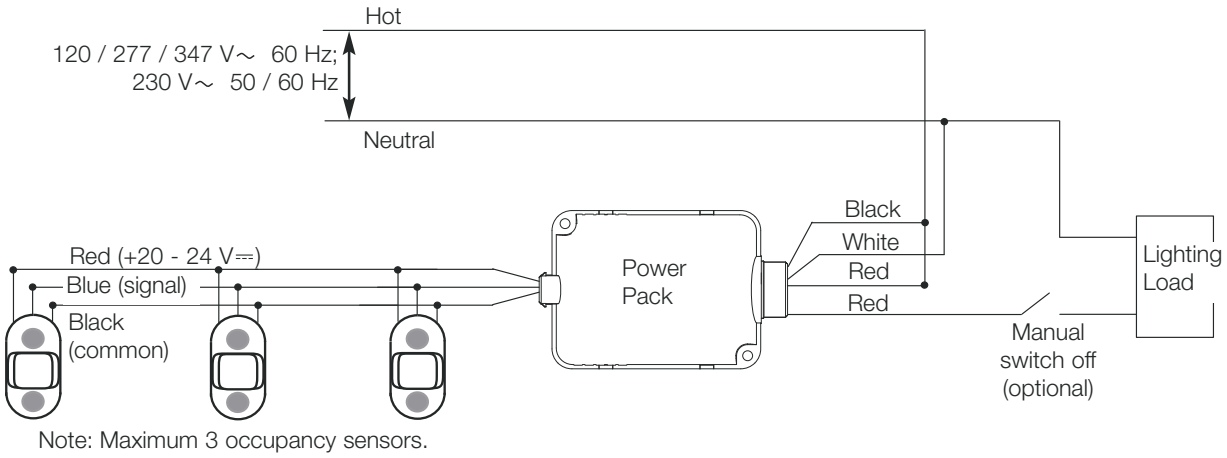
Power Supply Options

Lutron Lighting Control System	Power Pack Required?
Digital microWATT™	No
EcoSystem®	No
GRAFIK 5000 / 6000 / 7000	No, when used with seeTouch® wallstations with occupant sensor connections.
GRAFIK Eye® 3000 / 4000	Yes
HomeWorks®	Yes
LCP128™	No, when used with *seeTouch* wallstations with occupant sensor connections.
microWATT®	No
RadioRA®	Yes
RadioTouch®	No
Softswitch128®	No, when used with *seeTouch* wallstations with occupant sensor connections.

Job Name:	Model Numbers:	
Job Number:		

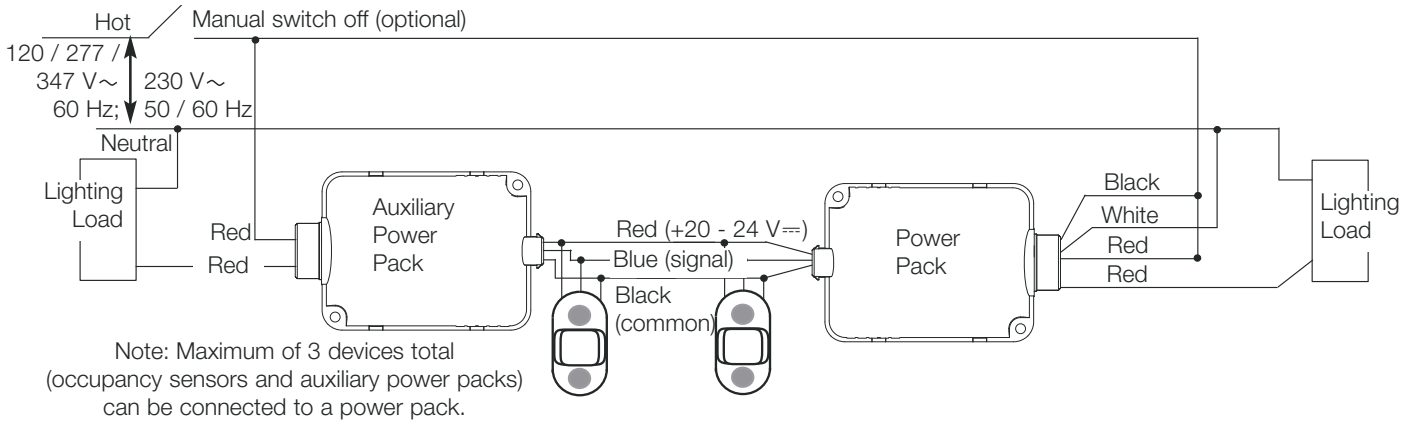
Wiring: Stand-Alone Control

1 to 3 Sensors with Power Pack



Note: Maximum 3 occupancy sensors.

Switching Multiple Loads with Auxiliary Power Packs



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

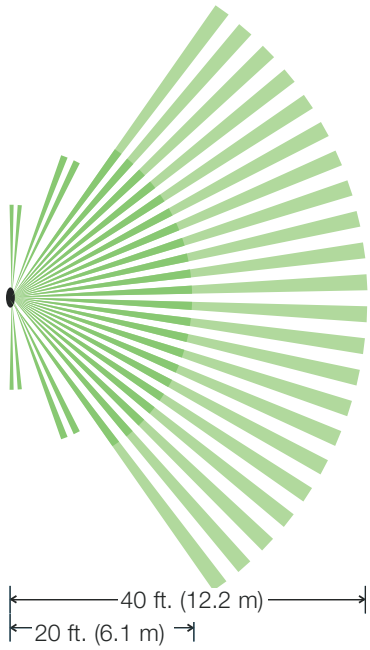
Job Name:	Model Numbers:	
Job Number:		

Installation

Sensor Placement

- The occupant sensor must have an unobstructed view of the room. Do not mount behind or near tall cabinets, shelves, indirect hanging fixtures, etc.
- Keep the occupant sensor away from air flow from ventilation outlets, windows, fans, etc.
- Closely follow the diagrams shown concerning major and minor motion coverage. The sensor can detect major motion (such as a person taking a half-step) at a greater distance than it can detect minor motion (such as writing or typing at a desk).
- May not detect occupancy with no significant difference between ambient and body temperatures.

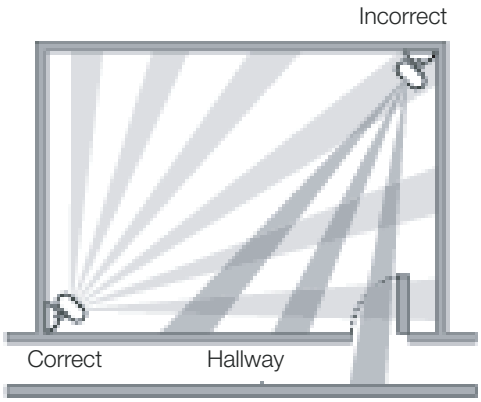
Range Diagram



Minor motion detection

Major motion detection

Sensor Placement



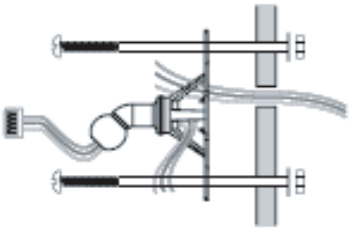
Job Name:	Model Numbers:	
Job Number:		

Installation

Mounting

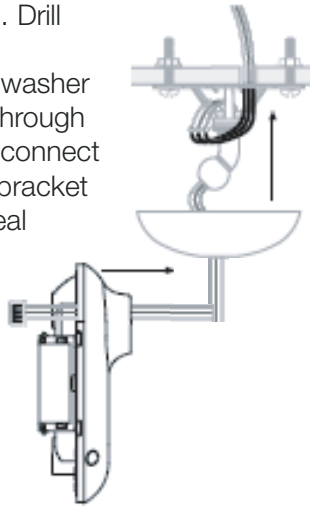
Mounting to Wall or Ceiling Tile

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



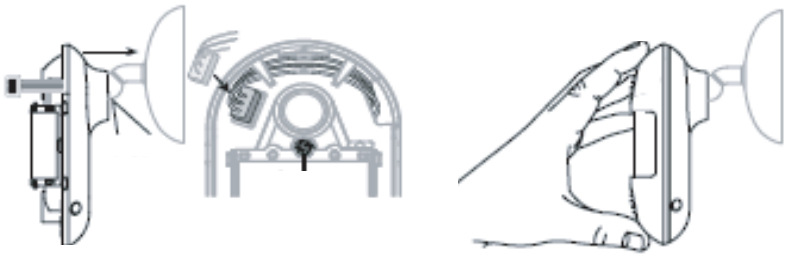
Mounting in Acoustic Ceiling Tile

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



Either Method

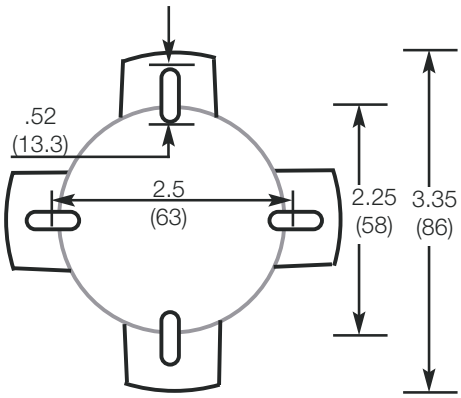
Feed wiring harness through the back of the sensor body and out the exit slot. Snap sensor onto mounting post. Plug wiring harness into connector on the left side (opposite exit slot) and place wiring under wire tabs. Align sensor and tighten position locking screw.



Wire Lengths

# Sensors	1	2	3	1	2	1
# Aux. PP	0	0	0	1	1	2
22 AWG	750 ft.	375 ft.	250 ft.	375 ft.	250 ft.	250 ft.
0.5 mm^2	365 m	180 m	120 m	90 m	120 m	120 m
20 AWG	1200 ft.	600 ft.	400 ft.	600 ft.	400 ft.	400 ft.
0.75 mm^2	730 m	365 m	240 m	365 m	240 m	365 m
18 AWG	2400 ft.	1200 ft.	800 ft.	1200 ft.	800 ft.	800 ft.

Mounting Plate Dimensions

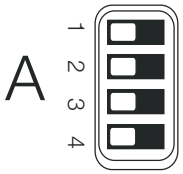


Measurements are in inches (mm)

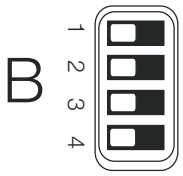
Job Name:	Model Numbers:	
Job Number:		

Sensor Adjustments

Override Settings

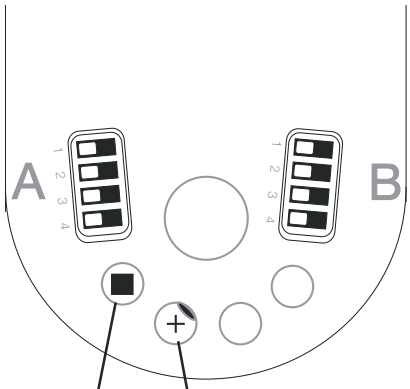


	Off (Default)	On
1	Automatic (Normal)	Manual lights on (Override)
2	Not used	Not used
3	LED on (Normal)	LED off
4	Retain Settings (Normal)	Any change resets learned settings



	Off				On			
1	OFF	8	OFF	4	ON	15	ON	30
2	OFF	min.	ON	min.	OFF	min.	ON	min.
3	Auto Timer Adjust On				Auto Timer Adjust Off			
4	Auto Sensitivity Adjust On				Auto Sensitivity Adjust Off			

Factory Settings



Timer Test Mode
Push and Release:
8 sec. test timer
(resets to Normal
after 1 hour)
Push and Hold (flash):
Normal timer

Red: Infrared
sensitivity
75% default

Job Name:	Model Numbers:	
Job Number:		

Back Room Equipment

Processor and Repeater

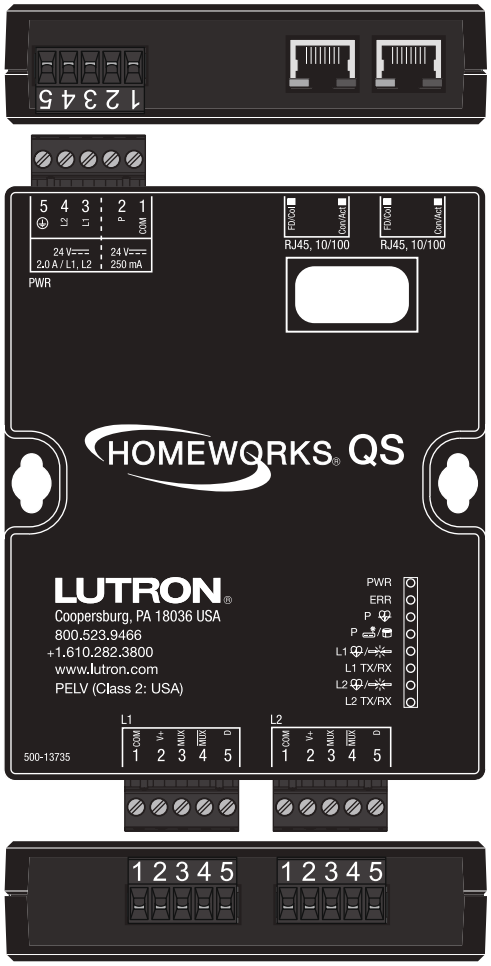
HomeWorks® QS Processor

The HomeWorks® QS processor provides control and communication to HomeWorks® QS system components.

The Ethernet links allow communication to the HomeWorks® QS software, integration with third party systems and communication between multiple processors. HomeWorks® QS processors may be connected using either standard networking or using ad-hoc networking. All processors on a project must be connected to a single network. The HomeWorks® QS software and all integration equipment must be connected to the same network as the processors.

The processor is powered from the QSPS-DH-1-60 power supply. Refer to the HomeWorks® QS software to determine link power requirements.

The HomeWorks® QS processor can be installed in a HQ-LV21, L-LV21, L-LV14, or PNL-8 enclosure.



Processor Capabilities

Each HomeWorks® QS processor has 2 links that can be individually configured as one of three types:

- HomeWorks® / HomeWorks® QS Power Panels
  16 addresses / 256 zones
- HomeWorks® QS Wired Device Link
  99 devices / 512 zones
- HomeWorks® QS RF Link
  99 devices / 100 zones

Model Number

HQP6-2 HomeWorks® QS Processor

HomeWorks® QS Processor

Specifications

Model Numbers	HQP6-2
Power	Processor (P): 24 V⎓ 250 mA Links (L1 / L2): 24 V⎓ 2 A per link
Typical Power Consumption	5 W; 8 Power Draw Units (PDUs) Test conditions: Two Ethernet links connected, both device links in use
Regulatory Approvals	UL, cUL, CE, CTICK
Environment	Indoor use only. 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing
Heat Generated	17 BTU/hr — typical (24 BTU/hr with 2 links at 2 A each output)
Cooling Method	Passive Cooling
Power Failure Memory	System data stored in non-volatile memory. Timeclock retention for 10 years
Internal Timeclock	±1 minute per year
Miswire Protection	All terminal block inputs are over-voltage and miswire protected against wire reversals and shorts.
Low-Voltage Link Wire Type	Two pair — one pair 18 AWG (0.75 mm^2), one pair 18 to 22 AWG (0.34 to 0.75 mm^2) twisted shielded — IEC PELV / NEC® Class 2 cable
Low-Voltage Power Wire Type	18 AWG (0.75 mm^2)
Communications	Ethernet, RS485 (QS, RF, Power Panel)
Link Capacities	HomeWorks® / HomeWorks® QS Power Panels — 16 addresses / 256 zones HomeWorks® QS Wired Device Link — 100 devices / 500 zones HomeWorks® QS RF Link — 100 devices / 100 zones
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard
Surge Protection	Meets or exceeds ANSI/IEEE C62.41 standard
Mounting	Mounts in HQ-LV21, L-LV14, L-LV21, or PNL-8 enclosure
Dimensions	With terminal blocks (as shown): 4.27 in (108 mm) x 6.0 in (152 mm) Without terminal blocks: 4.27 in (108 mm) x 5.26 in (134 mm)
Connections	Two 5-pin removable terminal blocks* for Links 1 and 2. One 5-pin removable terminal block* for Power Input. Two RJ 45 standard Ethernet connections. *Each terminal will accept up to two 18 AWG (0.75 mm^2) wires.
Warranty	http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf http://www.lutron.com/TechnicalDocumentLibrary/ HomeWorks_Intl_Warranty.pdf

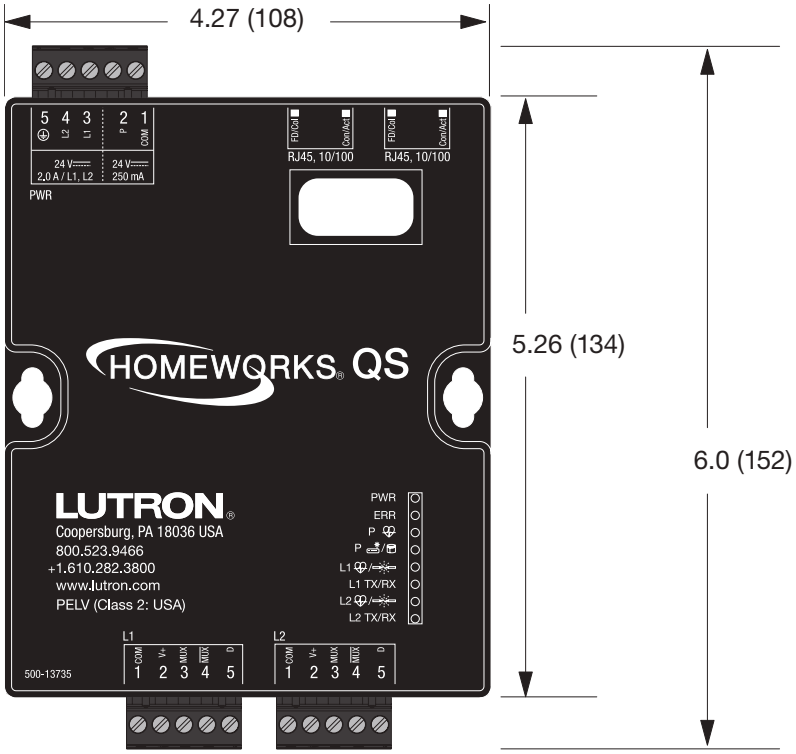
NEC is a registered trademark of the National Fire Protection Association, Quincy, Massachusetts.

HomeWorks® QS Processor

Dimensions

Dimensions shown as: in (mm)

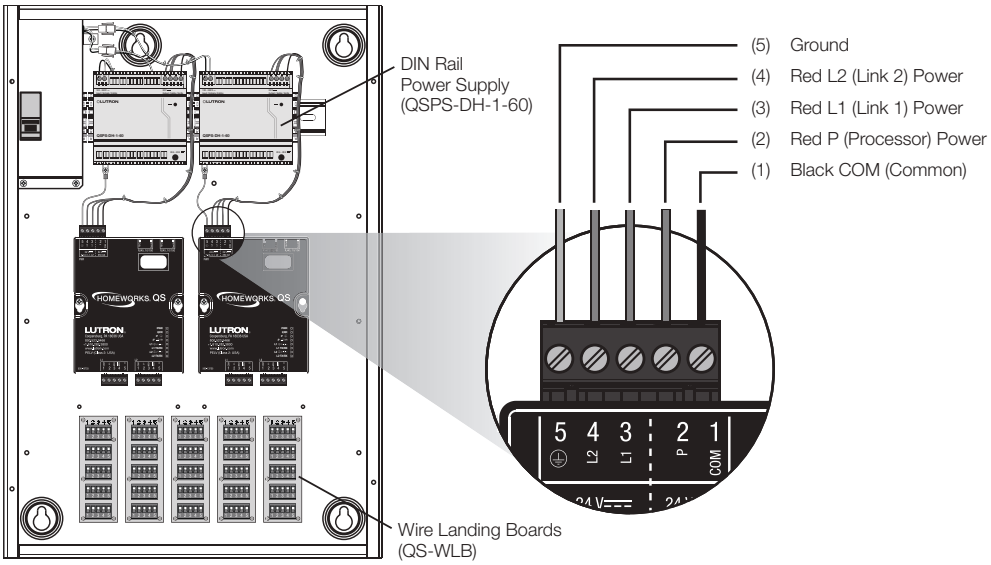
Front View



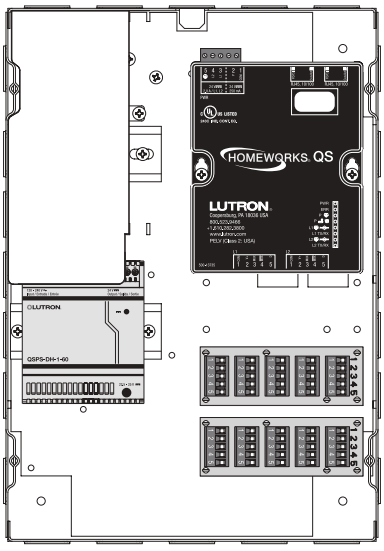
Side View

HomeWorks® QS Processor

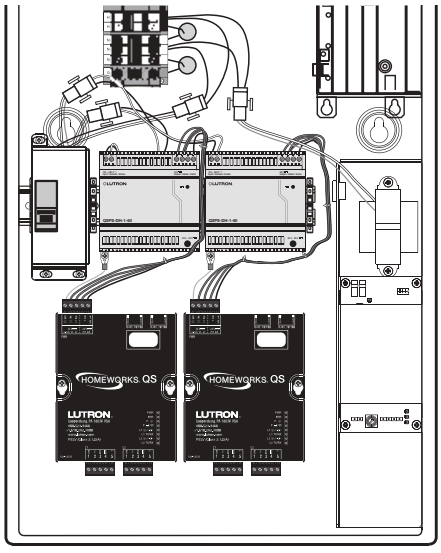
Mounting



L-LV21/HQ-LV21



L-LV14

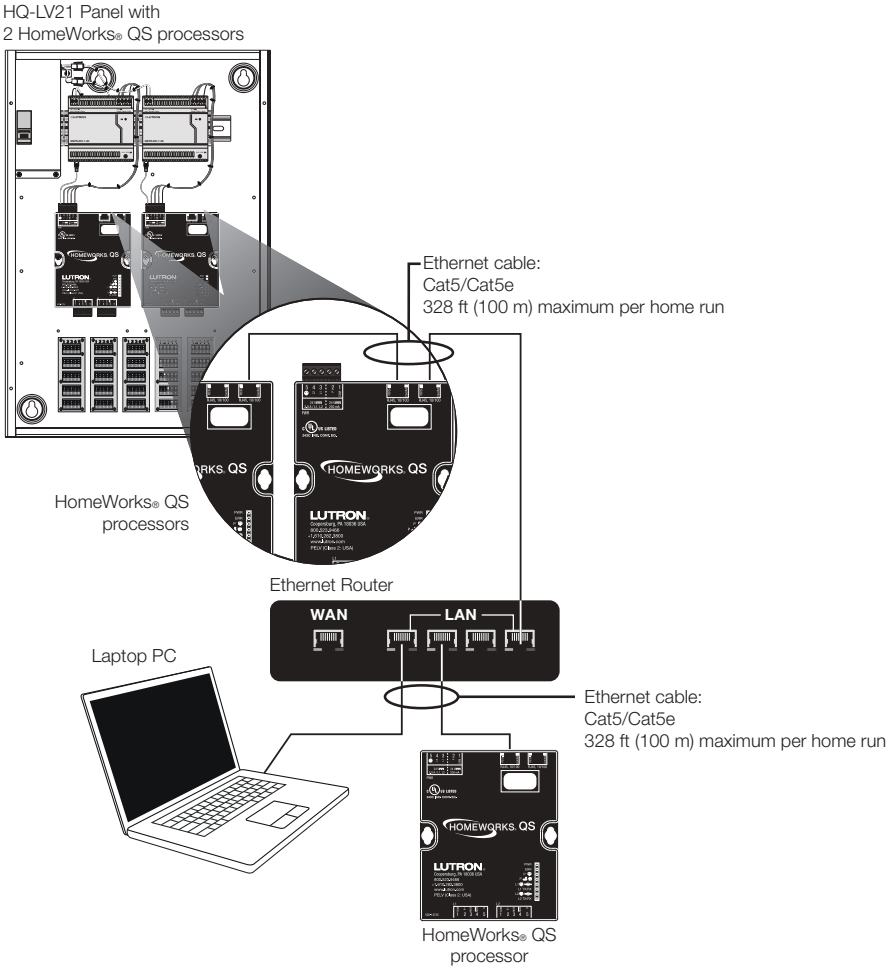


PNL-8

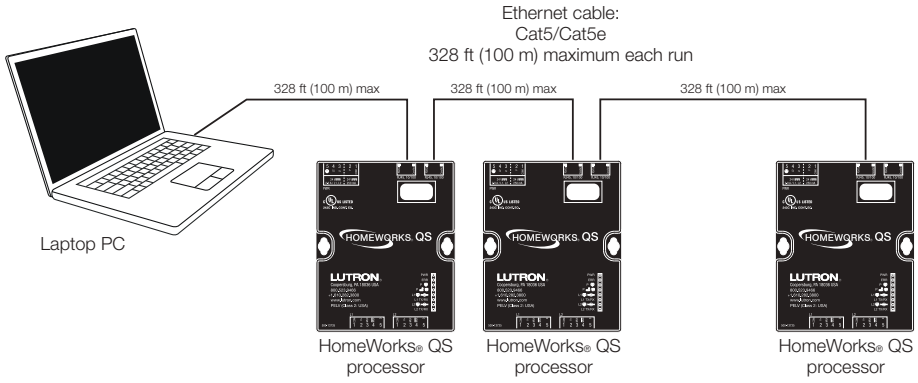
HomeWorks® QS Processor

Wiring Diagrams — Networking

Standard Networking: Connection using an Ethernet hub/switch/router



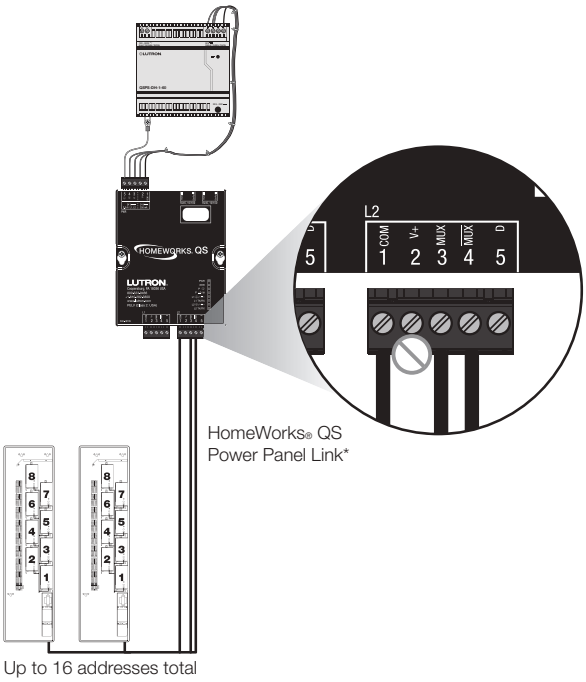
Ad-hoc Networking: Direct Ethernet connection from PC to processors



Up to 5 processors can be daisy-chained

HomeWorks® QS Processor

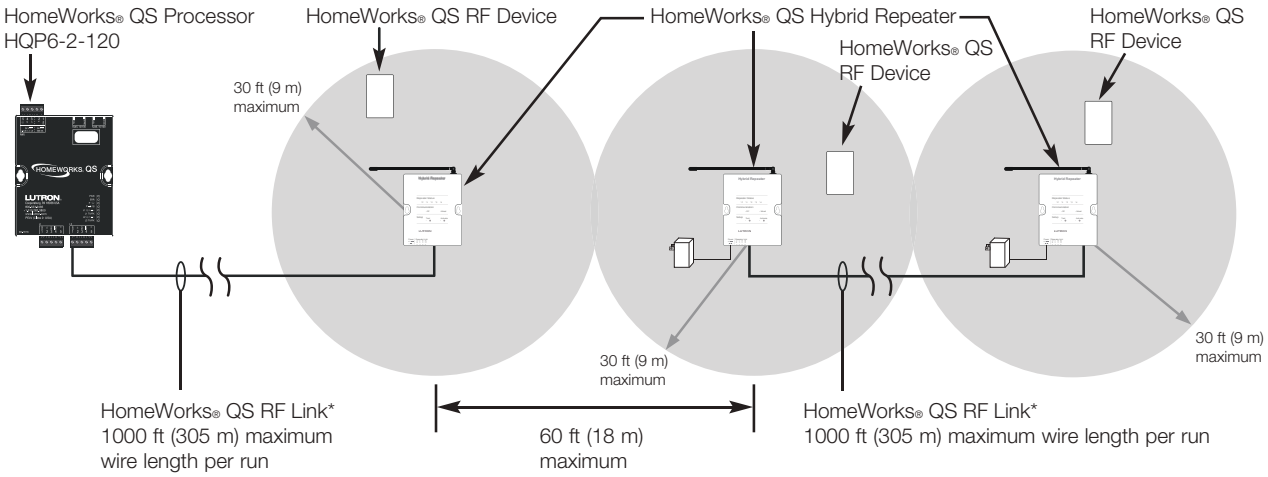
Wiring Diagrams—Power Panel Link



* Pin 2 does not get connected when using a power panel link.

HomeWorks® QS Processor

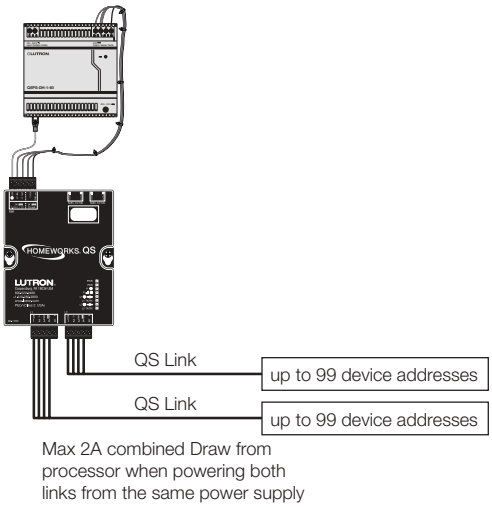
Wiring Diagrams — HomeWorks® QS RF Link



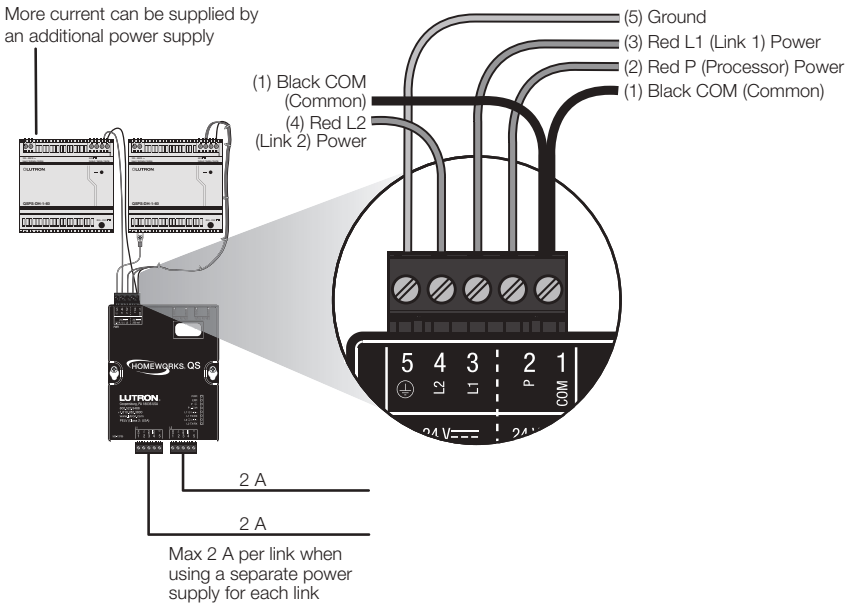
* HomeWorks® QS Hybrid Repeaters can be powered from the Processor link or a wall-mount transformer. If powering from a wall-mount transformer, Pin 2 does not get connected.

HomeWorks® QS Processor

Wiring Diagrams—QS Link

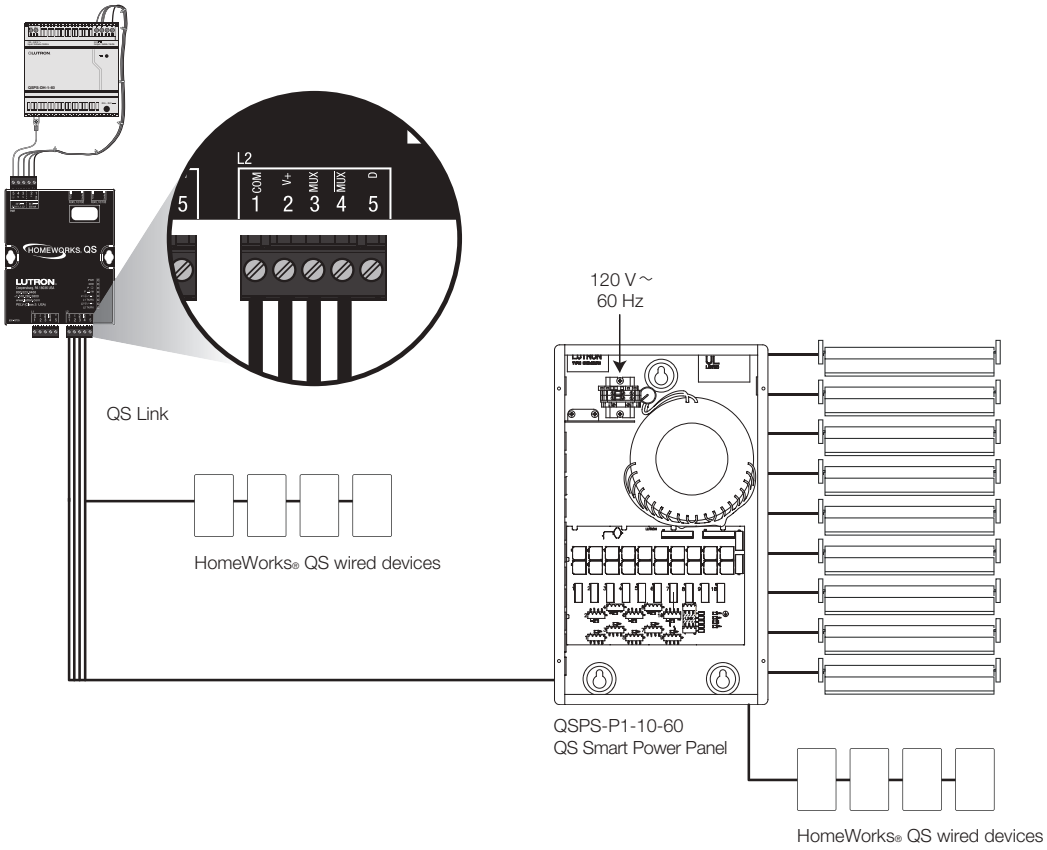


Wiring Diagrams—Link Power



HomeWorks® QS Processor

Wiring Diagrams—QS Wired Device Link with Shades/Draperies (Controllable Window Solutions)



HomeWorks® QS Hybrid Repeaters

HomeWorks® QS Hybrid Repeaters add wireless Radio Frequency (RF) communication and extend the range of RF signals that are sent between dimmers, switches, keypads, visor control receivers, shades/draperies, and other devices. Repeaters ensure error-free communication between system components and prevent interference from neighboring systems.

The first repeater connects to the HomeWorks® QS processor to provide RF communication that extends up to 30 ft (9 m) in every direction. Up to four (4) total Hybrid Repeaters can be used per link to extend the RF range for larger system applications. Each Repeater has an RF range of 30 ft (9 m) between repeater and devices or 60 ft (18 m) between repeaters, covering a total area of approximately 2500 sq ft (232 m^2).

Model Numbers	Frequency
HQR-REP-120	434 MHz
HQK-REP	868 MHz
HQM-REP	868 MHz Limited
HQN-REP	865 MHz
HQR-REP-120-BA	434 MHz (Brazil)
HQQ-REP	434 MHz Limited

Only available in White (WH).

HomeWorks® QS software will select the correct frequency/channel code for compatibility with your particular geographic region.

HomeWorks® QS Hybrid Repeaters

Specifications

Model Number	HQR-REP-120; HQK-REP; HQM-REP; HQN-REP; HQR-REP-120-BA; HQQ-REP
Power	Hybrid Repeater: DC adapter: 9 V⎓ 300 mA Link: 24 V⎓ 50 mA DC adapter: Input: 100-240 V~ 50/60 Hz 6.5 W Output: 9 V⎓ 300 mA
Typical Power Consumption	Hybrid Repeater: 0.6 W Test conditions: one LED on, powered by a 9 V⎓ adapter.
Regulatory Approvals	Hybrid Repeater: FCC, IC, COFETEL, CE, CCC, TRA, CTICK, ANATEL, IDA, SUPERTEL, SUTEL
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Low-Voltage Wire Type	Two pair – one pair 18 AWG (1.0 mm^2), one pair 22 AWG to 18 AWG (0.5 mm^2 to 1.0 mm^2) twisted shielded – NEC® Class 2/PELV cable. Required for connecting the first repeater to the processor and may be used to connect additional Hybrid Repeaters.
Communications	The first Hybrid Repeater communicates with the HomeWorks® QS processor on the RF wired link. Subsequent Repeaters may be wired on this link or may communicate over Radio Frequency (RF). All RF devices must be located within 30 ft (9 m) of a Repeater. All Repeaters must be within 60 ft (18 m) of another Repeater.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the Repeater will return to its previous state when power is restored.
Mounting	Mount on a wall, ceiling, or level surface using the two #6 (M3) screws provided.
Connections	Hybrid Repeater: RS485
Warranty	http://www.lutron.com/resiinfo

Design Features

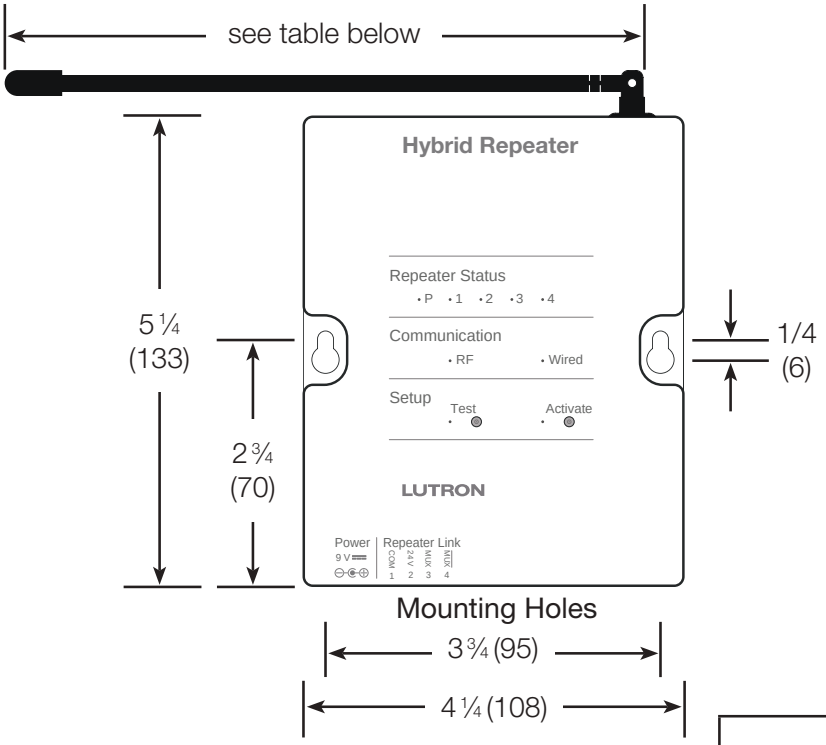
- Test button - enters the RF repeater test mode.
- Activate button - provides repeater activation within system.
- RS485 port to connect to the HomeWorks® QS RF link and to other repeaters through a wired link (daisy-chain).

HomeWorks® QS Hybrid Repeaters

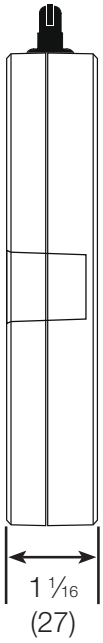
Dimensions

Measurements shown as: in (mm)

Front View



Side View

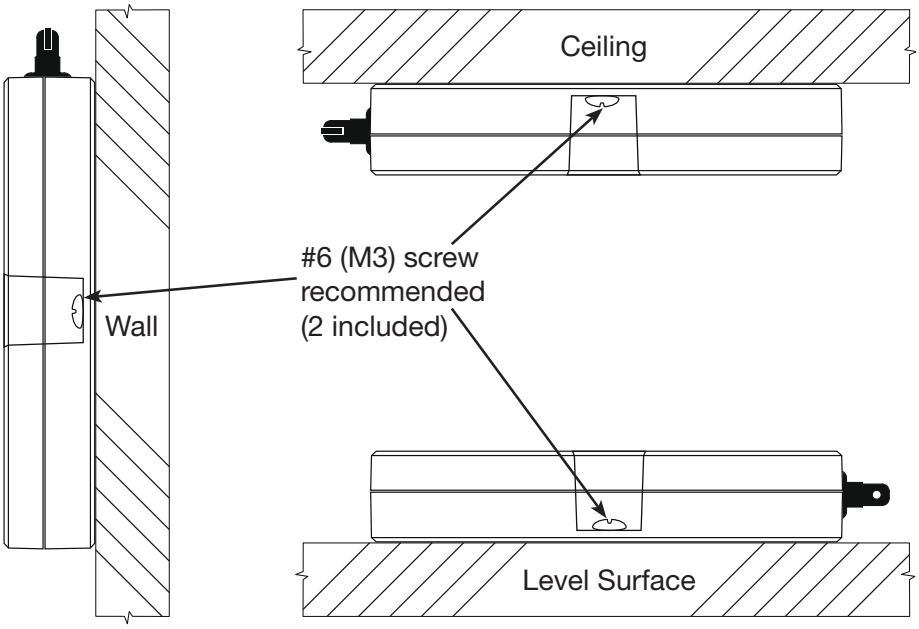


Model	Dimension
HQR-REP-120, HQR-REP-120-BA, HQQ-REP	6.25 (158.8)
HQK-REP, HQM-REP, HQN-REP	3.13 (79.4)

Mounting

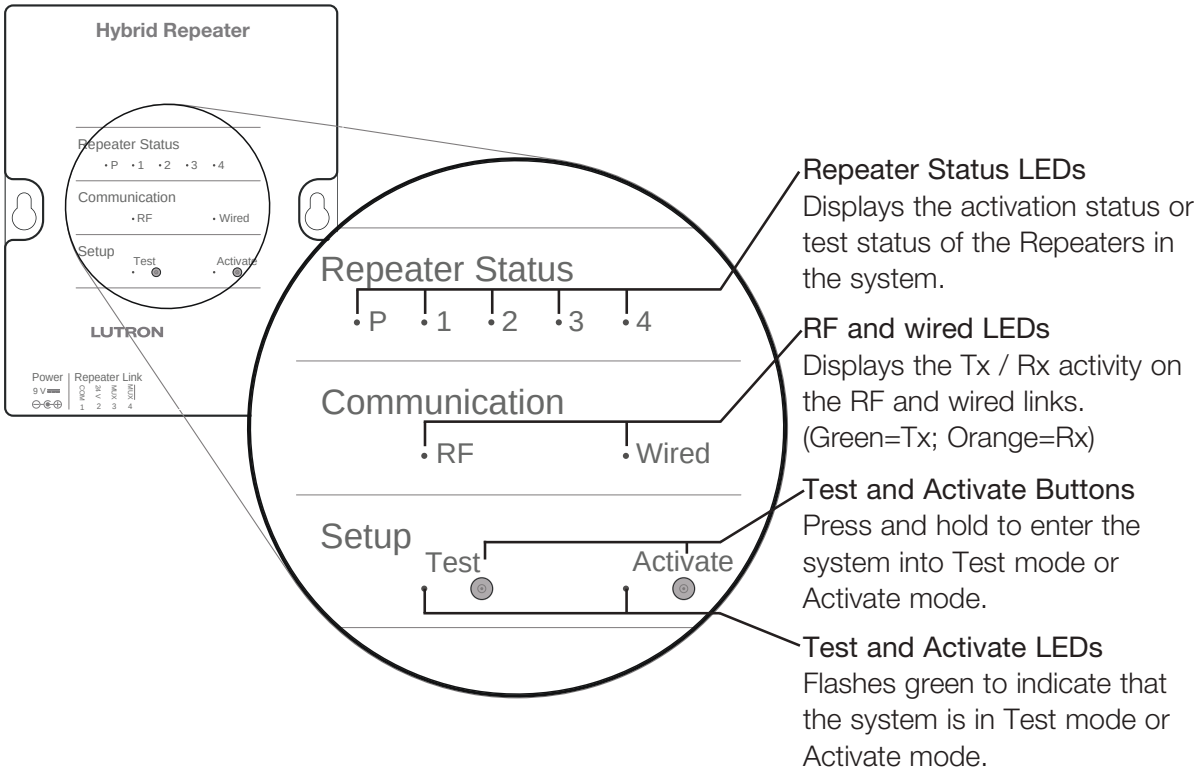
Vertical

Horizontal

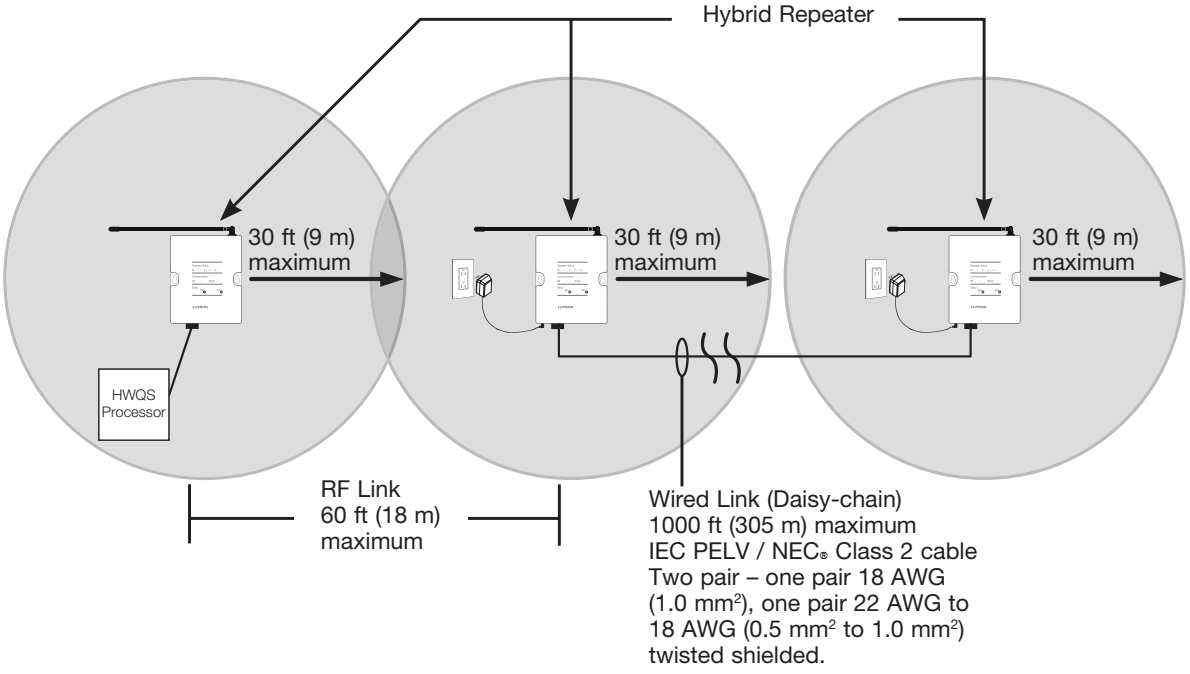


HomeWorks® QS Hybrid Repeaters

Operation



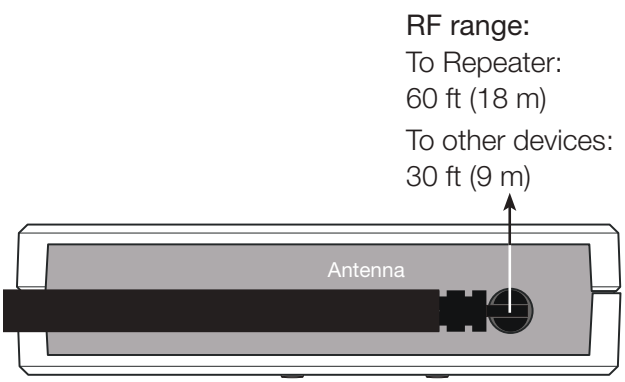
Wired and RF Configuration



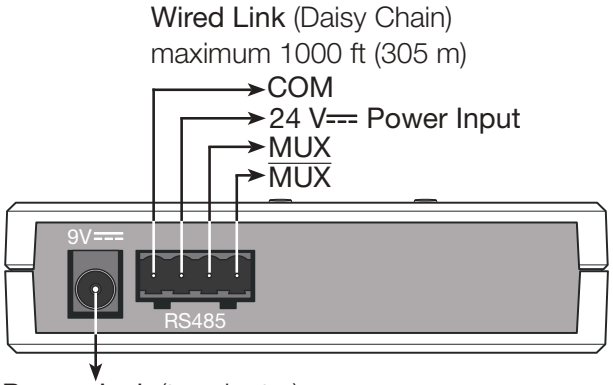
HomeWorks® QS Hybrid Repeaters

Connections

Top View



Bottom View



Power Jack (to adapter)
IEC PELV/NEC® Class 2

NOTE: Power must be provided by a 9 V⎓ adapter or 24 V⎓ power on the HomeWorks® QS processor link.

Interfaces

HomeWorks QS Visor Controls

The *HomeWorks* QS Visor Controls allow lights, shades/draperies, and other equipment to be controlled from the car with just a touch of a button on a Visor Control Transmitter or a HomeLink® compatible visor control. Up to ten (10) Transmitters can be used with a Visor Control Receiver.

The Receiver provides two (2) Contact Closure Inputs (CCI) for integration with other systems and one (1) CCI for security systems. The CCIs can be configured to accept maintained or momentary contact closures. The security input is always a maintained CCI.

The Receiver also has four (4) maintained or momentary Contact Closure Outputs (CCO) to control up to four (4) garage doors or motorized gates.

Pre-printed and blank labels are included with the Visor Controls for naming scenes or buttons on both the Receiver and the Transmitter.

HQR-VCRX-WH
Visor Control Receiver

LR-3B-H-SW
Visor Control Transmitter

HomeLink and the HomeLink Compatible logo are registered trademarks of Johnson Controls.

Model Numbers

HQR-VCRX-WH*	Visor Control Receiver
LR-3B-H-SW**	Visor Control Transmitter

*Only available in White (WH).

**Only available in Snow (SW).

HomeWorks QS Visor Controls

Specifications

Model Numbers	HQR-VCRX-WH, LR-3B-H-SW
Power	**Receiver:** 9 V⎓ 300 mA **DC adapter:** Input: 120 V~ 60 Hz 6.5 W Output: 9 V⎓ 300 mA **Transmitter:** 6 V⎓ 10 mA (2 - CR2032, included – 10 year lifetime)
Typical Power Consumption	1.6 W Test conditions: two LEDs on (two presets active), powered by the 9 V⎓ adapter supplied, no CCOs or CCIs active.
Regulatory Approvals	**DC adapter:** UL Listed for U.S. and Canada, NOM **Receiver / Transmitter:** FCC, IC, COFETEL
Environment	**Receiver:** Ambient operating temperature: 32 °F to 140 °F (0 °C to 60 °C), 0% to 90% humidity, non-condensing. Indoor use only. **Transmitter:** Ambient operating temperature: -40 °F to 235 °F (-40 °C to 113 °C), 0%-90% humidity, non-condensing. Meets the Society of Automotive Engineers (SAE) temperature standards.
Communications	Visor Controls communicate with the system through Radio Frequency (RF). The Receiver must be located within 30 ft (9 m) of a Repeater. The typical operating distance between a Transmitter and a Receiver is 150 ft (46 m).
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Mounting	Mount Receiver on a wall, ceiling, or level surface using the two #6 (M3) screws provided. Clip Transmitter to a vehicle's visor.
Connections	2 Contact Closure Inputs, 1 security input, and 4 momentary or maintained Contact Closure Outputs.
Warranty	8 Year Limited Warranty. http://www.lutron.com/resiinfo

Design Features

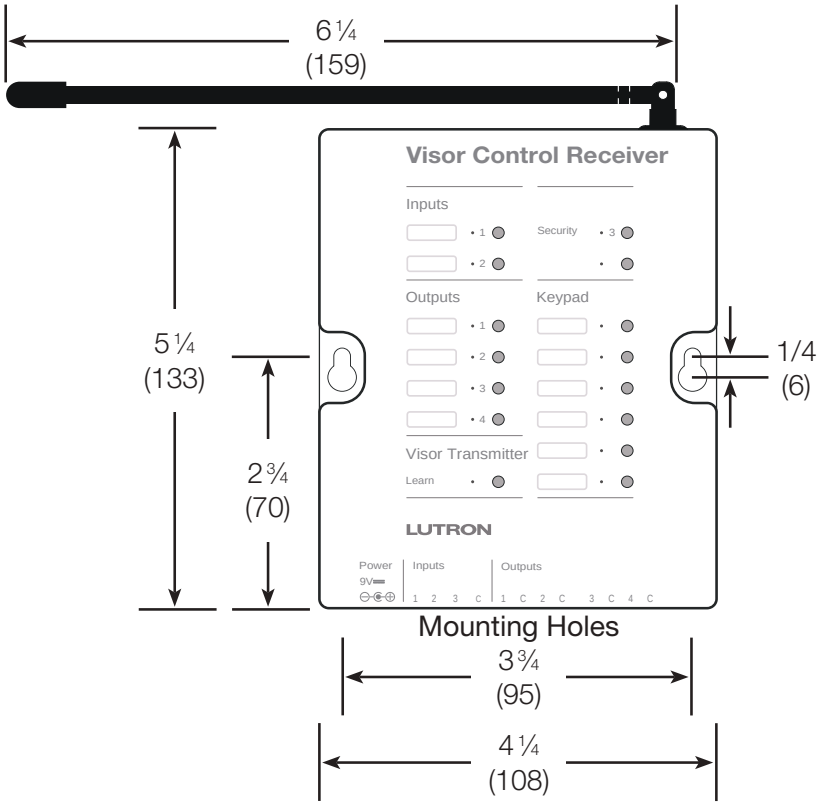
- Each output can be controlled locally at the Receiver or remotely by a Transmitter or keypad button.
- The Receiver '**Keypad**' or '**Inputs**' buttons can be programmed to lights and shades / draperies.
- The Transmitter can remotely control the '**Keypad**', '**Security Input**', and '**Outputs**' buttons on the Receiver.

HomeWorks QS Visor Controls

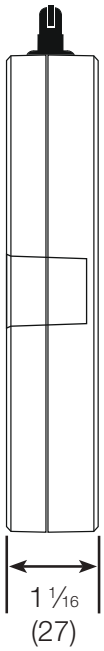
Dimensions

All dimensions are shown as in (mm)

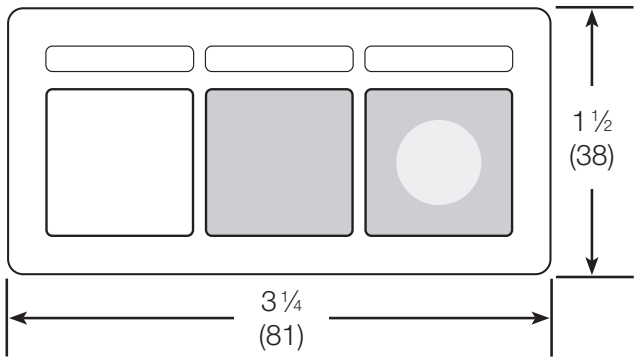
Receiver (Front)



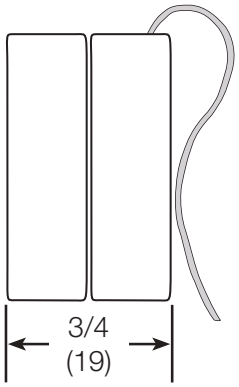
Receiver (Side)



Transmitter (Front)



Transmitter (Side)

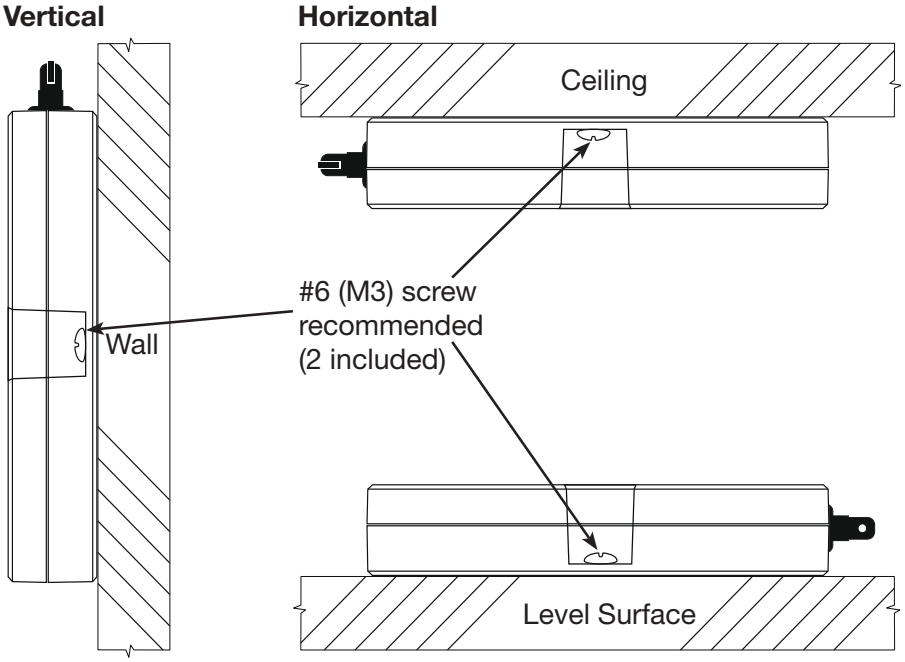


HomeWorks QS Visor Controls

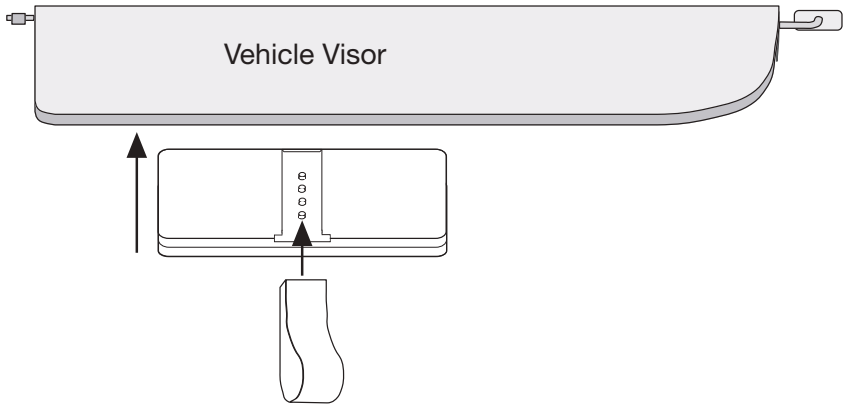
Mounting

Receiver

Vertical **Horizontal**



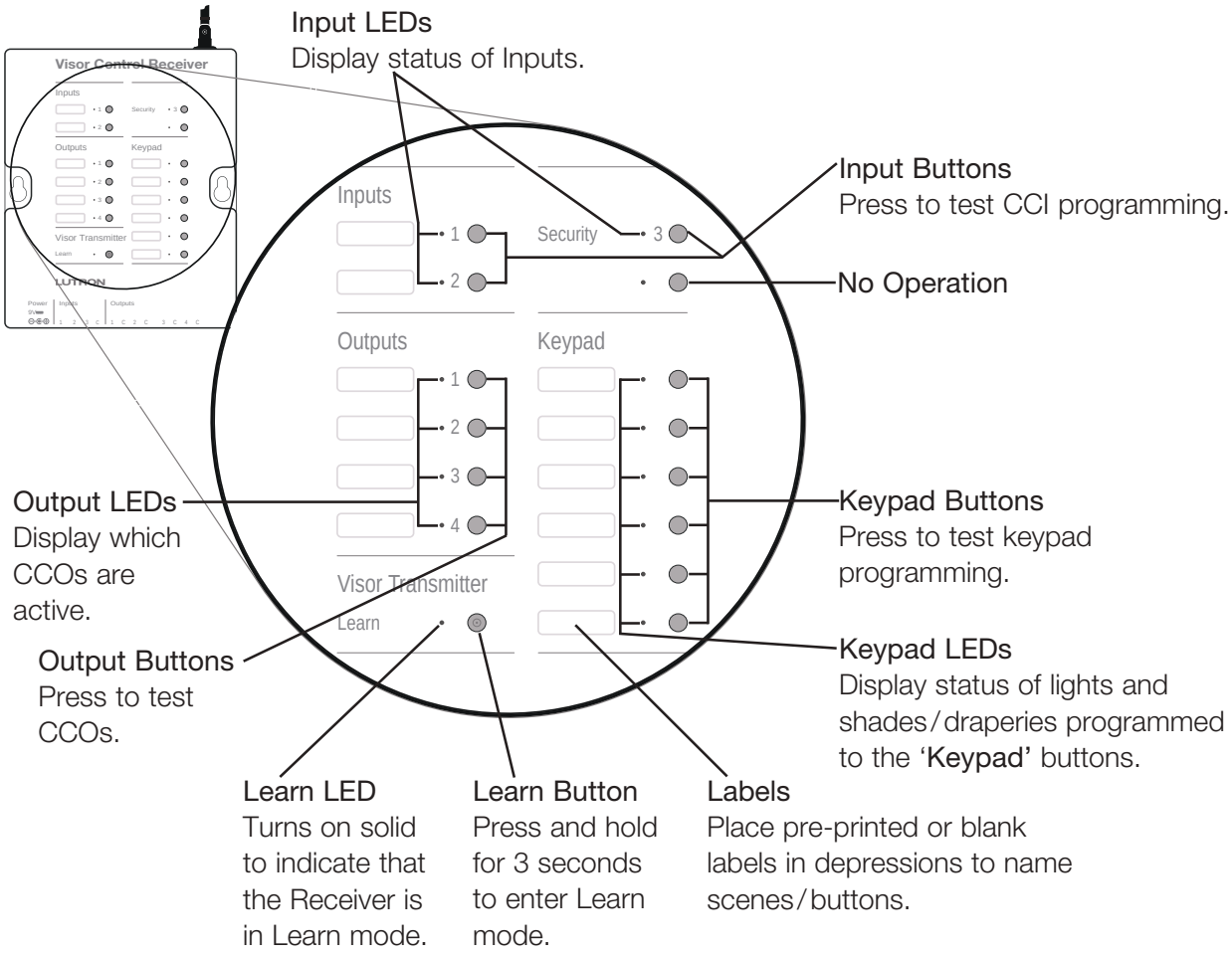
Transmitter



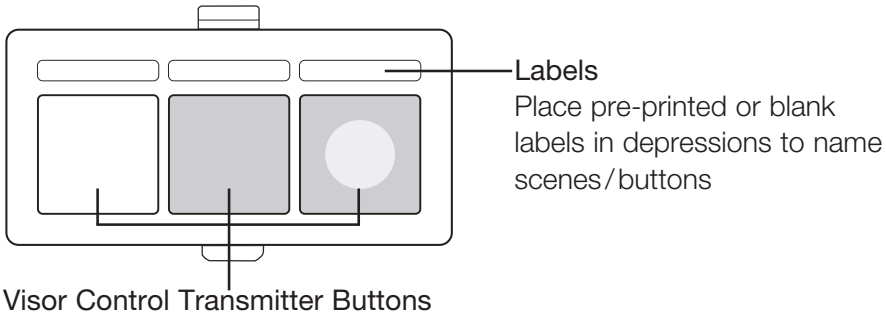
HomeWorks QS Visor Controls

Operation

Receiver



Transmitter

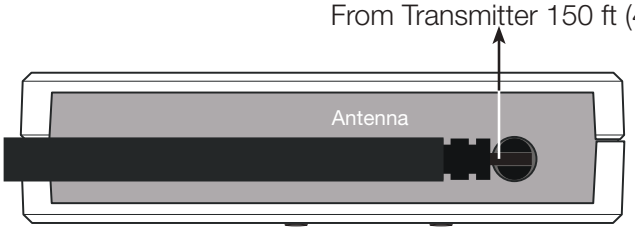


HomeWorks QS Visor Controls

Connections

Receiver (Top)

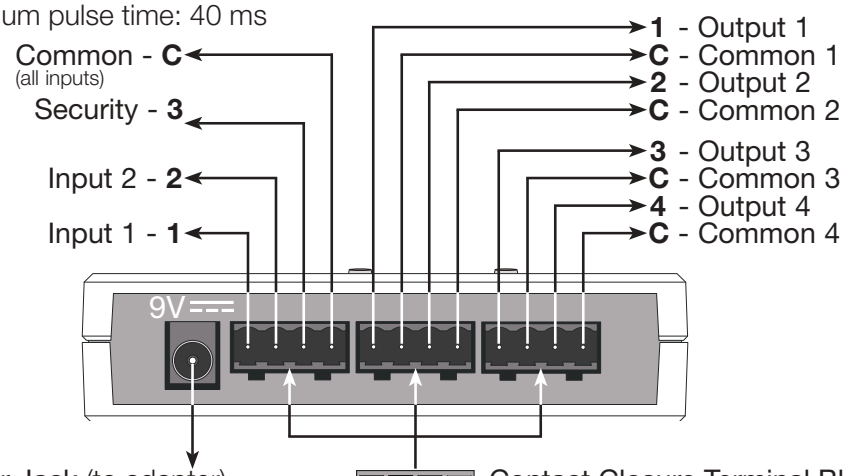
RF range:
From repeater 30 ft (9 m)
From Transmitter 150 ft (46 m)



Receiver (Bottom)

Contact Closure Inputs (CCI)
Dry contacts only.
ON saturation: <1 V⎓ at 2 mA
OFF leakage: <1 µA at 9 V⎓
Minimum pulse time: 40 ms

Contact Closure Outputs (CCO)
Max Voltage / Current: See **Relay Contact Ratings** below.
Listed Class 2 / Certified PELV
Minimum close time: 500 ms



Power Jack (to adapter)
Model: T120-9DC-3-BL
(NEC® Class 2 / IEC PELV)

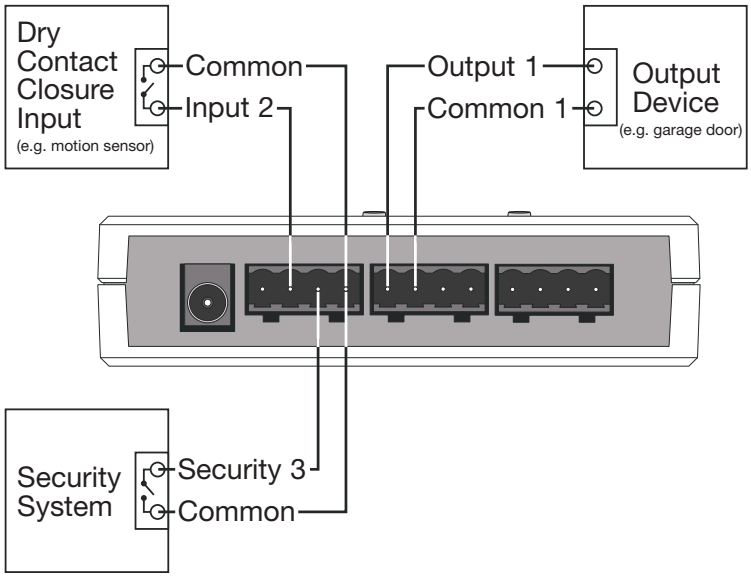
Contact Closure Terminal Blocks
Use NEC® Class 2 / PELV cable
Maximum 1000 ft (305 m)
Each terminal holds up to one 16 AWG (1.0 mm²) or two 18 AWG (0.75 mm²) or smaller wire.

Relay Contact Ratings

Voltage	Resistive Load	Inductive Load
Up to 30 V⎓	1 A	0.2 A
Up to 30 V~	1 A	0.1 A
Up to 60 V⎓	0.5 A	Do not use.

HomeWorks QS Visor Controls

Wiring Diagram



QSE-IO Control Interface

Description

Integrates a HomeWorks® QS control system with equipment that has contact-closure I/O.

Inputs/Outputs

- Provides five inputs and five dry contact closure outputs.
- Provides both normally open (NO) and normally closed (NC) contacts.
- Using the inputs, contact closures in other equipment, such as those listed below, can trigger HomeWorks® QS system events (e.g.: shades, lights, HVAC):
  - Motion and occupant sensors;
  - Timeclocks and push buttons;
  - AV equipment;
  - Security systems.
- Outputs can be used to control:
  - Shades, motorized projection screens, skylights, shutters, and movable walls;
  - AV equipment;
  - Security systems;
  - LEDs and lamps for status indication.

QSE-IO Control Interface

Specifications

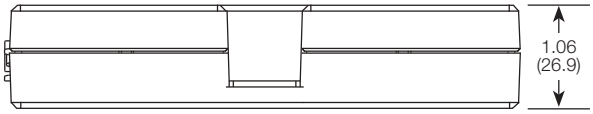
Model	QSE-IO
Power requirements	Low-voltage IEC PELV/NEC® Class 2. Operating voltage: 12–24 V⎓, 200 mA.
Typical power consumption	2.0 W; 3 power draw units (PDUs)
Regulatory approvals	CE, ✓ C-tick, CUL
Environment	32 °F to 104 °F (0 °C to 40 °C). Relative humidity less than 90%, non-condensing.
System communications and capacity	· Low-voltage type IEC PELV/NEC® Class 2 wiring connects the QSE-IO Interface to control units and other components. · QSE-IO counts as one device toward link maximum of 100 devices.
Electrostatic discharge (ESD)	· Meets or exceeds IEC 61000-4-2 standard. · Meets or exceeds ANSI/IEEE standard c62.41.
Power failure	Output relays are non-latching (if relays are closed and power is lost, relays will open).
Mounting	Mounts on surface or in LV14, LV21, PNL8, LUT-5x10-ENC, LUT-19AV-1U
Wiring	Control wire must be 1 pair 18 AWG (1.2 mm^2) IEC PELV/NEC® Class 2 for power and 1 pair 22 AWG to 18 AWG (0.5 mm^2 to 1.0 mm^2) IEC PELV/NEC® Class 2 twisted/shielded for data (see **Wiring**)
System capabilities/limits	· Provides 5 inputs and 5 outputs. Outputs can control other manufacturers' equipment. Five Input Terminals: · Accept maintained inputs and momentary inputs with 40 msec minimum pulse times. · Off-state leakage current must be less than 100 µA. · Open circuit voltage: 24 V⎓ maximum. · Inputs must be dry contact closure, solid state, open collector, or active-low (NPN) / active-high (PNP) output. – Open collector NPN or active-low on-state voltage must be less than 2 V⎓ and sink 3.0 mA. – Open collector PNP or active-high on-state voltage must be greater than 12 V⎓ and source 3.0 mA. Five Output Terminals: · Provide selectable maintained or momentary (1/4 sec) outputs (IEC PELV/NEC® Class 2).
Status LEDs	Five Status LEDs light when associated output is active (on).
Operating modes and DIP switch settings	Dip switches do not operate when QSE-IO is part of a HomeWorks® QS system.
Warranty	http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Intl_Warranty.pdf

QSE-IO Control Interface

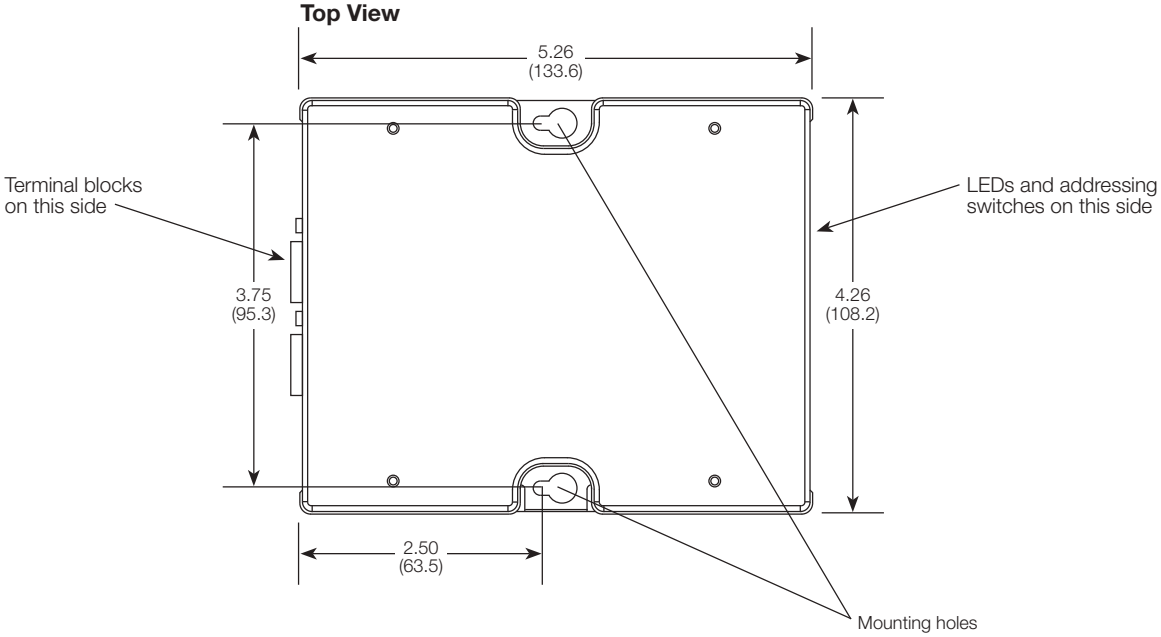
Dimensions

Dimensions are in inches (mm)

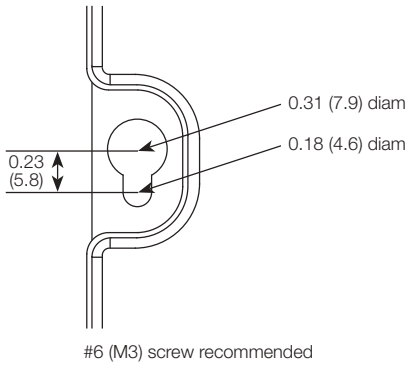
Side View



Top View



Mounting Hole Detail



QSE-IO Control Interface

Mounting

1. Mount the control interface directly on a wall, as shown in the mounting diagram, using screws (not included). When mounting, provide sufficient space for connecting cables.

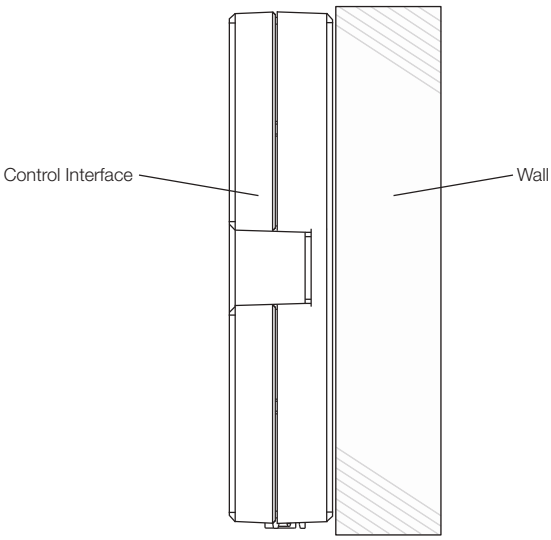
   The unit can be mounted in the LV14, LV21, and PNL8 enclosures; the unit can also be placed in the LUT-19AV-1U AV rack using the screws provided with the unit (the LUT-19AV-1U AV will hold up to four units).

   If conduit is desired for wiring, the LUT-5x10-ENC can be used to mount one unit.

   Mount where terminal blocks, switches, and LEDs are accessible.
2. Strip 3/8 in (10 mm) of insulation from wires. Each data link terminal will accept up to two 18 AWG (1.0 mm^2) wires.
3. Connect wiring as shown in the wiring diagram (next page).

   Note: Contact closure output relays click audibly when switching. Mount where this will not cause inconvenience.

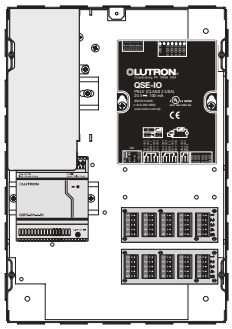
Mounting Diagram



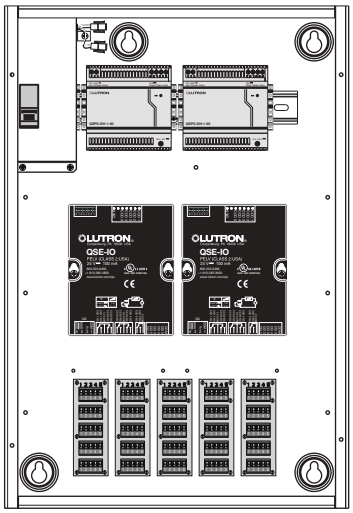
Wire Strip Length

Mounting Options

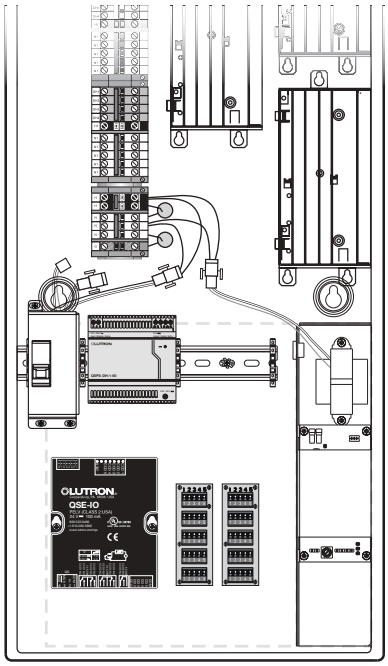
LV14



LV21

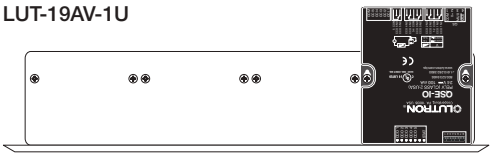


PNL8



LUT-5x10-ENC

LUT-19AV-1U



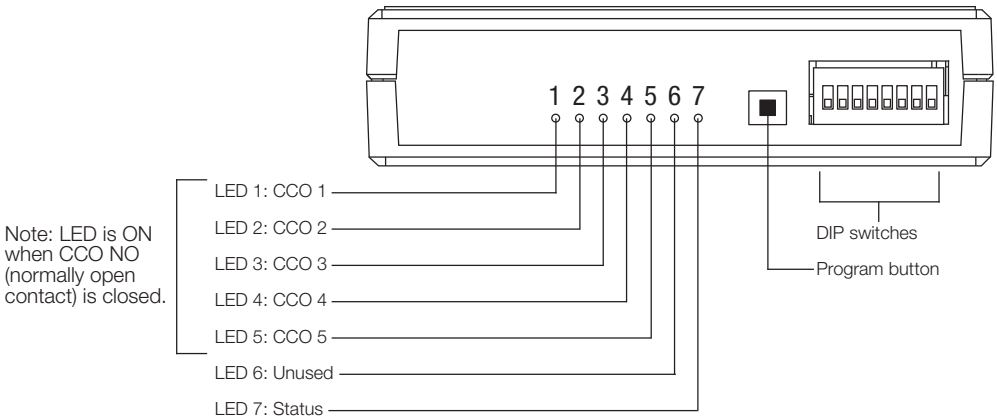
QSE-IO Control Interface

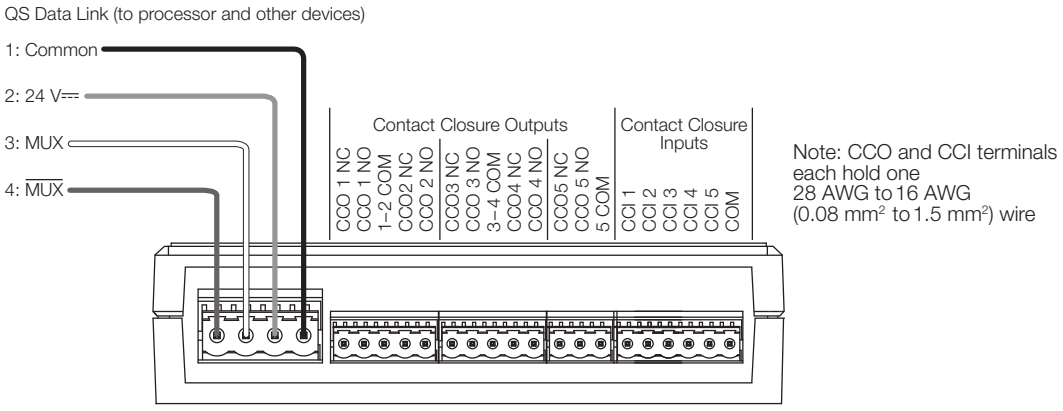
Wiring

Low-Voltage IEC PELV/NEC® Class 2 Wiring

- Wire the QSE-IO Interface to the IEC PELV/NEC® Class 2 QS link using the MUX terminal (3) on the front of the unit.
- Each terminal accepts up to two 18 AWG (1.0 mm²) wires.
- Wiring may be daisy-chain, star, or T-top configuation.
- Total length of wire on a QS link must not exceed 2000 ft (610 m)

QSE-IO

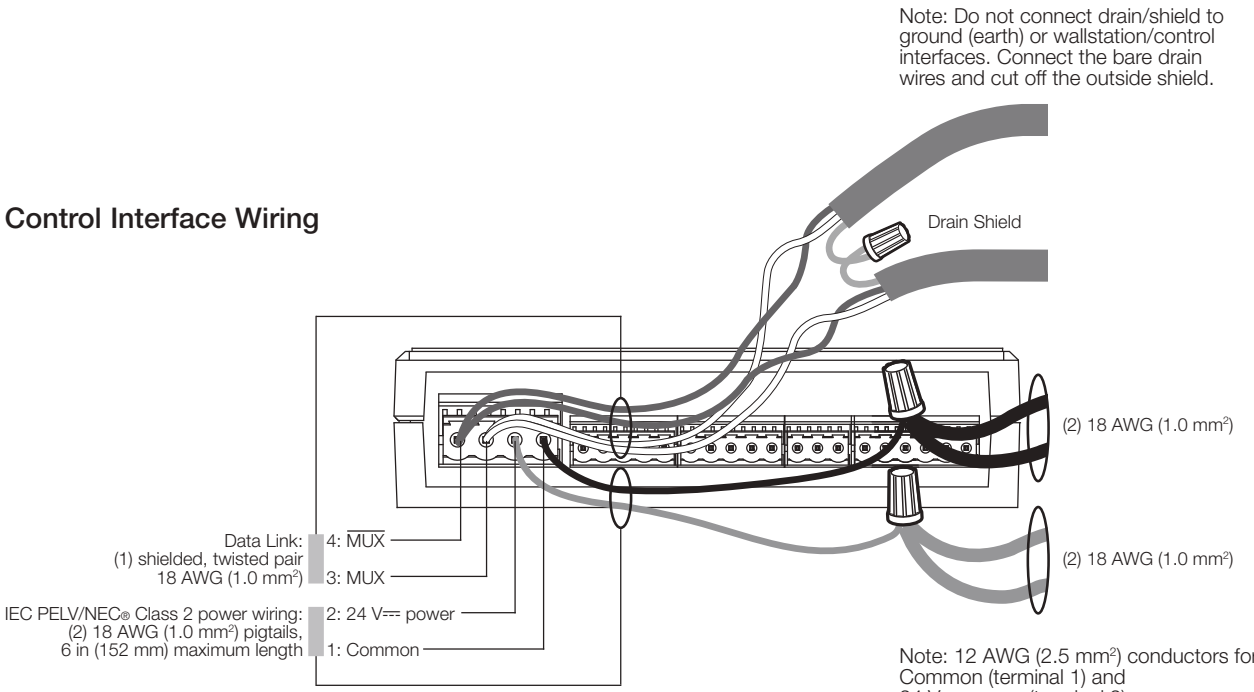




QSE-IO Control Interface

IEC PELV/NEC® Class 2 Terminal Connections

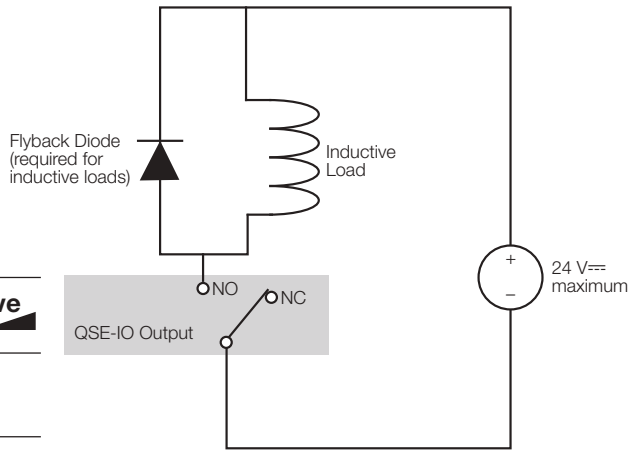
Control Interface Wiring



Note: Use Lutron® Cable GRX-CBL-46L

Control of Unclamped, Inductive Loads

The QSE-IO is not rated to control unclamped, inductive loads. Inductive loads include, but are not limited to, relays, solenoids, and motors. To control these types of equipment, a flyback diode must be used (DC voltages only). See diagram below.



Supply Voltage	Resistive Load R
0–24 V⎓	1.0 A
0–24 V~	0.5 A

369373 Rev. A 1 12.16.10

QSE-CI-NWK-E Control Interface

Description

The QSE-CI-NWK-E is a versatile integration access point for Lutron's QS-based systems. Through either RS232 or TCP/IP over Ethernet, third-party devices can control and/or monitor a QS system.

Key Features

- Easily integrate with touchscreens, PCs, A/V systems, or other digital systems and devices.
- Control and monitor GRAFIK Eye® QS, Sivoia® QS, Energi Savr Node™, and other products on the wired QS link.
- Monitor lighting scenes, levels, and shade positions.
- Up to ten (10) QSE-CI-NWK-E control interfaces are allowed per QS link.
- The QSE-CI-NWK-E is Quantum® compatible. Refer to the *Quantum* System Specification Sheet for compatibility details.

Requirements

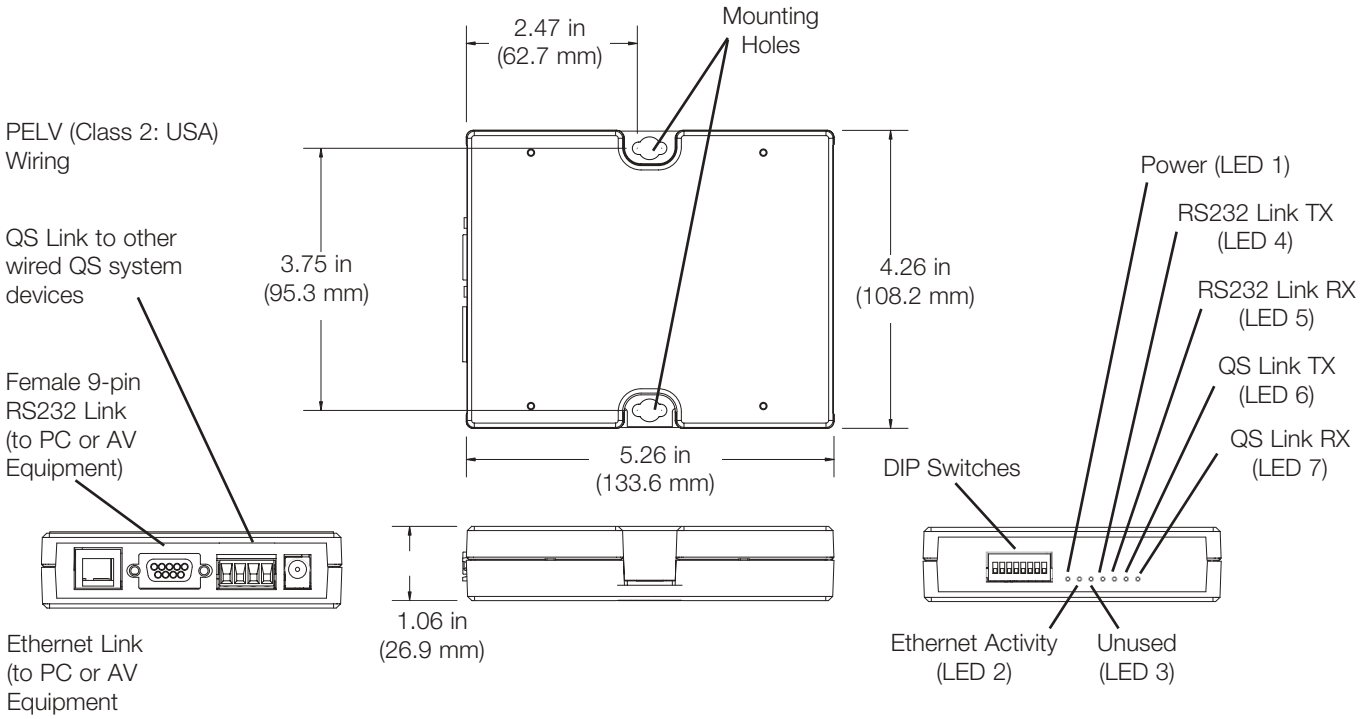
- QS Link Power Supply, such as a:
  - *GRAFIK Eye* QS.
  - QS Link power supply, such as the QSPS-P1-1-50.
  - *Energi Savr Node*.
- QS Communication Link Wire (PELV, Class 2: USA)
  - Two 18 AWG (1.0 mm^2) conductors for control power.
  - One twisted, shielded pair of 22 AWG (0.5 mm^2) for data link.
  - Available from Lutron, part number GRX-CBL-346S; check compatibility in your area.

Protocol

- Protocol document P/N 040-249 included on a CD accompanying the packaged QSE-CI-NWK-E.
- Also available for download at www.lutron.com/qs.

Job Name:	Model Numbers:	
Job Number:		

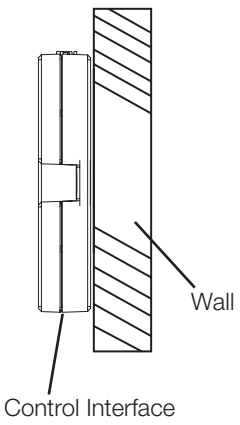
Dimensions



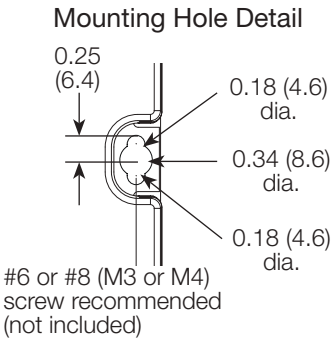
Mounting

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

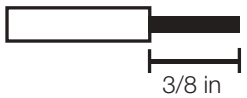
Mounting Diagram



Mounting Hole Detail



Wire Strip Length



LUT-5x10-ENC

LUT-19AV-1U

Job Name:	Model Numbers:	
Job Number:		

Specifications

Power

- PELV (Class 2: USA).
- Operating Voltage: 24 V⎓ 60 mA.
- Uses two (2) power draw units on the QS link.

Environment

- 32 to 104 °F (0 to 40 °C). Relative humidity less than 90% non-condensing.

Integration Features

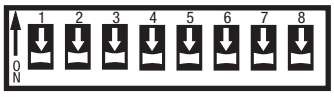
- Monitoring: Current scene, zone level, button presses, shade group levels.
- Control: Scene selection, scene lockout, zone lockout, sequencing, zone raise/lower, master raise/lower, set shade group level, simulate button press/release.

For the full list of features and commands, please refer to the protocol document on the accompanying CD, also available at www.lutron.com.

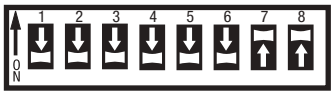
RS232 Connection

- Standard 9-pin female serial connector on interface. Use the included serial cable with standard 9-pin male connectors to connect to RS232 equipment.
- 50 ft (15 m) maximum serial cable length.
- Dip switches are set at factory, all Off.
- Dip switches are used to set RS232 baud rate:

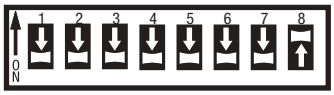
DIP Switch Settings for RS232 Baud Rate



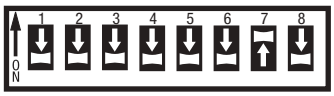
115200 (default)



38400



19200



9600

Ethernet Connection

- Standard CAT5 (or better) cable, 328 ft (100 m) maximum, connects the QSE-CI-NWK-E interface to a PC or other Ethernet source.
- Supports MDI/MDIX auto-crossover (no crossover cable needed).
- Auto-negotiation of 10 or 100 Mbps speed and full- or half-duplex operation.
- Default IP address is 192.168.250.1. Can be changed using the Lutron DeviceIP tool located on the accompanying CD.

Note: Either the RS232 or the Ethernet can be used, but not both.

Job Name:	Model Numbers:	
Job Number:		

RS232 Link Wiring

- 9-pin to 9-pin serial cable provided.
- Standard 9-pin serial connector plugs into RS232 equipment, and to QSE-CI-NWK-E.
- Must be 50 ft (15 m) or less.

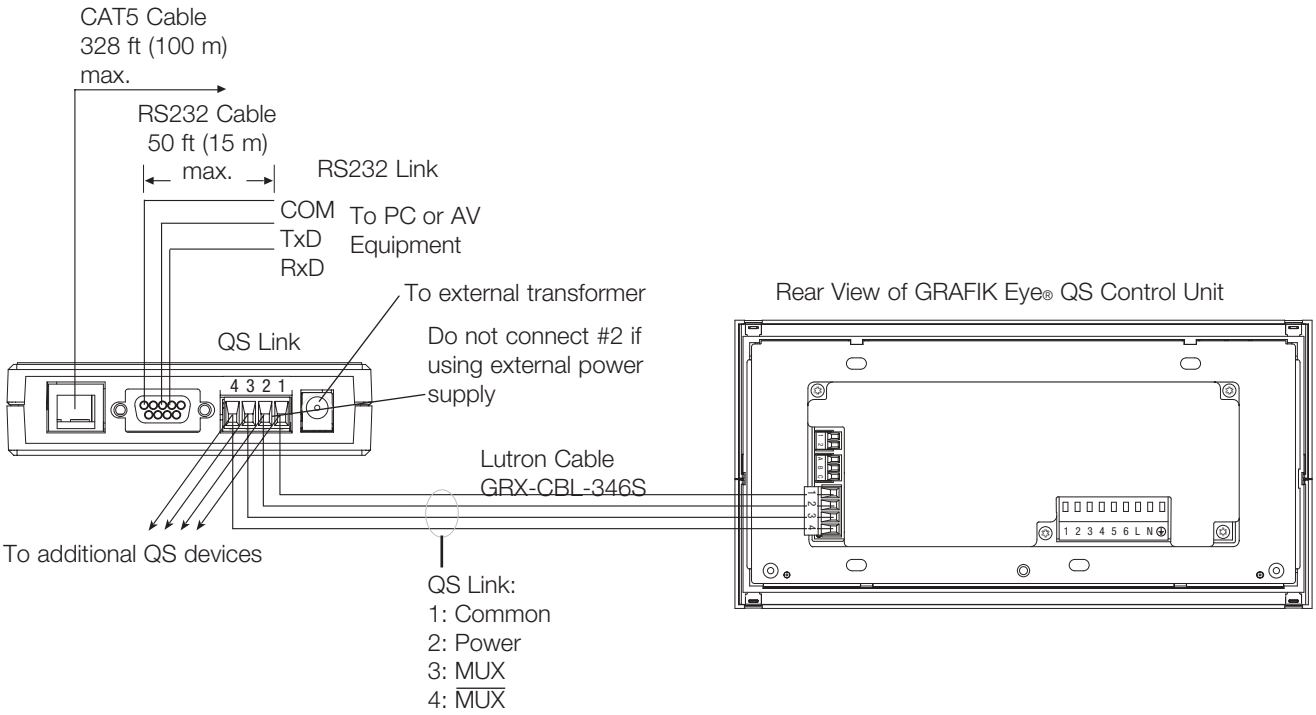
RS232 Signals

Signals	Pin on 9-pin Cable
Com	5
TxD	3
RxD	2

Ethernet Link Wiring

- Standard CAT5 cable connects QSE-CI-NWK-E Interface to PC, router, or other Ethernet source.
- No crossover cable needed.
- Must be 328 ft (100 m) or less.
- Ethernet network and cable provided by others.

Control Interface Wiring

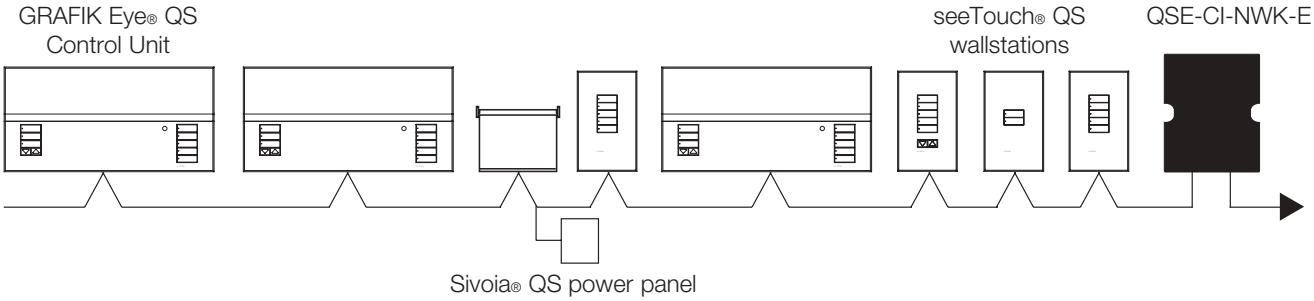


Job Name:	Model Numbers:	
Job Number:		

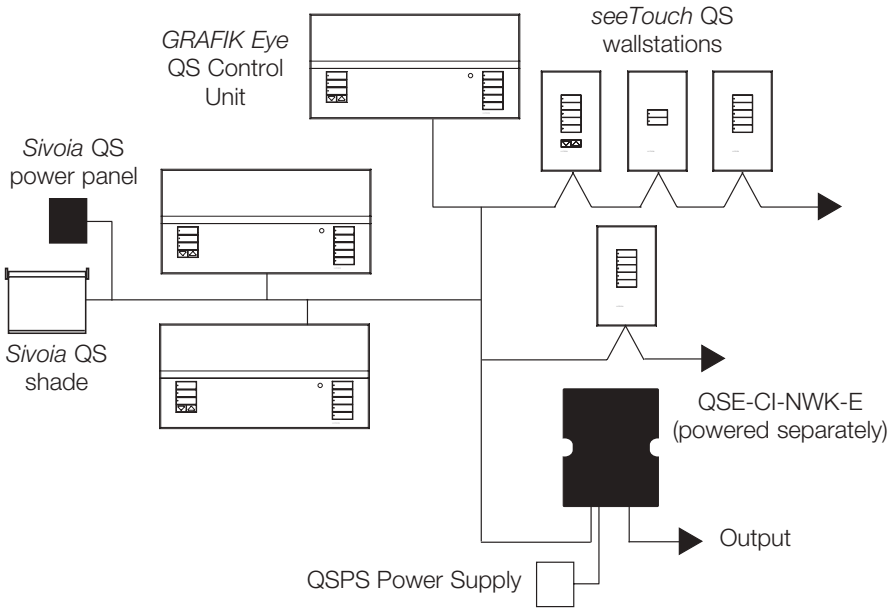
PELV (Class 2: USA) QS Link Requirements and Wiring

- System communication uses PELV (Class 2: USA) wiring.
- Wiring can be daisy-chained or T-tapped (see below).
- Wiring must be run separately from line/mains voltage.
- Each PELV (Class 2: USA) terminal accepts up to two 18 AWG (1.0 mm^2) wires.
- PELV (Class 2: USA) wiring link requires:
  - Two 18 AWG (1.0 mm^2) conductors for control power.
  - One twisted, shielded pair of 22 AWG (0.5 mm^2) for data link.
  - Available from Lutron, P/N GRX-CBL-346S; check compatibility in your area.
- Total length of control link must not exceed 2000 ft (610 m).
- Connect the terminal 1, 3, and 4 connections to all control units, wallstations, and control interfaces. See Powering the QSE-CI-NWK-E for pin 2 connectivity.

Daisy-Chain Wiring Example



T-Tap Wiring Example

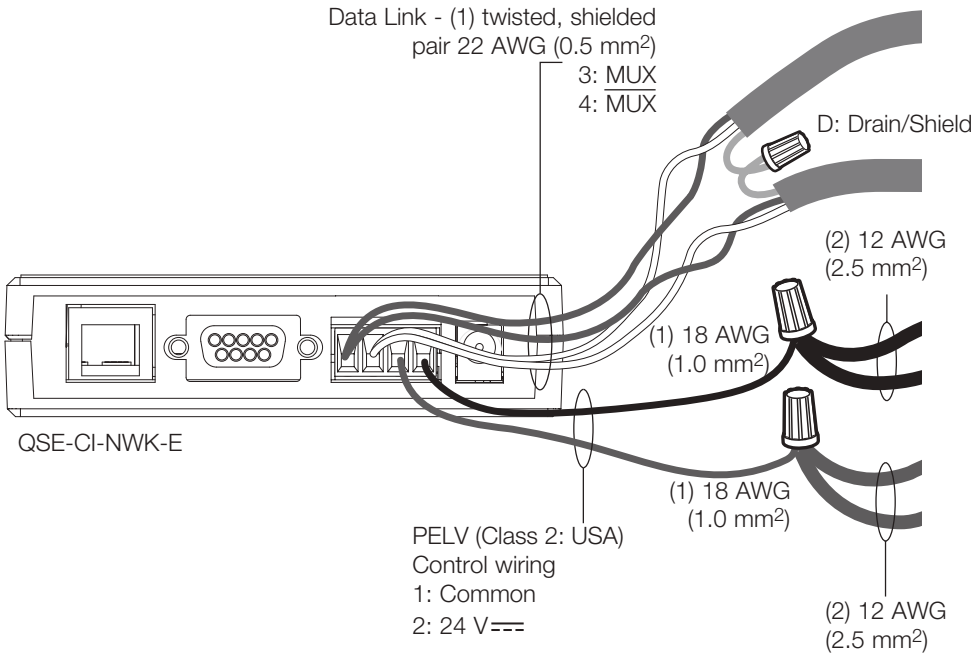


Job Name:	Model Numbers:	
Job Number:		

PELV (Class 2: USA) Terminal Connections

When used with GRAFIK Eye® QS Control Units

- Two 18 AWG (1.0 mm²) conductors for Common (terminal 1) and 24 V⎓ (terminal 2). Ensure that the terminal 2 connection is wired correctly. Refer to *GRAFIK Eye* QS Specification Submittal for more details.
- One shielded, twisted pair 22 AWG (0.5 mm²) for data link (terminals 3 and 4).



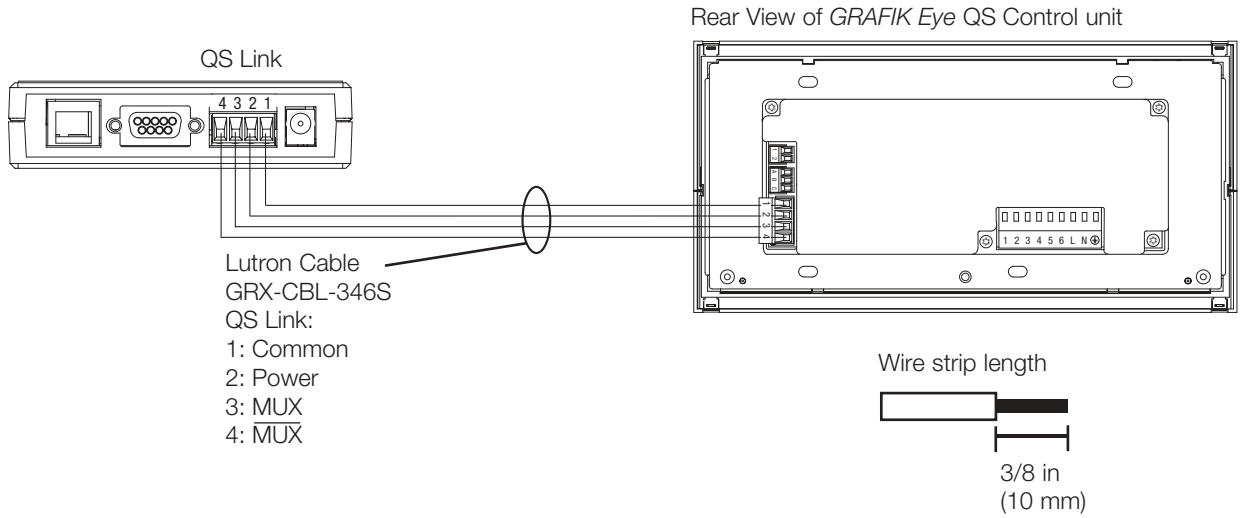
Job Name:	Model Numbers:	
Job Number:		

Powering the QSE-CI-NWK-E

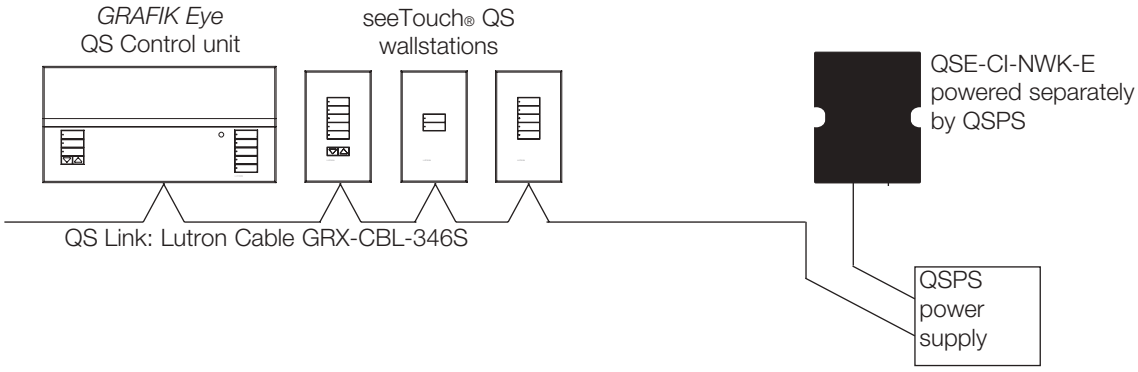
- The QSE-CI-NWK-E uses two (2) power draw units on the QS link.
  Power for one QSE-CI-NWK-E counts as two devices toward the maximum of three devices per GRAFIK Eye® QS Wireless Control Unit when powered off of Pin 2 of the *GRAFIK Eye* QS.
- Another option is to power the QSE-CI-NWK-E from a QS Link power supply (QSPS-P1-1-50, QSPS-P2-1-50, or QSPS-P3-1-50) or a QS shade panel power supply (QSPS-P2-10-60 for 230 V~, or QSPS-P1-10-60 for 120 V~).

Wiring Examples

QSE-CI-NWK-E Powered by a GRAFIK Eye® QS



QSE-CI-NWK-E Powered by a QSPS Power Supply



Job Name:	Model Numbers:	
Job Number:		

Lutron® Comfort Controls

HVAC Controller and Temperature Sensors

Add Lutron® Comfort Controls to your light and shade/drapery systems for convenient control of all aspects of an environment—natural light, artificial light, and temperature—from the touch of a button. Lutron® Comfort Controls allow heating and cooling systems to integrate seamlessly with Lutron® systems and must be located within 30 ft (9 m) of an RF signal repeater.

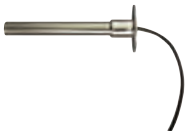
The HVAC Controller connects to and controls HVAC equipment using standard 24 V~ thermostat wiring. It can be mounted out of sight, near the equipment being controlled. Communication with a Lutron® total home control system is accomplished using Lutron® Clear Connect™ RF technology.

The HVAC Controller can utilize either Lutron® Wireless Temperature Sensors or Wired Flush Mount Sensors to read the temperature in the area being controlled. The Wireless Temperature Sensor is battery powered, making it easy to install in existing spaces. A 5-year battery life and Lutron® Clear Connect™ RF communication ensure reliable operation.

Lutron® Comfort Controls can only be used in RadioRA® 2 and HomeWorks® QS systems programmed using the PC Programming Tool.

HVAC Controller

Wireless Temperature Sensor



Wired Return Air Duct Sensor

Wired Flush Mount Sensor

Model Numbers

LRF2-TWRB-XX*	Wireless Temperature Sensor
LR-TEMP-FLSH**	Wired Flush Mount Sensor

Packages:

LR-HVAC-PKG-WH	System package includes: -1 HVAC Controller** -1 seeTemp™ Wall Display (°F) (WH) -1 Wireless Temperature Sensor (SW) -1 Wired Return Air Duct Sensor
LR-HVAC-PKG-C-WH	System package includes: -1 HVAC Controller** -1 seeTemp™ Wall Display (°C) (WH) -1 Wireless Temperature Sensor (SW) -1 Wired Return Air Duct Sensor
LR-HVAC-INT-XX*	System package includes: -1 HVAC Controller** -1 Wireless Temperature Sensor* -1 Wired Return Air Duct Sensor
LR-HVAC-INT-FLSH	System package includes: -1 HVAC Controller** -1 Wired Flush Mount Sensor**

*Available in Snow (SW) and Midnight (MN).
**Only available in White (WH).

Lutron® Comfort Controls

HVAC Controller and Temperature Sensors

Specifications

Model Numbers	**Temperature Sensors:** LRF2-TWRB-XX, LR-TEMP-FLSH **Packages:** LR-HVAC-PKG-WH, LR-HVAC-INT-XX, LR-HVAC-PKG-C-WH, LR-HVAC-INT-FLSH
Power	**HVAC Controller:** 24 V~ IEC PELV/NEC® Class 2 **Wireless Temperature Sensor:** 3 V⎓ (one CR2450 battery included)
Typical Power Consumption	**HVAC Controller:** 3 W; Test conditions: two LEDs on
Regulatory Approvals	**HVAC Controller:** UL, cUL, FCC, IC, COFETEL **WirelessTemperature Sensor:** UL, cUL, FCC, IC, COFETEL
Environment	**HVAC Controller:** Ambient operating temperature: 32 °F to 160 °F (0 °C to 71 °C), 0% to 90% humidity, non-condensing. Indoor use only. **Wireless Temperature Sensor, Wired Return Air Duct Sensor, and Wired Flush Mount Sensor:** Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
Communications	Lutron® Comfort Controls communicate with the system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a repeater. System devices operate on frequencies between 431.0 MHz and 437.0 MHz.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: should power be interrupted, the Comfort Controls will retain their programming when power is restored.
Mounting	**HVAC Controller:** Mount on flat surface using supplied screws. **Wireless Temperature Sensor:** Adhesive strip provided for temporary mounting and testing. Wall anchor and screw provided for permanent mounting. **Wired Return Air Duct Sensor:** Mount in return air duct using supplied screws. **Wired Flush Mount Sensor:** Surface mount in area to be controlled.
Wiring	**HVAC Controller:** IEC PELV/NEC® Class 2, 22 AWG (0.5 mm^2) to 18 AWG (0.75 mm^2) solid wiring. Requires transformer common connection. **Wired Return Air Duct Sensor:** IEC PELV/NEC® Class 2, 22 AWG (0.5 mm^2) to 18 AWG (0.75 mm^2) twisted, shielded pair wiring. Maximum wire length is 100 ft (30.5 m). **Wired Flush Mount Sensor:** IEC PELV/NEC® Class 2, 22 AWG (0.5 mm^2) twisted, shielded pair wiring. Maximum wire length is 100 ft (30.5 m).
Warranty	http://www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf Warranty only valid if installed by climate control specialist.

Lutron® Comfort Controls

HVAC Controller and Temperature Sensors

Design Features

HVAC Controller

- Connects to HVAC equipment.
- Uses RF to communicate with the Wireless Temperature Sensors, seeTemp™ Wall Displays, and other Lutron® wireless devices.
- Requires 24 V~ wiring from HVAC equipment transformer.
- Requires 1 Wired Sensor per HVAC Controller, wired in the system as a backup sensor in case the Wireless Temperature Sensor is not communicating.

Wireless Temperature Sensor

- Flexible mounting options require no wiring.
- 5 year battery life.
- Multiple sensor averaging possible.
- Use up to 4 Wireless Temperature Sensors per HVAC Controller.
- Use up to 5 Wireless Temperature Sensors per Main Repeater (RadioRA® 2) or per RF link (HomeWorks® QS).
- A Wireless Temperature Sensor assigned to a Main Repeater (RadioRA® 2) or RF link (HomeWorks® QS) and attached to an HVAC Controller that is assigned to a second Main Repeater/RF link will count towards the 5 Wireless Temperature Sensor limit on both Main Repeaters/RF links.
- Accurate to +/- 1 °F.

Wired Return Air Duct Sensor

- Mount in the return air duct. If there is no return air duct available, use the Wired Flush Mount Sensor or contact Lutron® Technical Assistance.

Wired Flush Mount Sensor

- Surface mount on wall in the area to be controlled.
- Field paintable to match decor.

System Features

- 7-day programmable schedule.
- Select alternate set points to save energy when on vacation or away from home.
- System features are programmed in the PC tool.

Control from Dynamic Keypads in HomeWorks® QS systems

- Control temperature from Dynamic Keypads.
- The Dynamic Keypad provides full control of multiple HVAC Controllers from a single location without the need for seeTemp™ Wall Displays.
- Multiple Dynamic Keypads can be used to control one HVAC Controller from multiple locations.

Control from Mobile Devices

- Control temperature from Lutron® Home Control+ mobile device application.
- Set and edit up to seven different daily schedules from your mobile device.

Lutron® Comfort Controls

HVAC Controller and Temperature Sensors

Compatibility

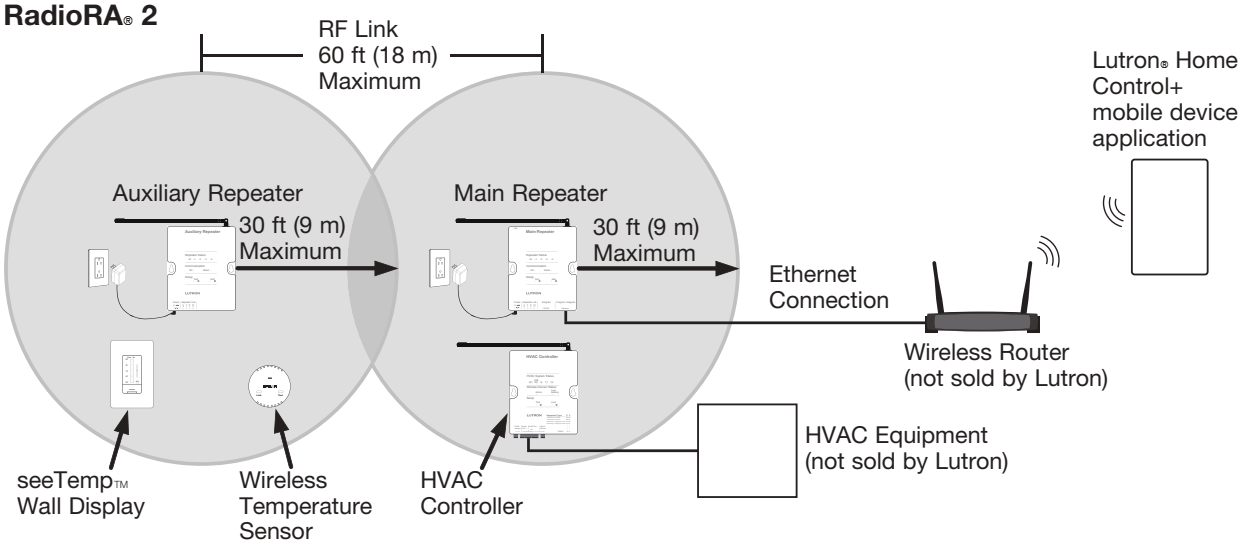
HVAC Type	Compatible?
Single Stage Cool	Yes
Two Stage Cool	Yes
Single Stage Heat	Yes
Two Stage Heat	Yes
Packaged Roof Top Units	Yes
Heat Pump	Yes
Dual Fuel Systems	Yes - Requires a separate Fossil Fuel Kit (not sold by Lutron)
Geothermal Heat Pump	Yes
Heat Pump with Auxiliary Electric (Emergency) Heat	Yes
Typical Variable Speed Fan (Equipment Controlled)	Yes
Multi-Zone Systems (Controllable Dampers)	Yes - Requires a separate Zone Controller (not sold by Lutron)
In-Floor Radiant Heat	Yes
Line Voltage Electric Baseboard	No
Mili-Volt System	No
Proprietary/Digital Control systems	No
Variable Speed Fan (Independent Relays)	No
Humidity Control	No
Humidity Sensing	No
Outdoor Temperature Sensing	No
VAV/VRV Systems	No

Lutron® Comfort Controls

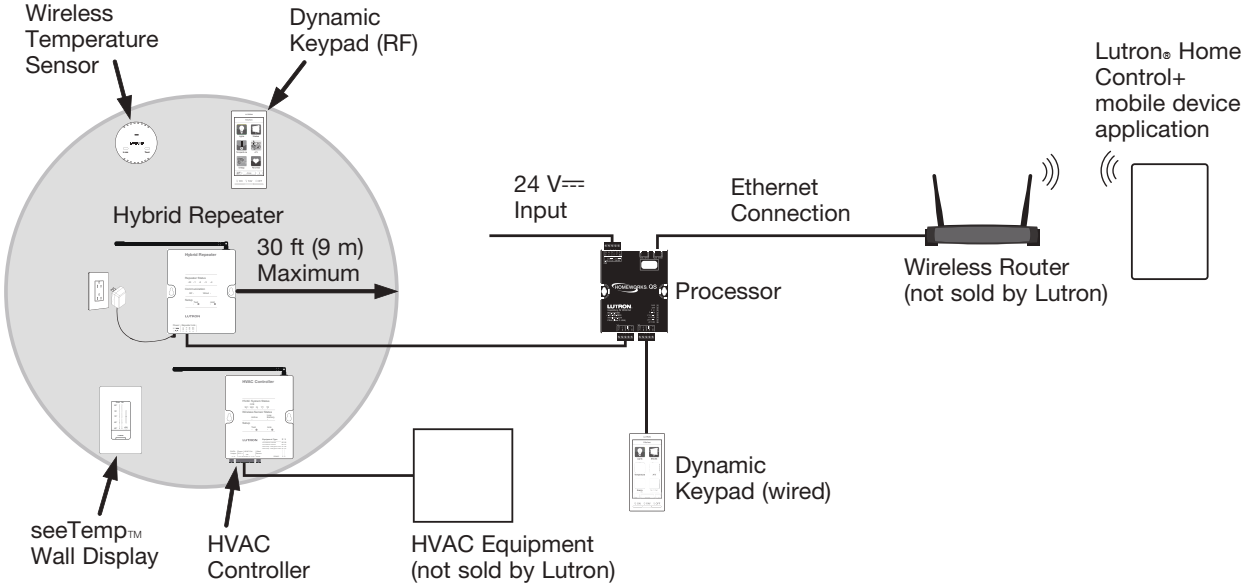
HVAC Controller and Temperature Sensors

System Examples

RadioRA® 2



HomeWorks® QS



Lutron® Comfort Controls

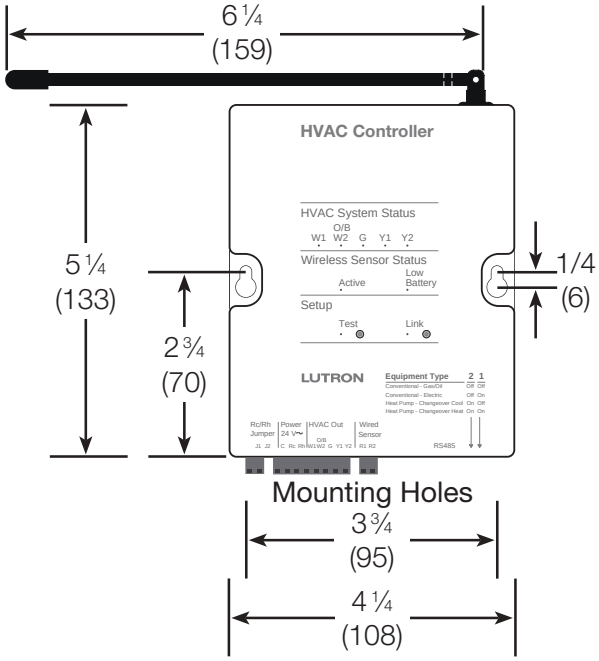
HVAC Controller and Temperature Sensors

Dimensions

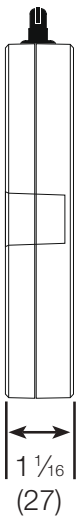
All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$ unless otherwise noted.

HVAC Controller

Front View



Side View



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Lutron® Comfort Controls

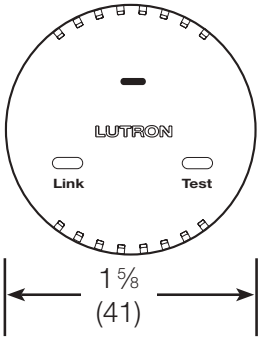
HVAC Controller and Temperature Sensors

Dimensions *(continued)*

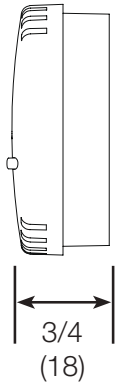
All dimensions are shown as $\frac{\text{in}}{(\text{mm})}$ unless otherwise noted.

Wireless Temperature Sensor

Front View

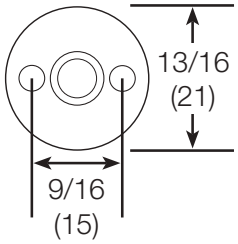


Side View

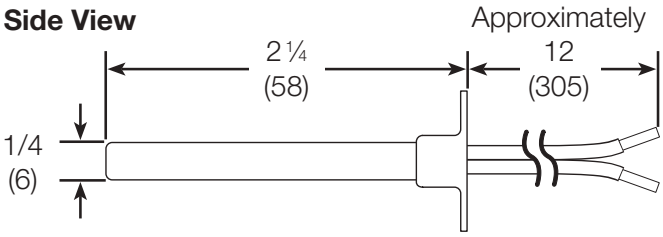


Wired Return Air Duct Sensor

Front View

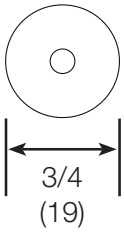


Side View

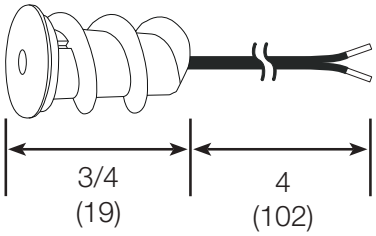


Wired Flush Mount Sensor

Front View



Side View



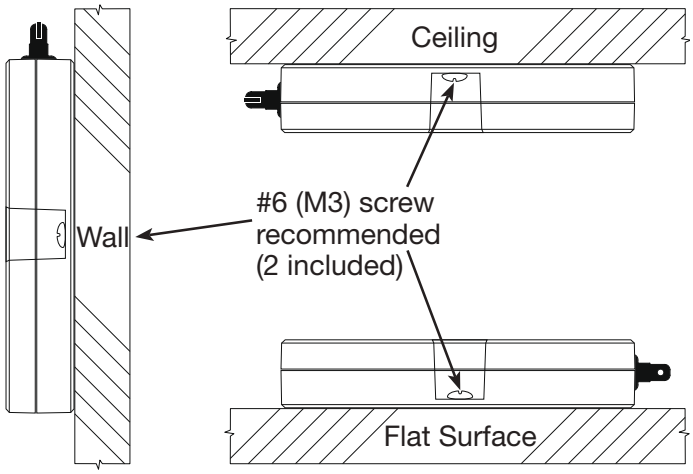
Lutron® Comfort Controls

HVAC Controller and Temperature Sensors

Mounting and Parts Identification

HVAC Controller

Vertical **Horizontal**



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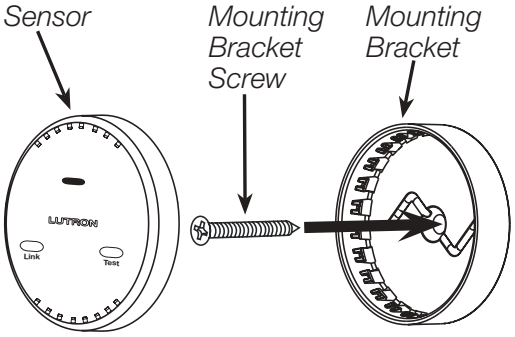
Lutron® Comfort Controls

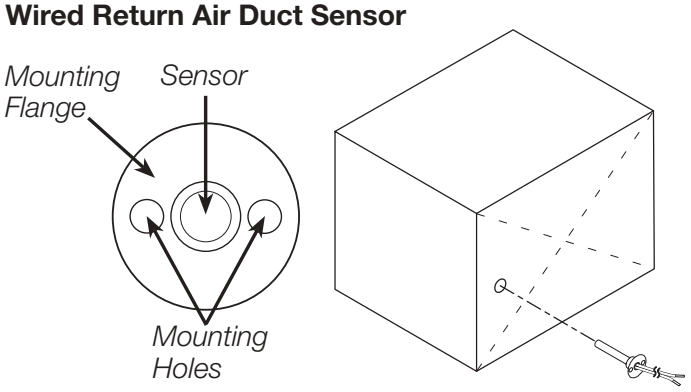
HVAC Controller and Temperature Sensors

Mounting and Parts Identification *(continued)*

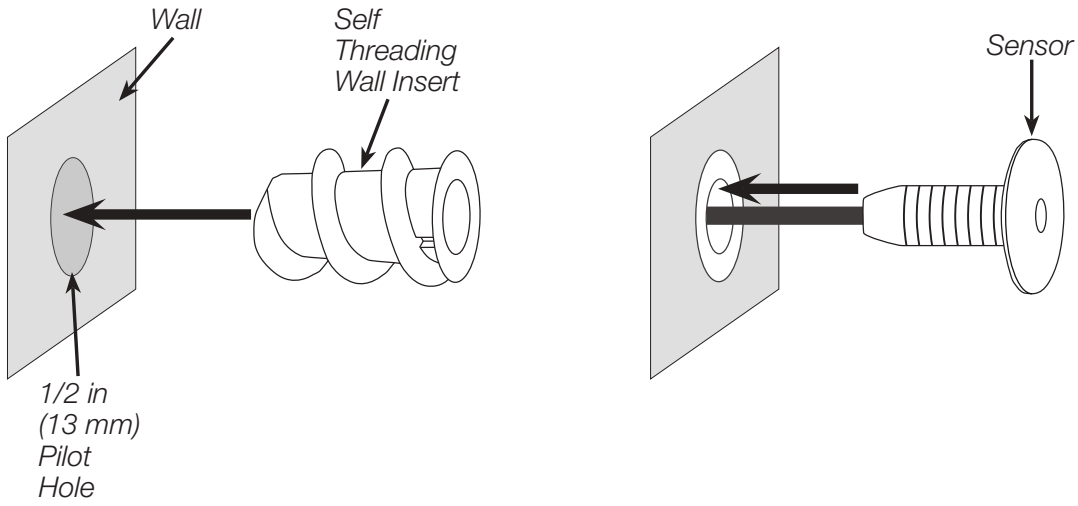
Wireless Temperature Sensor



Wired Return Air Duct Sensor



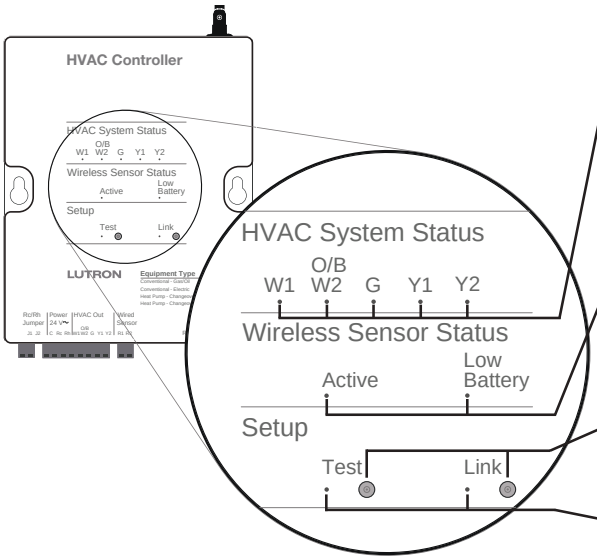
Wired Flush Mount Sensor



Lutron® Comfort Controls
HVAC Controller and Temperature Sensors

Operation

HVAC Controller



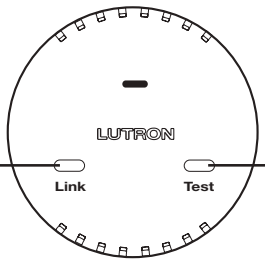
HVAC System Status LEDs
Indicate the status of the control outputs. When an LED is lit the corresponding relay is closed.
W1 - Heat stage 1, auxiliary heat
W2 O/B - Heat stage 2, changeover valve
G - Fan
Y1 - Compressor stage 1
Y2 - Compressor stage 2

Wireless Sensor Status LEDs
Solid - All Wireless Temperature Sensors are active.
Flashing - One or more Wireless Temperature Sensors are not active or a wired sensor is not connected.
Off - No active Wireless Temperature Sensors.

Test and Link Buttons
Press and hold to troubleshoot (Test) and set up (Link) the RF connection.

Test and Link LEDs
Flashes green to indicate that the system is in Test mode or Link mode.

Wireless Temperature Sensor



Link Button
Press and hold to assign to a system.

Test Button
Press and hold to test system functionality

Lutron® Comfort Controls

HVAC Controller and Temperature Sensors

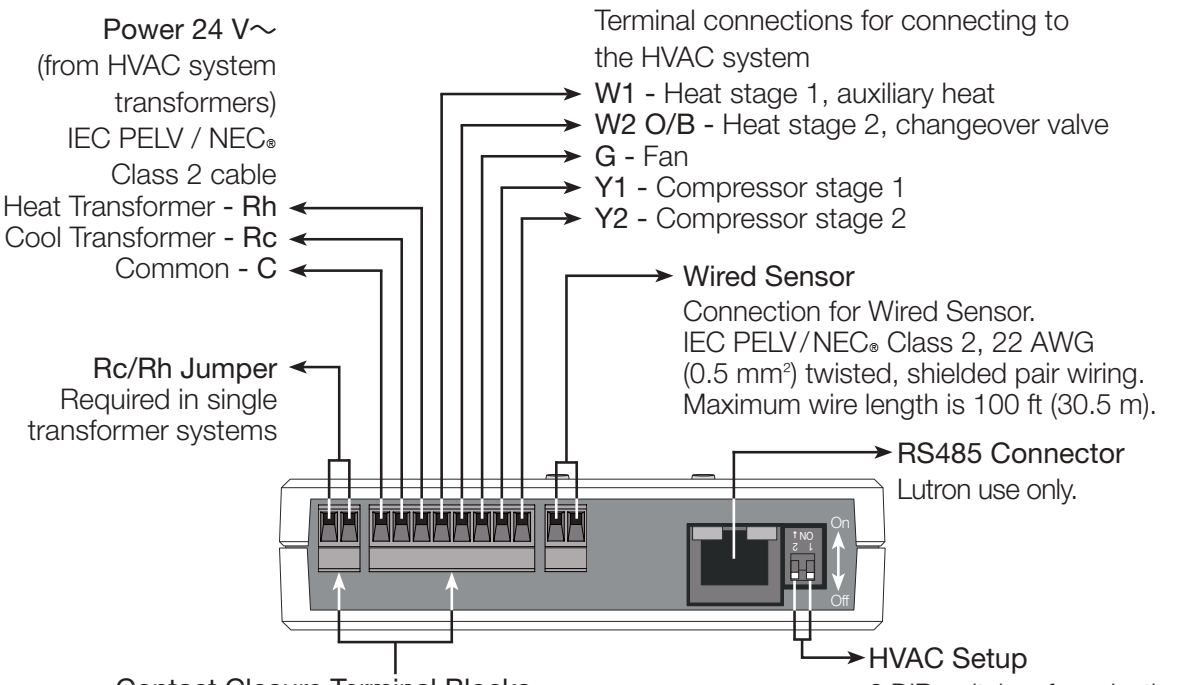
Wiring Diagrams *(continued)*

HVAC Controller

Note: HVAC Controller must be wired by a qualified HVAC climate control specialist.

Relay Contact Ratings

Voltage	Resistive Load	Inductive Load
Up to 24 V~	1 A	0.1 A



Equipment Type	2	1	Fan Controlled by
Conventional - Gas/Oil	Off	Off	Air Handler
Conventional - Electric	Off	On	HVAC Controller
Heat Pump - Changeover Cool	On	Off	HVAC Controller
Heat Pump - Changeover Heat	On	On	HVAC Controller

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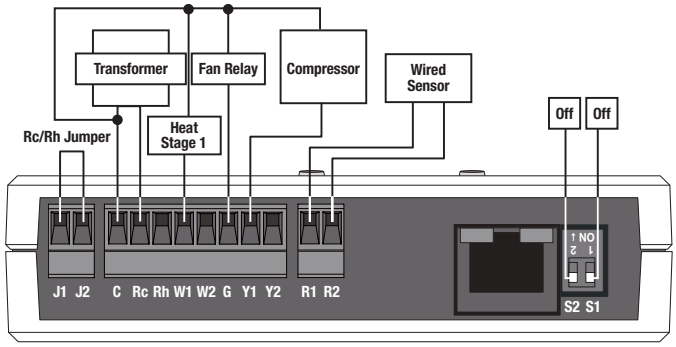
Lutron® Comfort Controls
HVAC Controller and Temperature Sensors

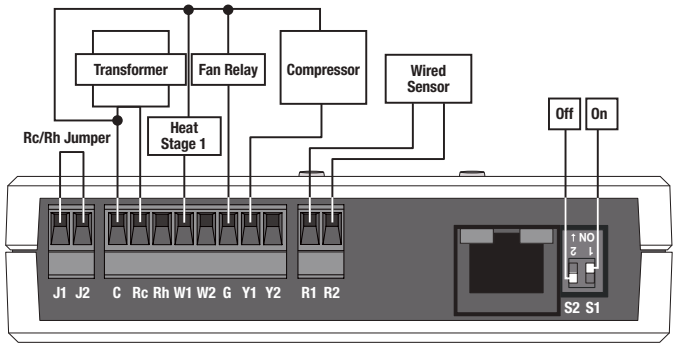
Wiring Diagrams *(continued)*

Conventional Systems

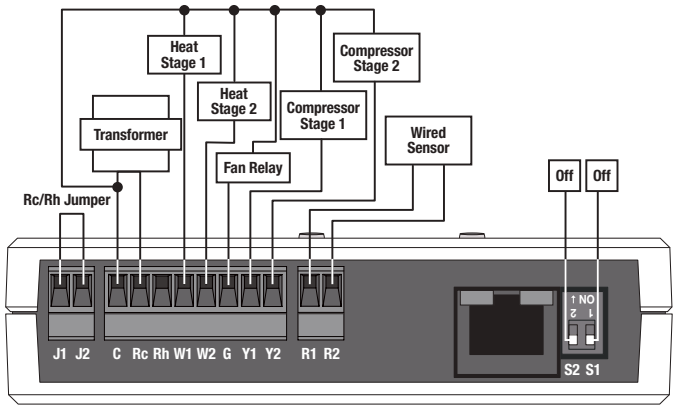
Conventional Gas/Oil Heat System • 1 Stage Heat / 1 Stage Cool



Conventional Electric Heat System • 1 Stage Heat / 1 Stage Cool



Conventional Gas/Oil Heat System • 2 Stage Heat / 2 Stage Cool



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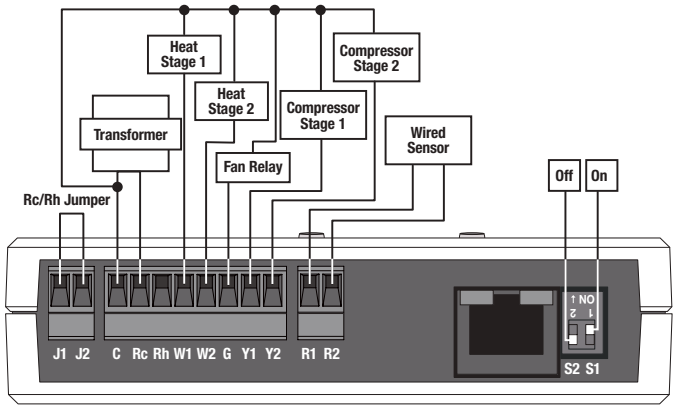
Lutron® Comfort Controls
HVAC Controller and Temperature Sensors

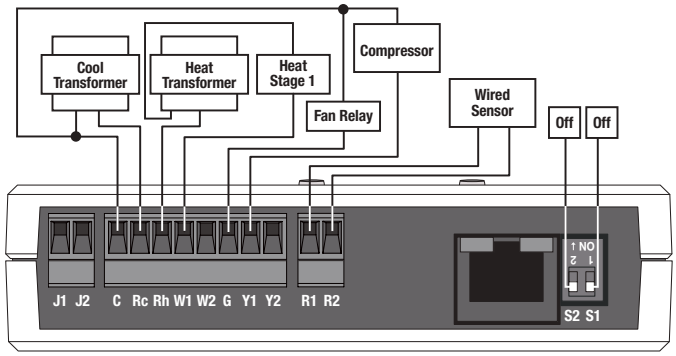
Wiring Diagrams *(continued)*

Conventional Systems *(continued)*

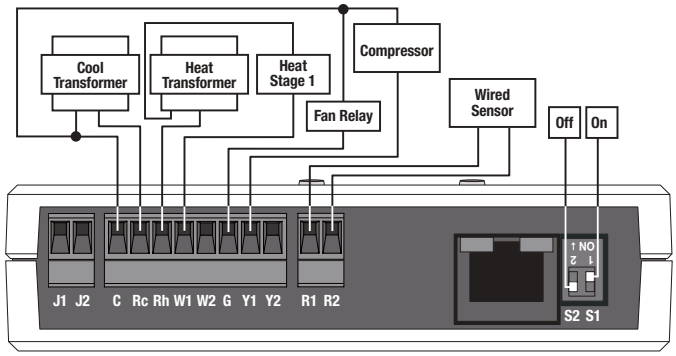
Conventional Electric Heat System • 2 Stage Heat / 2 Stage Cool



Conventional Gas/Oil Heat System • 1 Stage Heat / 1 Stage Cool, 2 Transformers



Conventional Electric Heat System • 1 Stage Heat / 1 Stage Cool, 2 Transformers



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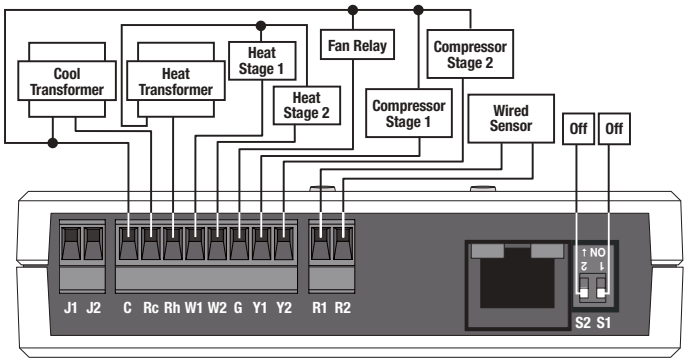
Lutron® Comfort Controls
HVAC Controller and Temperature Sensors

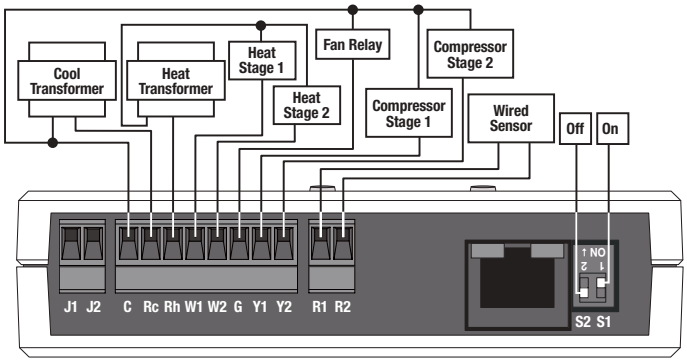
Wiring Diagrams *(continued)*

Conventional Systems *(continued)*

Conventional Gas/Oil Heat System • 2 Stage Heat / 2 Stage Cool, 2 Transformers



Conventional Electric Heat System • 2 Stage Heat / 2 Stage Cool, 2 Transformers



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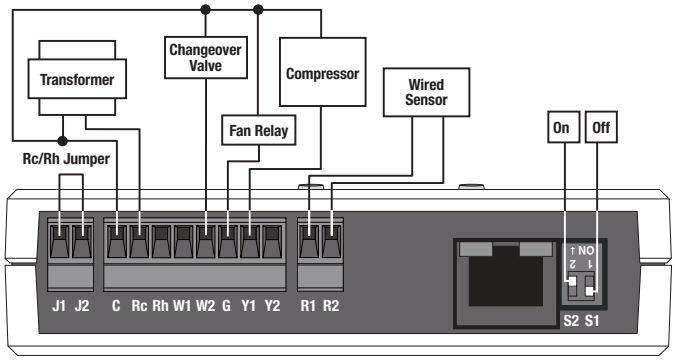
Lutron® Comfort Controls
HVAC Controller and Temperature Sensors

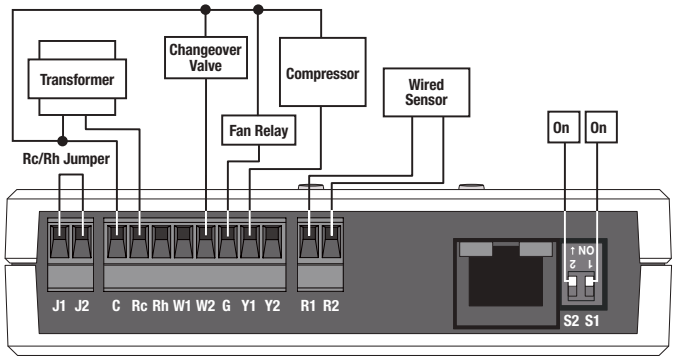
Wiring Diagrams *(continued)*

Heat Pump Systems

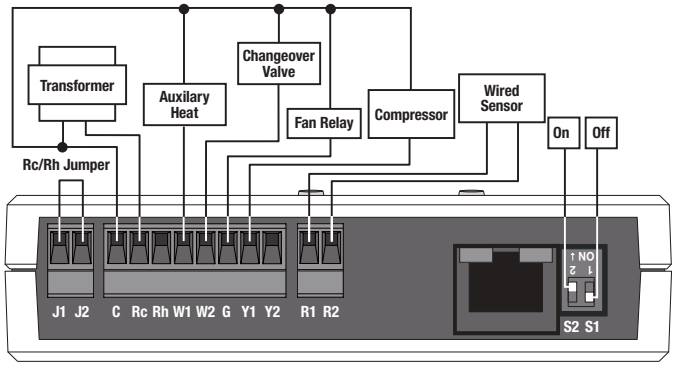
Single Stage Heat Pump (Changeover = Cool)



Single Stage Heat Pump (Changeover = Heat)



Single Stage Heat Pump w/ Auxiliary Heat (Changeover = Cool)



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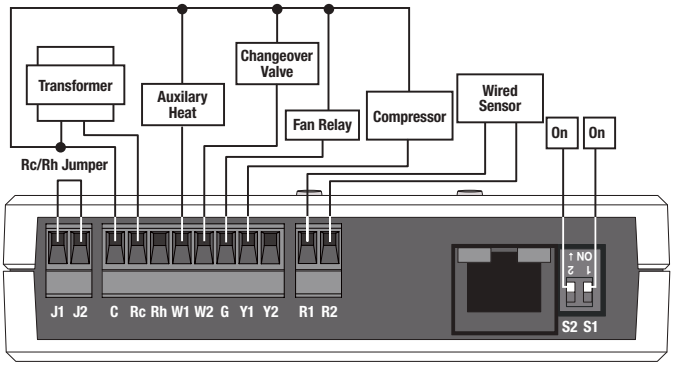
Lutron® Comfort Controls
HVAC Controller and Temperature Sensors

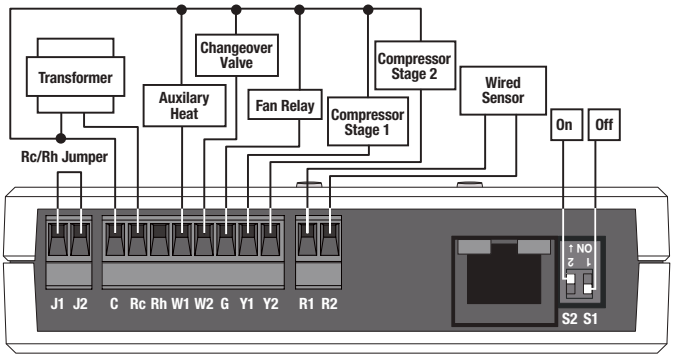
Wiring Diagrams *(continued)*

Heat Pump Systems *(continued)*

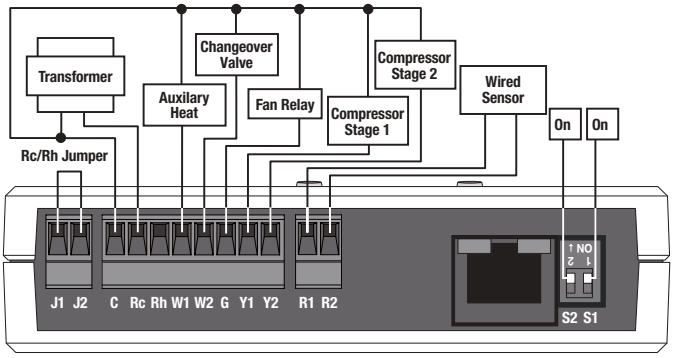
Single Stage Heat Pump w/ Auxiliary Heat (Changeover = Heat)



2 Stage Heat Pump w/ Auxiliary Heat (Changeover = Cool)



2 Stage Heat Pump w/ Auxiliary Heat (Changeover = Heat)



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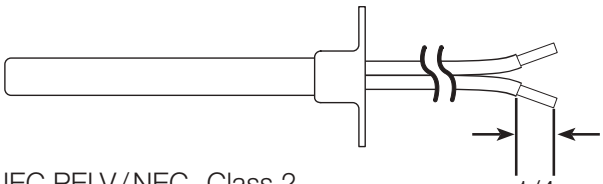
Lutron® Comfort Controls

HVAC Controller and Temperature Sensors

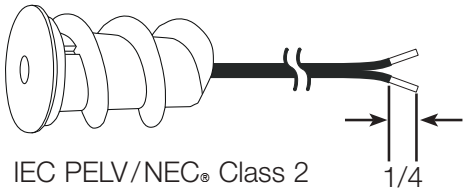
Wiring Diagrams *(continued)*

Wired Return Air Duct Sensor



IEC PELV/NEC® Class 2
22 AWG (0.5 mm²) to
18 AWG (0.75 mm²) twisted,
shielded pair wiring.

Wired Flush Mount Sensor



IEC PELV/NEC® Class 2
22 AWG (0.5 mm²) twisted,
shielded pair wiring.

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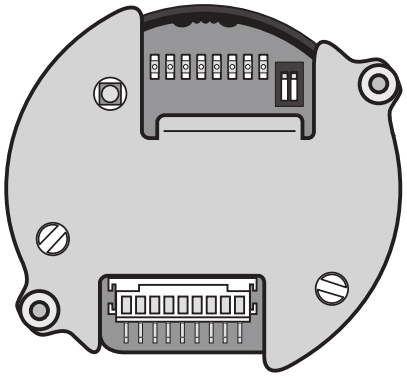
QS Wallbox Closure Interface



Shown actual size.

The QSE-CI-WCI (WCI) is a control interface for use with HomeWorks® QS systems, Quantum® systems, and QS standalone applications. The WCI integrates a contact closure keypad with a Lutron® lighting control system. The contact closure keypad must be provided by the customer. The WCI provides up to eight contact closure inputs (CCIs). The CCIs accept maintained or momentary signals. The CCIs are programmable through the Homeworks® QS and Quantum® system setup software. For QS standalone applications, the CCIs are programmable using the button, DIP switch, and LEDs on the WCI.

Features

- Provides 8 contact closure inputs (CCIs), maintained or momentary.
- Works with IEC PELV/NEC® Class 2, low-voltage, dry contact closures.
- The CCI can be set up to simulate existing Lutron® keypad functionality or custom-configured to meet project-specific requirements.
- Place in the wallbox behind a contact closure keypad (See Mounting).
- Provides a 1-way interface between the Lutron® lighting system and a contact closure keypad (not supplied).
- For use in Homeworks® QS systems, Quantum® systems, and QS standalone applications.

Additional Programming Details

- In Homeworks® QS and Quantum® systems, the 8 CCIs are individually programmable through the appropriate setup software.
- For QS standalone applications, the DIP switch allows for selection of CCI control options:
  - With or without raise/lower controls.
  - With all momentary or all maintained CCIs.
- LEDs provide instant feedback during setup and diagnostics;
  - Confirmation when programming.
  - Verification of which contacts are closed.
  - Indication of communication miswire/malfunction.
- Programming button allows for ease of programming and resetting to factory default.
- Place in the wallbox behind a contact closure keypad

Job Name:	Model Numbers:	
Job Number:		

Specifications

Regulatory Requirements

- CE marked
- Complies with applicable IEC standards
- If UL listing is required please contact Lutron

Input Power

- Operating Voltage: 24 V⎓ 30 mA
- Low Voltage IEC PELV/NEC® Class 2 wiring provides power, derived from QS link. Consumes one Power Draw Unit (PDU).

Contact Closure Input Types

- The QSE-CI-WCI (WCI) is compatible with both momentary and maintained contact closure inputs (CCIs).
- Contact closure keypad must have a low voltage, dry contact closure rating.
- CCIs must have an on-state saturation voltage less than 1 V at 100 uA and an off-state leakage current of less than 100 uA. Contact manufacturer of the contact closure keypad for details.
- The signal pulse for the CCI must be greater than 40 ms. Contact manufacturer of the contact closure keypad for details.
- The WCI is not designed or rated to work with line/mains voltage switches. Use with line/mains voltage switches will result in premature failure.

Environment

- Ambient Operating Temperature: 0-40 °C (32-104 °F)
- Relative Humidity less than 90%, non-condensing
- For indoor use only

Terminals

- Each terminal accepts up to two 1.0 mm^2 (18 AWG) wires, one twisted shielded pair 0.5 mm^2 (22 AWG) wire or one 4.0 mm^2 (12 AWG) wire typical.

Mounting

- Recommended to be placed in the wallbox behind a contact closure keypad.
- Lutron recommends using a wallbox which is 60 mm (2 ½ in) deep x 60 mm (2 ½ in) wide, when installing the WCI. Note: Some applications may require a deeper wallbox.
- Do not extend wire harness length.

QS Link Limits

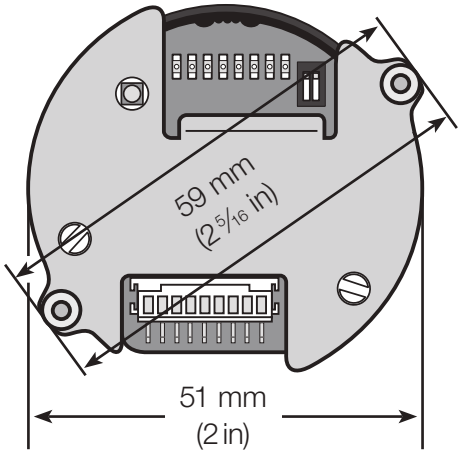
- A QS Link can have up to 100 zones (outputs) and 100 devices in a standalone system or 99 in a Homeworks® QS or Quantum® System.
- Each WCI counts as 1 device on the QS Link.
- Consumes 1 PDU on the QS Link. For more information on Power Draw Units, see “Power Draw Units on the QS Link”, Lutron PN 369405, at www.lutron.com/qs
- Link communicates to other devices via IEC PELV/NEC® Class 2 wiring.
- Follow all applicable national and local electrical codes for proper circuit separation and protection.
- Wiring may be t-tapped or daisy-chained.
- For wiring limits, see the chart below.

Length	Wire Gauge	Lutron® Cable
Less than 150 m (500 ft)	Common (terminal 1) one 1.0 mm^2 (18 AWG)	GRX-CBL-346S (non-plenum) GRX-PCBL-346S (plenum)
	Power (terminal 2) one 1.0 mm^2 (18 AWG)	
	Data (terminals 3 and 4) one twisted, shielded pair 0.5 mm^2 (22 AWG)	
150 m to 600 m (492 ft to 1969 ft)	Common (terminal 1) one 4.0 mm^2 (12 AWG)	GRX-CBL-46L (non-plenum) GRX-PCBL-46L (plenum)
	Power (terminal 2) one 4.0 mm^2 (12 AWG)	
	Data (terminals 3 and 4) one twisted, shielded pair 0.5 mm^2 (22 AWG)	

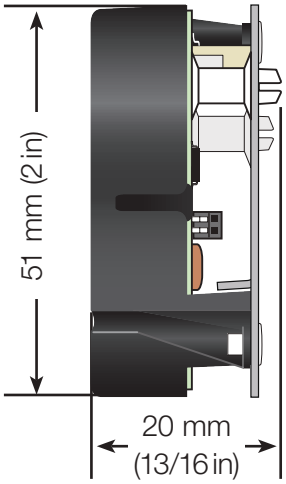
Job Name:	Model Numbers:	
Job Number:		

Mechanical Dimensions

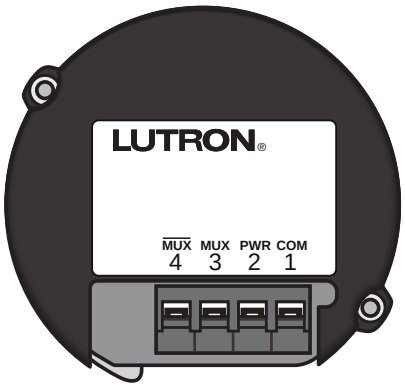
Front View



Side View



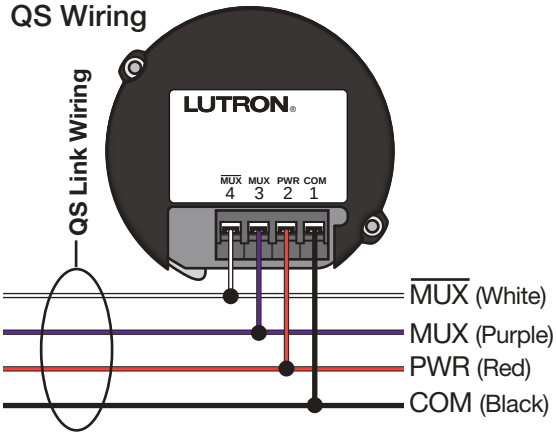
Back View



Job Name:	Model Numbers:	
Job Number:		

Wiring

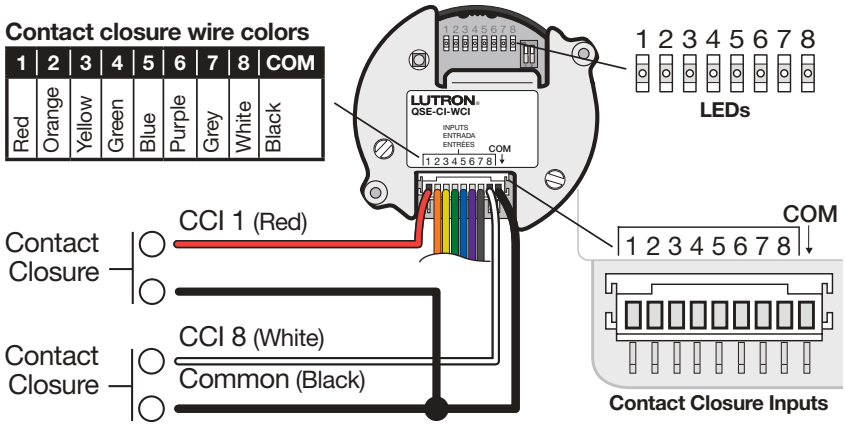
QS Wiring

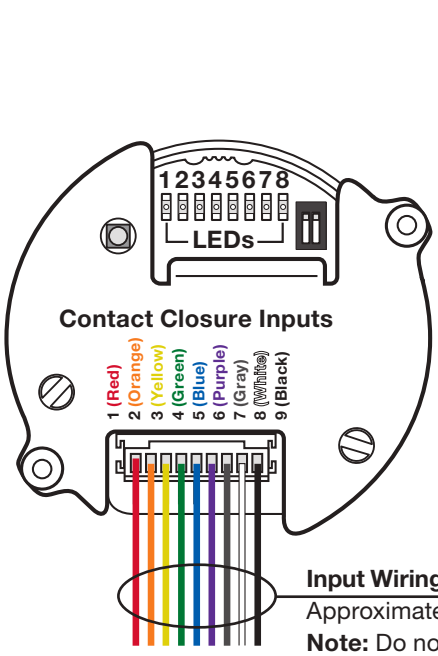


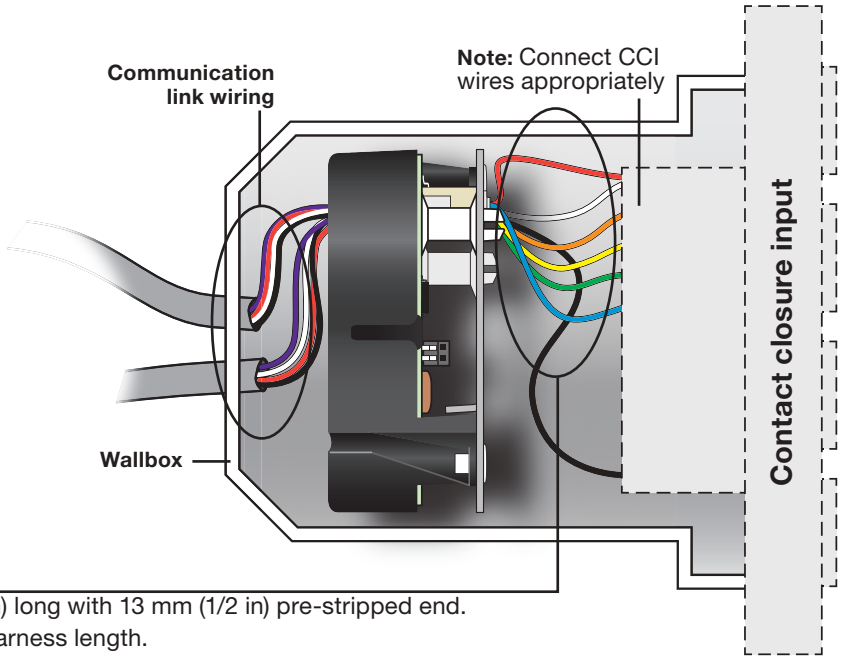
Contact Closure Wiring

- Connect the contact closures to the contact closure inputs (CCIs) and shared common using supplied wiring harness.
- Ensure proper function, and cap all unused CCI wires together, away from other circuitry.

Note: All contact closures must share the provided common. (Black)







Input Wiring Harness:
Approximately 178 mm (7 in) long with 13 mm (1/2 in) pre-stripped end.
Note: Do not extend wire harness length.

Job Name:	Model Numbers:	
Job Number:		

QS Sensor Module

The QS Sensor Module (QSM) is a ceiling-mounted device that integrates Lutron® wireless and wired sensors through the wired QS Link on a HomeWorks® QS processor.

- The QSM uses Clear Connect® RF Technology for communication with up to 10 Radio Powr Savr™ occupancy/vacancy sensors and 10 Pico® wireless controls.
- The QSM connects up to four Lutron® wired occupancy sensors.
- No line voltage connections are required because the QSM is powered by the QS Link.

Model Numbers

Frequency / Channel Code*
Number of Wired Inputs
Mounting Method

QSM_-_W-_

Frequency / Channel Code*

2—431.5 – 436.6 MHz U.S.A., Canada and Mexico
3—868.1 – 869.8 MHz European Union and United Arab Emirates
4—868.1 – 868.5 MHz Singapore and China
5—865.5 – 866.5 MHz India
7—433.0 – 434.7 MHz Hong Kong
X—No RF

Number of Wired Inputs

4—4
X—None

Mounting Method

C—Ceiling Mount
J—Junction Box Ceiling Mount

* Contact Lutron for frequency/channel code compatibility with your geographic region if it is not indicated above.

QS Sensor Module

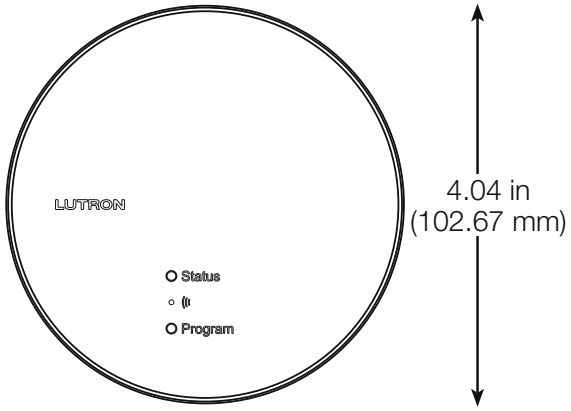
Specifications

Model Numbers	QSM2-4W-C, QSM2-XW-C, QSM2-4W-J, QSM2-XW-J QSM3-4W-C, QSM3-XW-C QSM4-4W-C, QSM4-XW-C QSM5-XW-C QSM7-4W-C, QSM7-XW-C QSMX-4W-C
Power	24 V⎓ 400 mA max (wired input), 100 mA max (no wired input)
Typical Power Consumption	1.5 W; 3 Power Draw Units* (PDUs), plus 2 PDUs for each wired sensor * For more information about PDUs, please see the HomeWorks® QS Wiring and Power Guidelines document on the HomeWorks® QS Resource Website.
Regulatory Approvals	cUL US, FCC, IC, SCT, CE, TRA, WPC
Environment	Ambient operating temperature: 32 to 104 °F (0 to 40 °C) 0% to 90% humidity, non-condensing. Indoor use only
Communications	The QSM communicates with the system through the Wired QS Link. When communicating via RF, all wireless sensors and Pico® wireless controls must be within 30 ft (9 m) through typical construction materials.
Link Capacities	The QSM counts as 1 device toward the link maximum of 100 devices. Wired sensors increase the PDU (Power Draw Units) of the QSM.
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Power failure memory: Should power be interrupted, the QSM will return to its previous state when power is restored.
Mounting	To ensure optimal wireless range, QSM units should be mounted in the middle of non-metal ceiling tile or drywall, visible from inside the space. Installation near metal other than a junction box may reduce RF range.
Wiring	QS Link: 22 to 14 AWG (0.5 to 2.5 mm^2) IEC PELV/NEC® Class 2 wiring Maximum QS Link length 2000 ft (610 m) Input: 22 to 14 AWG (0.5 to 2.5 mm^2) IEC PELV/NEC® Class 2 wiring Use Lutron® cable GRX-CBL-346S (standard) or GRX-PCBL-346S (plenum)
Warranty	www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Intl_Warranty.pdf

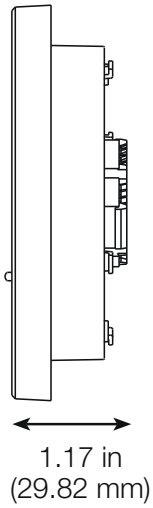
QS Sensor Module

Dimensions

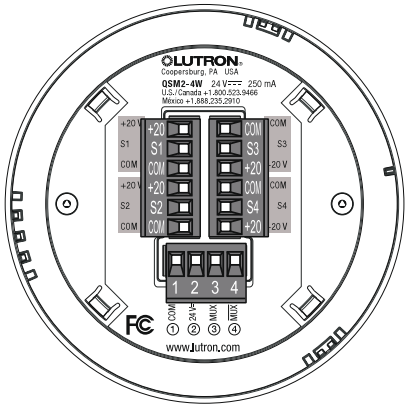
Front View



Side View

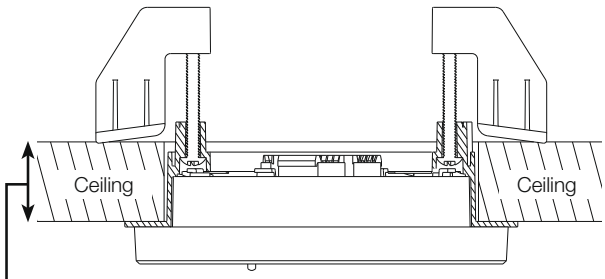


Back View
(QSM2-4W-C shown)



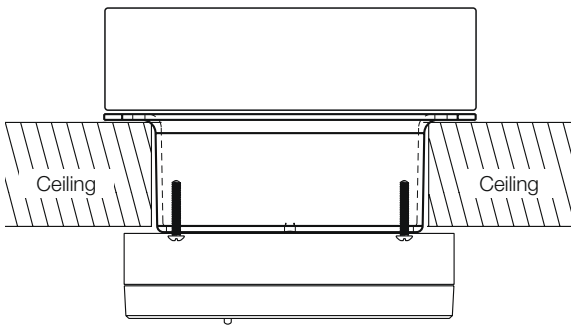
Mounting

-C Models

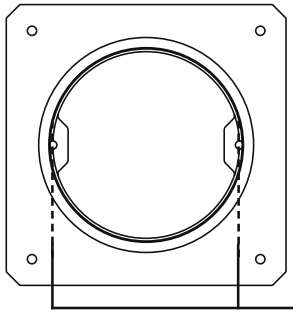


Ceiling thickness range for -C models
Min: 0.30 in (7.62 mm)
to
Max: 1.20 in (30.48 mm)

-J Models



Use appropriate Mud Ring for ceiling tile thickness

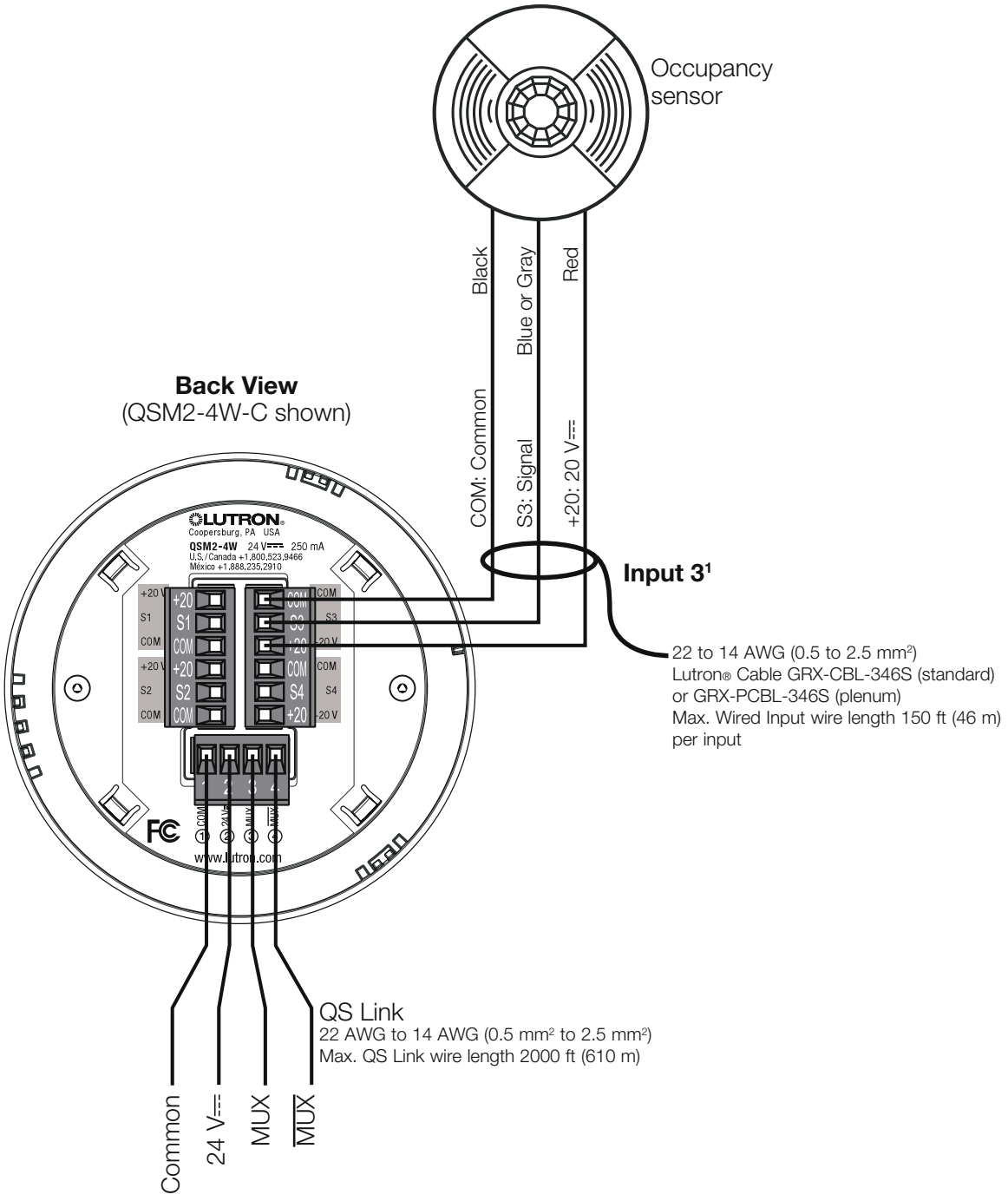


Use Mud Ring with hole spacing shown below.
(Mud Ring not included with any QSM models)

2.75 in (70 mm)

QS Sensor Module

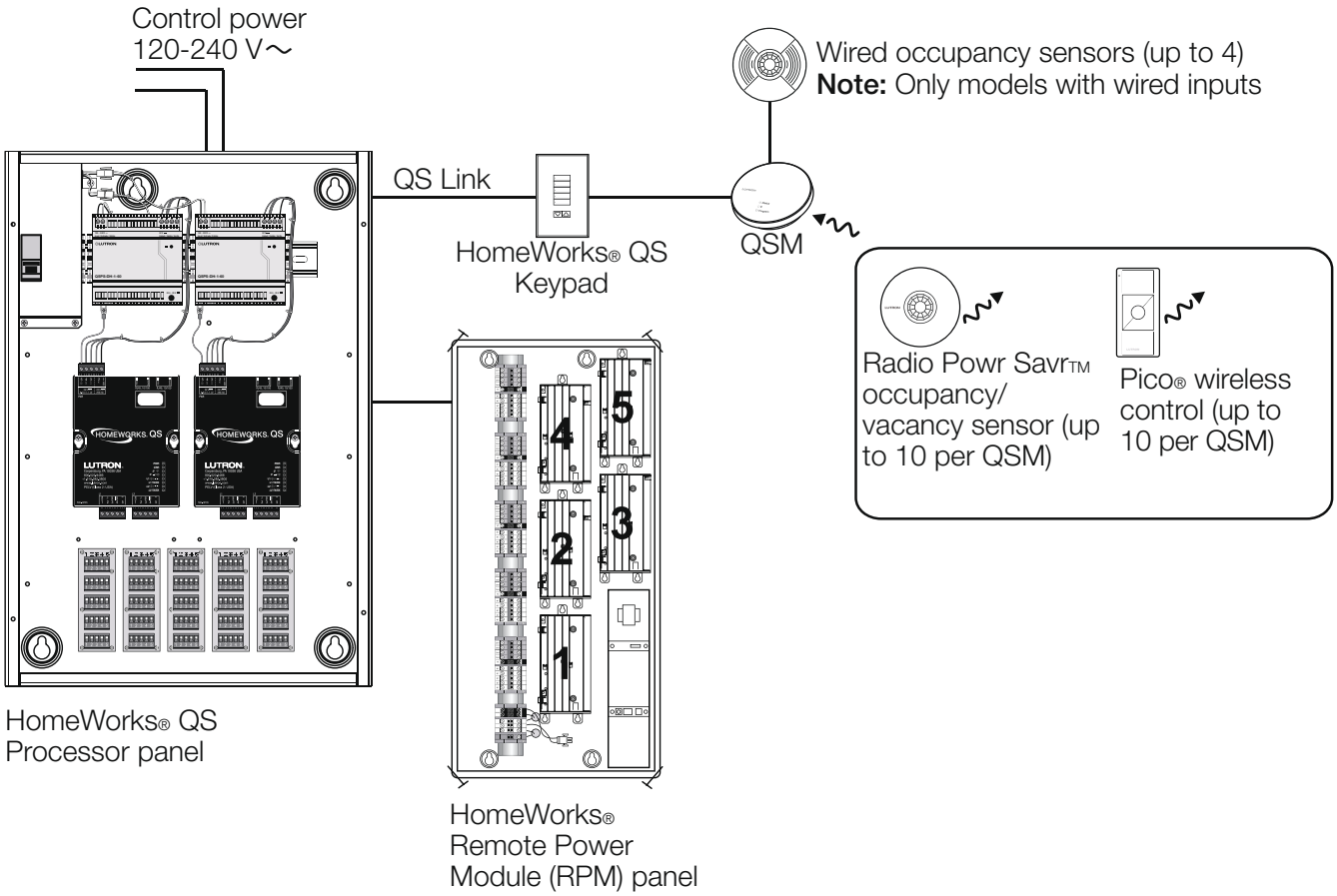
Wiring: QS Link and Wired Inputs



[1] Only on QSM models with wired inputs.

QS Sensor Module

System Wiring Diagram



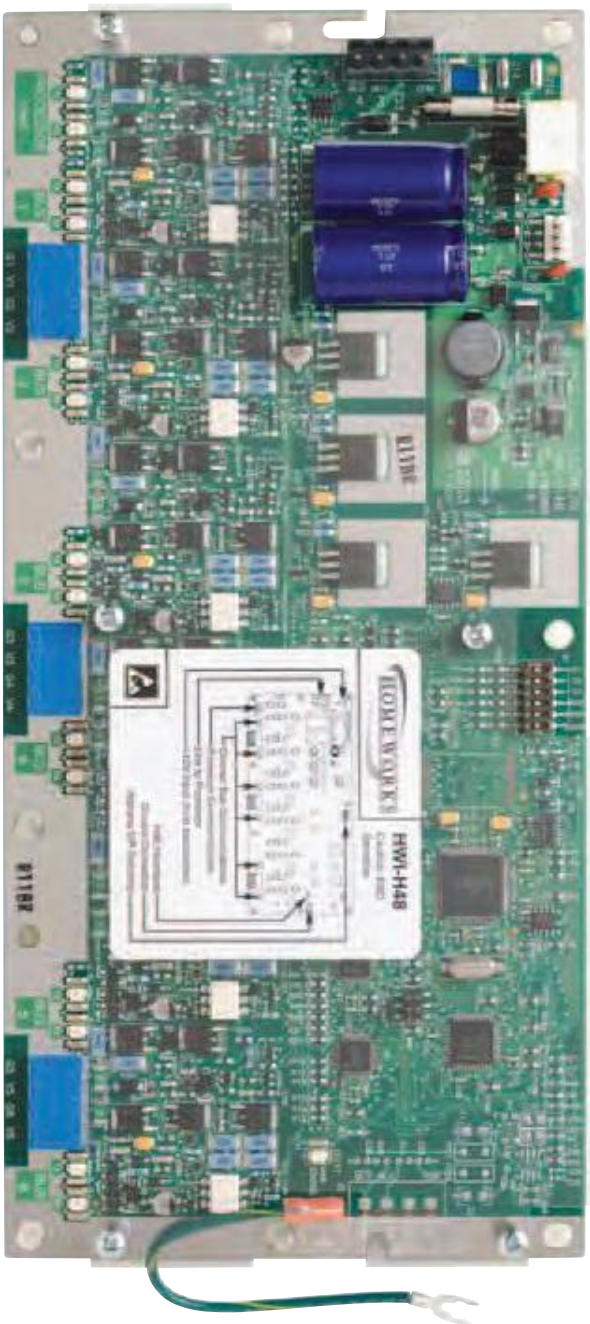
H48 Dimmer Interface

The H48 Dimmer Interface acts as a point of communication between a processor and local controls.

The Dimmer Interface allows the HomeWorks® processor to provide control of up to 48 additional local controls via six communication buses. Each bus supports a maximum of eight wired, uniquely-addressed HomeWorks® Maestro® local controls.

Model Number

HWI-H48 H48 Dimmer Interface



H48 Dimmer Interface

H48 Dimmer Interface

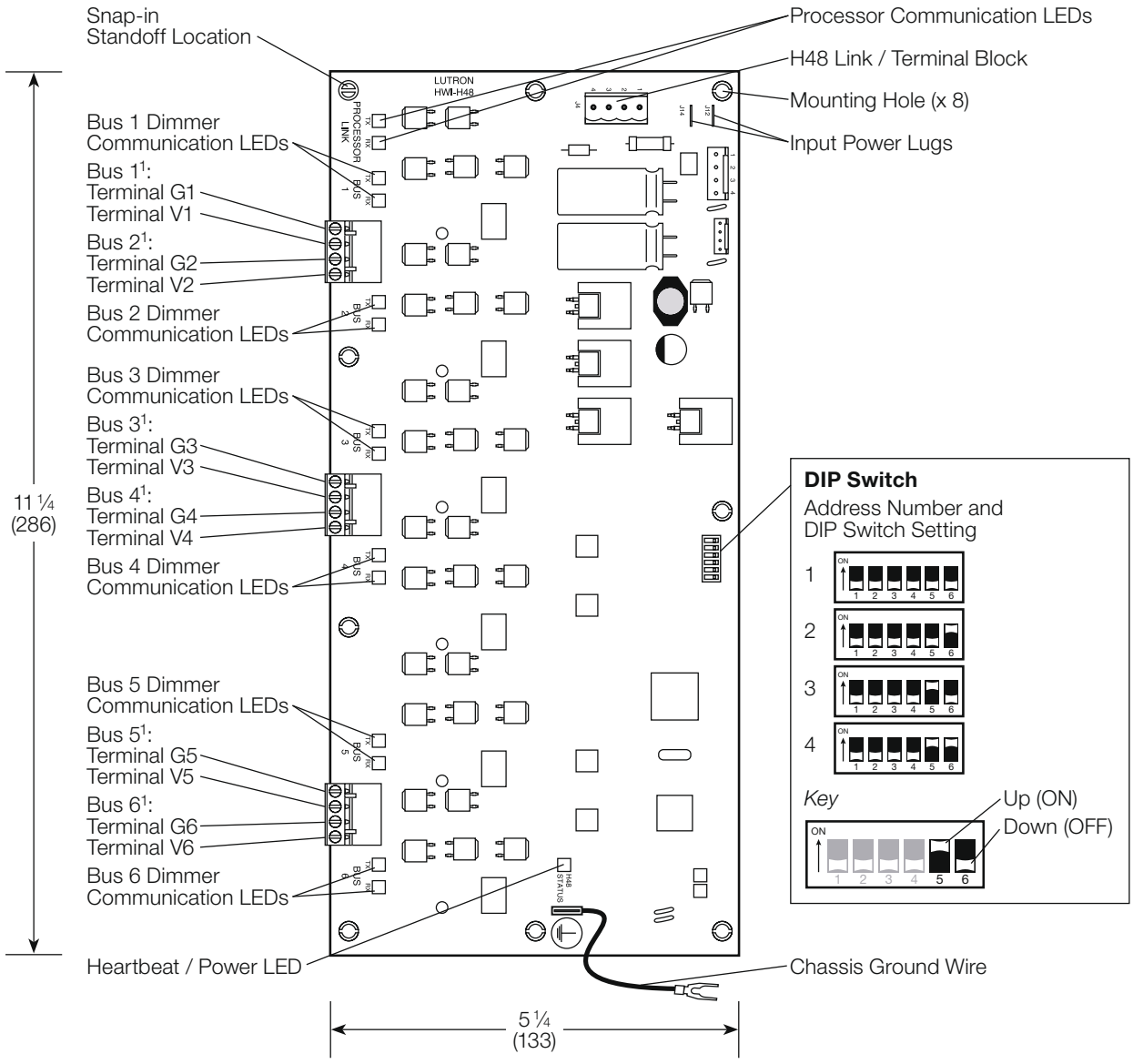
Specifications

Model Number	HWI-H48
Capacity	Controls up to 48 wired HomeWorks® Maestro® local lighting controls.
Input Voltage	12 V⁓ from power supply in the HWI-LV17-120
Environment	Ambient operating temperature: 0 °C to 40 °C (32 °F to 104 °F) Ambient operating humidity: 0 to 90% humidity, non-condensing. Indoor use only.
Low-Voltage Wire Type	Processor to dimmer interface wires: Two pairs: one pair 18 AWG (1.0 mm^2); one pair 18 AWG to 22 AWG (1.0 mm^2 to 0.5 mm^2) twisted, shielded Class 2 wire. Lutron® wire part number GRX-CBL-346S-500 may be used. Dimmer interface to wired HomeWorks® Maestro® local control wire: One pair 22 AWG (0.5 mm^2) twisted, shielded Class 2 wires.
Low-Voltage Wiring Configuration	Between processor and dimmer interfaces: Daisy-chain only. Termination required if total cable length exceeds 50 ft (15 m). Total length of wire on any link must NOT exceed 1000 ft (305 m). Maximum: four dimmer interfaces per processor link that has been configured as an H48 link. Between dimmer interface and wired HomeWorks® Maestro® local controls: Daisy-chain NOT required (star, T-tap, daisy-chain, home run are permitted). Termination not required. Each Maestro® bus may have a max 500 ft (152.5 m) per home run, but must NOT exceed 1000 ft (305 m) total per bus. Maximum: eight HomeWorks® Maestro® local controls per Maestro® bus and six dimmer buses per H48 interface.
Low-Voltage Connections	Wired Processor: One 4-pin removable terminal block; terminal block will accept up to two 18 AWG (1.0 mm^2) wires. Wired HomeWorks® Maestro® local control: Six 2-pin removable terminal blocks; each terminal will accept up to two 18 AWG (1.0 mm^2) wires.
Addressing	Via DIP switch. Counts as 1 of 4 dimmer interface addresses.
Diagnostics	Dimmer communication LEDs, processor communication LEDs, and heartbeat/power LED.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	Maestro® buses are miswire-protected against gray-violet shorts. Dimmer interface buses are non-polarized.
Dimensions	5¼ in (133 mm) x 11¼ in (286 mm)
Mounting	Mount inside HWI-LV17-120 panel.
Shipping Weight	1 lb (0.45 kg)

H48 Dimmer Interface

Features and Dimensions

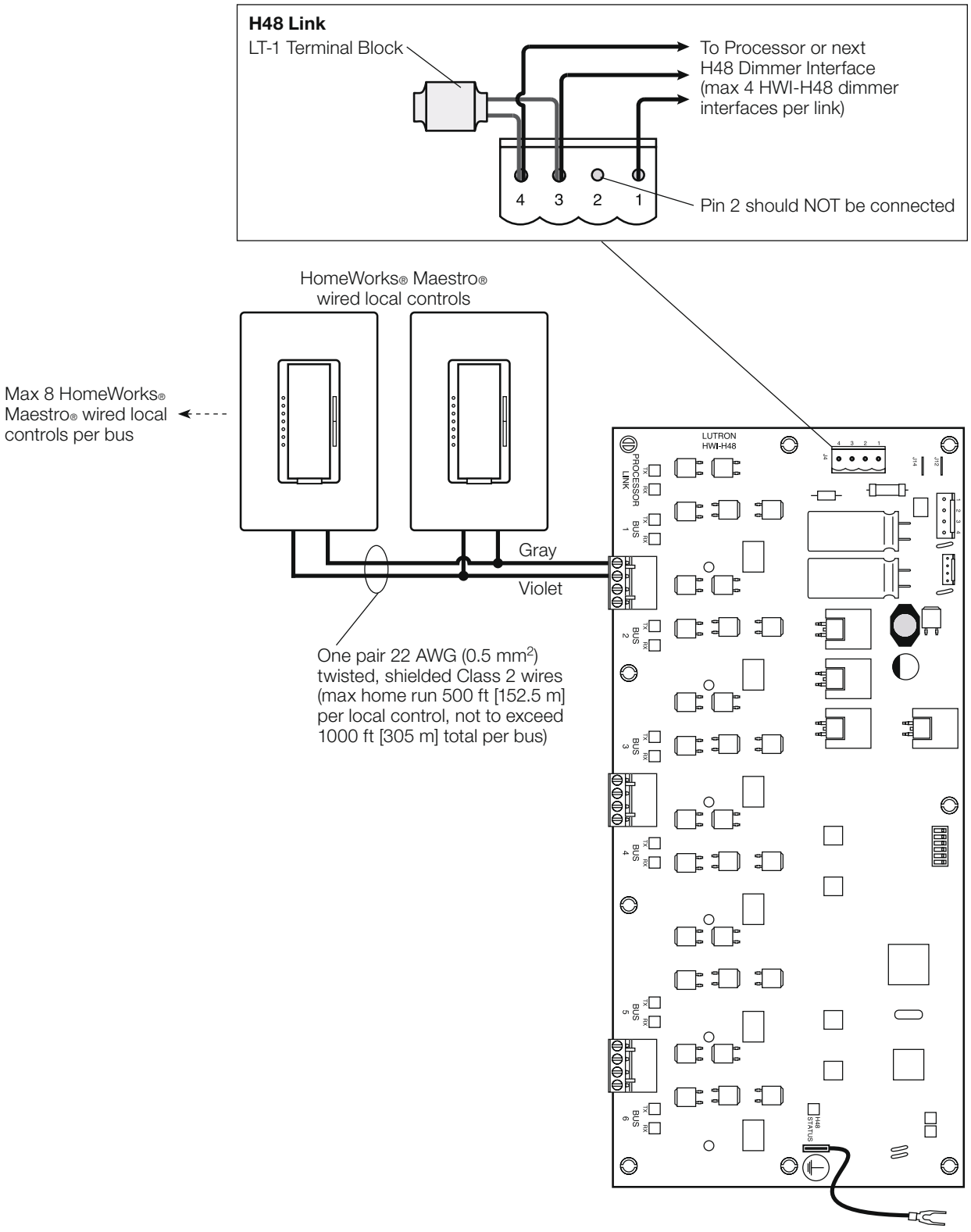
Measurements shown as: in (mm)



[1] Max 6 buses per HWI-H48

H48 Dimmer Interface

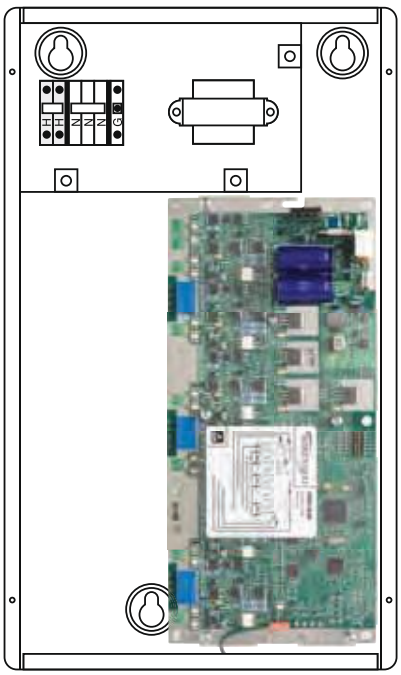
Wiring



H48 Dimmer Interface

Configuration

HWI-LV17-120 panel



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Daylight Control Package

The CES daylight sensor package allows Lutron® lighting control systems to respond to ambient light levels based on the settings of the controller. The package includes a power pack, CES daylight sensor, and LC8 controller. It can be integrated via contact closure into a variety of Lutron® lighting systems.

Features

- Allows management of Lutron® lighting control systems through dry contact closure outputs from the LC8 controller.
- The controller features adjustable On and Off set points.
- The package can be integrated into any Lutron® system that accepts dry contact closure inputs.
- A variety of sensor types are available to fit any application.

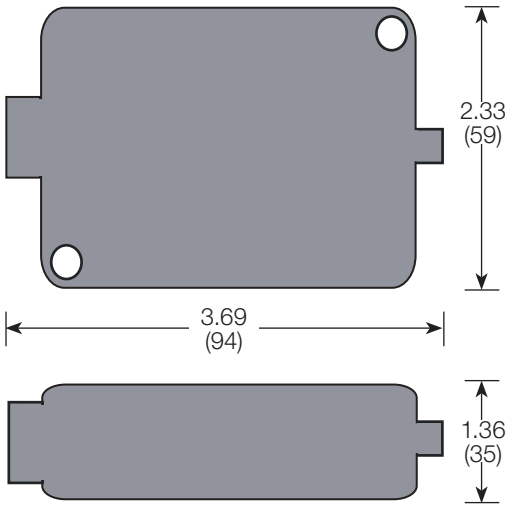
Available Models

Model Number	Usage	Voltage
GRX-CESO-120 PKG	Outdoor	120 V~
GRX-CESO-277 PKG	Outdoor	277 V~
GRX-CESI-120 PKG	Indoor	120 V~
GRX-CESI-277 PKG	Indoor	277 V~
GRX-CESA-120 PKG	Atrium	120 V~
GRX-CESA-277 PKG	Atrium	277 V~
GRX-CESS-120 PKG	Skylight	120 V~
GRX-CESS-277 PKG	Skylight	277 V~

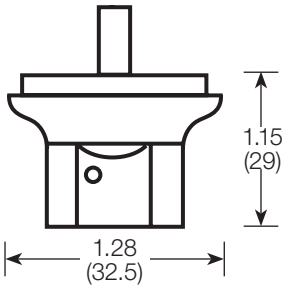
Dimensions

Dimensions shown as: in (mm)

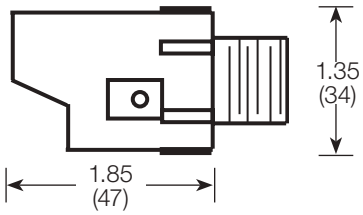
PP



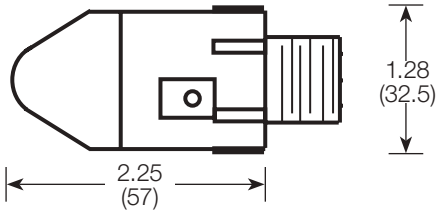
GRX-CESI



GRX-CESO



GRX-CESA or GRX-CESS



LUTRON® SPECIFICATION SUBMITTAL

Job Name:	Model Numbers:	
Job Number:		

Specifications

Power

Power Pack

- Input or Operating Voltage:
  120 V~, 277 V~, or universal (call for availability) transformer 60 Hz
- 24 V⎓ nominal output; 100 mA nominal, full wave rectified and filtered

CES Sensor

- Operating Voltage: 24 V⎓ IEC PELV/NEC® Class 2.
- Operating Current: 40 mA nominal from 24 V⎓ supply.
- Control Output: 0 – 10 V⎓ signal representative of ambient light present (input to LC8 controller).

LC8 Controller

Each Controller is powered by 24 V⎓ and has separate high and low fully adjustable set points. Signal/set point and relay status indication are provided along with calibration input for adjustment. The controller is in a plastic enclosure for surface mounting installation. The controller provides a 10 A low-voltage Form C relay output.

- Dead Band: Adjustable - 5 to 95%
- Input Delay: Standard - 30 second Sensor (removable for adjustment)
- Output: Standard - Form C SPDT Relay 10 A resistive
- Circuit Board: 3.75 in H x 2.25 in W x 1 in D (95 x 57 x 25 mm)
- Plastic Box: 4.75 in H x 2.25 in W x 1.5 in D (121 x 57 x 38 mm)

General

Environment

- Operating temperature: 13 to 140 °F (–11 to 60 °C).
- All CES sensors are water-resistant and designed to withstand UV radiation.
- LC8 Controller and PP Power Packs are for indoor use only.

CES Sensors

The photoelectric device is a IEC PELV/NEC® Class 2, low-voltage, ambient light sensor designed to interface directly with the analog input of the Lighting Control System. The sensor supplies an analog signal to the EMS system proportional to the light measured. The sensor output provides for zero or offset based signal. The sensor is capable of a fully adjustable response from 0 to 10,000 foot candles, with a +/-1% accuracy at 70 °F (21 °C).

The sensitivity adjustment is at the sensor body, and outside of the sensor's viewing angle. The sensor housing is constructed from GE Cycolac (R) ABS, is flame retardant, and meets UL 94 HB standards.

Indoor

Indoor sensors have a Fresnel lens, with a 60 degree cone of response. Indoor sensors require a penetration hole in the ceiling of ⅜ in (9.5 mm) diameter, and the sensor mounts to the ceiling using adhesive tape. The indoor sensor range is 0 to 750 fc.
Factory default: 100 fc.

Outdoor

Outdoor models have a hood over the aperture to shield the sensor from direct sunlight. The outdoor sensor circuitry is completely encased in an optically clear epoxy resin. Outdoor sensors mount to a standard threaded ½ in (13 mm) conduit or fit a ½ in (13 mm) knockout. The Outdoor sensor range is 0 to 750 fc.
Factory default: 250 fc.

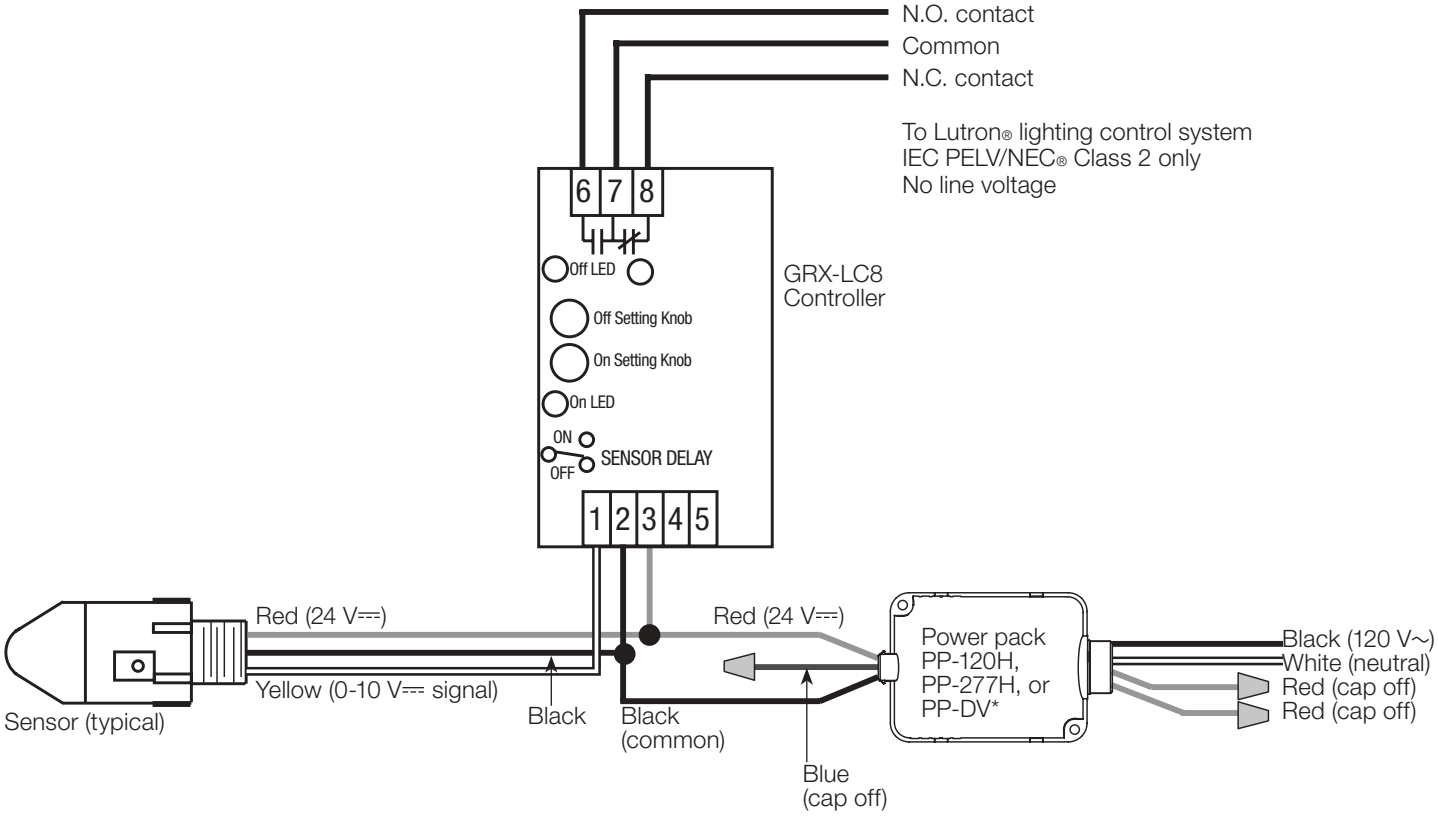
Atrium or Skylight

The Atrium or Skylight sensors have a translucent dome with a 180 degree field of view. Atrium or Skylight sensors mount to a standard threaded ½ in (13 mm) conduit or fit a ½ in (13 mm) knockout. Atrium sensor range is 2 to 2500 fc. Skylight sensor range shall be between 10 and 7500 fc.
Factory defaults: Atrium 1000 fc; Skylight 2000 fc.

Job Name:	Model Numbers:	
Job Number:		

Wiring

- When interfacing to a Lutron® system, the N.C. contact will turn lights on (contact closure close) when daylight levels are low, and turn lights off (contact closure open) when daylight levels are high.
- When the Off or On LED is lit, the light level is above the setting of its respective knob.



Note: Before October 2011, sensor wired to terminals 1, 4, and 5.

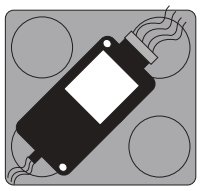
*Check with Lutron for availability.

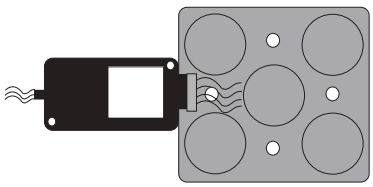
Job Name:	Model Numbers:	
Job Number:		

Mounting

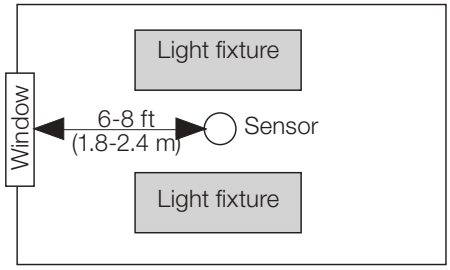
- LC8: Mount the controller using the adhesive strips provided. Choose a location where the PP series power pack can be provided with power.
- GRX-CESI: Mount in ⅜ in (9.5 mm) hole using the adhesive backing (included).
  Ceiling mount: 6 to 8 ft (1.8 to 2.4 m) from window, centrally located.
  Reflected wall mount: Facing the reflecting wall, not in line with any indoor lighting.
  Sconce wall mount: Mount at same height as sconce, but not directly in line.
- GRX-CESO: Mount in standard ½ in (13 mm) conduit or knockout. Mount horizontally, facing north, with the hooded portion on top.
- GRX-CESA: Mount in standard ½ in (13 mm) conduit or knockout, opposite the atrium window.
- GRX-CESS: Mount in standard ½ in (13 mm) conduit or knockout, near the center of the skylight well, at least 12 in (305 mm) from the sides. Mount vertically, facing up, with top of sensor level with top of skylight curb.
- PP: Power pack fits inside junction box. Mount with ⅙₂ x 1.25 in (5 x 32 mm) pan head screws. Or mount to standard 4 x 4 in (102 x 102 mm) junction box through knockout with ½ in (13 mm) EMT threaded nipple.

Note: Always turn power off and lock out during unit installation. Always install unit in accordance with applicable national and local electrical codes.

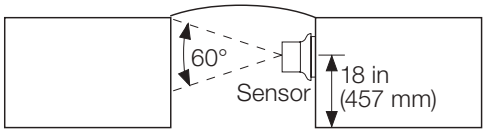




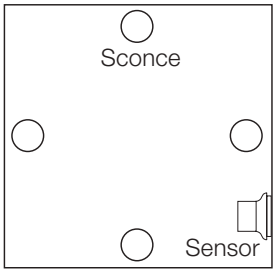
GRX-CESI: Ceiling Mount



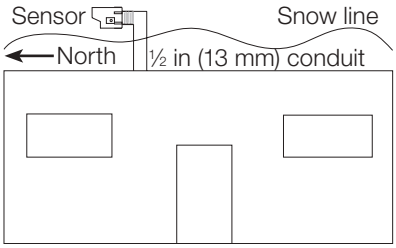
GRX-CESI: Reflected Wall Mount



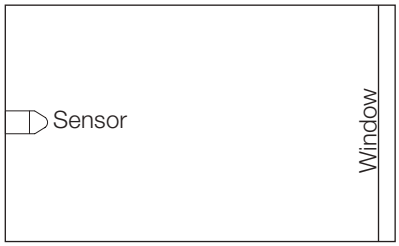
GRX-CESI: Sconce Wall Mount



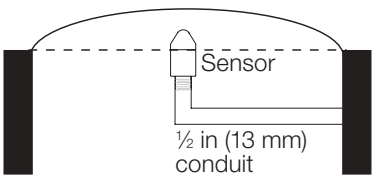
GRX-CESO



GRX-CESA



GRX-CESS



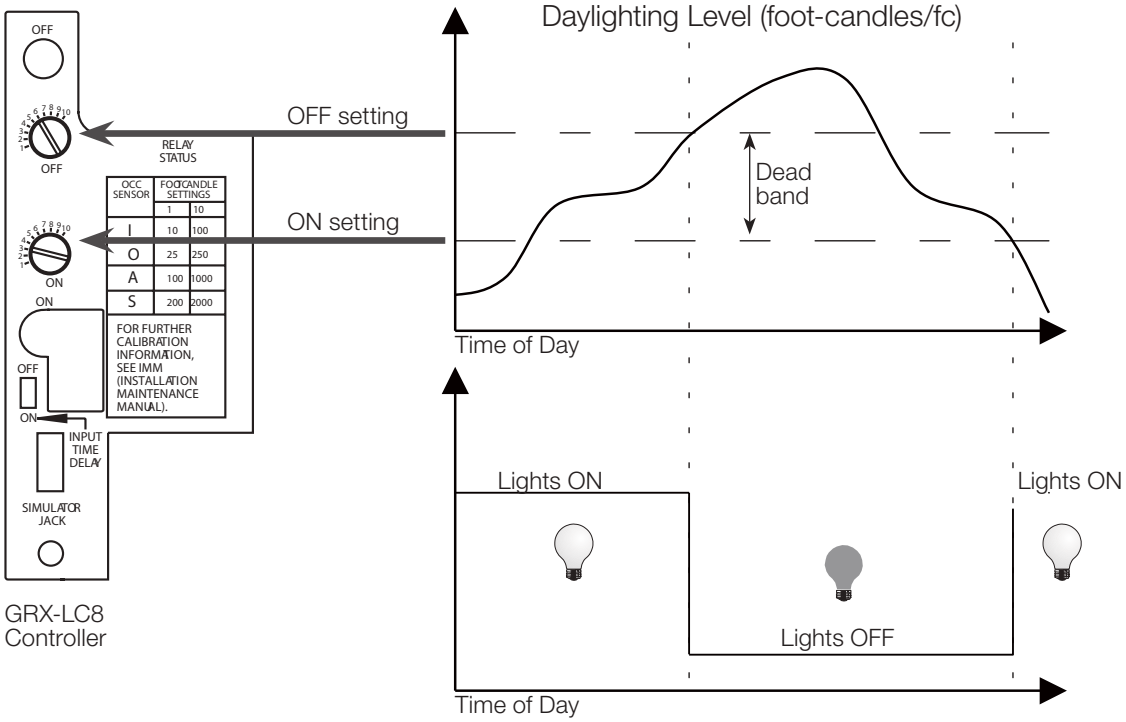
Job Name:	Model Numbers:	
Job Number:		

Calibration

Each GRX-CES sensor is calibrated during manufacturing to the light levels in its intended environment (indoor, outdoor, etc.). Below is a chart of the settings for each model. The first column corresponds to the settings on the adjustment knobs in the GRX-LC8 controller.

Adjustment Knob Setting	Corresponding Foot-Candle (fc) Thresholds (based on factory default sensor setting)			
	GRX-CESI	GRX-CESA	GRX-CESS	GRX-CESO
Below 1	0	2	10	0
1	10	100	200	25
2	20	200	400	50
3	30	300	600	75
4	40	400	800	100
5	50	500	1000	125
6	60	600	1200	150
7	70	700	1400	175
8	80	800	1600	200
9	90	900	1800	225
10	100	1000	2000	250

Using the chart above, set the On adjustment knob: This is the low light level that will trigger your lights to go on. Set the Off adjustment knob: This is the high light level that will trigger your lights to turn off. For proper operation, set the On knob to at least 10% (1 tick mark on the knob) lower than the Off knob to create the dead band.



Job Name:	Model Numbers:	
Job Number:		

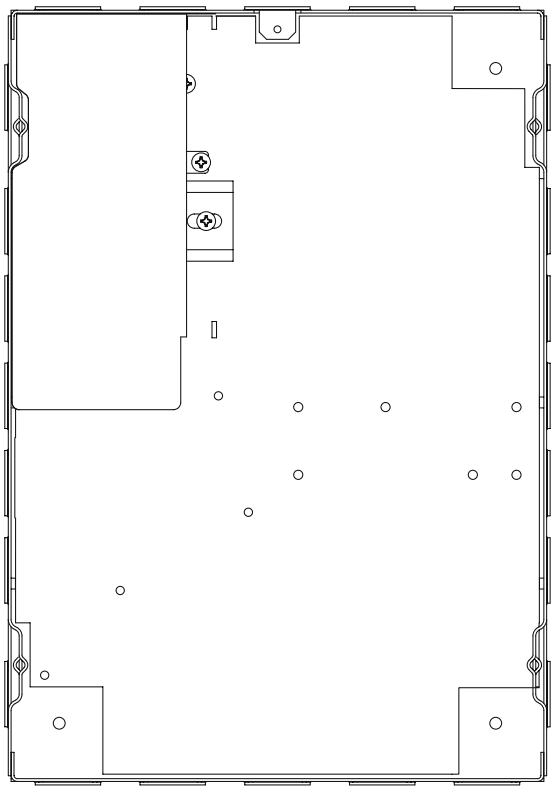
Enclosures, Panels, and Power Modules

Low-Voltage Enclosure

Low-voltage enclosures may be surface-mounted in an electrical closet or equipment room. Both the number of enclosures and the types of components within them are customized to fit the size, lighting plan, and design of a home. Low-voltage enclosures can be distributed throughout the home near the rooms they are controlling, to provide maximum flexibility during installation of the low-voltage wiring. Low-voltage enclosures cannot house Remote Power Modules (RPMs).

14 in (35.6 cm) Low-Voltage Enclosure

The 14 in (35.6 cm) low-voltage enclosure provides a compact housing for mounting one processor or one system interface and up to two wire landing boards (QS-WLB). The enclosure accepts one 120 V~ (L-LV14-120) or 220-240 V~ (L-LV14-230) feed to power the panel, which is self-contained in an enclosed area, thus allowing access to only the low-voltage connections when the enclosure cover is removed.



Low-Voltage Enclosure

Model Number

L-LV14-120	120 V~ Low-Voltage Enclosure
L-LV14-230	220-240 V~ Low-Voltage Enclosure

Low-Voltage Enclosure Cover

Low-Voltage Enclosure

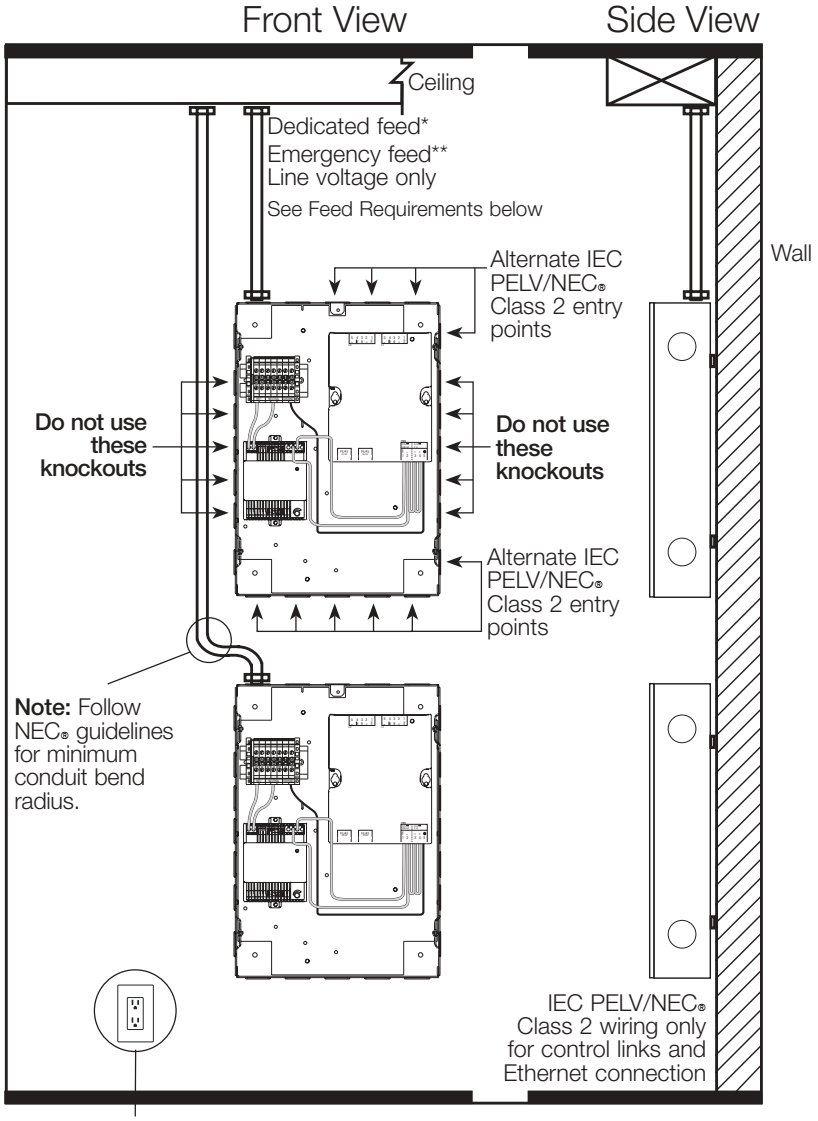
Specifications

Model Numbers	L-LV14-120, L-LV14-230
Power	120 V~ 50/60 Hz 2 A (L-LV14-120) 220-240 V~ 50/60 Hz 1 A (L-LV14-230)
Regulatory Approvals	UL, CSA CE, ✔ C-tick (L-LV14-230)
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C) Ambient operating humidity: 0% to 90% humidity, non-condensing. Indoor use only.
Mounting	Enclosure may be surface-mounted. Mount the enclosure so that line-voltage wiring will be at least 6 ft (1.8 m) from audio or electronic equipment and wiring. **Mount Enclosure** using the following method (mounting hardware is not provided): **Surface Mount –** Use keyholes with bolts sufficient for 100 lb (45 kg) load, 0.25 in (M6) bolts recommended. **NOTICE:** This equipment is air-cooled. Mount in a location where there is at least 12 in (305 mm) of clearance in front of the enclosure. **NOTICE:** Power supply will hum slightly and internal relays will click while in use. Mount in a location where such noise is acceptable.
Dimensions	**Enclosure:** 13.3 in (337 mm) x 9.2 in (235 mm) x 3.16 in (80 mm) **Cover:** 13.32 in (338 mm) x 9.32 in (237 mm)
Construction	**Enclosure:** 16-gauge powder coated sheet metal. **Cover:** 16-gauge powder coated metal cover. Cover is attached using four phillips-head screws.
Capacity	Enclosure can accommodate one processor or system interface device and two wire landing boards (QS-WLB).
Line-Voltage Connections	Use copper wire only, supply conductors rated at 167 ºF (75 °C). Use supplied wire connections to connect to corresponding power supply harnesses.
Warranty	www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Intl_Warranty.pdf

Technical Support: U.S.A. 800.523.9466
Europe +44.(0)20.7680.4481

Low-Voltage Enclosure

Mounting



Note: An outlet must be installed within 6 ft (1.8 m) of the panel. Outlet should not be on the same circuit as the panel. **Required for system start-up.**

Feed Requirements

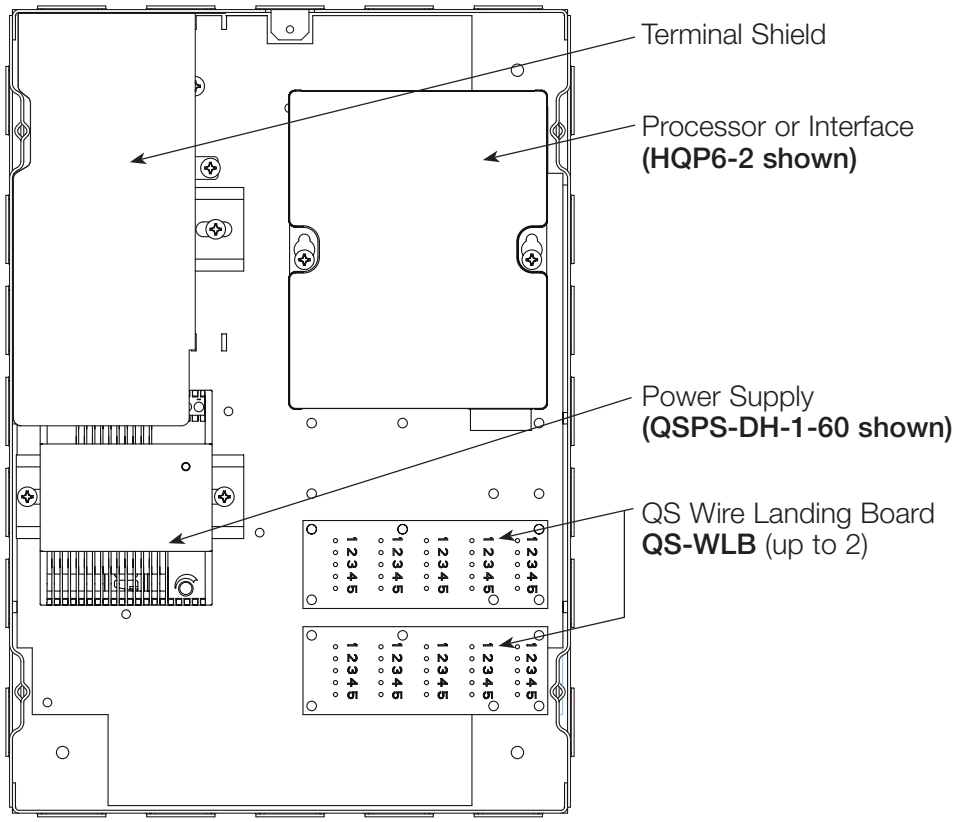
*Lutron recommends using a dedicated circuit for lighting control devices.

**Emergency feed is recommended so that the system status can be monitored during an emergency event. If this is not required, normal power can be used.

Technical Support: U.S.A. 800.523.9466
Europe +44.(0)20.7680.4481

Low-Voltage Enclosure

Configuration



Technical Support: U.S.A. 800.523.9466
Europe +44.(0)20.7680.4481

Low-Voltage Enclosure

Low-voltage enclosures may be either surface-mounted or flush-mounted in an electrical closet or equipment room. Both the number of enclosures and the types of components within them are customized to fit the size, lighting plan, and design of a home. Low-voltage enclosures can be distributed throughout the home near the rooms they are controlling, to provide maximum flexibility during installation of the low-voltage wiring.

17-inch Low-Voltage Enclosure (Model HWI-LV17-120)

The 17-inch low-voltage enclosure accommodates one HWI-H48 dimmer interface.

The enclosure accepts one 120 V~ feed to power the panel, which is self-contained in an enclosed area, thus allowing access to only the low-voltage connections when the enclosure cover is removed.

Model Number

HWI-LV17-120	120 V~ Low-Voltage Enclosure

Low-Voltage Enclosure

Low-Voltage Enclosure Cover

Low-Voltage Enclosure

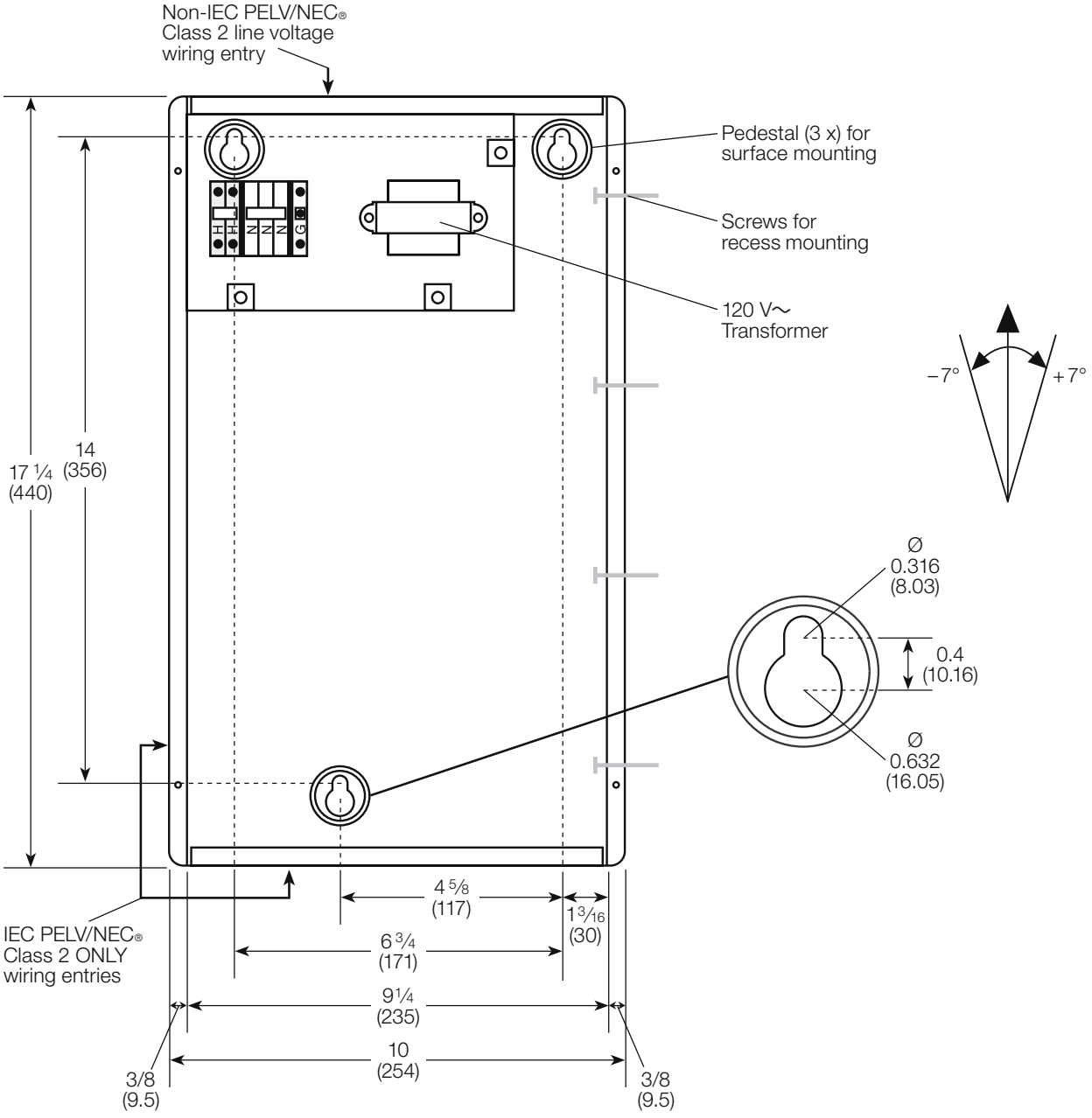
Specifications

Model Number	HWI-LV17-120: 17-inch low-voltage enclosure
Capacity	One dimmer interface (HWI-H48) and one wire landing board (HWI-WLB).
Input Voltage	120 V~ 50/60 Hz
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C) Ambient operating humidity: 0 to 90% humidity, non-condensing. Indoor use only.
Line-Voltage Connections	Use copper wire only, supply conductors rated at 60 °C to 75 °C, 120 V~ to 12 V~ transformer mounted in top left corner for powering a dimmer interface (HWI-H48). Terminal blocks will accept one 18 AWG to 10 AWG (1.0 mm^2 to 2.5 mm^2) wire or two 18 AWG to 16 AWG (1.0 mm^2 to 1.5 mm^2) wires. Terminal blocks should be tightened to 3.5 in-lb to 5.0 in-lb (0.40 N•m to 0.57 N•m).
Dimensions	Enclosure: 9¼ in (235 mm) x 17¼ in (440 mm) x 3⅞ in (98 mm) Cover: 10½ in (267 mm) x 17½ in (445 mm)
Mounting	Enclosure may be surface-mounted or recess-mounted. Enclosure fits between standard 16 in (410 mm) on-center stud framing. Mount the enclosure so that line-voltage wiring will be at least 6 ft (1.8 m) from audio or electronic equipment and wiring.
Construction	Enclosure: 16-gauge galvanized sheet metal (unpainted). Cover: Painted (black) metal with ventilation holes. Cover is attached using four phillips-head screws.
Shipping Weight	16 lbs (2.7 kg)
Warranty	http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Intl_Warranty.pdf

Low-Voltage Enclosure

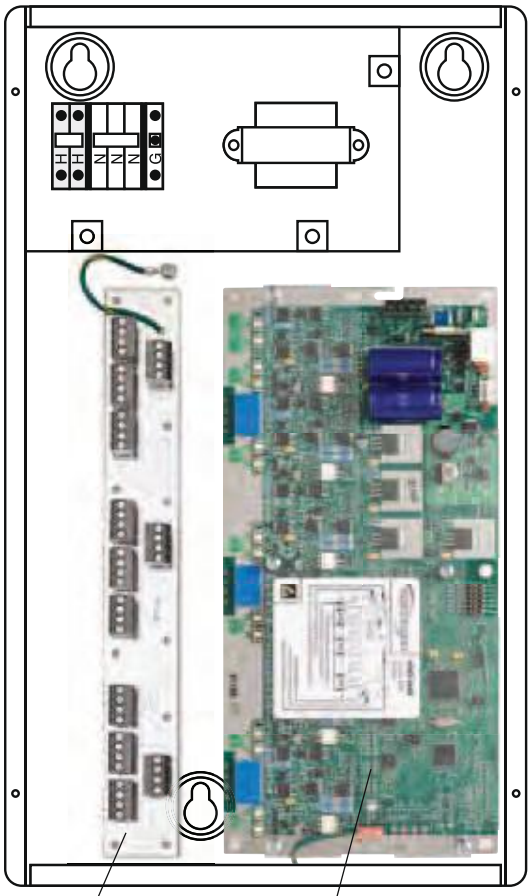
Dimensions and Mounting

Measurements shown as: in (mm)



Low-Voltage Enclosure

Configuration



Wire Landing Board
HWI-WLB

Dimmer Interface
HWI-H48

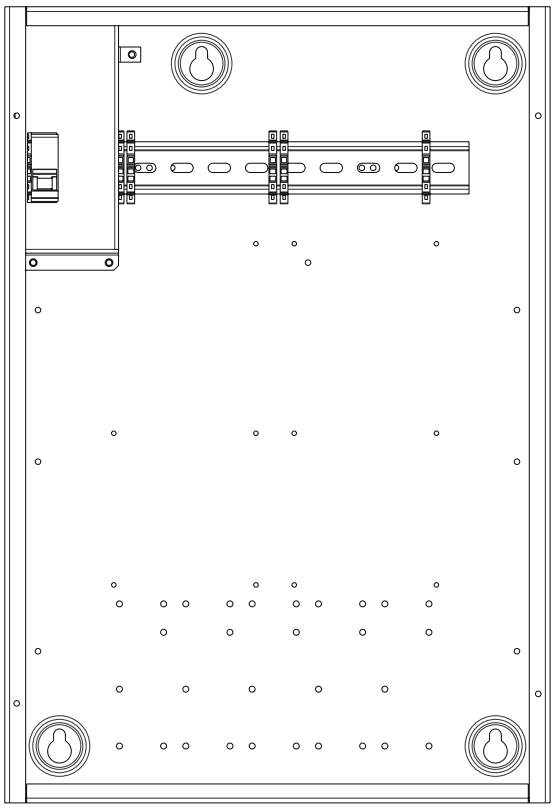
Low-Voltage Enclosure

Low-voltage enclosures may be either surface-mounted or flush-mounted in an electrical closet or equipment room. Both the number of enclosures and the types of components within them are customized to fit the size, lighting plan, and design of a home. Low-voltage enclosures can be distributed throughout the home near the rooms they are controlling, to provide maximum flexibility during installation of the low-voltage wiring.

21-inch Low-Voltage Enclosure

The 21-inch low-voltage enclosure provides a compact housing for mounting up to two HomeWorks® QS processors or up to two system interfaces and up to five wire landing boards (QS-WLB).

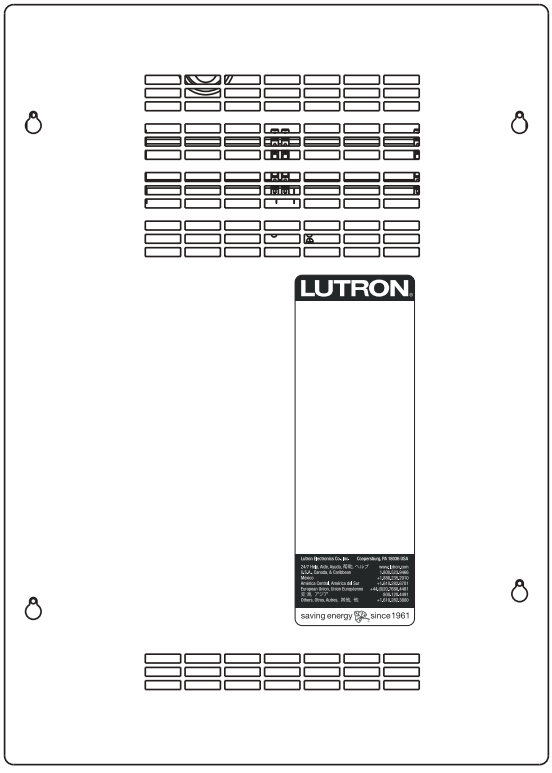
The enclosure accepts one 120 V~ (HQ-LV21-120) or 220-240 V~ (L-LV21-230) feed to power the panel, which is self-contained in an enclosed area, thus allowing access to only the low-voltage connections when the enclosure cover is removed.



Low-Voltage Enclosure

Model Number

HQ-LV21-120	120 V~ Low-Voltage Enclosure
L-LV21-230	220-240 V~ Low-Voltage Enclosure



Low-Voltage Enclosure Cover

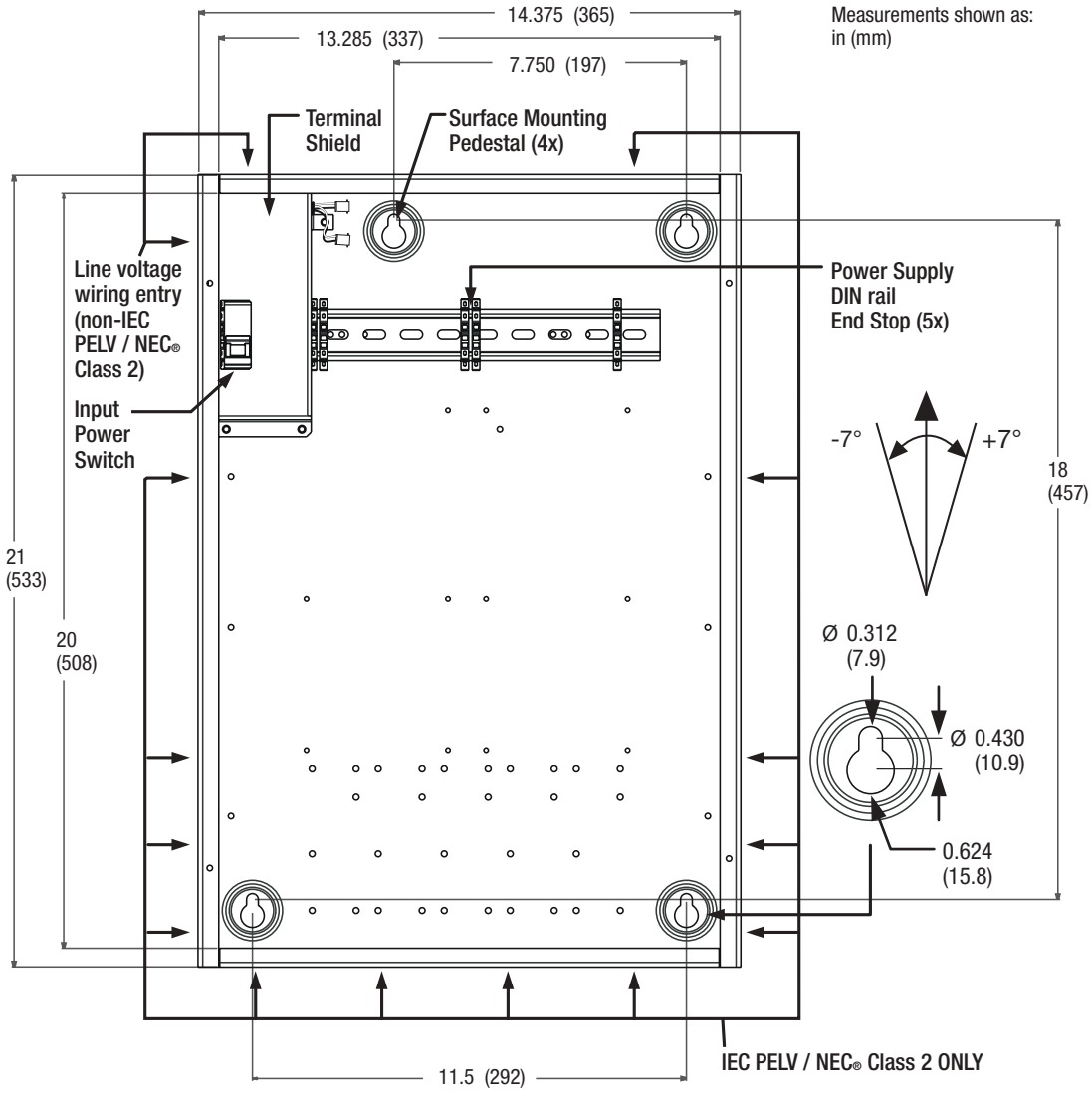
Low-Voltage Enclosure

Specifications

Model Numbers	HQ-LV21-120 L-LV21-230
Power	120 V⁓ Power Input 50/60 Hz 2 A (HQ-LV21-120) 220-240 V⁓ Power Input 50/60 Hz 2 A (L-LV21-230)
Regulatory Approvals	UL, CSA, NOM (HQ-LV21-120) CE, ✓ C-tick (L-LV21-230)
Environment	Ambient operating temperature: 32 °F to 104 °F (0v°C to 40 °C) Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Mounting	Enclosure may be surface-mounted or recess-mounted. Enclosure fits between standard 16 in (41 cm) on-center stud framing. Mount the enclosure so that line-voltage wiring will be at least 6 ft (1.8 m) from audio or electronic equipment and wiring. **Mount Enclosure** using one of the following methods (mounting hardware is not provided): **a. Surface Mount –** Use keyholes with bolts sufficient for 100 lb (45 kg) load, 1/4 in (M6) bolts recommended. **b. Recess Mount –** Use screws sufficient for 100 lb (45 kg) through the corners of the enclosure. Mount enclosure fully into the stud bay, with the back flush against the inner wall surface. Enclosure is 4.088 in (104 mm) deep past cover mounting tabs (including pedestal). Enclosure cover dimensions are 21.5 in x 15.386 in (546 mm x 391 mm). **NOTICE:** This equipment is air-cooled. Mount in a location where the vented cover will not be blocked. 12 in (305 mm) of clearance in front of the vents is required. **NOTICE:** Power supply will hum slightly and internal relays will click while in use. Mount in a location where such noise is acceptable.
Dimensions	**Enclosure:** 21 in (533 mm) x 14.375 in (365 mm) x 4.088 in (104 mm) **Cover:** 21.5 in (546 mm) x 15.386 in (391 mm)
Construction	**Enclosure:** 16-gauge powder coated sheet metal. **Cover:** 16-gauge powder coated metal cover. Cover is attached using four philips-head screws.
Capacity	Enclosure can accomodate two processors or system interface devices and five wire landing boards (QS-WLB). Examples: 1 Processor and 1 System Interface; 2 Processors; or 2 Interfaces
Line-Voltage Connections	Use copper wire only, supply conductors rated at 167 ºF (75 °C). Use supplied wire connections to connect to corresponding power supply harnesses.
Warranty	8 Year Limited Warranty. http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf

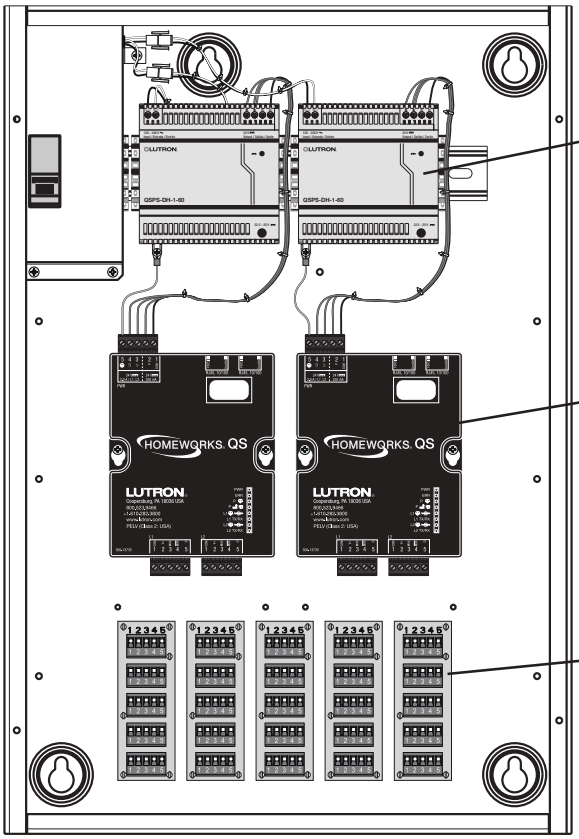
Low-Voltage Enclosure

Dimensions and Mounting



Low-Voltage Enclosure

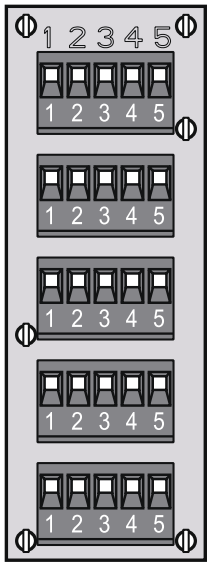
Configuration



QS Wire Landing Board

The wire landing board is a wiring aid consisting of a printed circuit board with one set of five terminal blocks. Each terminal block can accept up to two 18 AWG (1.0 mm^2) wires and is connected pin-to-pin, to simplify wiring.

The wire landing board can be installed in a low-voltage enclosure or at the bottom of a feed-through panel.



QS-WLB

Model Number

QS-WLB QS Wire Landing Board

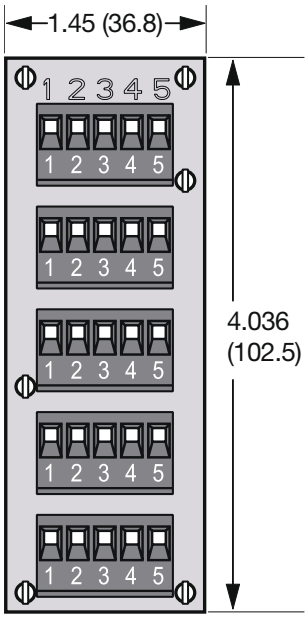
QS Wire Landing Board

Specifications

Model Number	QS-WLB
Low-Voltage Connections	One set of five terminal blocks. Each terminal block has 5 terminals that will each accept up to two 18 AWG (1.0 mm^2) wires.
Environment	Ambient operating temperature: 32 to 104 °F (0 to 40 °C). Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Mounting	Mounts in the following enclosures: L-LV14-120, L-LV14-230, L-LV21-230, HQ-LV21-120, and HWI-PNL-8
Warranty	www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf www.lutron.com/TechnicalDocumentLibrary/Intl_Warranty.pdf

Dimensions

Dimensions shown as: in (mm)



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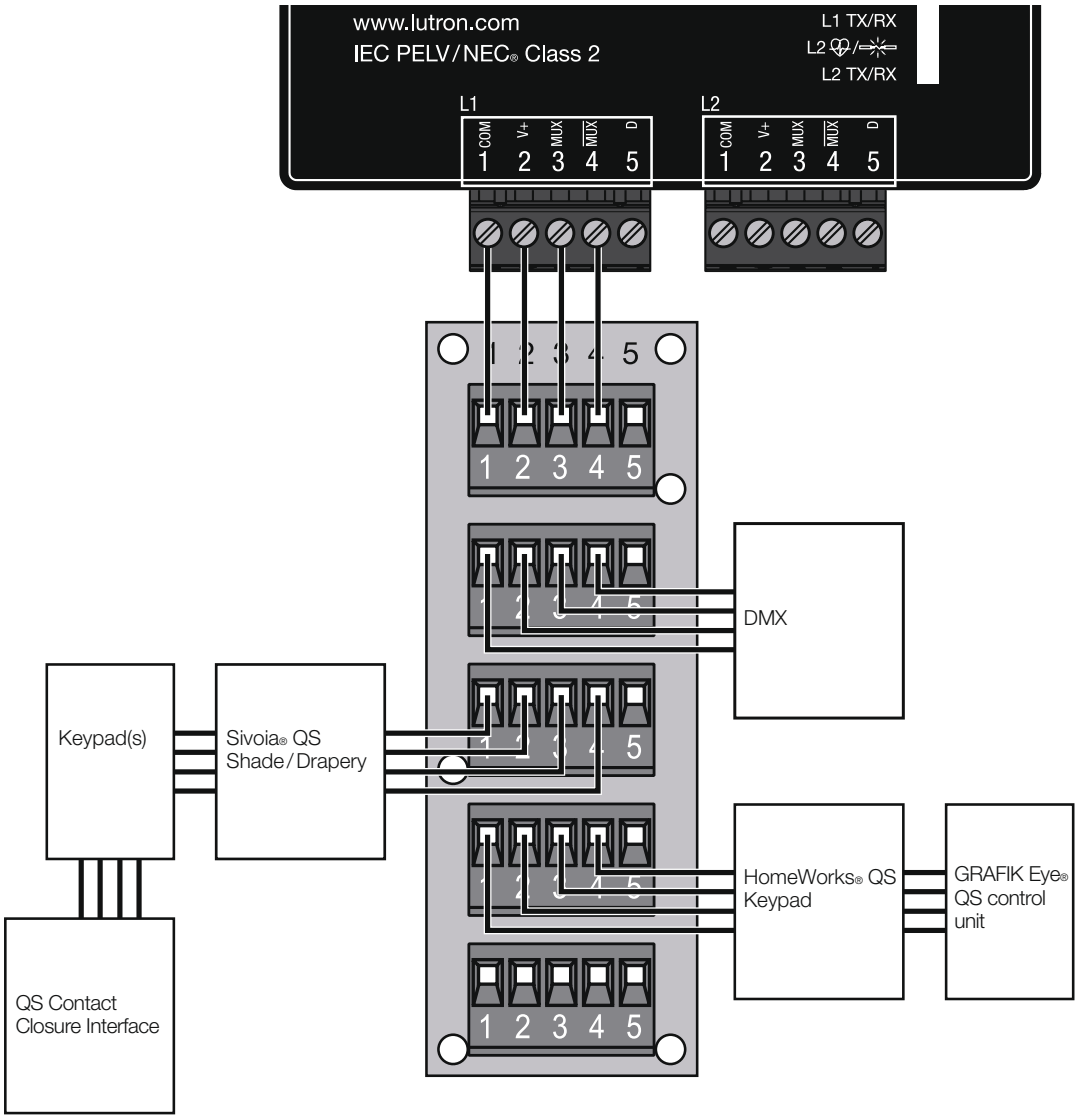
QS Wire Landing Board

Configuration Example

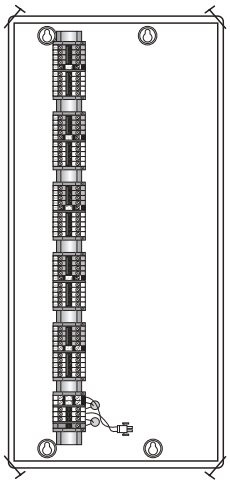


- Tighten terminal blocks to 3.5 to 5 in-lb (0.4 to 0.57 N•m). Do not overtighten.
- Terminal 5 is used to connect the QS cable shield drain wire throughout the system.

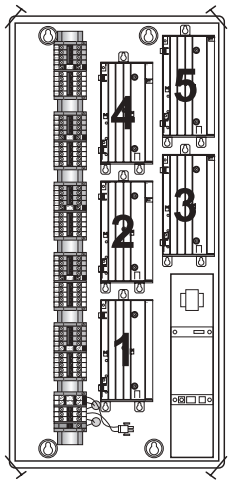
Control panels

Control panels are available in two different sizes, each of which may be either surface-mounted or recess-mounted in an electrical closet or other equipment room. The number of control panels—and the types of components within them—may be specified to fit the size, lighting plan, and design of a home. Control panels may be distributed throughout the home for added flexibility during installation of the line-voltage wiring.

Control panels may contain optional components (sold separately) including Filter Choke Assembly, Module Interface, PowerKit, Power Supply Unit, Processor(s), Remote Power Module(s) (RPM), Ten Volt Modules (TVM), and Wire Landing Board(s).



HWI-PNL-5
HWI-PNL-5-CE



Shown with optional RPMs and one Module Interface installed

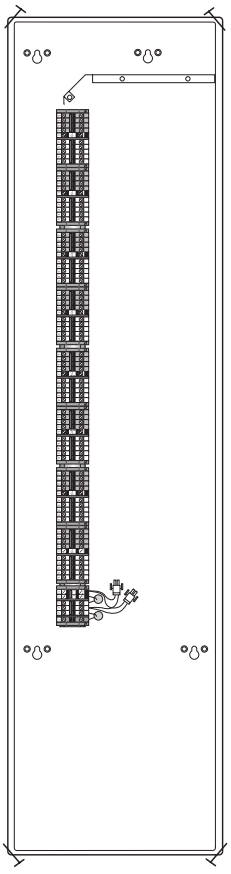
Model Numbers

HWI-PNL-5

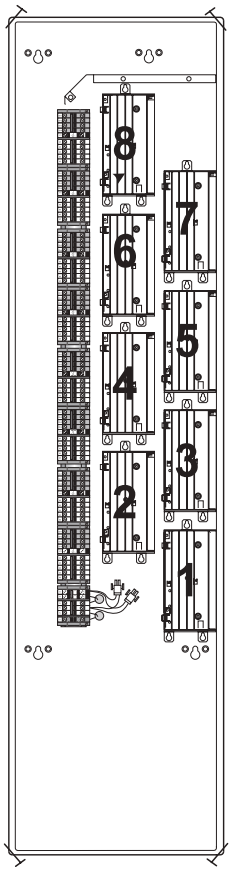
HWI-PNL-5-CE

HWI-PNL-8

HWI-PNL-8-CE



HWI-PNL-8
HWI-PNL-8-CE



Shown with optional RPMs installed

Control panels

Specifications

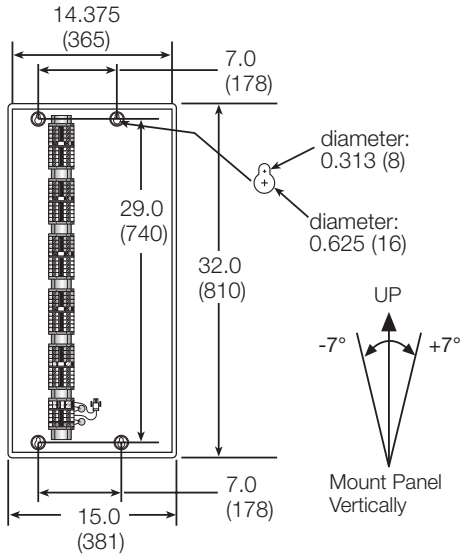
Model Numbers	HWI-PNL-5; HWI-PNL-5-CE HWI-PNL-8; HWI-PNL-8-CE
Power	120 V~ Power Input 50/60 Hz 2 A (HWI-PNL-5, HWI-PNL-8) 220-240 V~ Power Input 50/60 Hz 2 A (HWI-PNL-5-CE, HWI-PNL-8-CE)
Capacity	**HWI-PNL-5, HWI-PNL-5-CE:** Five RPMs* in any combination and one Module Interface **HWI-PNL-8, HWI-PNL-8-CE:** Eight RPMs* in any combination, one Module Interface, one PowerKit, one Processor, up to two Power Supply units and/or Wire Landing Boards (WLB) * 120 V~ HW-RPM-4A, HW-RPM-4U, HW-RPM-4FSQ, HW-RPM-4M, HW-RPM-4R 220-240 V~ HW-RPM-4A, HW-RPM-4E, HW-RPM-4U, HW-RPM-4M, HW-RPM-4R
Regulatory Approvals	UL, CSA, NOM (HWI-PNL-5, HWI-PNL-8) CE (HWI-PNL-5-CE, HWI-PNL-8-CE)
Environment	Ambient operating temperature: 32 to 104 °F (0 to 40 °C), 0 to 90% humidity, non-condensing. Indoor use only.
Cooling	Passive cooling
Line-Voltage Connections	DIN rail-mounted terminal blocks provided for line-voltage remote power module, module interface, and power supply wiring
DIN Rail Terminal Blocks	Terminal blocks will accept one 18 to 10 AWG (6.0 to 0.75 mm^2) wire. Terminal blocks should be tightened to 3.5 to 5.0 in-lb (0.40 to 0.57 N•m).
Ground Bar Terminals	**PNL-5, PNL-5-CE, PNL-8:** 23 ground termination points; **PNL-8-CE:** 46 ground termination points
Miswire Protection	All terminal blocks are shipped with bypass jumpers installed. After verifying that each circuit is wired correctly, remove the bypass jumpers for system operation
Dimensions	**HWI-PNL-5 and HWI-PNL-5-CE** **Control Panel:** 14.375 in (365 mm) x 32 in (813 mm) x 3.875 in (98 mm) **Cover:** 15.875 in (403 mm) x 32.5 in (826 mm) **HWI-PNL-8 and HWI-PNL-8-CE** **Control Panel:** 14.375 in (365 mm) x 59 in (1498 mm) x 4.125 in (105 mm) **Cover:** 15.875 in (403 mm) x 59.5 in (1511 mm)
Mounting	Control Panel may be surface-mounted or recess-mounted. Control Panel fits between standard 16 in (41 cm) on-center stud framing. Mount the Control Panel so that line-voltage wiring will be at least 6 ft (1.8 m) from audio or electronic equipment and wiring. Mount Control Panel using one of the following methods (mounting hardware is not provided): **a. Surface-Mount –** Use keyholes with bolts sufficient for 100 lb (45 kg) load, 1/4 in (M6) bolts recommended. **b. Recess-Mount –** Use screws sufficient for 100 lb (45 kg) through the corners of the Control Panel. Mount Control Panel fully into the stud bay, with the back flush against the inner wall surface. Control Panel is 4.09 in (104 mm) deep past cover mounting tabs (including pedestal). **NOTICE:** This equipment is air-cooled. Mount in a location where the vented cover will not be blocked. 12 in (305 mm) of clearance in front of the vents is required. **NOTICE:** Power supply will hum slightly and internal relays will click while in use. Mount in a location where such noise is acceptable.
Construction	**Control Panel:** 16-gauge galvanized sheet metal (unpainted). **Cover:** Painted (black) metal cover with ventilation holes. Cover is attached using phillips-head screws (included)
Warranty	8 Year Limited Warranty. http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf

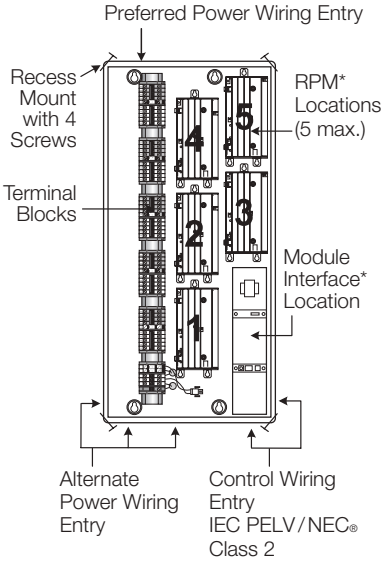
Control panels

Dimensions and Mounting

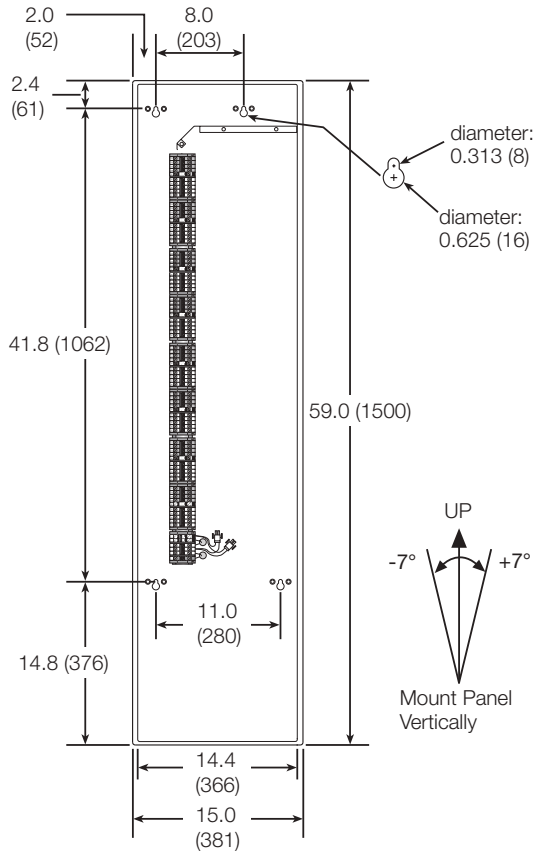
Measurements shown as: in (mm)

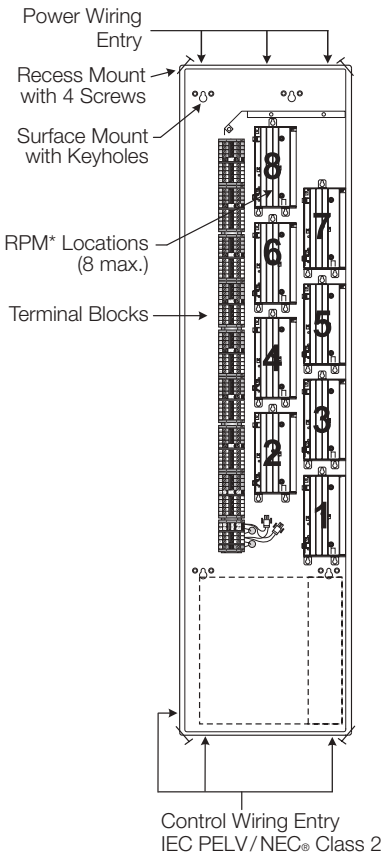
HWI-PNL-5 and HWI-PNL-5-CE





HWI-PNL-8 and HWI-PNL-8-CE



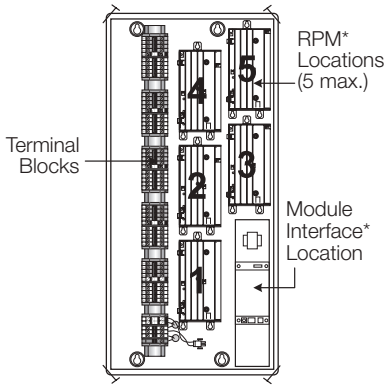


** Components sold separately*

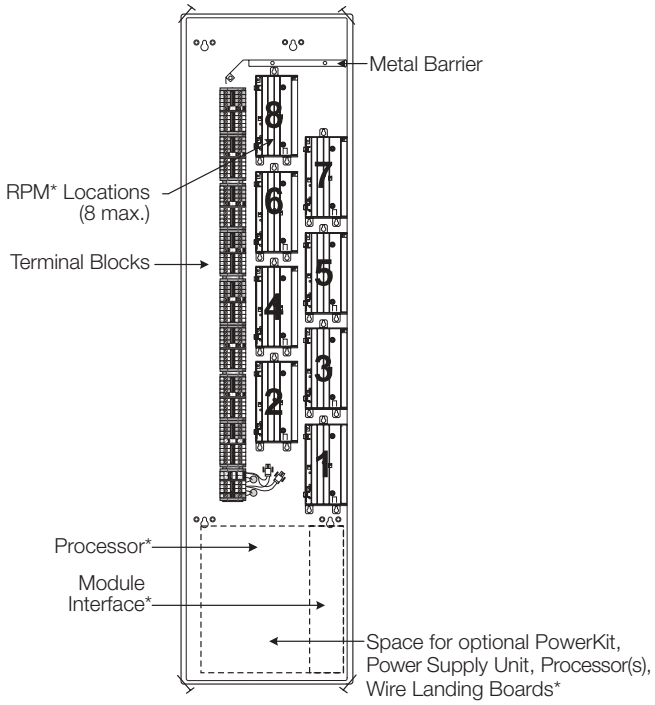
Control panels

Configurations

HWI-PNL-5 and HWI-PNL-5-CE



HWI-PNL-8 and HWI-PNL-8-CE



Note: Filter choke assembly may be installed in place of module 8.
0-10 V modules may be installed in place of module 8 and metal barrier. See Application Note #234 *"Using a Ten Volt Module (TVM) Kit to Control LED and Fluorescent Fixtures"* (http://resi.lutron.com/TechnicalInformation/AppNotesFAQs/tabid/180/Default.aspx) for more details.

** Components sold separately*

Control Power Panels with Breakers

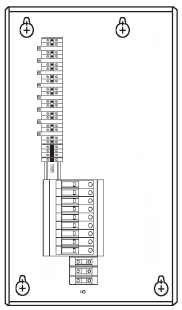
Control power panels with breakers are available in two different sizes, each of which may be either surface-mounted or recess-mounted, in an electrical closet or other equipment room. The number of remote power panels—and the types of components within them—may be specified to fit the size, lighting plan, and design of a home.

Control power panels may be distributed throughout the home for added flexibility during installation of the line-voltage wiring.

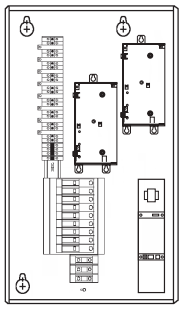
Control power panels with breakers may contain remote power modules (RPMs) and a control power module interface. Panels with breakers may not contain processors.

Control power panels with breakers require only one feed from the main distribution panel, reducing the number of wiring connections required (feed-through panels require up to nine separate feeds).

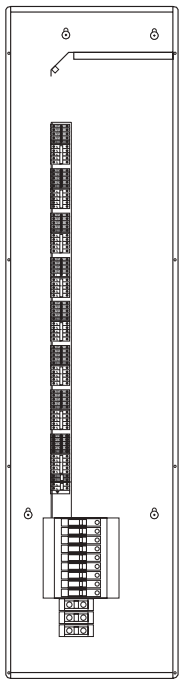
The HWBP-2S, HWAP-8D, HWBP-8D and PBK8 include factory-installed wiring from standard breakers to the terminal blocks. HWAP-8D power panels include commercial-grade combination Arc-Fault Circuit Interrupter (AFCI) breakers in place of the standard breakers.



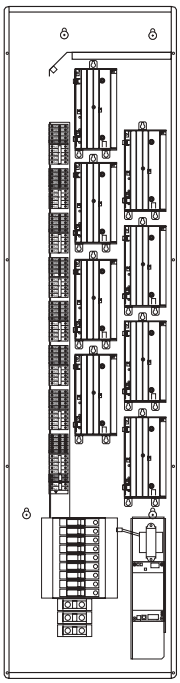
HWBP-2S



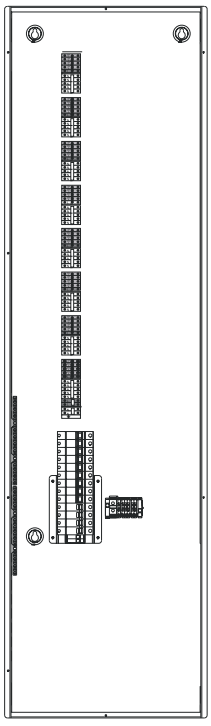
Shown with optional RPMS & module interface installed



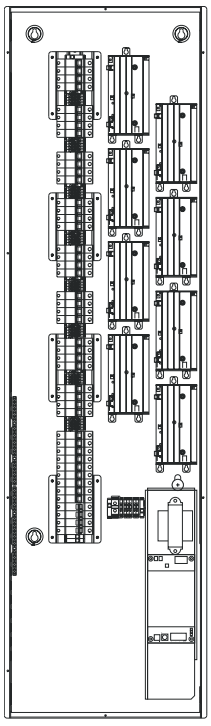
HWBP-8D



Shown with optional RPMS & module interface installed



PBK8-40-13-CE



Shown with optional output breakers RPMS & module interface installed

Model Numbers

Single Phase 3-Wire

120/240 V~ 50/60 Hz 175 A

HWBP-2S-15-120L3	15 A	HWAP-8D-20-120L3	20 A
HWAP-8D-15-120L3	15 A	HWBP-8D-20-120L3	20 A
HWBP-8D-15-120L3	15 A	PBK8-40-13-CE	20 A
HWBP-2S-20-120L3	20 A	PBK8-40-13-10-CE	20 A

Three Phase 4-Wire

120/208 V~ 50/60 Hz 175 A

HWBP-2S-15-120L4	15 A	HWBP-2S-20-120L4	20 A
HWAP-8D-15-120L4	15 A	HWAP-8D-20-120L4	20 A
HWBP-8D-15-120L4	15 A	HWBP-8D-20-120L4	20 A

Control Power Panels with Breakers

Specifications

Model Numbers	HWBP-2S-15-120L3, HWAP-8D-15-120L3, HWBP-8D-15-120L3, HWBP-2S-20-120L3, HWAP-8D-20-120L3, HWBP-8D-20-120L3, HWBP-2S-15-120L4, HWAP-8D-15-120L4, HWBP-8D-15-120L4, HWBP-2S-20-120L4, HWAP-8D-20-120L4, and HWBP-8D-20-120L4 PBK8-40-13-CE, PBK8-40-13-10-CE
Power	**Single phase 3-wire:** 120 V~/240 V~ 50/60 Hz 175 A **Three phase 4-wire:** 120 V~/208 V~ 50/60 Hz 175 A
Regulatory Approvals	**HW Models:** UL, CSA, NOM **PBK8 Models:** CE, ✔ C-tick
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0 to 90% humidity, non-condensing. Indoor use only.
Cooling	Passive cooling.
Line-Voltage Connections	Use copper wire only, supply conductors 140 °F to 167 °F (60 °C to 75 °C). DIN rail-mounted terminal blocks provided for line-voltage remote power module and Module Interface power wiring.
DIN Rail Terminal Blocks	Terminal blocks will accept one 18 AWG to 10 AWG (1.0 mm^2 to 2.5 mm^2) wire or two 18 AWG to 16 AWG (1.0 mm^2 to 1.5 mm^2) wires. Terminal blocks should be tightened to 3.5 in-lb to 5.0 in-lb (0.40 N•m to 0.57 N•m).
Ground Bar Terminals	**HW Models:** 24 ground termination points. **PBK8 Models:** 40 ground termination points.
Miswire Protection	All terminal blocks are shipped with bypass jumpers installed. After verifying that each circuit is wired correctly, remove the bypass jumpers for system operation.
Arc Fault Circuit Interrupter (AFCI) Breakers	HWAP-8D panels are equipped with commercial-grade combination (AFCI) breakers for protection against series arcs, parallel arcs, and line-to-ground arcs. Refer to FAQ #235 "Using Arc-Fault Breakers with HomeWorks®" for detailed information. HWABP-8D panels can be ordered with AFCI breakers or the AFCI breakers can be installed in the field. Contact Lutron Customer Service for ordering details.
Dimensions	**-8D Models:** 15⅛ in (384 mm) x 59 in (1500 mm) x 4⅛ in (105 mm) **-2S Models:** 15⅛ in (384 mm) x 24 in (610 mm) x 4⅛ in (105 mm) **PBK8 Models:** 16⅞ in (427 mm) x 63 in (1600 mm) x 4 in (102 mm)
Mounting	Control power panel may be surface-mounted or recess-mounted. Mount the control panel so that line-voltage wiring will be at least 6 ft (1.8 m) from audio or electronic equipment and wiring. Mount control power panel with breakers using one of the following methods (mounting hardware is not provided): **a. Surface Mount –** Use keyholes with bolts sufficient for 100 lb (45 kg) load, 1/4 in (M6) bolts recommended. **b. Recess Mount –** Use screws sufficient for 100 lb (45 kg) through the corners of the control power panel with breakers. Mount control panel fully into the stud bay, with the back flush against the inner wall surface. HW models are 4⅛ in (105 mm) deep and PBK8 models are 4 in (102 mm) past cover mounting tabs (including pedestal). **NOTICE:** This equipment is air-cooled. Mount in a location where the vented cover will not be blocked. 12 in (305 mm) of clearance in front of the vents is required. **NOTICE:** Power supply will hum slightly and internal relays will click while in use. Mount in a location where such noise is acceptable.
Construction	**Control Power Panel with Breakers:** 16-gauge galvanized sheet metal (unpainted). **Cover:** Painted (black) metal cover with ventilation holes. Cover is attached using phillips-head screws (included).
Warranty	http://www.lutron.com/technicaldocumentlibrary/homeworks_warranty.pdf http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Intl_Warranty.pdf

Technical Support: U.S.A. 800.523.9466
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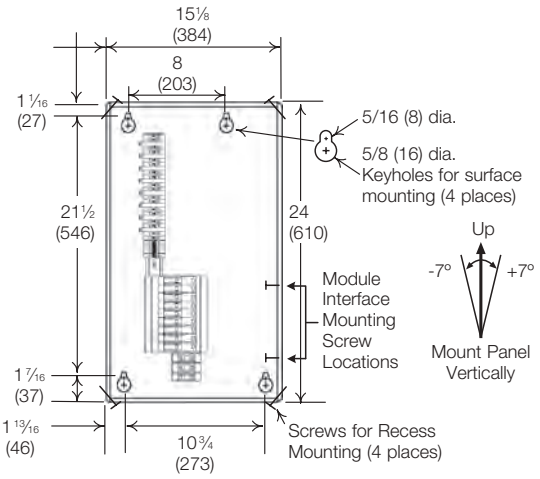
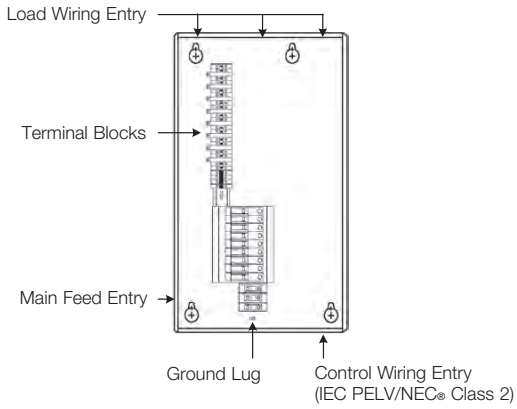
Control Power Panels with Breakers

Dimensions & Mounting

Measurements shown as: in (mm)

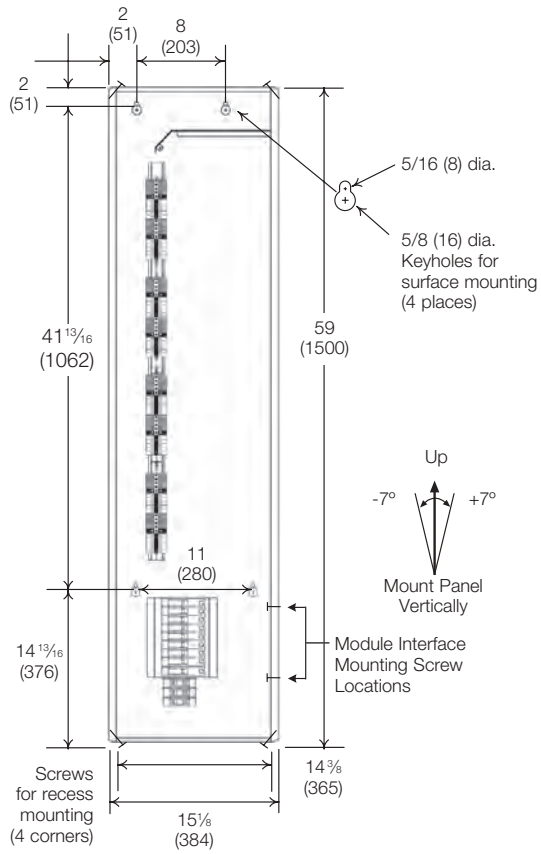
-2S Models

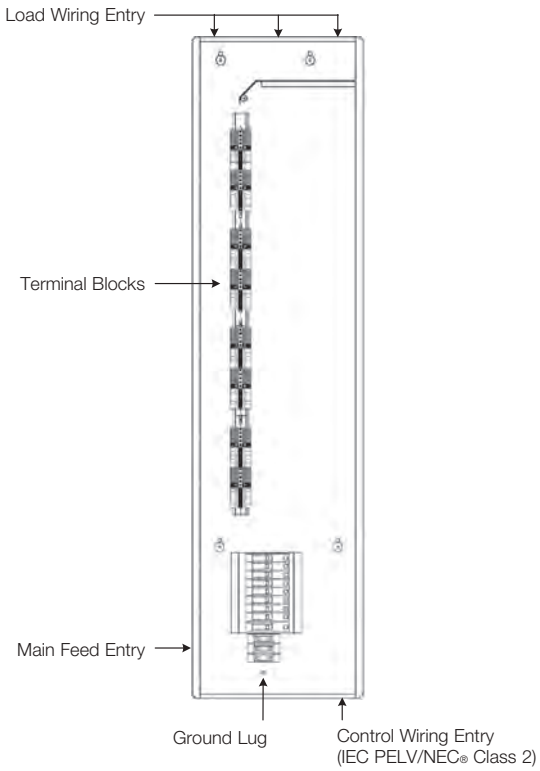




Note: The panel is 4⅛ (105) deep past cover mounting tabs.

-8D Models





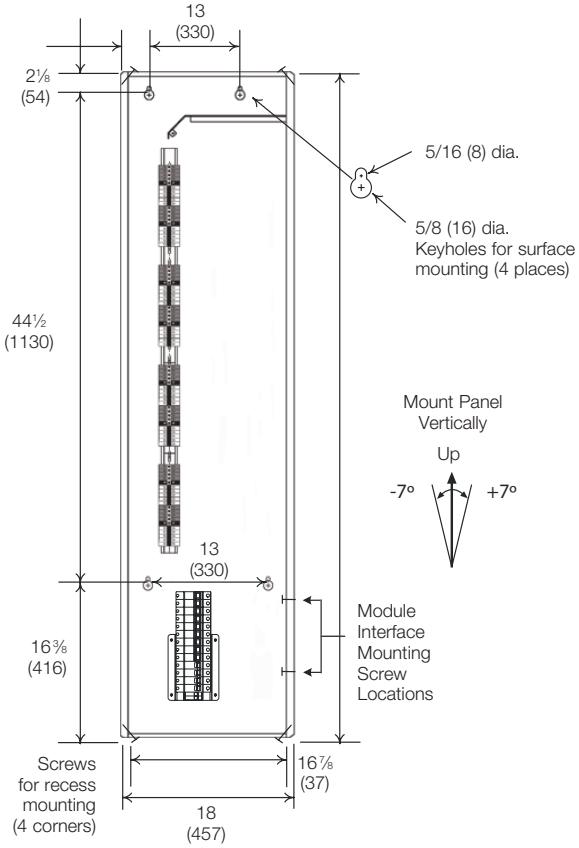
Note: The panel is 4⅛ (105) deep past cover mounting tabs.

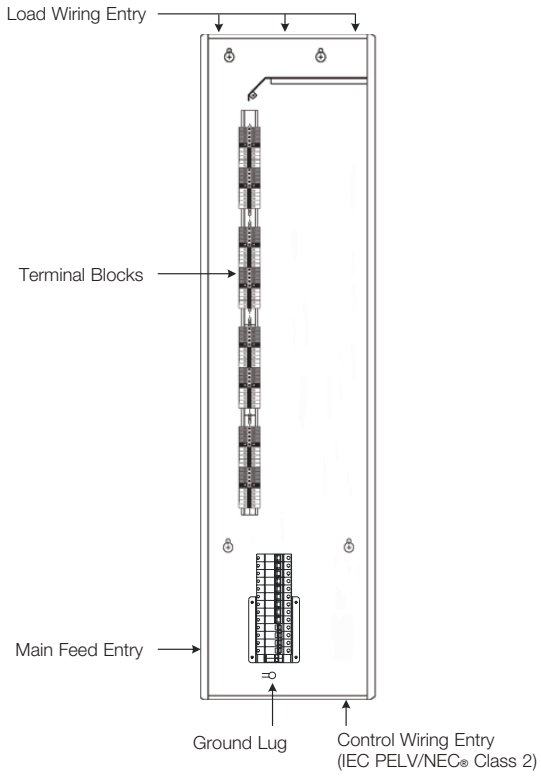
Control Power Panels with Breakers

Dimensions & Mounting (Continued)

Measurements shown as: in (mm)

PBK8 Models





The panel is 4 (102) deep past cover mounting tabs.

Notes:

1. PBK8-40-13-CE has one 3-phase, 4-pole, 40 A main input breaker; eight (8) 13 A branch circuit input breakers; and one (1) 13 A input control breaker.
2. PBK8-40-13-10-CE also has thirty-two (32) 10 A output breakers

Technical Support: U.S.A. 800.523.9466
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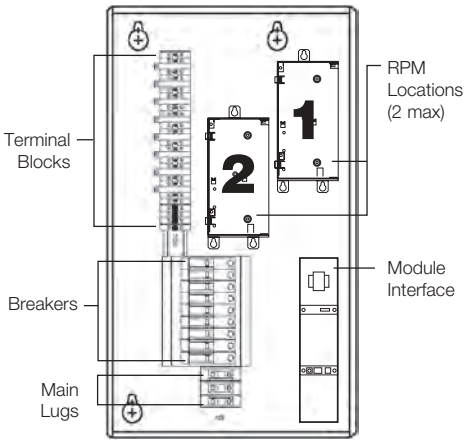
Control Power Panels with Breakers

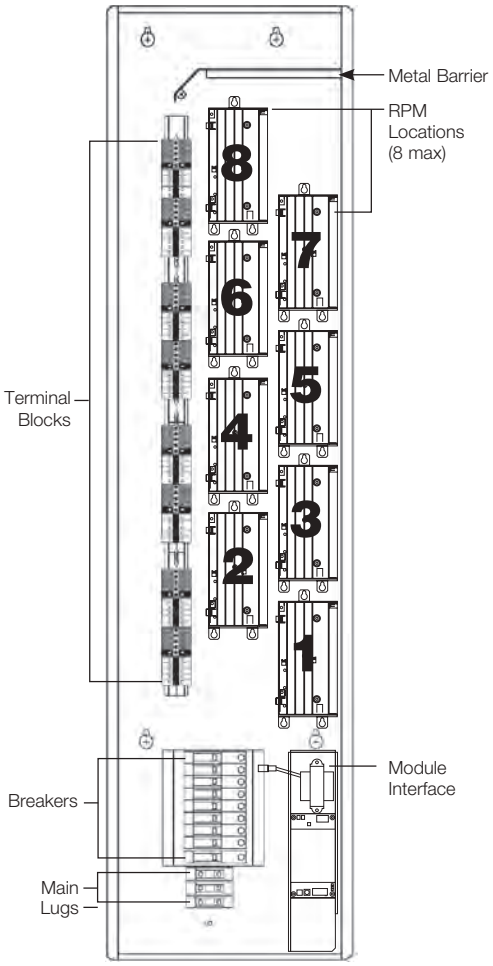
Configurations

-2S Models

Note: Only 4R modules may be used with HWBP-2S



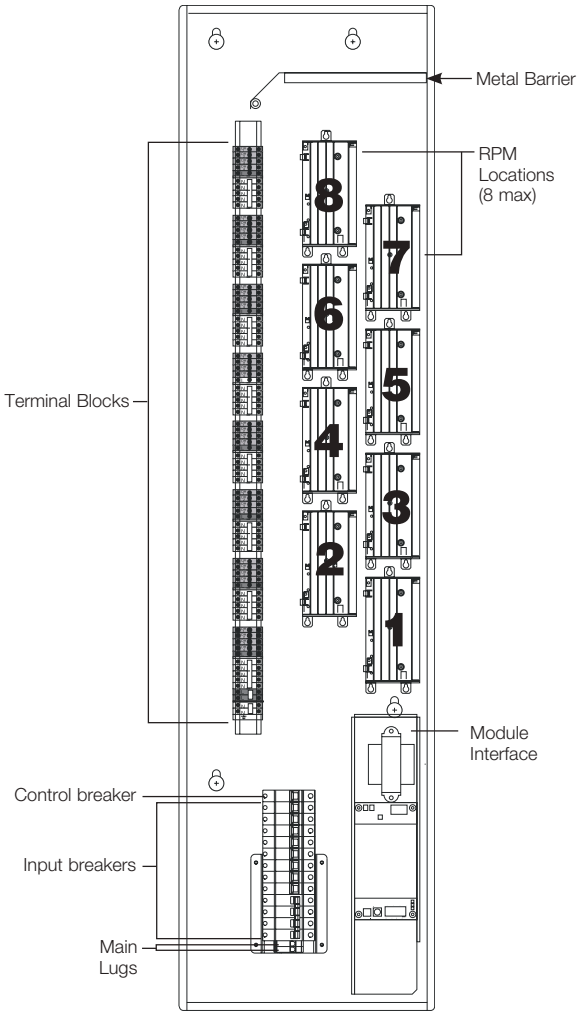
-8D Models



Control Power Panels with Breakers

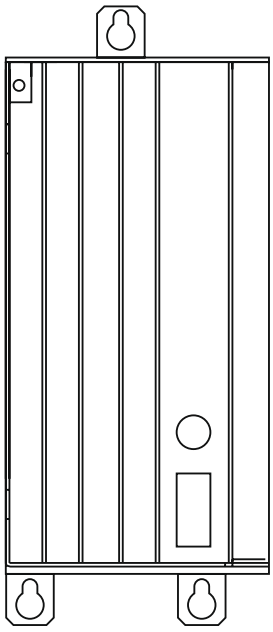
Configurations (Continued)

PBK8



Technical Support: U.S.A. 800.523.9466
Europe +44.(0)20.7680.4481

Remote Power Modules



Remote Power Modules (RPMs) are used to control lighting, motor, and fan loads. There are several different models of RPMs. Each model controls specific load types. The RPMs are mounted in remote power panels. Models HWI-PNL-8, HWAP-8D and HWBP-8D hold up to eight RPMs, HWI-PNL-5 holds up to five RPMs, and HWAP-2S and HWBP-2S hold up to two RPM-4R modules.

All RPMs must be connected to a module interface housed within the same panel enclosure. RPMs within an enclosure are connected to the module interface using a Lutron-provided harness. To minimize the effects of single power supply failure, each RPM is powered by its own internal power supply.

Model Numbers

HW-RPM-4A-120	120 V~	Adaptive Dimming Module
HW-RPM-4A-230	220-240 V~	Adaptive Dimming Module
HW-RPM-4E-230-CE	220-240 V~	ELV Dimming Module
HW-RPM-4FSQ-120	120 V~	Quiet Fan Speed Control Module
HW-RPM-4M-120	120 V~	Motor Control Module
HW-RPM-4M-230	220-240 V~	Motor Control Module
HW-RPM-4R	100-277 V~	Power Relay Module
HW-RPM-4U-120	120 V~	Dimming Module
HW-RPM-4U-230-CE	220-240 V~	Dimming Module
HW-RPM-4U-240	240 V~	Dimming Module

Remote Power Modules

Specifications

Model Numbers	HW-RPM-4A-120, HW-RPM-4A-230, HW-RPM-4E-230-CE, HW-RPM-4FSQ-120, HW-RPM-4M-120, HW-RPM-4M-230, HW-RPM-4R, HW-RPM-4U-120, HW-RPM-4U-230-CE, and HW-RPM-4U-240
Power	
120 V~ 50/60 Hz:	HW-RPM-4A-120, HW-RPM-4FSQ-120, HW-RPM-4M-120, and HW-RPM-4U-120
220-240 V~ 50/60 Hz:	HW-RPM-4A-230, HW-RPM-4M-230, HW-RPM-4U-230-CE and HW-RPM-4U-240
100-277 V~ 50/60 Hz:	HW-RPM-4R
Capacity	HWAP-8D, HWBP-8D, and HWI-PNL-8, remote power panels will hold up to 8 RPMs. HWI-PNL-5 remote power panel will hold up to 5 RPMs. HWAP-2S and HWBP-2S remote power panels will hold up to 2 HW-RPM-4R modules.
Number of Outputs	4
Regulatory Approvals	UL, CSA, NOM
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0 to 90% humidity, non-condensing. Indoor use only.
Cooling	Passive cooling.
Line-Voltage Connections	Separate line-voltage feeds at the DIN rail terminal blocks for each RPM. Terminal blocks should be tightened to 3.5 in-lb to 5.0 in-lb (0.40 N•m to 0.57 N•m).
Low-Voltage Communications	Communication harness (included).
Wiring	Terminal blocks will accept one 18 AWG to 10 AWG (1.0 mm^2 to 2.5 mm^2) wire or two 18 AWG to 16 AWG (1.0 mm^2 to 1.5 mm^2) wires. **HW-RPM-4M-120, HW-RPM-4M-230 and HW-RPM-4R:** Require the installation of four additional gray terminal blocks (included) and three additional black terminal blocks (included) to be mounted on to the DIN rail assembly. HW-RPM-4R gray terminal blocks accept one 18 AWG to 8 AWG (1.0 mm^2 to 10 mm^2) wire or two 16 AWG to 12 AWG (1.5 mm^2 to 4.0 mm^2) wires.
Addressing	Manual rotary switch. Counts as 1 of 8 RPM addresses per module interface.
Diagnostics	LED provided to indicate proper communications with module interface.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Air Gap	**HW-4U-120, HW-4U-230-CE HW-RPM-4A-120, HW-RPM-4A-230 HW-4FSQ-120, and HW-RPM-4M-230:** Provided when all four circuits are off. **HW-RPM-4R:** Individual output airgap is provided when each circuit is off.
Fail Safe Operation	Rotary switch on the RPM allows for manual operation of each load.
Dimensions	3⅞ in (99 mm) wide x 7 in (178 mm) high
Lamp Buzz	Lamp debuzzing coils are available from Lutron to reduce lamp filament buzzing. (Lutron® model HW-HIFC-10-2, LDC-10-TCP, or LDC-16-TCP).
Interface Suppression	EMI/RFI suppression circuitry
Warranty	http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf

Technical Support: U.S.A. 800.523.9466
Europe +44.(0)20.7680.4481

Remote Power Modules

Load Type and Ratings

Model	Load Types[1]	Voltage/ Frequency	Minimum Load	Maximum Load Per:		Technology
				Output	Module	
HW-RPM-4A-120	INC, MLV, ELV, NCC, F2W	120 V~ 50/60 Hz	10 W	10 A	16 A	RTISS-TE™[6]
	LED[2]			400 W	1600 W	
HW-RPM-4A-230	INC, MLV, ELV, NCC	220-240 V~ 50/60 Hz	10 W	8 A	13 A	
	LED[2]			300 W	1200 W	
HW-RPM-4E-230-CE	INC, ELV[3]	220-240 V~ 50/60 Hz	10 W	10 A	16 A	N/A
HW-RPM-4FSQ-120	Fan Motor[4]	120 V~ 50/60 Hz	0.25 A	2 A	8 A	Quiet control circuitry
HW-RPM-4M-120	INC	120 V~ 50/60 Hz	0 A	3 A	16 A	Mechanical interlocked relays
	Motor (Bi-directional)			5 A (1/4 HP)		
HW-RPM-4M-230	INC	220-240 V~ 50/60 Hz	0 A	1.5 A	16 A	
	Motor (Bi-directional)			5 A (1/4 HP)		
HW-RPM-4R	Lighting	100-277 V~ 50/60 Hz	0 A	16 A	64 A	Softswitch®[7]
	Motor			(1/3 HP)		
HW-RPM-4U-120	INC,[5] MLV,[5] NCC, F2W, SFL	120 V~ 50/60 Hz	25 W	16 A	16 A	RTISS[8] Equipped®
	LED[2]			400 W	1600 W	
HW-RPM-4U-230-CE	INC, MLV, NCC, SFL	220-240 V~ 50/60 Hz	40 W	10 A	13 A	
	LED[2]			300 W	1200 W	
HW-RPM-4U-240	INC, MLV, NCC,SFL	220-240 V~ 50/60 Hz	40 W	16 A	16 A	
	LED[2]			300 W	1200 W	

1 For higher wattages or for load types other than those listed, a Power Booster or Interface is required. For more details, refer to the HomeWorks® software.

2 This load type is not UL Listed or CSA Certified for use with this control. **NOTICE:** To avoid the risk of equipment damage, make sure that the LED lighting system used conforms to the Compatibility Guidelines for Lutron® Controls and LED Lighting Systems found at www.lutron.com/led.

3 Only use with ELV transformers. If used with MLV transformers, the module may be damaged and the warranty will be void.

4 Control up to 4 ceiling fans (1 per circuit). Do not use to control fans that have integrated fan speed controls (i.e., fan with a remote control). This module may hum or buzz when at medium-high fan setting. Do not connect to lighting loads. Damage to the module could result.

5 In rare cases, incandescent lamps and MLV transformers will "buzz" or "hum." The HW-HIFC-10-2 filter choke assembly reduces this hum. The filter choke assembly can be installed in place of module 8 in an HWI-PNL-8 remote power panel.

6 RTISS-TE™: (Real-Time Illumination Stability System-Trailing Edge). Same as RTISS, but operates on the trailing edge of the A/C sine wave. This allows for true instantaneous voltage compensation.

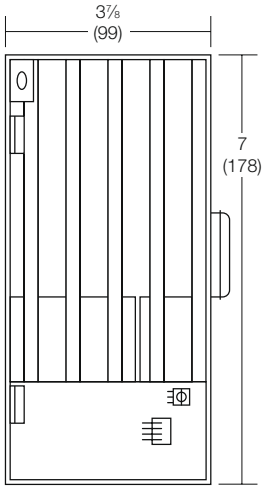
7 Softswitch®: Lutron® Softswitch® circuitry prevents the relay contacts from arcing. Even when fully loaded, the arc reduction extends a relay's average rated life to more than 1,000,000 on/off cycles.

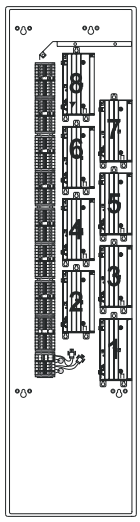
8 RTISS Equipped® (Real-Time Illumination Stability System). This Lutron® filter circuit technology compensates for incoming line-voltage variations, such as changes in Root Mean Square (RMS) voltage, frequency shifts, harmonics, and line noise.

Remote Power Modules

Dimensions & Mounting

Measurements shown as: in (mm)

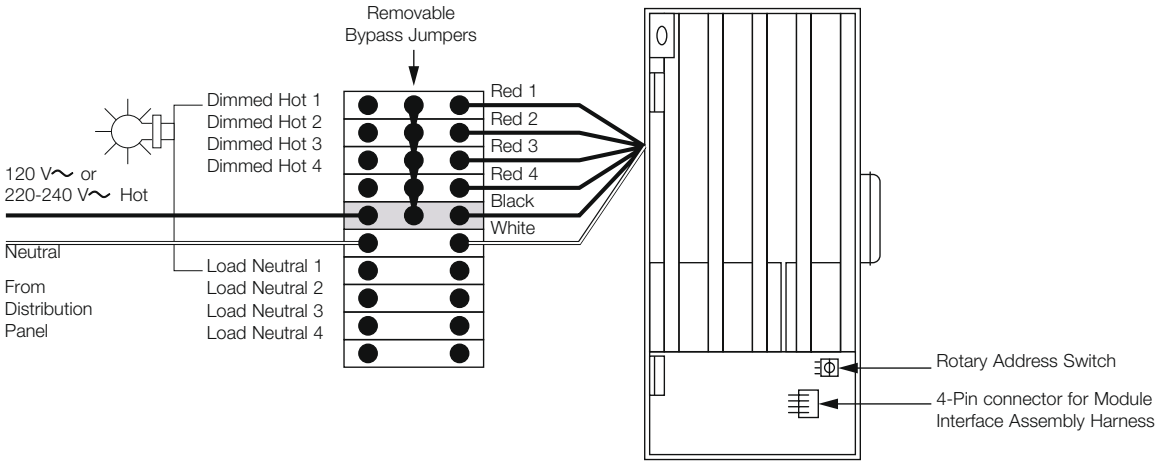




HWI-PNL-8 shown

Wiring

HW-RPM-4A-120, HW-RPM-4A-230, HW-RPM-4E-230-CE, HW-RPM-4FSQ-120, HW-RPM-4U-120, HW-RPM-4U-230-CE and HW-RPM-4U-240



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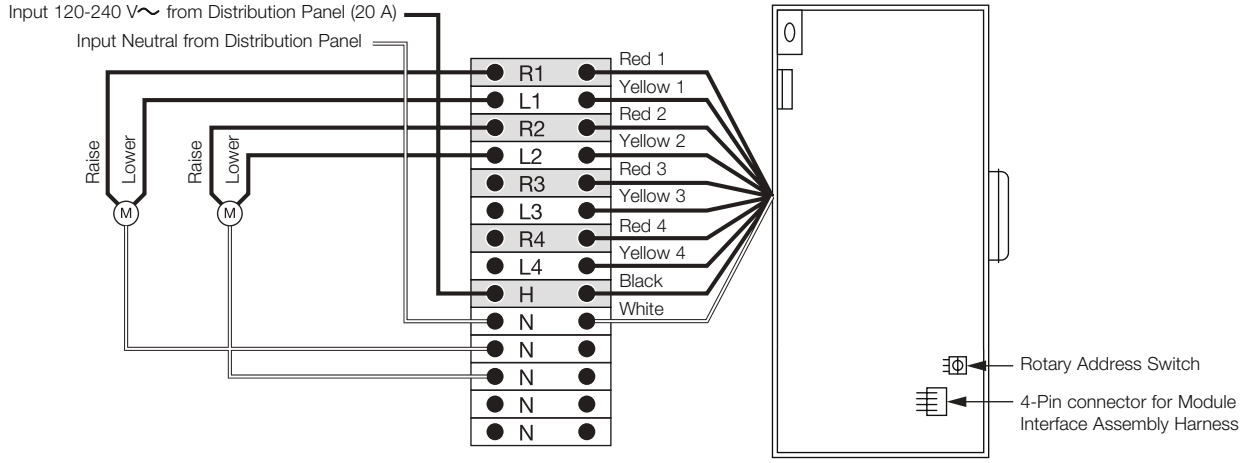
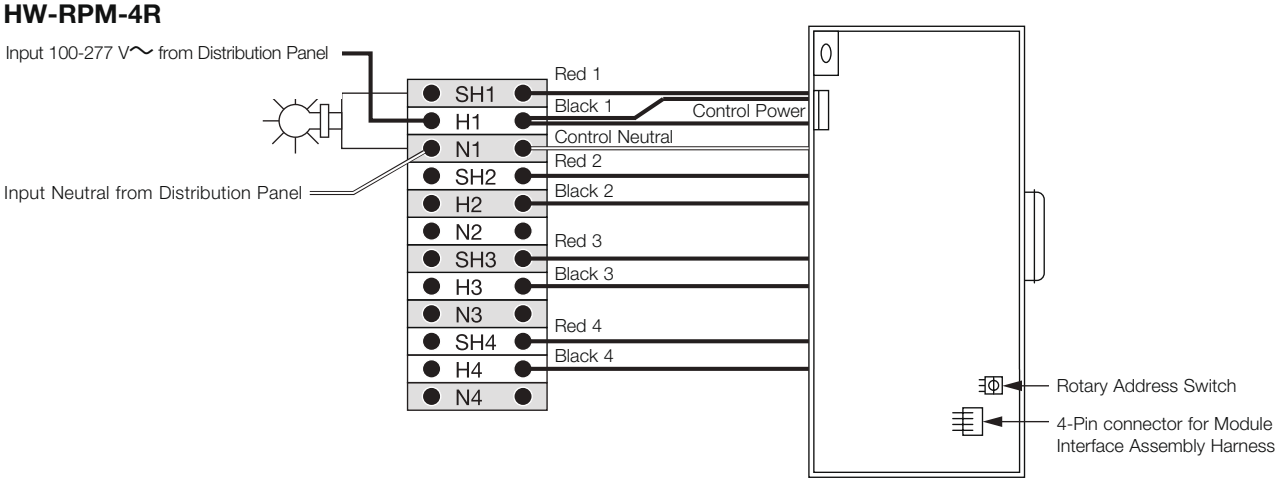
Remote Power Modules

Wiring (Continued)

HW-RPM-4M-120 and HW-RPM-4M-230



HW-RPM-4R



Remote Power Modules

Address Switch position for
HW-RPM-4A-120, HW-RPM-4A-230, HW-RPM-4E-230-CE, HW-RPM-4FSQ-120, HW-RPM-4R, HW-RPM-4U-120, HW-RPM-4U-230-CE and HW-RPM-4U-240

Position	Module Output/Purpose
0	All outputs OFF
1-8	Address for normal operation
9, A	Not used
B	Output 1 ON Use for temporary lighting and zone testing
C	Output 2 ON Use for temporary lighting and zone testing
D	Output 3 ON Use for temporary lighting and zone testing
E	Output 4 ON Use for temporary lighting and zone testing
F	All outputs ON Use for temporary lighting and zone testing

Address Switch position for
HW-RPM-4M and HW-RPM-4M-230

Position	Module Output/Purpose
0	All relays OFF
1-8	Address for normal operation
9, A-D	Not used – All outputs OFF
E	All raise relays ON Use for directional motor testing
F	All lower relays ON Use for directional motor testing

Diagnostic LED status for
HW-RPM-4A-230 HW-RPM-4E-230-CE, HW-RPM-4FSQ-120, HW-RPM-4R, HW-RPM-4U-120, HW-RPM-4U-230-CE and HW-RPM-4U-240

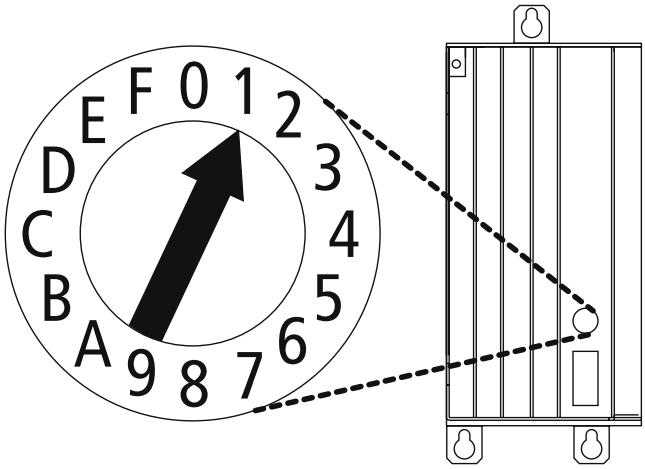
LED Status	Possible Cause
Off	No power or defective module
1 blink per sec. "Heartbeat"	Normal operation
1 blink per 7 seconds "Lighthouse"	Not communicating with processor: • Open control harness • Module set on invalid or diagnostic address • System not properly configured or addressed in HomeWorks® software
4 blinks; pause; repeat	• Module in manual override
10 blinks per sec.	• Zone error on one or more outputs

Zone Diagnostic LED Status
(HW-RPM-4A-120 and HW-RPM-4A-230 only)

Zone LED Status	Load Status	Description
Off	OFF	Normal; Load Off
Continuously on	ON	Incandescent/electronic dimmer
1 blink per second	ON	Magnetic dimming
Error Codes		
1 blink; pause; repeat	OFF	Load short circuit/overload[1]
2 blinks; pause; repeat	OFF	Inductive load[2]
3 blinks; pause; repeat	ON Full	Shorted component[3]
4 blinks; pause; repeat	OFF	DC detection[4]
10 blinks per sec.	All outputs OFF	Multiple errors[5]

[1] Locate and repair fault. Cycle power to RPM.
[2] Check software configuration. MLV load detected with ELV software setting.
[3] Replace RPM. Internal device (FET) shorted.
[4] Possible faulty MLV load.
[5] Multiple errors exist on this output. The relay has opened to protect the modules and all 4 outputs will be off.

Enlarged view of Address Switch



Technical Support: U.S.A. 800.523.9466
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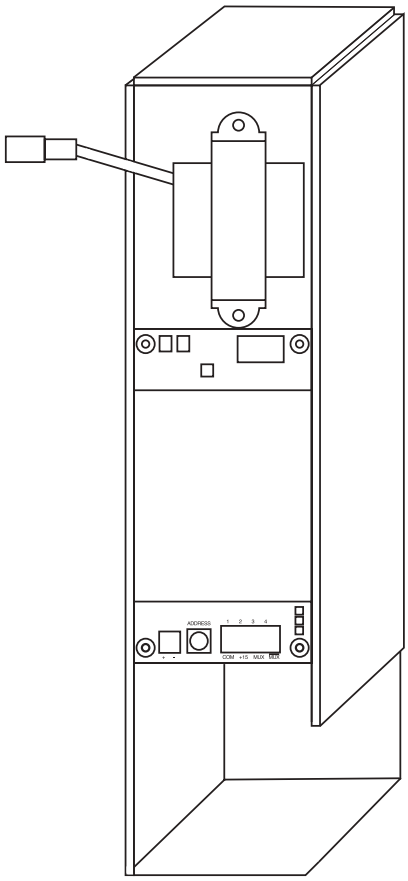
HomeWorks® Module Interface

A Module Interface controls up to eight Remote Power Modules (RPMs) in a remote power panel enclosure. The Module Interface manages communication between the RPMs and a processor. A Module Interface is powered from its own internal power transformer.

A Module Interface installs in HWI-PNL-8, HWBP-8D, HWAP-8D, or PBK8 with up to eight RPMs, in HWI-PNL-5 with up to five RPMs, or in HWBP-2S with up to two RPM-4Rs.

A manual override input is provided on each Module Interface, allowing a pre-determined lighting scene to be activated from designated override switches installed anywhere in the area.

Each processor has communication links that can be configured as power panel links dedicated to control up to 16 Module Interfaces. This connection must be daisy-chained and requires two pair IEC PELV/NEC® Class 2 wire – one pair 18 AWG (1.0 mm^2), one pair 18 AWG to 22 AWG (1.0 mm^2 to 0.5 mm^2) twisted shielded. Lutron® wire model GRX-CBL-346S-500 may be used.



Module Interface (HWI-MI-120)

Model Number

HWI-MI-120	120 V~ Module Interface
HWI-MI-230	220-240 V~ Module Interface

HomeWorks® Module Interface

Specifications

Model Number	HWI-MI-120, HWI-MI-230
Power	HWI-MI-120: 120 V~ 50/60 Hz 1 A HWI-MI-230: 230 V~ 50/60 Hz 0.5 A The Module Interface is powered by a separate line-voltage feed at the DIN rail terminal blocks and should not have terminal 2 connected on the processor communications link connector.
Typical Power Consumption	2 W
Regulatory Approvals	UL, CSA, NOM (HWI-MI-120) CE, C-tick (HWI-MI-230)
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0 to 90% humidity, non-condensing. Indoor use only.
Cooling Method	Passive cooling.
Low-Voltage Wire Type	Two pair IEC PELV/NEC® Class 2 wire – one pair 18 AWG (1.0 mm^2), one pair 18 AWG to 22 AWG (1.0 mm^2 to 0.5 mm^2) twisted shielded. Lutron® wire model GRX-CBL-346S-500 may be used.
Low-Voltage Wiring Configuration	Maximum wire length of 1000 ft (305 m). Must be wired in a daisy-chain configuration. Terminators are required if total cable length exceeds 50 ft (15 m).
Low-Voltage Connections	One 4-pin removable terminal block. Each of the four terminals will accept up to two 18 AWG (1.0 mm^2) wires.
Addressing	Via rotary switch. Counts as 1 of the 16 Module Interface addresses on a power panel link.
Diagnostics	Three LEDs for troubleshooting communications with the processor and the RPMs.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds ANSI/IEEE standard c62.41.
Miswire Protection	All terminal block inputs are over-voltage and miswire protected against wire reversals and shorts.
Fail Safe Operations	The manual override scene is activated for all RPMs connected to the Module Interface by closing a switch that is wired between the two manual override terminals. The switch (or relay) contacts must be rated for switching 50 mA at 30 V⎓. A single switch can be used for multiple Module Interfaces wired in parallel, but proper polarity must be maintained across all units. In this configuration, the switch must be rated for the sum of the current for all of the Module Interfaces connected (i.e., six Module Interfaces wired to a single manual override switch requires a switch rated for 300 mA at 30 V⎓).
Mounting Dimensions	13⅛ in x 3 in x 3⅝ in (333 mm x 76 mm x 92 mm)
Mounting	Mount in the lower right-hand corner of a panel enclosure (HWI-PNL-8, HWBP-8D, HWAP-8D, HWI-PNL-5, or HWBP-2S)
Output	Compatible with HW-RPM-4U dimming module, HW-RPM-4A adaptive dimming module, HW-RPM-4FSQ fan speed module, HW-RPM-4M motor module, and HW-RPM-4R power relay module.
Warranty	http://www.lutron.com/technicaltocumentlibrary/homeworks_warranty.pdf

Technical Support: U.S.A. 800.523.9466
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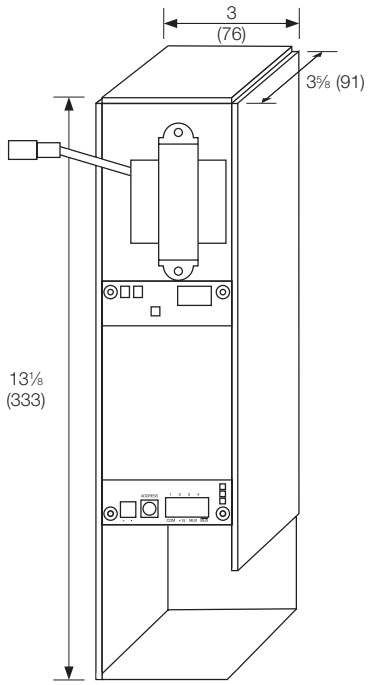
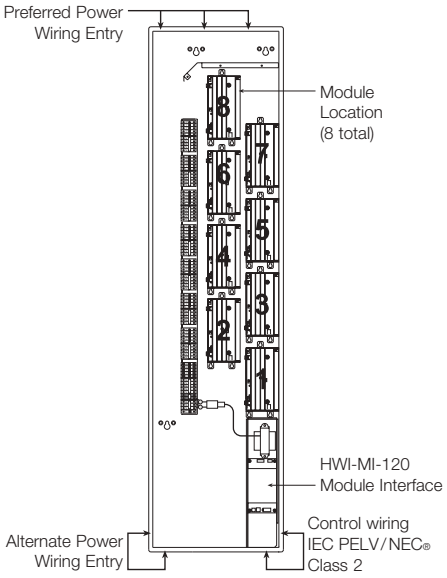
HomeWorks® Module Interface

Dimensions

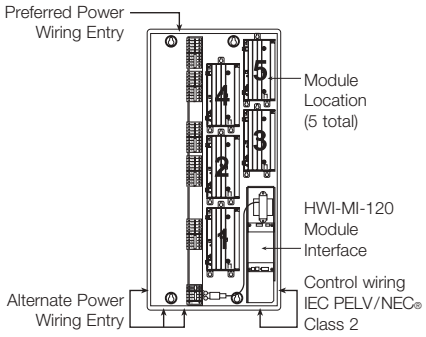
Measurements shown as: in (mm)



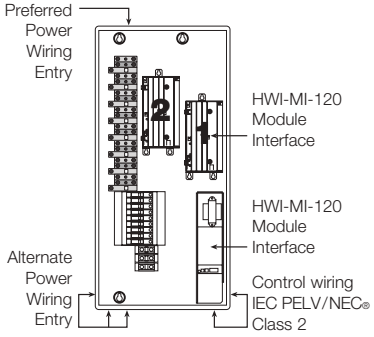
Configurations



8 Module Panel



5 Module Panel



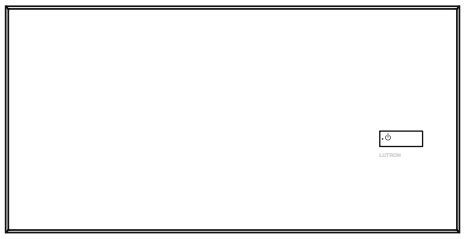
2 Module Panel

Wallbox Power Module

The Wallbox Power Module controls up to six zones of light and will operate the following sources with a continuous Square Law dimming curve or on a full conduction non-dim basis:

- Incandescent
- Tungsten Halogen
- Electronic Low-Voltage (ELV) Switched
- Magnetic Low-Voltage (MLV) Transformer
- Metal Halide/High Pressure Sodium Switched
- Neon/Cold Cathode
- Lutron® Tu-Wire® Electronic Fluorescent Dimming Ballasts
- Up to 64 DALI compliant output devices (devices must comply with IEC/EN 60929) can be addressed and grouped into zones (LQRK-WPM-6D and LQR-WPM-6D only).

The Power Module can be configured for wired, QS link (HomeWorks® QS only), or wireless, RF link (HomeWorks® QS and RadioRA® 2), communication.



Wallbox Power Module

Models

Model Number	Zones	Voltage	Frequency	Region
HQRJ-WPM-6D-120*	6	120 V~, 220-240 V~	434 MHz	U.S.A.
LQRJ-WPM-6P*	6	120 V~, 220-240 V~	434 MHz	U.S.A.
LQRK-WPM-6PCE*	6	230 V~ CE	868 MHz	Europe/U.A.E.
LQRK-WPM-6D*	6	230 V~ CE	868 MHz	Europe/U.A.E.
LQRK-WPM-8D*	8	230 V~ CE	868 MHz	Europe/U.A.E.
LQRK-WPM-16D*	16	230 V~ CE	868 MHz	Europe/U.A.E.
LQRQ-WPM-6PCE*	6	230 V~	434 MHz (Limited Channel)	Hong Kong
LQR-WPM-6PCE*	6	230 V~	----	Europe/U.A.E.
LQR-WPM-6P*	6	120 V~, 220-240 V~	----	U.S.A.
LQR-WPM-6D*	6	120 V~, 220-240 V~	----	U.S.A.
LQR-WPM-8D*	8	120 V~, 220-240 V~	----	U.S.A.
LQR-WPM-16D*	16	120 V~, 220-240 V~	----	U.S.A.

* Available only in White (WH)

Wallbox Power Module

Specification

Model Number	HQRJ-WPM-6D-120, LQRJ-WPM-6P, LQRK-WPM-6PCE, LQRK-WPM-6D, LQRK-WPM-8, LQRK-WPM-16D, LQRQ-WPM-6PCE, LQR-WPM-6PCE, LQR-WPM-6P, LQR-WPM-6D, LQR-WPM-8D, LQR-WPM-16D
Power	120 V~ 50/60 Hz, 220–240 V~ (non CE) (HQRJ-, LQRJ- and LQR- models only) 50/60 Hz, 230 V~ (CE) (LQRK- and LQRQ- models only) 50/60 Hz
Typical Power Consumption	7 W; 0 Power Draw Units (PDUs). **The Wallbox Power Module is not powered from the link, Pin 2 should not be connected.** Typical Power Consumption test conditions: all loads off, button LED on.
Regulatory Approvals	UL, CSA, FCC, IC, SCT (HQRJ-, LQRJ-, and LQR- models only), CE (all other models)
Environment	Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C). Ambient operating humidity: 0-90% humidity, non-condensing. Indoor use only.
Communications	**Wired (HomeWorks® QS only)** - Low-voltage type IEC PELV/NEC® Class 2 wiring connects Wallbox Power Modules to processor. Each HomeWorks® QS processor has two configurable links. Wallbox Power Modules communicate with the processor via the QS link or RF link. **RF (RadioRA® 2 and HomeWorks® QS)** - Lutron® wireless Clear Connect® Technology
ESD Protection	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 801-2.
Surge Protection	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
Power Failure	Provides 10-year power failure memory: Automatically restores lighting to levels prior to power interruption.
Mounting	Installs in a standard 4-gang U.S. wallbox, 3½ in (89 mm) deep is strongly recommended. Always allow at least 4½ in (114 mm) clearance above and below the module to provide adequate space for cooling. Wallplate snaps on with no visible means of attachment.
Line Voltage Wiring	Each line voltage terminal can accept one 12 AWG (4.0 mm^2) wire.
IEC PELV/NEC® Class 2 QS System Low-Voltage Wiring (HomeWorks® QS only)	System communication uses low-voltage wiring. Wiring can be daisy-chained or T-tapped. Wiring must be run separately from line/mains voltage. IEC PELV/NEC® Class 2 wiring link requires: Two 18 AWG (0.75 mm^2) conductors for control power. One twisted, shielded pair of 22 AWG (0.34 mm^2) for data link. Available from Lutron, P/N GRX-CBL-346S; check compatibility in your area. Total length of control link must not exceed 2000 ft (610 m).
Warranty	www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf www.lutron.com/TechnicalDocumentLibrary/Intl_Warranty.pdf

Technical Support—800.523.9466 (USA)
+44.(0)20.7702.0657 (Europe)

Wallbox Power Module

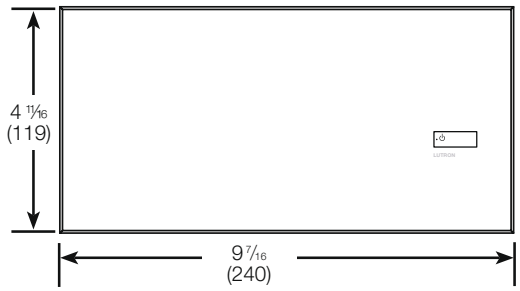
Design Features

- Contains RTISS Equipped® technology to compensate in real time for incoming line voltage variations: No visible flicker with +/-2% change in RMS voltage/cycle and +/-2% Hz change in frequency/second.
- Wallplate snaps on with no visible means of attachment.
- One button for activating default scene.
- Can be configured for wired, QS link (HomeWorks® QS only), or wireless, RF link (HomeWorks® QS and RadioRA® 2), communication.

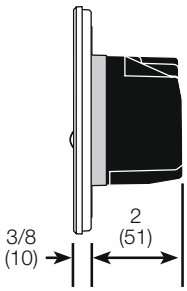
Dimensions

Dimensions shown as: in (mm)

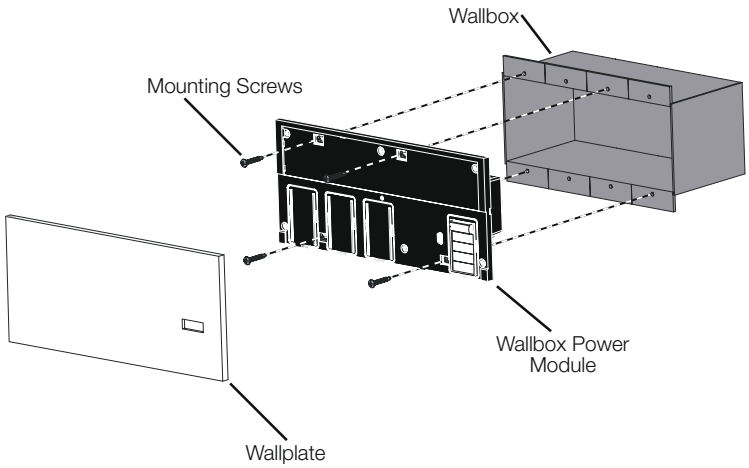
Front View



Side View



Mounting



Wallbox Power Module

Load Capacity

	HQRJ-, LQRJ-, LQR-WPM-6P		LQR-WPM-6PCE, LQRK-, LQRQ-
	120 V∼ 50/60 Hz	**220–240 V∼ 50/60 Hz**	**230 V∼ (CE) 50/60 Hz**
Unit Capacity (watts)	2000 W	3000 W	2300 W
Magnetic Low-Voltage	2000 VA / 1600 W	3000 VA / 2400 W	2300 VA / 1840 W
Zone Capacity (watts)	25–800 W	40 – 1200 W	40 – 500 W
Magnetic Low-Voltage	25–800 VA / 25–600 W	40–1200 VA / 40–960 W	40 – 500 VA / 40 – 400 W

Load Type Notes

(HQRJ-, LQRJ-, and LQR- models only)

- When dimming Electronic Low-Voltage (ELV) lighting, an ELV interface (such as PHPM-PA-DV-WH) must be used with the control unit. Before installing an ELV light source, verify with the manufacturer that their transformer can be dimmed.
- When controlling 0–10 V loads, a Ten Volt Interface (GRX-TVI) must be used with the control unit.
- Not all zones must be connected; however, **connected zones must have a minimum load as specified above.**
- Maximum total lighting load for a Magnetic Low-Voltage (MLV) varies by input voltage **(specified above):**
  — 120 V∼: 800 VA / 600 W
  — 220–240 V∼: 1200 VA / 960 W
- No zone may be loaded with more than the capacity specified above. For higher wattage applications, or for 277 V∼ applications, use Lutron® power module PHPM-PA, PHPM-WBX, PHPM-PA-DV, PHPM-SW, or PHPM-WBX-DV.

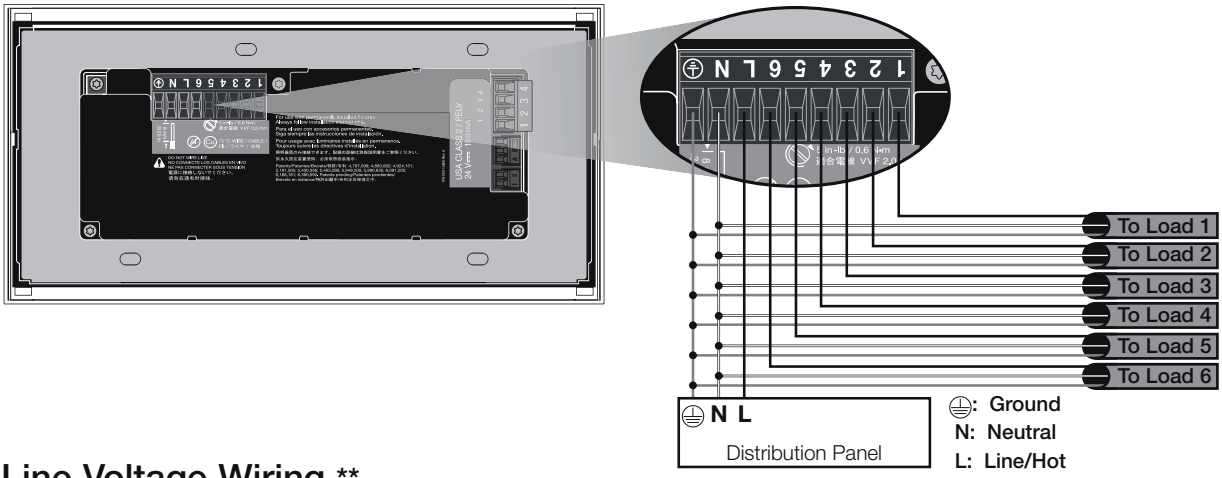
(LQR-WPM-6PCE, LQRK-, and LQRQ- models only)

- For applications with ELV loads or load wattages exceeding the specified capacities, please refer to specifications for Lutron power modules (NGRX-PB-CE; NGRX-ELVI-CE).
- Not all loads must be connected; however, connected zones must have a minimum load of 40 W.
- Maximum totals lighting load for a magnetic low-voltage zone is 500 VA / 400 W.
- No zone may be loaded with more than 500 W.

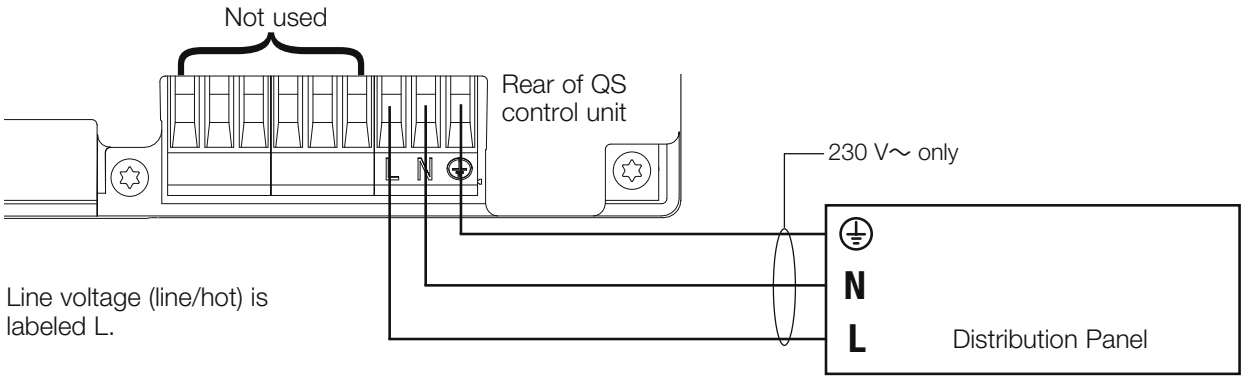
Technical Support—800.523.9466 (USA)
+44.(0)20.7702.0657 (Europe)

Wallbox Power Module

Power and Load Wiring *

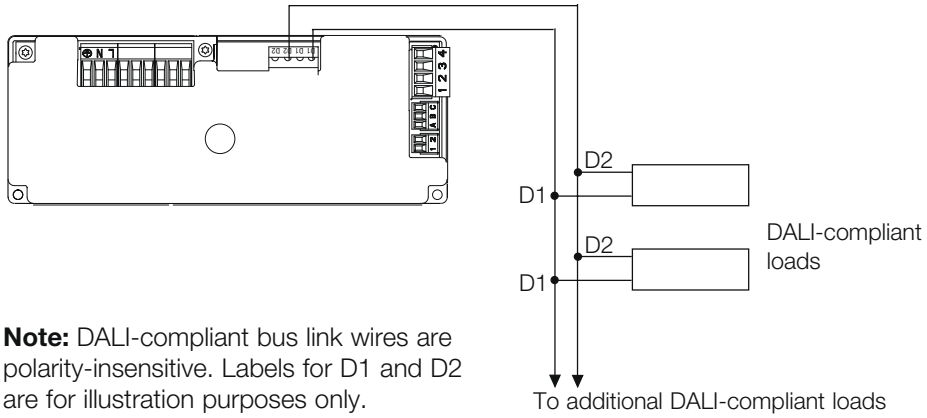


Line Voltage Wiring **



- Pull power wiring from distribution panel and to light fixtures.
- Each line voltage terminal can accept one 12 AWG (4.0 mm²) wire.
- Consult Lutron for non-dim relay wiring and/or load side emergency transfer wiring.

DALI-Compliant Bus Wiring **



Note: DALI-compliant bus link wires are polarity-insensitive. Labels for D1 and D2 are for illustration purposes only.

* HQRJ-WPM-6D-120, LQRJ-WPM-6P, LQR-WPM-6P, LQRK-WPM-6PCE, LQRQ-WPM-6PCE, LQR-WPM-6PCE models only

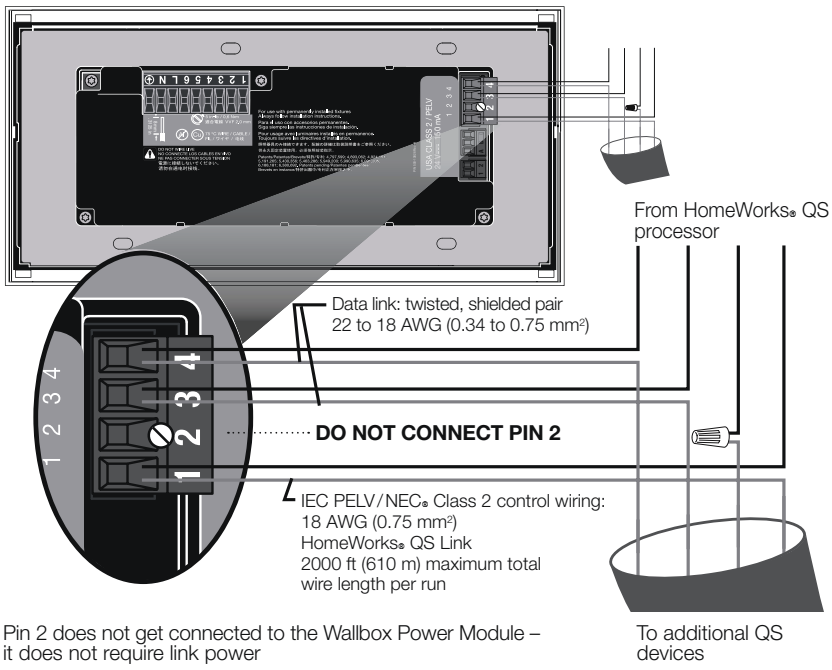
** LQR-WPM-6D, LQR-WPM-8D, LQR-WPM-16D, LQRK-WPM-6D, LQRK-WPM-8D, LQRK-WPM-16D models only

Wallbox Power Module

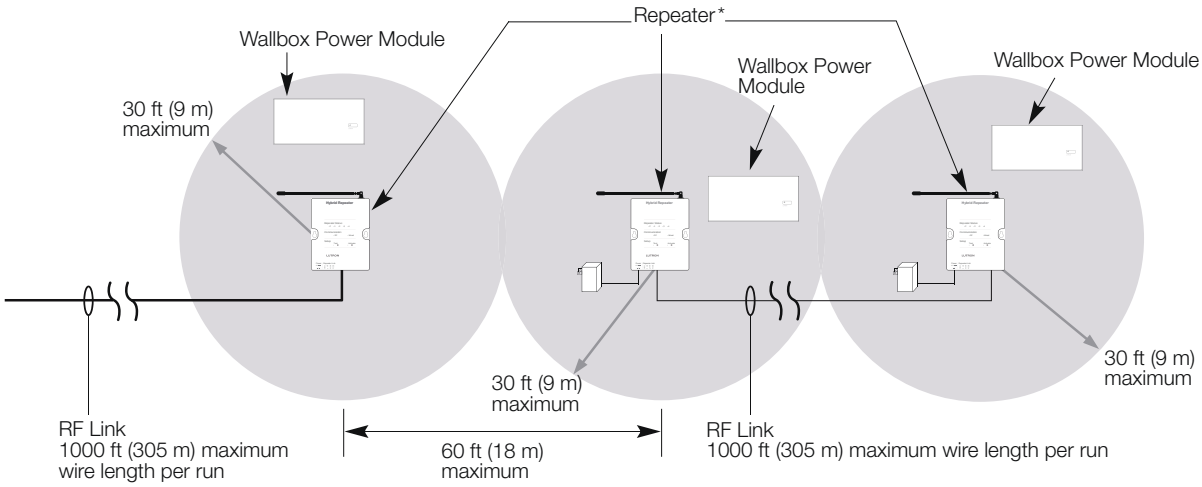
Communications

HomeWorks® QS supports selection of wired or RF communications. A GRAFIK Eye® main unit that communicates back to a HomeWorks® QS processor through the RF link should not have any QS wired link connections. In RadioRA® 2 only RF communication is available.

QS Link Wiring (HomeWorks® QS only)



RF Link (RadioRA® 2 and HomeWorks® QS)



* In HomeWorks® QS systems, use Hybrid Repeaters for range extension. In RadioRA® 2, the repeater shown may be either a main repeater (1 required) of auxiliary repeater (up to 4 permitted).

Technical Support—800.523.9466 (USA)
+44.(0)20.7702.0657 (Europe)

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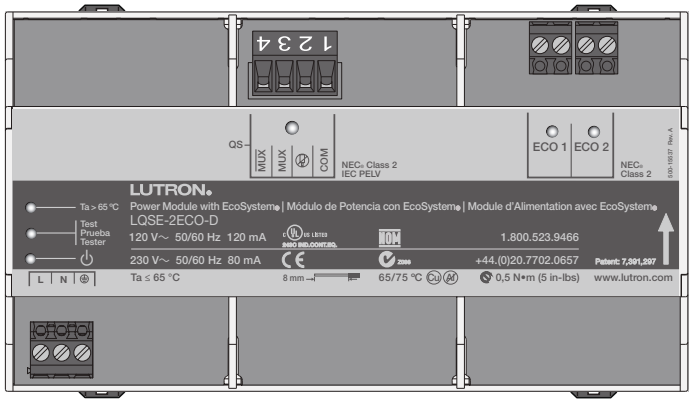
Power Module with EcoSystem®

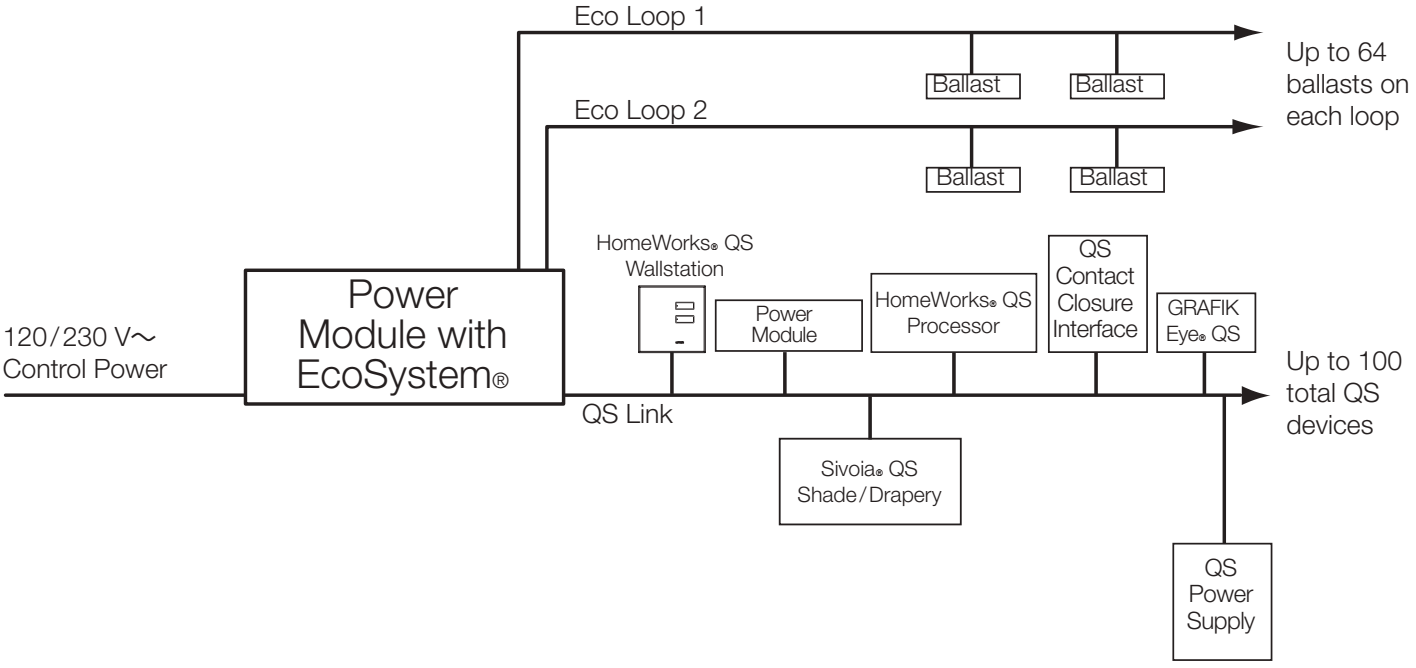
The Power Module with EcoSystem® unit is a DIN-rail mounted EcoSystem® Loop controller for EcoSystem® ballasts, drivers and devices. It provides EcoSystem® Loop power and control for two independent EcoSystem® Loops with up to 64 ballasts or drivers each.



Features

- Provides EcoSystem® Loop power for two loops of EcoSystem® ballasts or drivers (up to 250 mA per loop).
- Power failure memory retains control unit programming in the event of a power loss.
- Includes QS Link for connection to a HomeWorks® QS system.
- Power Module with EcoSystem® unit can be used in a HomeWorks® QS system to control and manage light in an entire home or building.

System Example



LUTRON® SPECIFICATION SUBMITTAL Page 1

Job Name:	Model Numbers:	
Job Number:		

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Specifications

Power

- 120 V~ 50/60 Hz 120 mA
- 230 V~ 50/60 Hz 80 mA
- Lightning strike protection meets ANSI/IEEE standard 62.31-1980. Can withstand voltage surges of up to 6000 V~ and current surges of up to 3000 A.
- Stand by power: 7 W
- BTUs/hour when fully loaded: 24
- EcoSystem® Loop Output: 16 V⎓ 250 mA maximum per loop.

Standards

- UL
- CE
- Lutron Quality Systems registered to ISO 9001.2008.
- C-Tick
- cUL
- NOM

Environment

- Surrounding Air Temperature Range: 0 °C to 65 °C (32 °F to 149 °F).
- Relative humidity: less than 90% non-condensing.
- Calibration point maximum: 75 °C (167 °F)
- For indoor use only.

Terminals

- Mains wiring: 1.0 mm^2 to 4.0 mm^2 (18 AWG to 12 AWG)
- EcoSystem® Loop Wiring: 1,0 mm^2 to 4,0 mm^2 (18 AWG to 12 AWG)
- QS Wiring: 1,0 mm^2 (18 AWG)
- Minimum wire temperature rating = 65 °C (149 °F), Cu only

Mounting

- Intended to mount within an IP20 (minimum) rated consumer panel or breaker panel with integrated DIN rail and dead cover
- Width = 9 DIN modules (161.7 mm or 6 ⅜ in).

Programming and Compatibility Requirements

- The LQSE-2ECO-D can only be used with the HomeWorks® QS system.
- Setup and programming of the Power Module with EcoSystem® is done through the HomeWorks® QS programming software.

NEC is a registered trademark of the National Fire Protection Association, Quincy, Massachusetts

EcoSystem®

- Control up to 64 EcoSystem®-compatible devices (ballast or LED drivers) per EcoSystem® Digital Loop (up to 128 devices per Power Module with EcoSystem® unit).
- Digitally define areas and zones.
- Automatic replacement of a single failed ballast or driver.
- Simple method of replacing multiple failed ballasts or drivers.
- EcoSystem® Digital Loop can be wired as Mains voltage or IEC PELV/NEC® Class 2 for maximum wiring flexibility.
- EcoSystem® Loop wires are polarity insensitive and topology-free.

EcoSystem® Digital Loop Limits

- Up to 64 EcoSystem®-compatible fluorescent ballasts and/or LED drivers per EcoSystem® digital loop.
- EcoSystem®-compatible fluorescent ballasts and LED drivers on the EcoSystem® digital loop do not count as QS devices.

QS Link Limits

- A QS link in a HomeWorks® QS system can have up to 512 zones (outputs) and 100 devices. A ballast or driver counts as 1 zone unless specifically grouped into zones from the HomeWorks® QS software.
- Each Power Module with EcoSystem® unit counts as one device toward the 100 device limit.
- A maximum of 8 fully loaded EcoSystem® digital loops may be connected to a single QS link.

HomeWorks® QS Wallstations

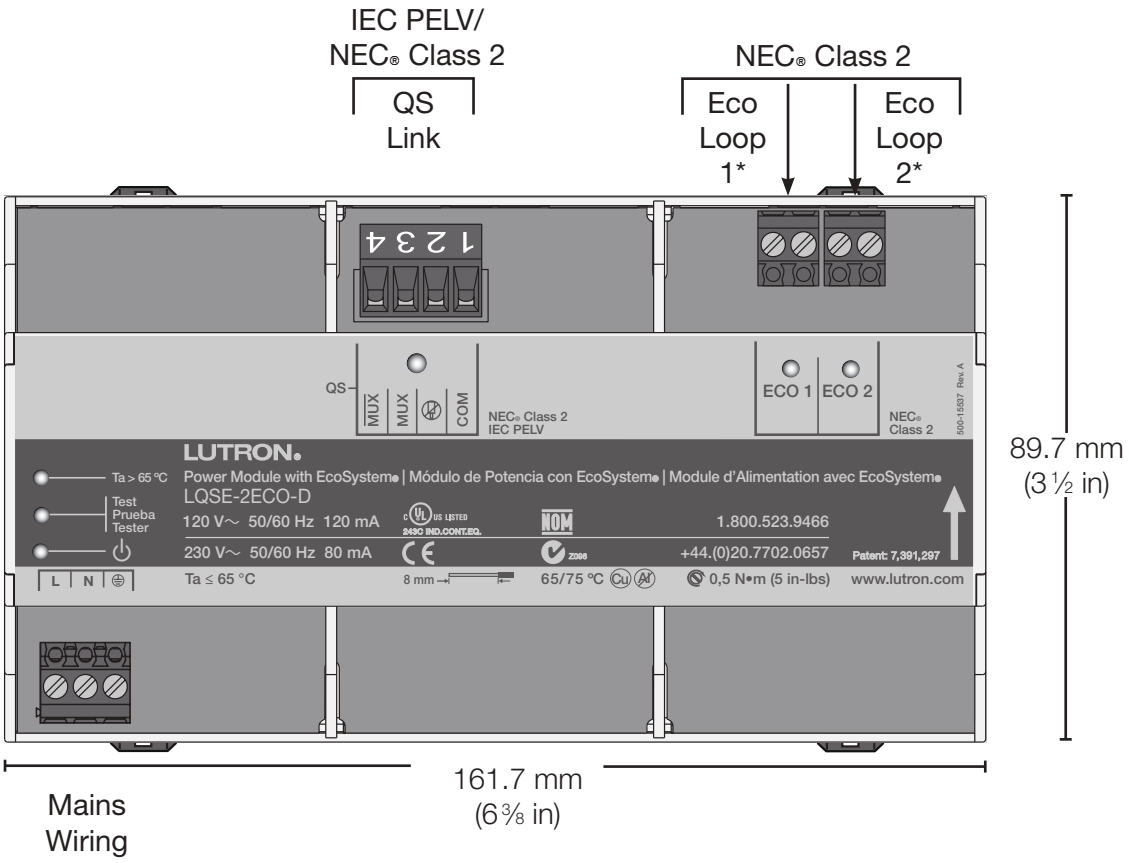
- HomeWorks® QS wallstations can be configured to control Power Module with EcoSystem® units with the HomeWorks® QS programming utility.
- LED indicator displays the status of programmed lights.

Troubleshooting and Maintenance Features

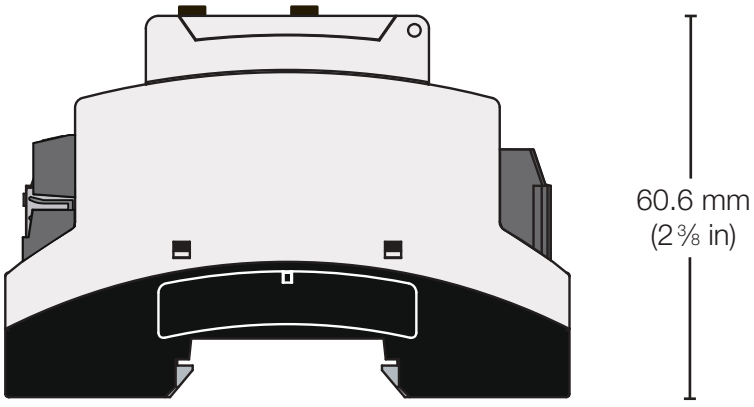
- Maintains redundant memory of ballast programming for ease of single or multiple ballast replacement.
- To verify EcoSystem® lights connected to EcoSystem® Loop 1 and Loop 2:
  - **Enter Test Mode:** Press and hold ***Test*** button on the Power Module with EcoSystem® until the Test LED starts flashing.
  - **Test:** Each press of either the ***ECO 1*** or ***ECO 2*** button will cycle the lights between high-end, low-end, flash, and off for that loop.
  - **Exit Test Mode:** Press and hold ***Test*** button until Test LED stops flashing.

Job Name:	Model Numbers:	
Job Number:		

Overview of Wiring Terminals and Mechanical Dimensions



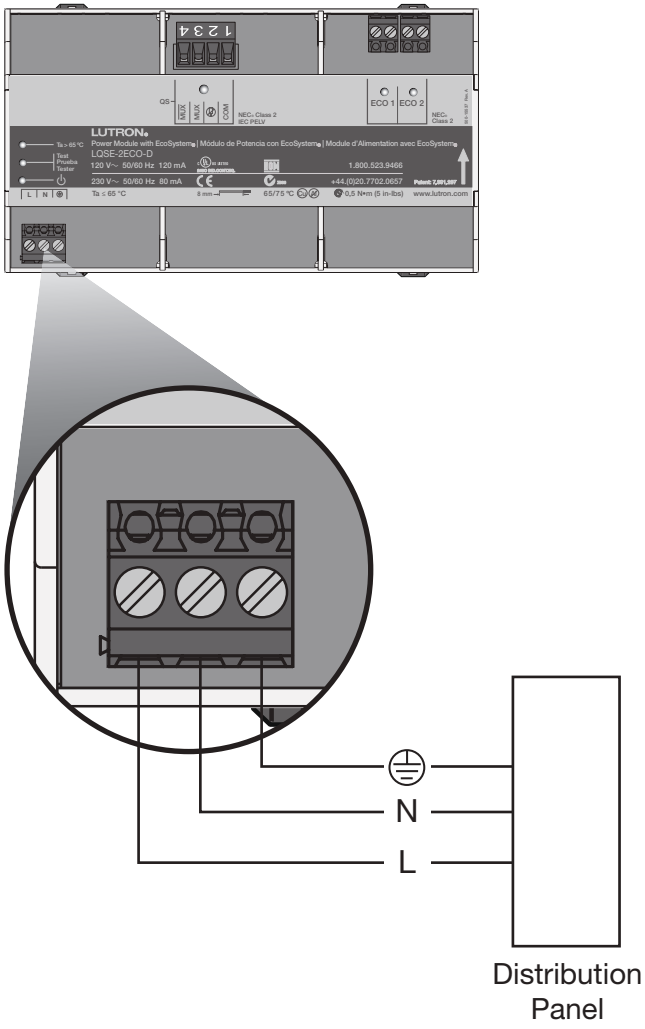
*Wire according to local codes.



NEC is a registered trademark of the National Fire Protection Association, Quincy, Massachusetts

Job Name:	Model Numbers:	
Job Number:		

Wiring: Mains Voltage



⏚ – Earth/Ground

N – Neutral

L – Mains/Line

Wiring from Distribution to Power Module Unit

- Turn off all circuit breakers or isolators feeding the Power Module unit at the distribution panel.
- Run line, neutral, and earth/ground ⏚ wires from a feed to the Power Module with EcoSystem®.
- Use 1.0 mm^2 to 4.0 mm^2 (18 AWG to 12 AWG) conductors (depending on breaker rating) to feed the mains wiring. The device draws less than 80 mA (230 V⁓) or 120 mA (120 V⁓).

Emergency Lighting Applications

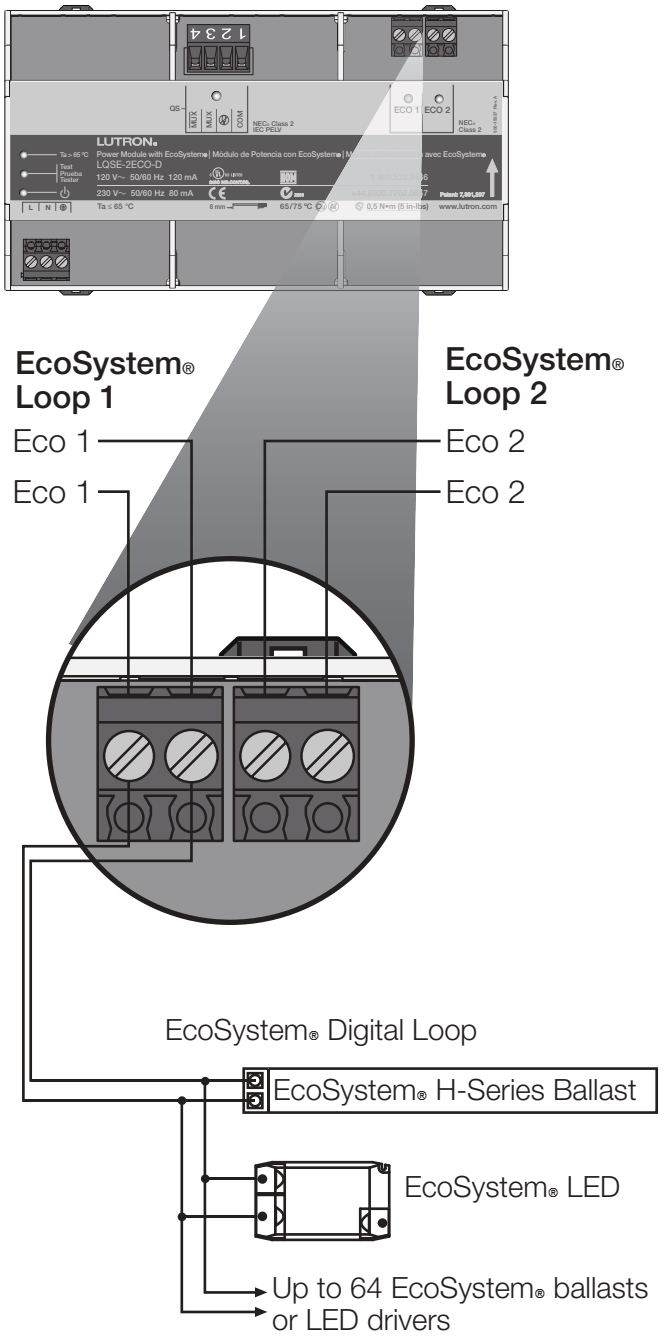
- Use normal (non-essential) power only to power the Power Module with EcoSystem®.
- EcoSystem® ballasts and drivers are programmed to enter emergency mode when the EcoSystem® Loop loses power.
- When normal power drops out, the Power Module with EcoSystem® will not power the EcoSystem® Loops. When this occurs, ballasts powered from emergency feeds go to their emergency mode, full light output by default.

Mains Wiring and IEC PELV/NEC® Class 2 Separation

- The Power Module with EcoSystem® is designed to separate mains wiring from IEC PELV/NEC® Class 2 circuits.
- Follow appropriate local and national codes to avoid violating required separation guidelines.

Job Name:	Model Numbers:	
Job Number:		

Wiring: EcoSystem Loop®



Power Module with EcoSystem® will supply power for two independent EcoSystem® Loops, which support a maximum of 64 ballasts per loop.

Eco Wiring

- EcoSystem® Digital Loop can be wired as Mains voltage or IEC PELV/NEC® Class 2 for maximum wiring flexibility.
- The Loop is polarity insensitive and can be wired in any topology.
- Consult all national and local electrical codes for separation requirements.

Wire Gauge	Maximum EcoSystem®-compliant Loop Wire Length
4.0 mm^2 (12 AWG)	671 m (2200 ft)
2.5 mm^2 (14 AWG)	427 m (1400 ft)
1.5 mm^2 (16 AWG)	275 m (900 ft)
1.0 mm^2 (18 AWG)	175 m (570 ft)

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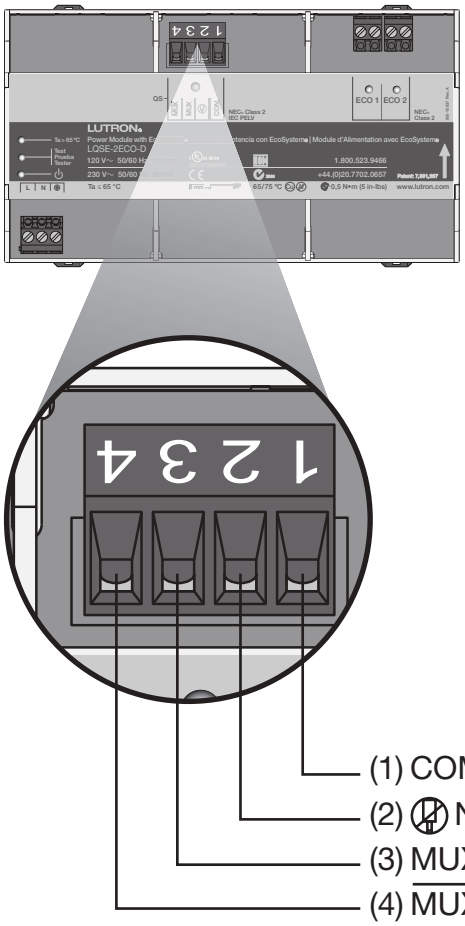
Job Name:	Model Numbers:	
Job Number:		

Wiring: QS Link



IEC PELV/NEC® Class 2 QS Link Wiring

- Link communicates using IEC PELV/NEC® Class 2 wiring.
- Follow all applicable national and local codes for proper circuit separation and protection.
- Wiring may be daisy chained or t-tapped.
- Total length of QS link must not exceed 610 m (2000 ft).
- Do NOT connect terminal 2.
- Wire Gauge
  - Power (terminals 1 and 2): 1 pair 1.0 mm² (18 AWG)
  - Data (terminals 3 and 4): 1 pair 0.5 mm² to 1.0 mm² (22 AWG to 18 AWG) twisted and shielded
  - Can use Lutron® cable GRX-CBL-346S-500

Job Name:	Model Numbers:	
Job Number:		

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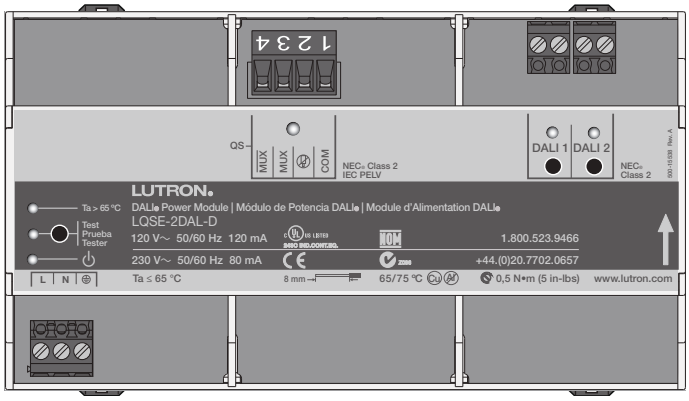
DALI® Power Module

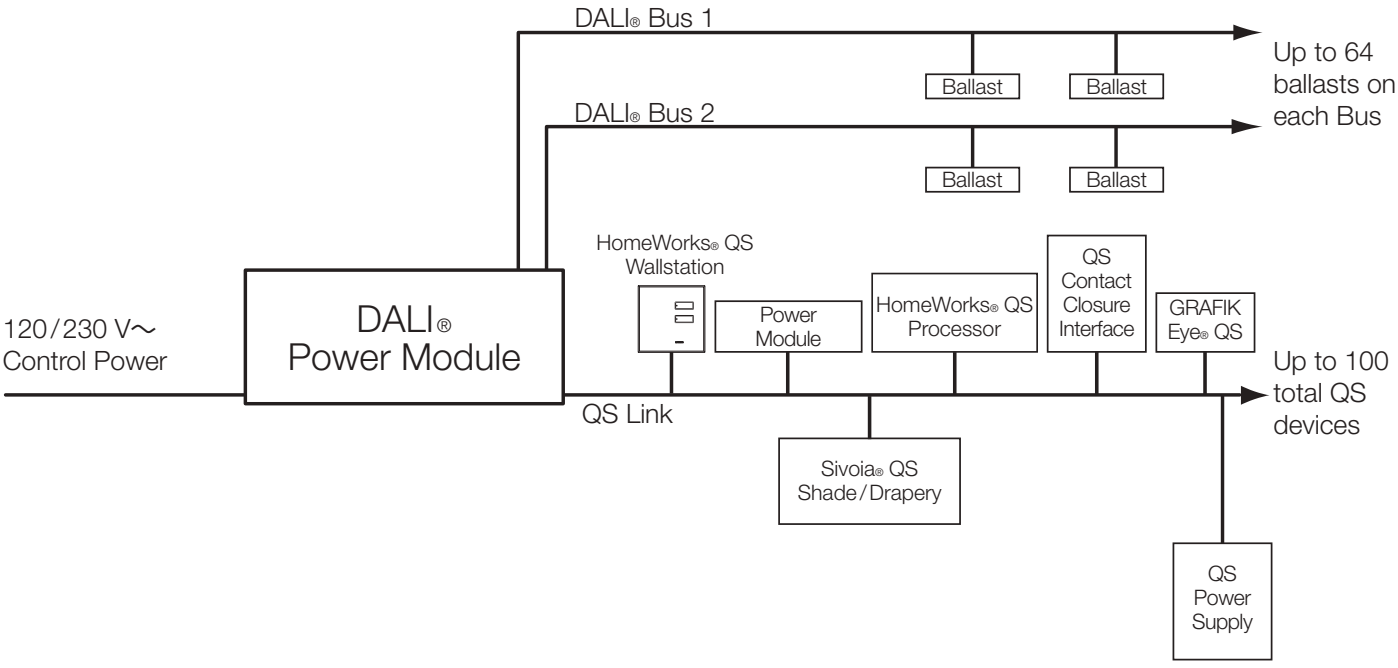
The DALI® Power Module is a DIN-rail mounted controller for DALI®-compliant Digital Addressable loads. It provides DALI® bus power and control for two independent DALI® buses with up to 64 ballasts each.

Features

- Provides power for two buses of DALI® compliant digital addressable loads (up to 250 mA per bus).
- Each DALI® Bus can control a maximum of 16 zones.
- Power failure memory retains programming in the event of a power loss.
- DALI® Power Module can be used in a HomeWorks® QS system to control and manage light in an entire home or building.



DALI® Power Module (LQSE-2DAL-D)



LUTRON® SPECIFICATION SUBMITTAL Page 1

Job Name:	Model Numbers:	
Job Number:		

Specifications

Power

- 120 V~ 50/60 Hz 120 mA
- 230 V~ 50/60 Hz 80 mA
- Lightning strike protection meets ANSI/IEEE standard 62.31-1980. Can withstand voltage surges of up to 6000 V~ and current surges of up to 3000 A.
- Stand by power: 7 W
- BTUs/hour when fully loaded: 24
- DALI® Bus Output: 16 V⎓ 250 mA maximum per bus.

Standards

- Lutron Quality Systems registered to ISO 9001.2008.
- CE
- C-Tick ✔
- UL
- cUL
- NOM

Environment

- Surrounding Air Temperature Range: 0 °C to 65 °C (32 °F to 149 °F).
- Relative Humidity: less than 90% non-condensing.
- Calibration point maximum: 75 °C (167 °F)
- For indoor use only.

Terminals

- Mains Wiring: 1.0 mm^2 to 4.0 mm^2 (18 AWG to 12 AWG)
- DALI Bus Wiring: 0.5 mm^2 to 1.5 mm^2 (20 AWG to 14 AWG)
- QS Link Wiring: 1.0 mm^2 (18 AWG)
- Minimum wire temperature rating = 65 °C (149 °F), Cu only

Mounting

- Intended to mount within an IP20 (minimum) rated consumer panel or breaker panel with integrated DIN rail and dead cover
- Width = 9 DIN modules (161.7 mm or 6 ⅜ in).

Programming and Compatibility Requirements

- The LQSE-2DAL-D can only be used with the HomeWorks® QS system.
- Setup and programming of the DALI® Power Module is done through the HomeWorks® QS programming software.

DALI® Buses

- Up to 64 DALI® compliant loads on each bus can be addressed and grouped into 16 zones.
- DALI® Power Module supplies 250 mA to power each bus.
- DALI® Bus wires are polarity insensitive and topology-free.

QS Link Limits

- A QS link in a HomeWorks® QS system can have up to 512 zones (outputs) and 100 devices. A ballast or driver counts as 1 zone unless specifically grouped into zones from the HomeWorks® QS software.
- Each DALI® Power Module counts as one device toward the 100 device limit.
- A maximum of 8 fully loaded DALI® Buses may be connected to a single QS link.

HomeWorks® QS Wallstations

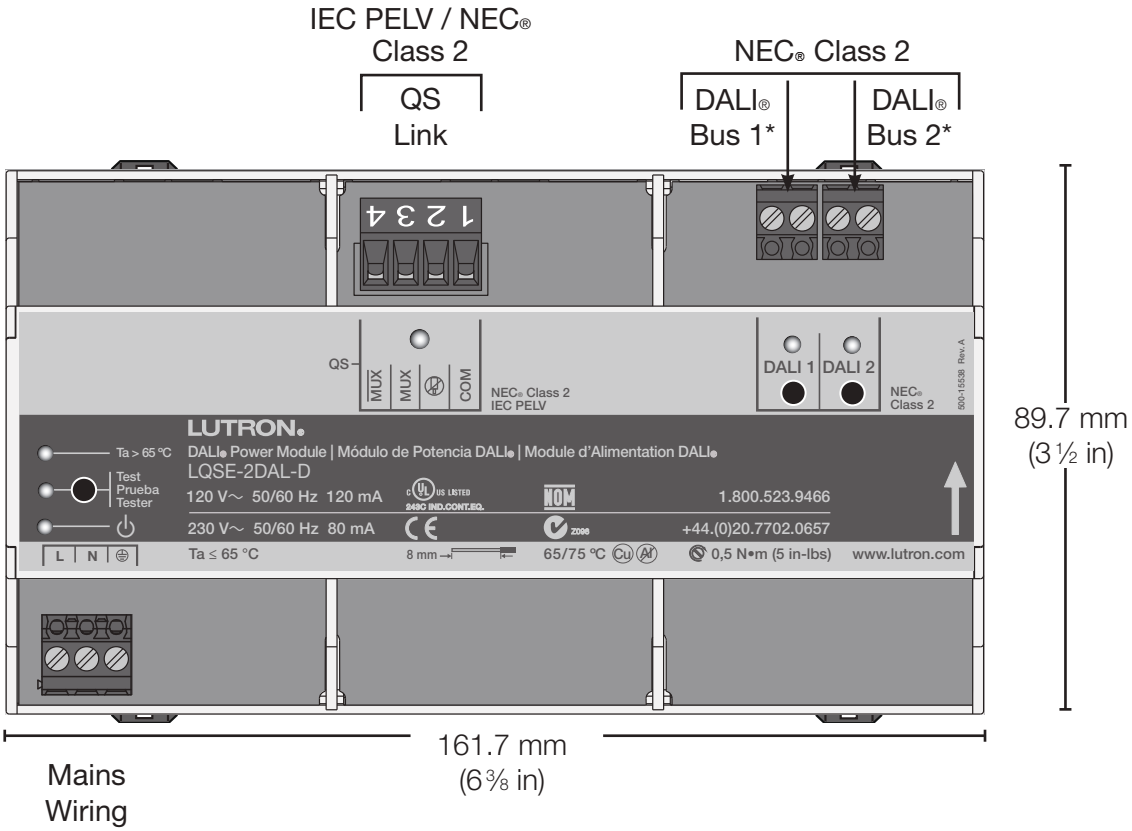
- HomeWorks® QS wallstations can be configured to control DALI® Power Modules with the HomeWorks® QS programming utility.
- LED indicator displays the status of programmed lights.

Troubleshooting and Maintenance Features

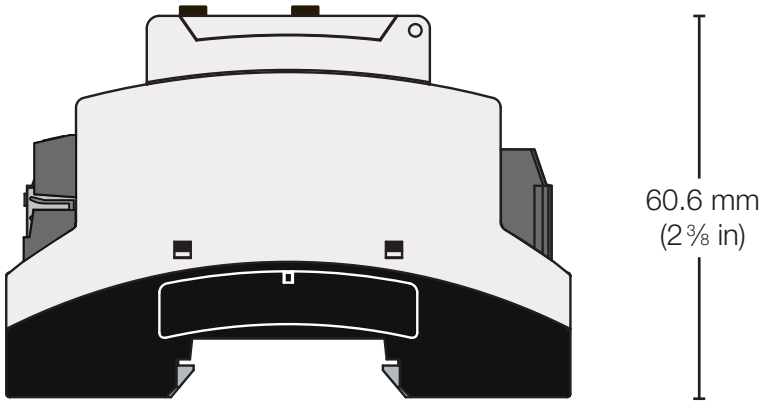
- Maintains redundant memory of ballast programming for ease of single or multiple ballast replacement.
- To verify DALI® lights connected to DALI® bus 1 and bus 2:
  - **Enter Test Mode:** Press and hold ***Test*** button on the DALI® Power Module until the Test LED starts flashing.
  - **Test:** Each press of either the ***DALI 1*** or ***DALI 2*** button will cycle the lights between high-end, low-end, flash and off for that bus.
  - **Exit Test Mode:** Press and hold ***Test*** button until Test LED stops flashing.

Job Name:	Model Numbers:	
Job Number:		

Overview of Wiring Terminals and Mechanical Dimensions

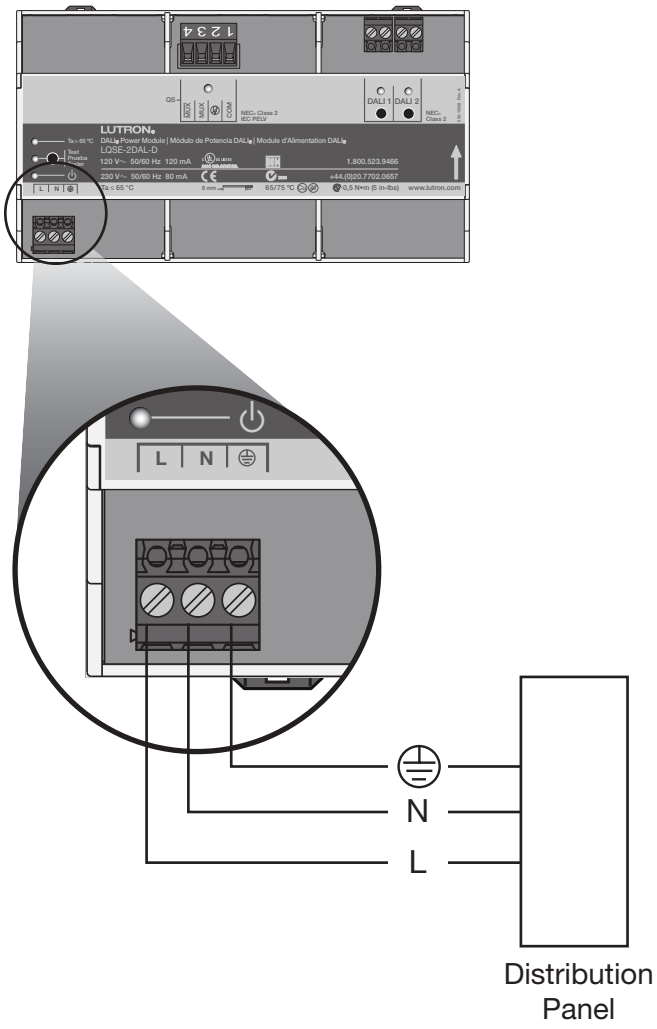


* Wire according to local codes.



Job Name:	Model Numbers:	
Job Number:		

Wiring: Mains Voltage



⏚ – Earth/Ground

N – Neutral

L – Mains/Line

Wiring from Distribution to Power Module

- Turn off all circuit breakers or isolators feeding the Power Module unit at the distribution panel.
- Run line, neutral, and earth/ground ⏚ wires from a feed to the DALI® Power Module.
- Use 1.0 mm^2 to 4.0 mm^2 (18 AWG to 12 AWG) conductors (depending on breaker rating) to feed the mains wiring. The device draws less than 120 mA (120 V⁓) and 80mA (230 V⁓).

Emergency Lighting Applications

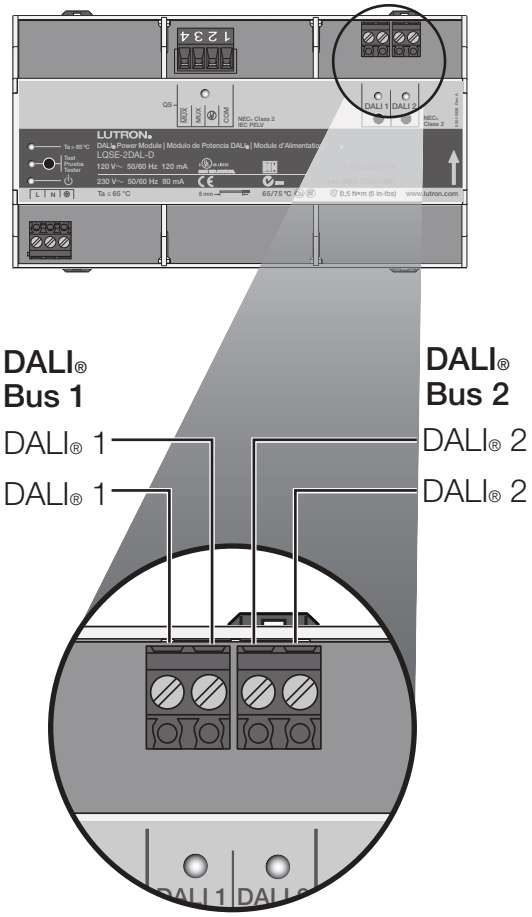
- Use normal (non-essential) power only to power the DALI® Power Module.
- When normal power drops out, the DALI® Power Module will not power the DALI® Buses. When this occurs, ballasts powered from emergency feeds go to their emergency mode, full light output by default.

Mains Wiring and IEC PELV/NEC® Class 2 Separation

- The DALI® Power Module is designed to separate mains wiring from IEC PELV/NEC® Class 2 circuits.
- Follow appropriate local and national codes to avoid violating required separation guidelines.

Job Name:	Model Numbers:	
Job Number:		

Wiring: DALI® Bus



The DALI® Power Module will supply power for two independent DALI® Bus, which supports a maximum of 64 ballasts per bus.

DALI® Wiring

- DALI® wiring is not SELV.
- DALI® wiring may be treated as mains voltage, and thus can be run within the same sheathing.
- Ensure that there is no greater than a 2 V~ drop between the DALI® Power Module and the end of the DALI® Bus.
- Consult all national and local electrical codes for separation requirements.

Wire Gauge	Maximum DALI®-compliant Bus Wire Length
1.5 mm^2 (14 AWG)	300 m (984 ft)
0.75 mm^2 (18 AWG)	150 m (492 ft)
0.5 mm^2 (20 AWG)	100 m (328 ft)

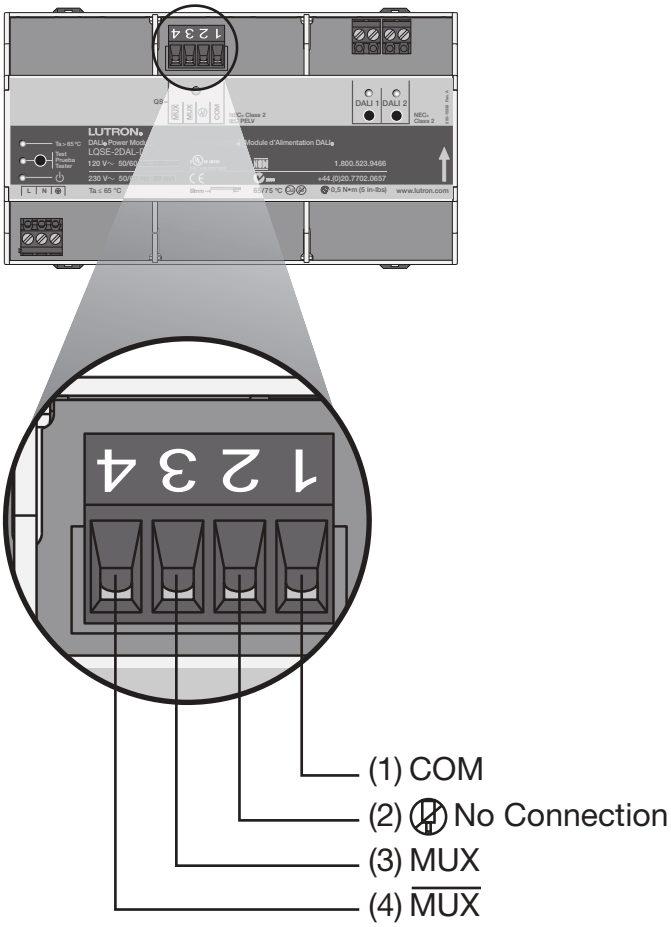
Lutron Qualified DALI® Ballasts

Lutron requires that all DALI® devices that are intended to be used with a Lutron® DALI controller must be pre-tested by Lutron and determined to be compatible before being used on a project.

For a complete list of Lutron® qualified DALI® ballasts please refer to Application Note #482 for more information.

Job Name:	Model Numbers:	
Job Number:		

Wiring: QS Link



IEC PELV / NEC® Class 2 QS Link Wiring

- Link communicates using IEC PELV/NEC® Class 2 wiring.
- Follow all applicable national and local codes for proper circuit separation and protection.
- Wiring may be daisy chained or t-tapped.
- Total length of QS link must not exceed 610 m (2000 ft).
- Do NOT connect terminal 2.
- Wire Gauge
  - Power (terminals 1 and 2): 1 pair 1.0 mm^2 (18 AWG)
  - Data (terminals 3 and 4): 1 pair 0.5 mm^2 to 1.0 mm^2 (22 AWG to 18 AWG) twisted and shielded
  - Can use Lutron® cable GRX-CBL-346S-500

Job Name:	Model Numbers:	
Job Number:		

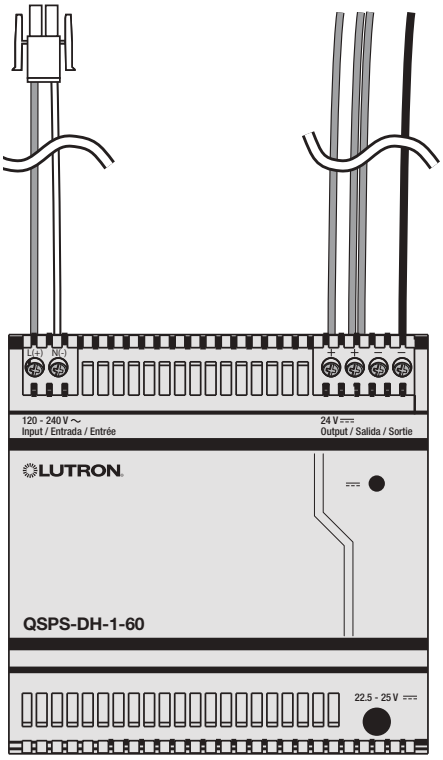
Power Supplies

HomeWorks QS Power Supply

The *HomeWorks* QS Power Supply provides power to the *HomeWorks* QS processor as well as system devices and interfaces.

Featuring easy assembly on a DIN rail, the power supply unit delivers 24 V⎓ output voltage and conforms with UL1310 for IEC PELV / NEC® Class 2 applications.

Use the *HomeWorks* QS design utility and power draw documentation for power management details.



HomeWorks QS Power Supply
(QSPS-DH-1-60)

Model Number

QSPS-DH-1-60	*HomeWorks* QS Power Supply

HomeWorks QS Power Supply

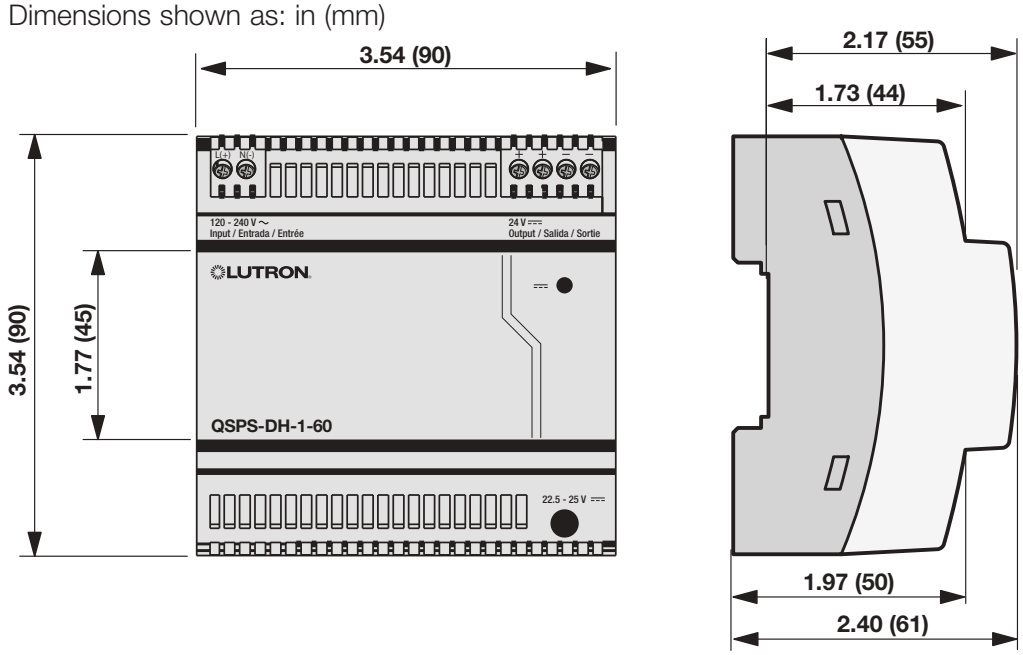
Specifications

Model Number	QSPS-DH-1-60
Power	**Input:** 100 V~ to 240 V~ 50 Hz to 60 Hz 0.7 A **Output:** 24 V⎓ 2.5 A **Power Draw Units* (PDUs):** supplies 75 * For more information about Power Draw Units (PDUs), please see the *HomeWorks® QS Wiring and Power Guidelines* document on the *HomeWorks* QS Resource Web Site
Environment	Ambient operating temperature: 32 °F to 131 °F (0 °C to 55 °C) . Ambient operating humidity: 0% to 90% humidity, non-condensing. Indoor use only.
Mounting	Mount using 1.38 in (35 mm) DIN rail.
Dimensions	3.54 in (90 mm) x 3.54 in (90 mm) x 2.40 in (61 mm)
Warranty	8 Year Limited Warranty. http://www.lutron.com/resiinfo
Regulatory Approvals	UL/cUL listed UL508, IEC PELV / NEC® Class 2 as per UL1310
Industrial Control Panel Supply	UL508
Class 2	UL1310
European Regulations	CE
Radiated Interference	EN 55011 Class B EN 55022
Conducted Radio Interferance	EN 55011 Class B EN 55022
Electrical Equipment for Machinery	EN 60204
Safety Transformers for Power Supply Units	IEC 61558-2-17
Electronic Equipment for Use in Electrical Power Installations	EN 50178/VDE 0160 (PELV)
SELV	IEC 60950 (SELV) and EN 60204 (PELV)
Safe Isolation	DIN VDE 0100-410 DIN VDE 0106-1010
Protection Against Electric Shock	DIN 57100-410 DIN VDE 0106-101
Limitation of Mains Harmonic Currents	EN 61000-3-2

HomeWorks QS Power Supply

Dimensions

Dimensions shown as: in (mm)



Mounting

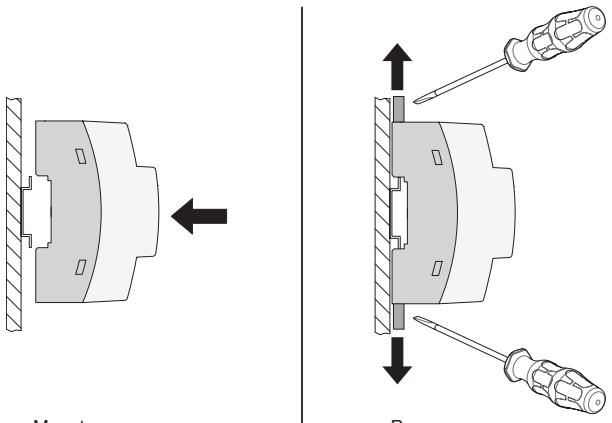
- The power supply can be snapped onto any DIN rail in accordance with EN 60715. The device must be mounted horizontally (connection terminal blocks on top).

Mount

To mount on a DIN rail, snap the device straight onto the DIN rail.

Remove

To remove from the DIN rail, pull the orange base latch outward then remove the device from the DIN rail.



Mount
Montaje
Monter
Instale

Remove
Retire
Retirez
Retire

HomeWorks QS Power Supply

Installation

NOTICE: The power supply unit is suitable for use in *HomeWorks* QS enclosures and applications ONLY.

NOTICE: Damage will result if this product is used with previous generations of *HomeWorks* products.

- Must be installed by a qualified individual in accordance with all applicable regulations.

  WARNING: Shock Hazard. Wiring with power ON could result in serious injury or death. To avoid the risk of electric shock locate and remove fuse or lock circuit breaker in the OFF position before installing or servicing equipment.

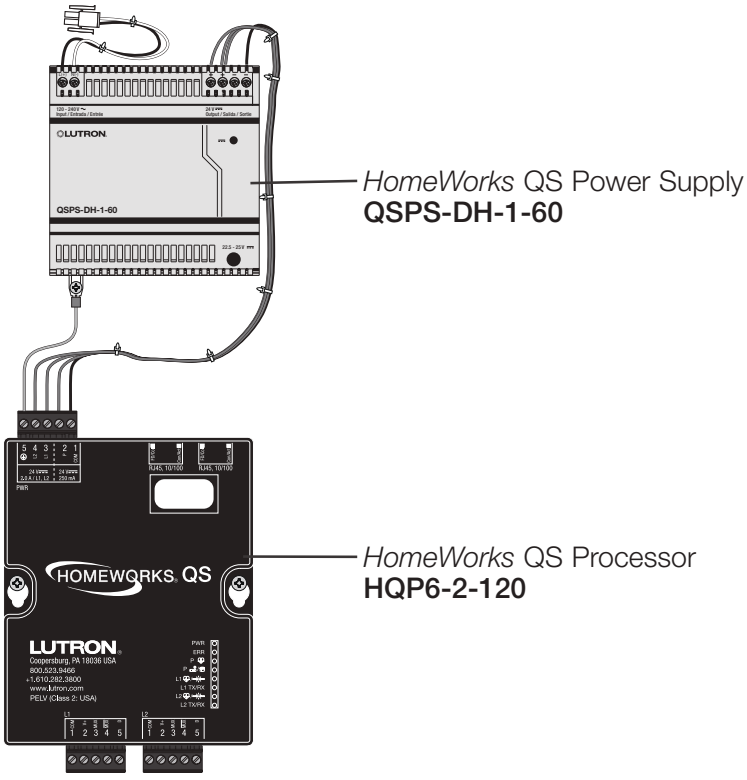
- Mount the Power Supply in a *HomeWorks* QS enclosure.

  NOTICE: The Power Supply is intended for indoor use only. Operate between 32 °F and 131 °F (0 °C and 55 °C), 0% to 90% humidity, non-condensing.

  NOTICE: This equipment is air-cooled. Mount in a location where the vented cover will not be blocked, minimum 1.18 in (30 mm) above and below is required to reduce the risk of overheating and possible damage to equipment. Failure to provide adequate space for cooling may result in overheating and void the warranty.

- Connect the input harness for the power supply into appropriate terminal blocks. Attach output harness to appropriate terminals for the connected device.
- Verify all connections before turning on power.

Wiring Diagram



HomeWorks QS Power Supply
QSPS-DH-1-60

HomeWorks QS Processor
HQP6-2-120

Example above shows wiring connection from the *HomeWorks* QS Power Supply **(QSPS-DH-1-60)** to a *HomeWorks* QS Processor **(HQP6-2-120)**

HomeWorks® QS PowerKit

The HomeWorks® QS PowerKit is necessary for installations that require the mounting of up to 2 HomeWorks® QS Processors (HQP6-2) in HWI-PNL-8 or HWI-PNL-8-CE.

The HomeWorks® QS PowerKit provides a simple power connection method and has an Input Power Switch that can be used to easily remove power to the HomeWorks® QS Power Supply units and the equipment they feed.

The PowerKit provides a mounting method for HomeWorks® QS Power Supply units (QSPS-DH-1-60), which are required to power the HomeWorks® QS Processors and provide link power for devices.

HomeWorks® QS PowerKit
(PNL-8-PWRKIT)

Model Number

PNL-8-PWRKIT	HomeWorks® QS PowerKit

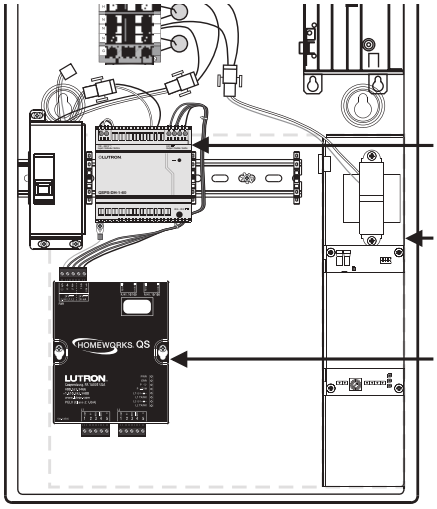
HomeWorks® QS PowerKit

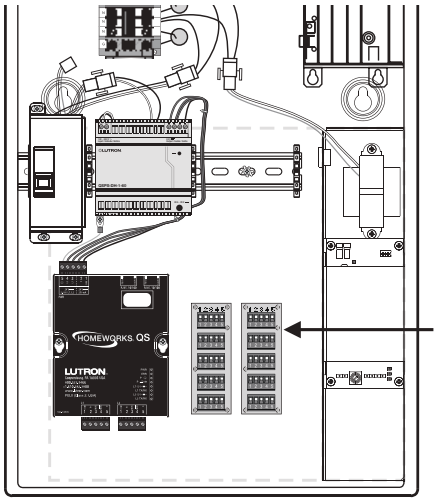
Specifications

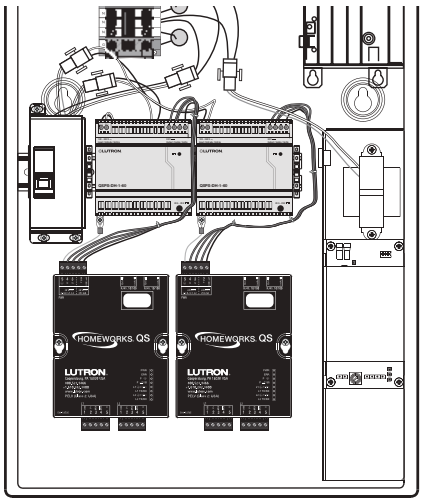
Model Number	PNL-8-PWRKIT
Power	120-240 V~ 50/60 Hz 2A
Capacity	Can accommodate up to two HomeWorks® QS Power Supply units (QSPS-DH-1-60)
Environment	Ambient operating temperature: 32 °F and 104 °F (0 °C and 40 °C). Ambient operating humidity: 0% to 90% humidity, non-condensing. Indoor use only.
Mounting	Mount in HWI-PNL-8 or HWI-PNL-8-CE using screws and washers provided
Connections	One Power Harness (quick connect to HWI-PNL-8) Two Supply Harnesses (quick connect to HomeWorks® QS Power Supply units)
Warranty	8 Year Limited Warranty. http://www.lutron.com/TechnicalDocumentLibrary/HomeWorks_Warranty.pdf

HomeWorks® QS PowerKit

Configuration Examples





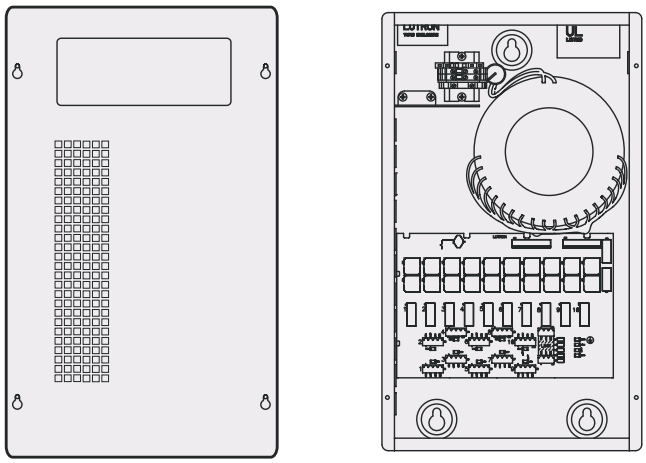


086-100 REV C 1 03.26.09

Sivoia QS | 120V Smart Panel power supply

The Sivoia QS Smart Panel power supply (QSPS-P1-10-60) is a 24 V⎓ hardwired power supply that is used with Lutron® QS lighting or shading devices. QSPS-P1-10-60 simplifies the wiring and organizes installations that require multiple power supplies. Each panel contains ten 30 W (60 W peak) power supplies, designed for use with Lutron QS lighting and shading devices.

QSPS-P1-10-60 is designed to be hardwired into a standard 120 V~ circuit. The panel contains fuses on each output to protect the device in the event of a miswire.



QSPS-P1-10-60
10 output Smart Panel power supply

Features

- 24 V⎓ supply that provides power to shades, drapery drive units, keypads, and accessories
- Simple wiring scheme uses 4-conductor low voltage link to provide power and communication for both QS electronic drive units (EDUs) and seeTouch QS keypads
- Flexible wiring topology for easy installation and integration
- 10 output panel provides power for 10 to 30 shades based on shade dimensions
- Smart diagnostics reduce installation time and system verification
- Confirms system communication and facilitates system installation
- Provides easy system testing with manual override buttons for shades and lighting

Job Name:	Model Numbers:
Job Number:	

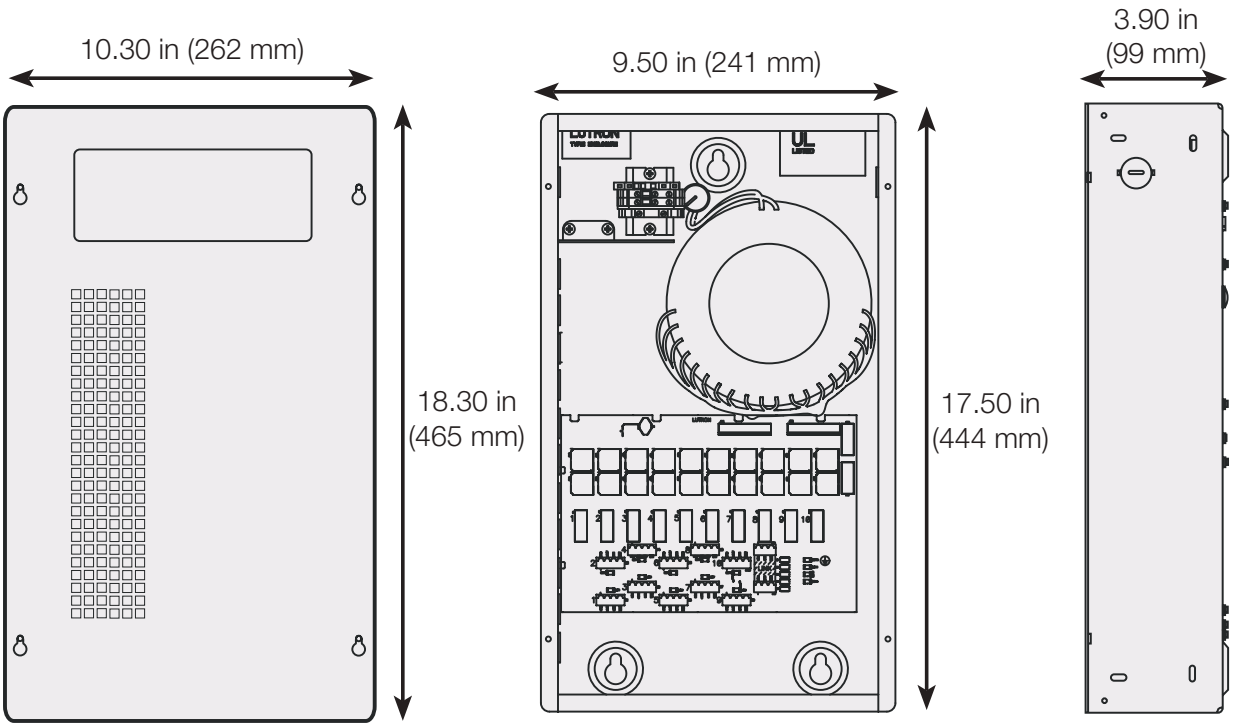
Specifications

Input Voltage	120 V~
Input current per QSPS-P1-10-60	6 A/Panel Note: use only high magnetic breakers
Output Voltage	24 V⎓
Output Current	2.5 A
Operating Frequency	60 Hz
ESD Protection	(+/-) 16kV
Miswire Protection	Fuse on each output 2 spares included (5x20mm, 2.5 A fuse)
Wiring	Input wires to 120 V~ supply, output wires to Lutron QS lighting or shading devices
Wiring type	Input wires: 10-14 AWG (6-2.5 mm^2) stranded
	Output wires: 4 conductor 12-26 AWG (4-0.15 mm^2) stranded, twisted/shielded
Connections	Terminal blocks
Maximum QSPS-P1-10-60	1 panel per dedicated 15 A circuit
Maximum QSPS-P1-10-60	2 panels per dedicated 20 A circuit
Maximum feed breaker size	30 A
Weight	25 lbs (11.3 kg)
Regulatory Approvals	UL Listed: #E42071
Industrial Control Equipment	Limited Voltage/Limited Current Circuit (NEC® approved class 2 power source)

Job Name:	Model Numbers:
Job Number:	

Dimensions

QSPS-P1-10-60

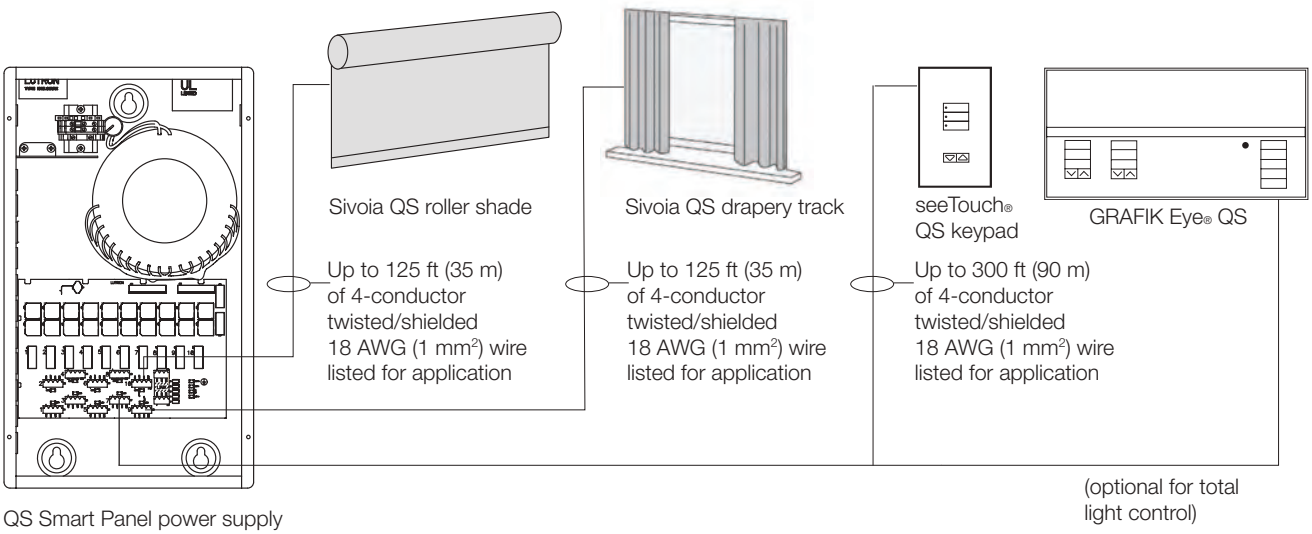


with cover

without cover

Job Name:	Model Numbers:
Job Number:	

System Wiring Overview: QS Smart Panel Power Supply



- Maximum 100 devices (Sivoia QS shades / drapery drive units, seeTouch QS keypads, GRAFIK Eye QS main units, and QS power supplies) per link
- Maximum 100 zones (Sivoia QS shades / drapery drive units and GRAFIK Eye QS lighting zones)

Job Name:	Model Numbers:
Job Number:	

QS Link Wiring

Link Rules

The following Link rules must be observed for proper operation.

- Maximum of 100 devices (such as a GRAFIK Eye® QS, seeTouch® QS keypad, smart panel power supply [QSPS-P1-10-60], or Sivoia® QS shade / drapery drive unit)
- Maximum of 100 zones - such as a Sivoia QS shade / drapery drive unit, or a lighting zone on a GRAFIK Eye QS
- Maximum 2000 ft (600 m) of cable connecting all QSPS-P1-10-60 panels
- Maximum 2000 ft (600 m) of cable to devices wired to each QSPS-P1-10-60
- Only use cable with at least one twisted/shielded pair for communications (MUX and $\overline{\text{MUX}}$)

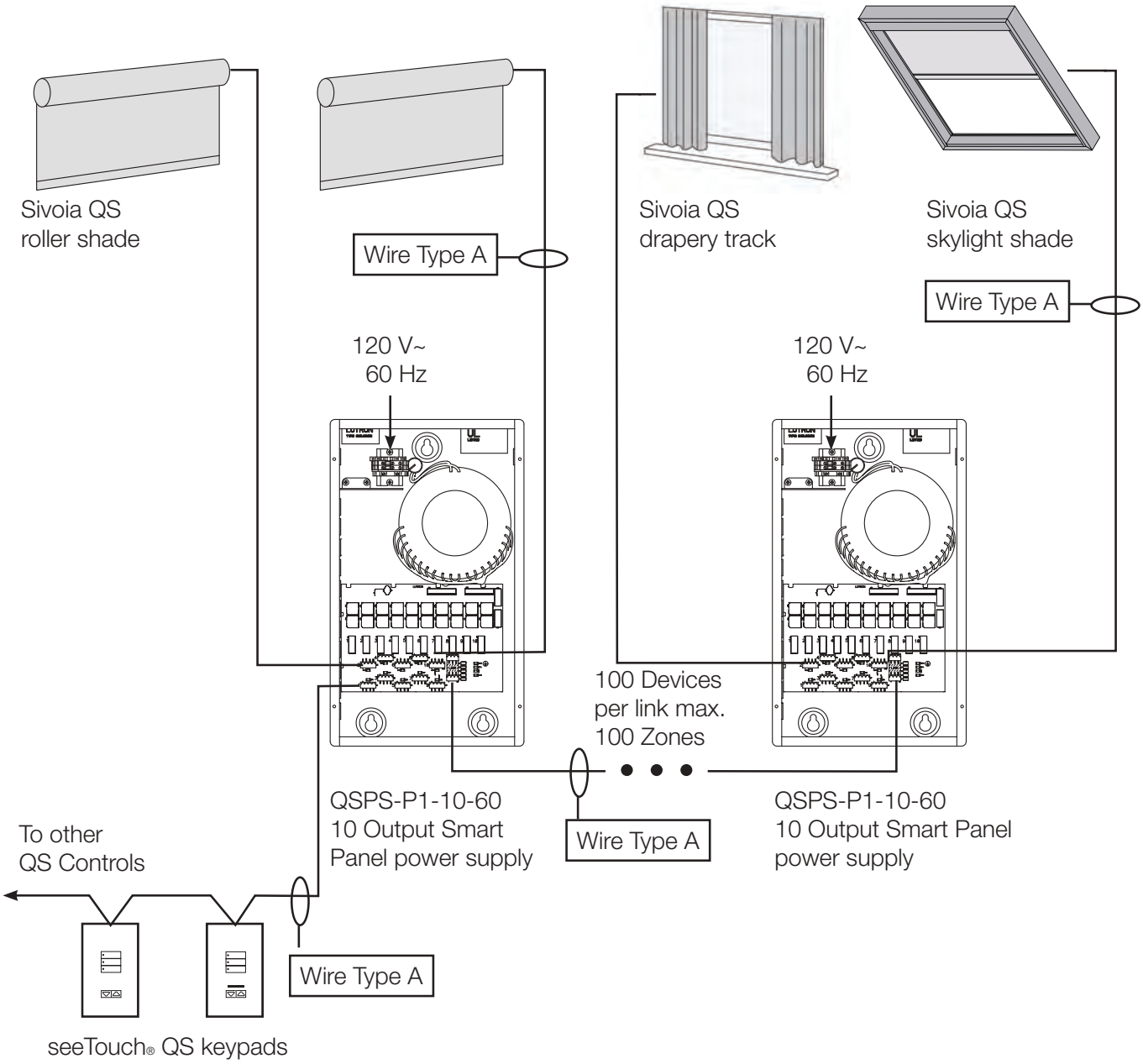
QS Smart Panel Power Supply Wiring Guide

Maximum devices per one output		Maximum distance per one output based on wire guage		
Shades + Controls		12 AWG ($4\ mm^2$) QSH-CBL-L-500 QSH-CBLP-L-500	16 AWG ($1.5\ mm^2$) QSH-CBL-M-500 QSH-CBLP-M-500	18 AWG ($1\ mm^2$) GRX-CBL-346S-500
None	Up to 8 seeTouch QS keypads	1200 ft (350 m)	500 ft (150 m)	300 ft (90 m)
1 Sivoia QS shade* / drapery drive unit	Up to 1 seeTouch QS keypad	500 ft (150 m)	200 ft (60 m)	125 ft (35 m)
2 Sivoia QS roller 64™, ≤ 30 sq ft (2.75 sq m) each	None	200 ft (60 m)	75 ft (20 m)	50 ft (15 m)
3 Sivoia QS roller 64, ≤ 20 sq ft (1.8 sq m) each	None			
2 Sivoia QS roller 100, ≤ 50 sq ft (4.6 sq m) each	None			

* roller 64, roller 100, roller 200CW, roller 225™, skylight

Job Name:	Model Numbers:
Job Number:	

Sivoia QS System Wiring:
Smart Panel power supply, single shade per output

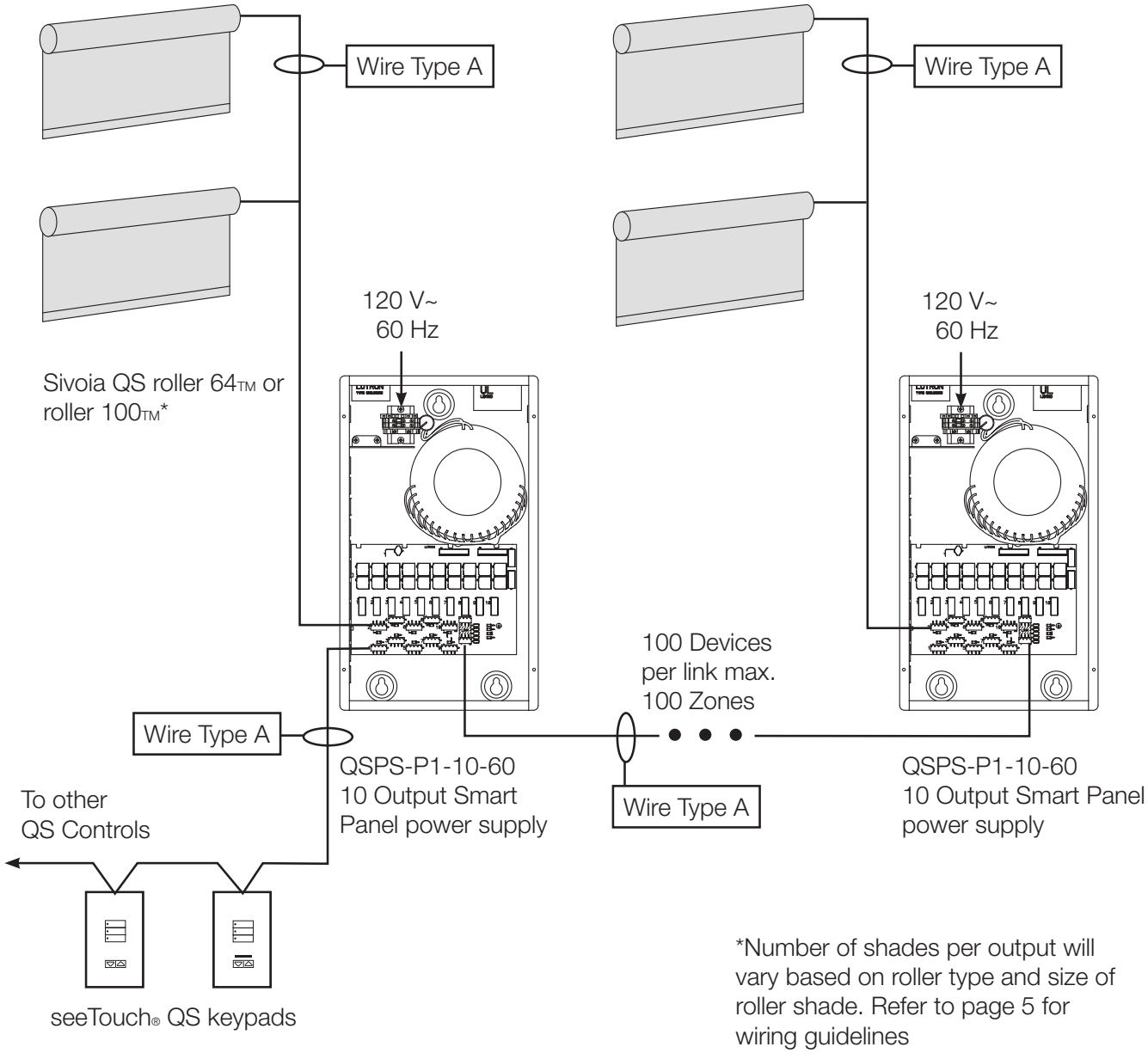


Wiring Type Key

Type A Communications Link: 4 Conductor (twisted and shielded), listed for application
Refer to wiring guide on pg. 5 for wire gauge based on distance
Maximum comm. link: – Up to 2000 ft (600 m) connecting
all QSPS-P1-10-60 panels

Job Name:	Model Numbers:
Job Number:	

Sivoia QS System Wiring:
Smart Panel power supply, two shades per output*



*Number of shades per output will vary based on roller type and size of roller shade. Refer to page 5 for wiring guidelines

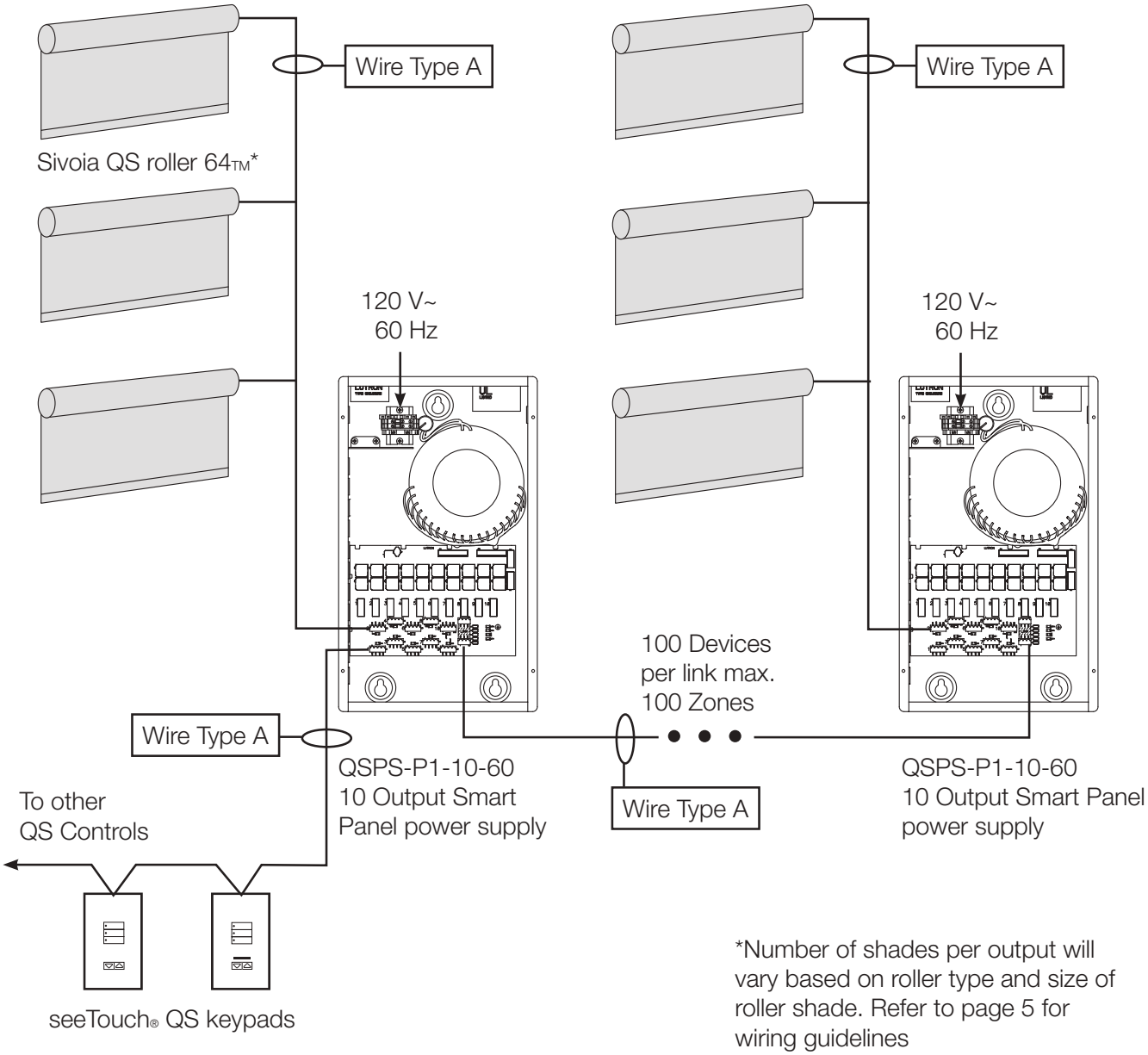
Wiring Type Key

Type A

Communications Link: 4 Conductor (twisted and shielded), listed for application
Refer to wiring guide on pg. 5 for wire gauge based on distance
Maximum comm. link: – Up to 2000 ft (600 m)
connecting all QSPS-P1-10-60 panels

Job Name:	Model Numbers:
Job Number:	

Sivoia QS System Wiring:
Smart Panel power supply, three shades per output*



*Number of shades per output will vary based on roller type and size of roller shade. Refer to page 5 for wiring guidelines

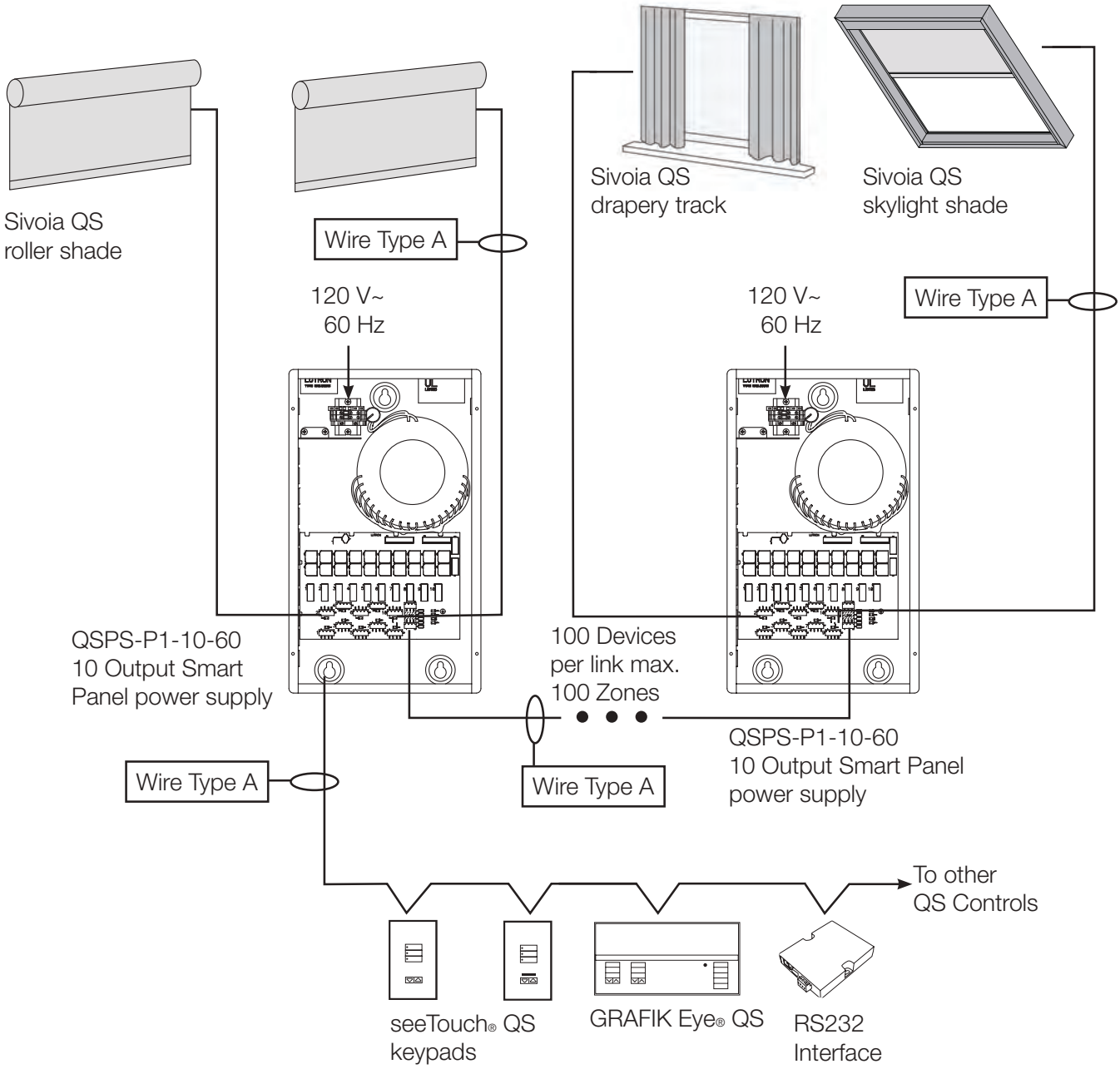
Wiring Type Key

Type A

Communications Link: 4 Conductor (twisted and shielded), listed for application
Refer to wiring guide on pg. 5 for wire gauge based on distance
Maximum comm. link: – Up to 2000 ft (600 m)
connecting all QSPS-P1-10-60 panels

Job Name:	Model Numbers:
Job Number:	

Sivoia QS with GRAFIK Eye® QS System Wiring: Smart Panel power supply, single shade per output



Wiring Type Key

Type A

Communications Link: 4 Conductor (twisted and shielded), listed for application
Refer to wiring guide on pg. 5 for wire gauge based on distance
Maximum comm. link: – Up to 2000 ft (600 m)
connecting all QSPS-P1-10-60 panels

Job Name:	Model Numbers:
Job Number:	

Limited Warranty

SCOPE

This limited warranty ("Warranty") covers the Lutron supplied (a) Sivoia® QS Shade System ("Sivoia® QS Shade System"), (b) Sivoia QED® Shade System ("Sivoia QED® Shade System"), (c) manual shade system and (d) alternating current or a/c shade system (each of the foregoing being a "System"). Customer acknowledges and agrees that use of the System constitutes acceptance of all terms and conditions of this Warranty.

LIMITED WARRANTY

Subject to the exclusions and restrictions described below, Lutron warrants that each System will be free from manufacturing defects from the date of shipment by Lutron for a period of (a) one year as to the wall controls, interfaces, and system accessories of the Sivoia QS Shade System ("External Sivoia QS Components") and (b) eight years as to the other Systems and the electronic drive unit (EDU), shade fabric, and shade hardware of the Sivoia QS Shade System. If any manufacturing defect exists in the External Sivoia QS Components, so long as Customer promptly notifies Lutron of the defect within the one year warranty period and, if requested by Lutron, returns the defective part(s), Lutron will, at its option, either repair the defective part(s) or provide comparable replacement part(s). If any manufacturing defect exists in any of the components of a System other than the External Sivoia™ QS Components, so long as Customer promptly notifies Lutron of the defect within the eight year warranty period and, if requested by Lutron, returns the defective part(s), Lutron will, at its option, either repair the defective part(s) or issue a credit to the Customer against the purchase price of comparable replacement part(s) purchased from Lutron as provided below:

Number of Years from Date of Shipment	Percentage of Cost of Replacement Parts Credited by Lutron
Up to 2	100%
More than 2 but not more than 5	50%
More than 5 but not more than 8	25%
More than 8	0%

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

EXCLUSIONS AND RESTRICTIONS

This Warranty will be void, and Lutron and its suppliers will have no responsibility under this Warranty, if Lutron or its representatives cannot access any components of the System to inspect, diagnose problems with or repair the System or any of its components as a result of concealment or inaccessibility of such components within a building structure.

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

1. Damage, malfunction or inoperability diagnosed by Lutron or a Lutron approved third party as caused by normal wear and tear, abuse, misuse, incorrect installation, neglect, accident, interference or environmental factors, such as (a) use of incorrect line voltages fuses or circuit breakers; (b) failure to install, maintain and operate the System pursuant to the operating instructions provided by Lutron and the applicable provisions of the National Electrical Code and of the Safety Standards of

Job Name:	Model Numbers:
Job Number:	

Limited Warranty (continued)

Underwriter's Laboratories; (c) use of incompatible devices or accessories; (d) improper or insufficient ventilation; (e) unauthorized repairs or adjustments or alterations; (f) vandalism; (g) an act of God, such as fire, lightning, flooding, tornado, earthquake, hurricane or other problems beyond Lutron's control; or (h) direct exposure to corrosive materials.

2. On-site labor costs to diagnose issues with, and remove, repair, replace, adjust, reinstall and/or reprogram the System or any of its components.

3. Components and equipment external to the System, such as, non-Lutron lighting and automation systems; building wiring audio-visual equipment; and non-Lutron time clocks, photosensors and motion detectors.

4. The cost of repairing or replacing other property that is damaged when any System does not work properly, even if the damage was caused by the System.

THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES. ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO EIGHT YEARS FROM THE DATE OF SHIPMENT, EXCEPT THAT SUCH IMPLIED WARRANTIES ARE LIMITED TO ONE YEAR FROM THE DATE OF SHIPMENT AS TO THE EXTERNAL SIVOIA COMPONENTS.

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

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

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

Job Name:	Model Numbers:
Job Number:	

Limited Warranty (continued)

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

WARRANTY CLAIMS, TECHNICAL ASSISTANCE AND WARRANTY INFORMATION.

Contact the Lutron Technical Support Center at the numbers provided on the following page or your local Lutron sales representative with questions concerning the installation or operation of the System or this Warranty, or to make a warranty claim. Please provide the exact model number when calling.

Job Name:	Model Numbers:
Job Number:	

Technical and Sales Assistance

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Fax: +81.3.5575.8420

www.lutron.com/shadingsolutions

USA and Canada (24 hrs/7days):
call: 800.523.9466

Other countries (8 a.m. – 8 p.m. ET)
call: +1 610.282.3800
fax: +1 610.282.3090

email: shadinginfo@lutron.com

Shades Customer Service

USA and Canada (24 hrs/7days):
call: 800.446.1503

Specification Submittal Sheet
for QS Smart Panel power supply

Job Name:	Model Numbers:
Job Number:	

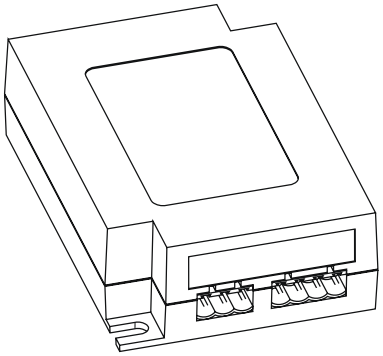
QS | Link power supply

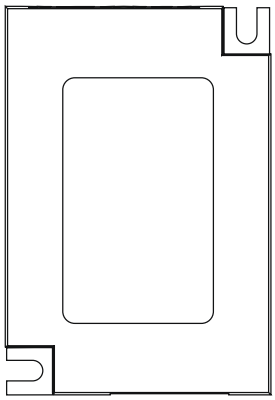
The QS Link power supply (QSPS-P1-1-50/ QSPS-P2-1-50/ QSPS-P3-1-50) is a 24 V⎓ plug in power supply that is used with Lutron® QS lighting or shading devices.

The Link power supply plugs into a standard receptacle. The power supply is protected electronically in the event of a miswire, and will automatically reset when wiring is corrected.

Features

- 24 V⎓ supply that provides power to shades, drapery drive units, keypads, and accessories
- Simple wiring scheme uses 4-conductor, low voltage link to provide power and communication for QS electronic drive units (EDUs), seeTouch® QS keypads and QS integration interfaces
- Mounting tabs and small size allow for discrete installation
- Universal input voltage (100-240 VAC) enables global specification

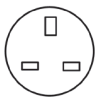




QSPS-P1-1-50
Link power supply

Job Name:	Model Numbers:
Job Number:	

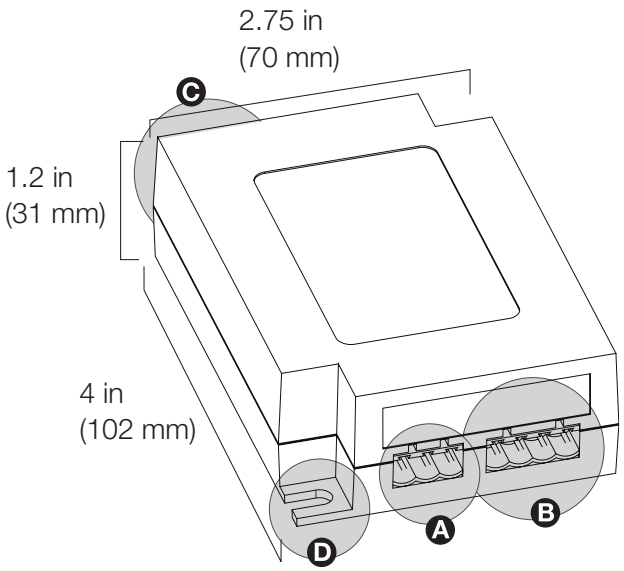
Specifications

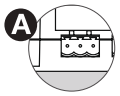
Input Voltage	100-240 V~
Input current (MAX)	1 A
Output Voltage	24 V⎓
Operating Frequency	50/60 Hz
ESD Protection	(+/-) 16 kV
Miswire Protection	Electronic Automatic Reset
Input Wiring	Available with 3 types of line cords. All 6 ft (1.8 m) Plugs into standard receptacle **QSPS-P1-1-50**  NEMA 5-15 Plug **QSPS-P2-1-50**  CEE 7/7Plug **QSPS-P3-1-50**  BS 1363 Plug
QS Link Wiring	4-conductor (power and communication) +24 V, COM, MUX, $\overline{\text{MUX}}$ 3-conductor (communication pass-through) COM, MUX, $\overline{\text{MUX}}$
Output connections	Detachable terminal blocks 12-26 AWG (4-0.15 mm^2) stranded, twisted/shielded
Weight	0.3 lb (0.14 kg)
Regulatory	UL (1310 CLASS2) CE (IEC 61558) CUL (CSA C22.2 #223)

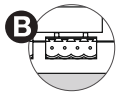
Job Name:	Model Numbers:
Job Number:	

Dimensions

QSPS-P1-1-50
QSPS-P2-1-50
QSPS-P3-1-50

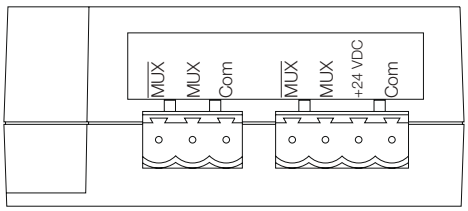



A 3-pin connector
Communication to
additional Power supplies


B 4-pin connector
Power and Communication
to QS shade or keypads


C Line voltage input

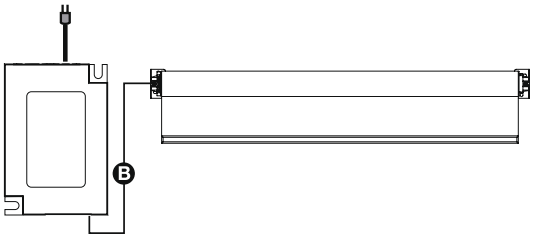

D Mounting tabs



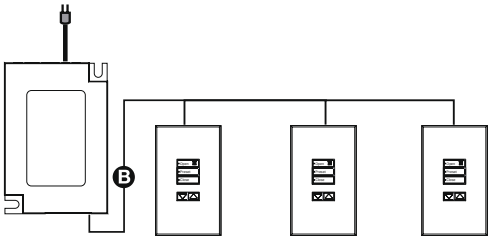
Job Name:	Model Numbers:
Job Number:	

System Wiring Overview: QS Link power supply

Example: Powering one shade / drapery drive unit
(max of one shade / drapery drive unit per output of a power supply)

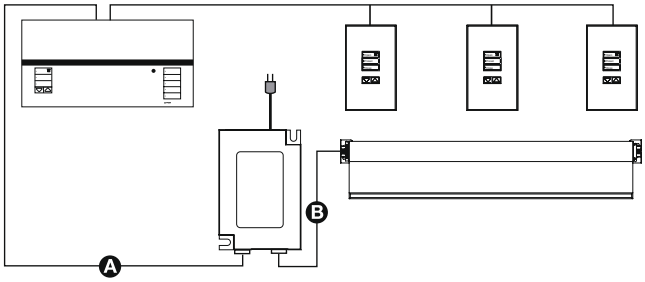


Example: Powering keypads



...up to 8 keypads
on link (B)

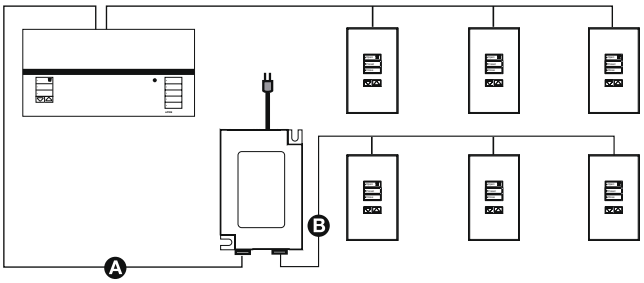
Example: Connecting to a *GRAFIK* Eye® QS (**Note:** *GRAFIK* Eye QS powered from line voltage)



Devices powered by
GRAFIK Eye QS

Devices powered
by supply

Example: Connecting to a *GRAFIK Eye* QS (**Note:** *GRAFIK* Eye QS powered from line voltage)



Devices powered by
GRAFIK Eye QS
(Refer to *GRAFIK* Eye QS spec submittal
for maximum devices that can be powered by
GRAFIK Eye QS

Devices powered by supply
...up to 8 keypads
on link (B)

Ⓐ Communication link (3 conductor)
Communications used to connect power supplies to each other or to *GRAFIK* Eye QS
12-26 AWG (4-0.15 mm²) standard, twisted/shielded

Ⓑ Power and communication link (4 conductor)
Provides power and communication to QS shades or keypads
12-26 AWG (4-0.15 mm²) standard, twisted/shielded

Job Name:	Model Numbers:
Job Number:	

QS Link Wiring

Link Rules

The following link rules must be observed for proper operation.

- Use only cable with at least one twisted/shielded pair for communiations ($\overline{\text{MUX}}$ and MUX)
- Total length of power supply link (A) wire plus device link (B) wire in entire system must be less than 2000 ft (609 m)

Maximum devices powered from one QSPS-PX-1-50		Total wire length of link (B) based on wire gauge		
Shades	Controls	12 AWG (4 mm²) QSH-CBL-L-500 QSH-CBLP-L-500	16 AWG (1.5 mm²) QSH-CBL-M-500 QSH-CBLP-M-500	18 AWG (1 mm²) GRX-CBL-346S-500
1 Slvoia QS shade/drapery drive unit	Up to 1 seeTouch® QS keypad	250 ft (75 m)	100 ft (30 m)	50 ft (15 m)
None	Up to 8 seeTouch® QS keypads*	1200 ft (350 m)	500 ft (150 m)	300 ft (90 m)

OR

* 2 seeTouch QS keypads may be exchanged for:

1 Ethernet & RS232 Control Interface (QSE-CI-NWK-E)

1 Contact Closure Input /Output Interface (QSE-IO)

Job Name:	Model Numbers:
Job Number:	

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www.lutron.com/shadingsolutions

USA and Canada (24 hrs/7days):
call: 800.523.9466

Other countries (8 a.m. – 8 p.m. ET)
call: +1 610.282.3800
fax: +1 610.282.3090

email: shadinginfo@lutron.com

Shades Customer Service

USA and Canada (24 hrs/7days):
call: 800.446.1503

Specification Submittal Sheet
for QS Link power supply

Job Name:	Model Numbers:
Job Number:	

Power Boosters and Load Interfaces

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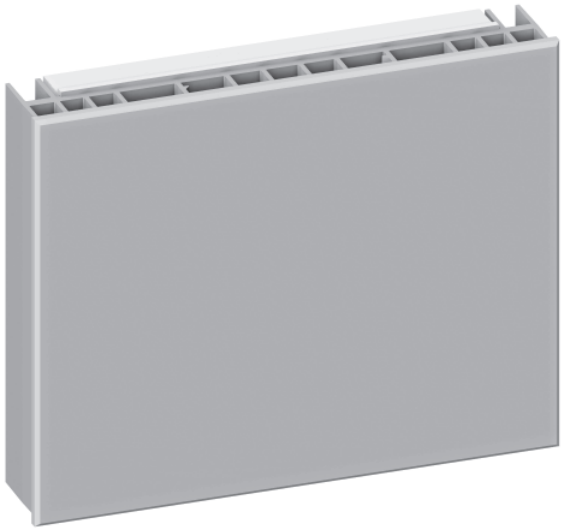
Phase-Adaptive Power Module

Description



- Provides capability for a zone on a GRAFIK Eye® control unit (or other product) to dim a fully loaded circuit of lighting.
- May be used to control incandescent, electronic low-voltage, magnetic low-voltage, and neon/ cold cathode lighting sources, as well as Lutron® Tu-Wire® fluorescent dimming ballasts.
- Automatically selects leading-edge or trailing-edge dimming for low-voltage transformers.
- Provides power and dimming for one zone.
- Up to 3 power modules may be wired on a single GRAFIK Eye® zone.
- Models available for 120 V~ control power.
- Models available for 120 V~ or 120 - 277 V~ load power.
- Not for use with non-dim loads.

Works with 120 V~ versions of:

- GRAFIK Eye® QS control units*
- GRAFIK Eye® 3000 Series control units**
- LP, LCP, and GP dimming panels**
- HomeWorks® and HomeWorks® QS remote power panels**
- Lutron® 3-wire fluorescent dimmers (consult Lutron for Vierti®); see approved list in the dimmers & switches specification guide at www.lutron.com

*Set to power module load type

**Set to incandescent load type

Model and Capacities

Control Power	Load Power	Capacity	Model Number
120 V~	120 - 277 V~	16 A	PHPM-PA-DV-WH
120 V~	120 V~	16 A	PHPM-PA-120-WH

Job Name:	Model Numbers:	
Job Number:		

Specifications

Power

- Control voltage: 120 V~
- Load voltage: 120 V~ only for PHPM-PA-120-WH
  120 – 277 V~ for PHPM-PA-DV-WH
- Capacity: Full 16 A
  120 V~: 1920 W
  120 – 277 V~: 1920 – 4432 W
- Frequency: 50 / 60 Hz, phase-to-neutral.
- Load (output) power: Phase independent of control device/control voltage.

Sources/Load Types

- Operates these sources with a smooth continuous Square Law dimming curve:
  – Incandescent (tungsten)
  – Halogen
  – Magnetic low-voltage transformer (iron core)
  – Electronic (solid-state) low-voltage transformer (must be manufacturer approved for reverse-phase control dimming)
  – Neon/Cold cathode
  – Lutron® Tu-Wire® fluorescent dimming ballasts
- Incandescent and electronic low-voltage sources may be controlled on the same circuit/control zone. Up to 30% of the unit's capacity may be used for incandescent lighting.
- Incandescent and magnetic low-voltage sources may NOT be controlled on the same circuit/control zone.
- PHPM-PA not for use with non-dim loads. Use switching power module (PHPM-SW-DV-WH) for non-dim loads.
- Minimum load on power module is 10 W.
- Output must be directly connected to the load. Load side switching is not recommended.

Key Design Features

- Automatically selects between forward phase/leading edge (e.g., magnetic low-voltage) and reverse phase/trailing edge (e.g., electronic low-voltage) dimming/output based on connected load.
- Patented RTISS™ circuitry compensates in real time for incoming line voltage variations: Compensates for +/-2% change in RMS voltage/cycle and +/-2% Hz change in frequency/second.
- Provides air-gap off.
- Module protects itself during most temporary over-current and over-voltage conditions.
- Two LEDs on front of unit provide diagnostic information (visible when faceplate is removed).

Terminals

- Each terminal accepts up to two 12 AWG (2.5 mm^2) wires.

Environment

- 32 to 104 °F (0 to 40 °C). Relative humidity less than 90% non-condensing.
- Indoor use only.
- Maximum heat output of module: 135 BTU/hour.

Mounting

- Surface or recess mount.
- Power module is UL tested and approved for use in spaces designed for environmental air handling.

Job Name:	Model Numbers:	
Job Number:		

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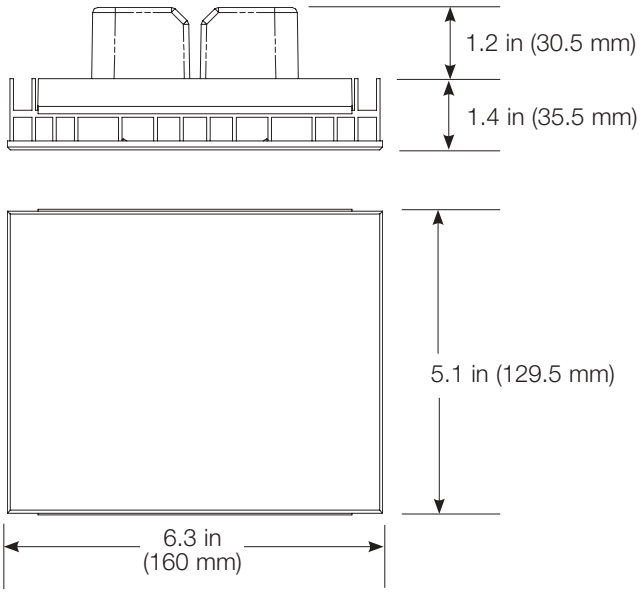
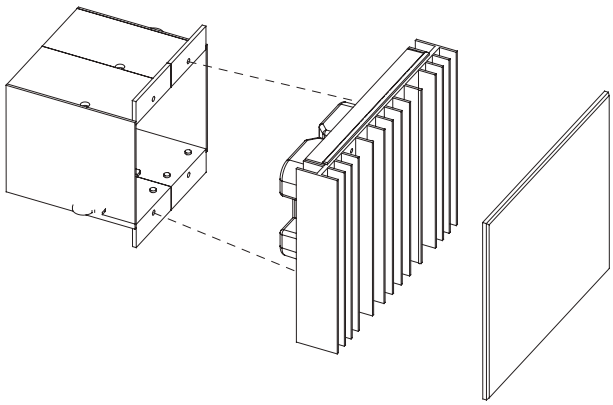
Dimensions and Mounting

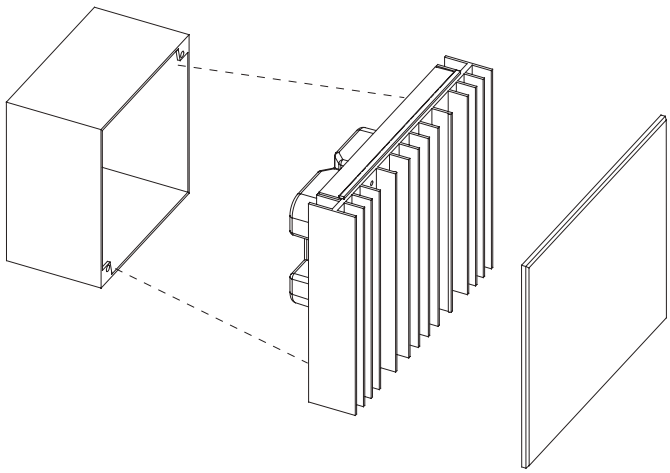
- Mount in 2-gang U.S. wallbox 3.5 in (89 mm) deep or 4 x 4 in (102 x 102 mm) junction box 2.1 in deep (53 mm).
- Indoors only.
- This device generates heat; mount only where ambient temperature is 32 to 104 °F (0 to 40 °C).
- Mount with arrows facing up to ensure adequate cooling.
- Allow 4.5 in (114 mm) above and below faceplates when mounting several modules in a vertical layout.
- Units may butt together when mounted in a horizontal layout.
- Mount so line (mains) voltage wiring is at least 6 ft (1.8 m) from sound or electronic equipment and wiring.
- Mount within 7° of true vertical.



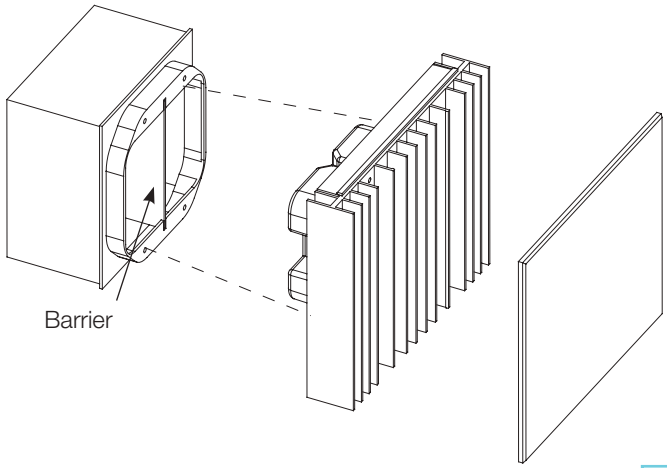
Mount to 2-gang U.S. wallbox



Mount to 4 x 4 in (102 x 102 mm), 2.1 in (53 mm) deep U.S. junction box



Mount to 4 x 4 in (102 x 102 mm), 2.1 in (53 mm) deep U.S. junction box with barrier
(for 277 V~ loads if required by local electrical code)



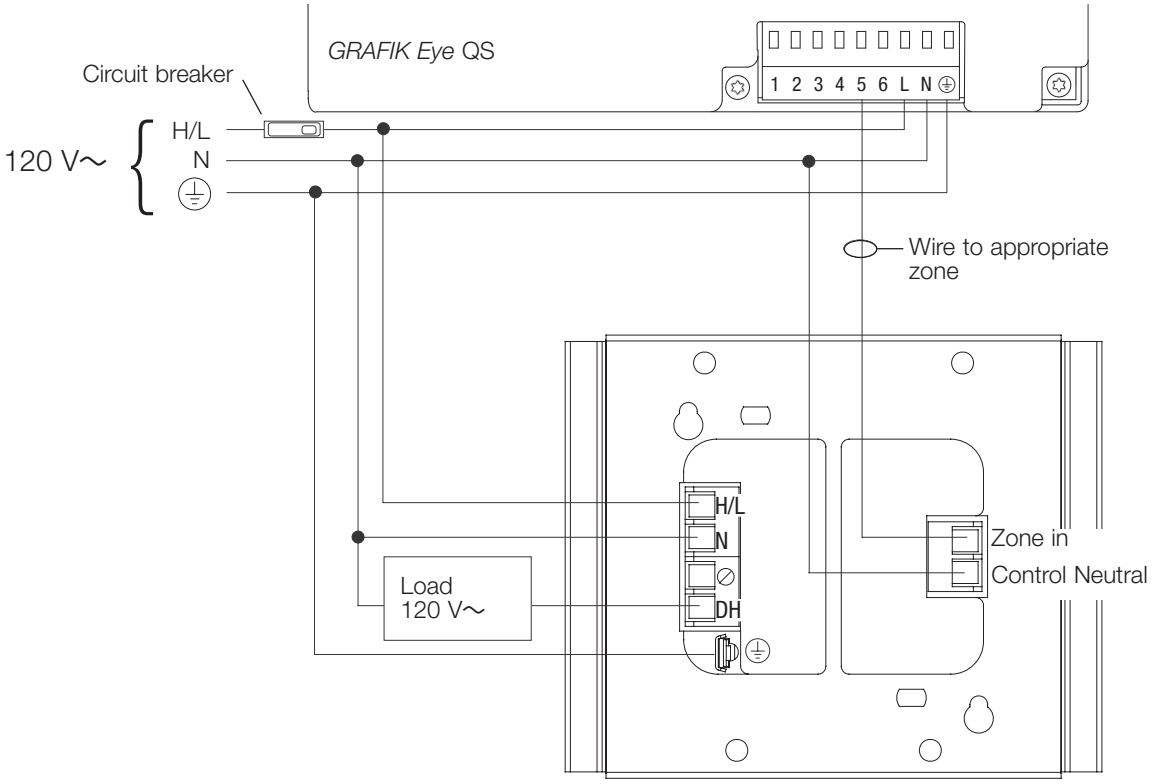
Job Name:	Model Numbers:	
Job Number:		

Wiring

- Pull 12 AWG (2.5 mm²) copper (Cu) wires (75 °C/167 °F minimum) for input power and load circuit.
- Strip 1/2 in (12 mm) insulation from wires before connecting.
- Run separate neutral for load circuit - no common neutrals.
- May be used with GFI breaker protected loads. Load circuit wiring (from GFI breaker to power module to load) must be run in its own non-metallic conduit, or nuisance tripping may occur. Maximum 100 ft (30.5 m) between power module and load.
- May be used with AFI breaker protected loads. Maximum load on AFI circuit is 1000 W. Exceeding 1000 W may cause nuisance tripping of AFI breaker.

Single Power Feed

Note: The power module may be on the same circuit as the control unit only if the total load does not exceed the rating of the breaker.



Legend

H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⏚	Ground
⊘	Not Used

Job Name:	Model Numbers:	
Job Number:		

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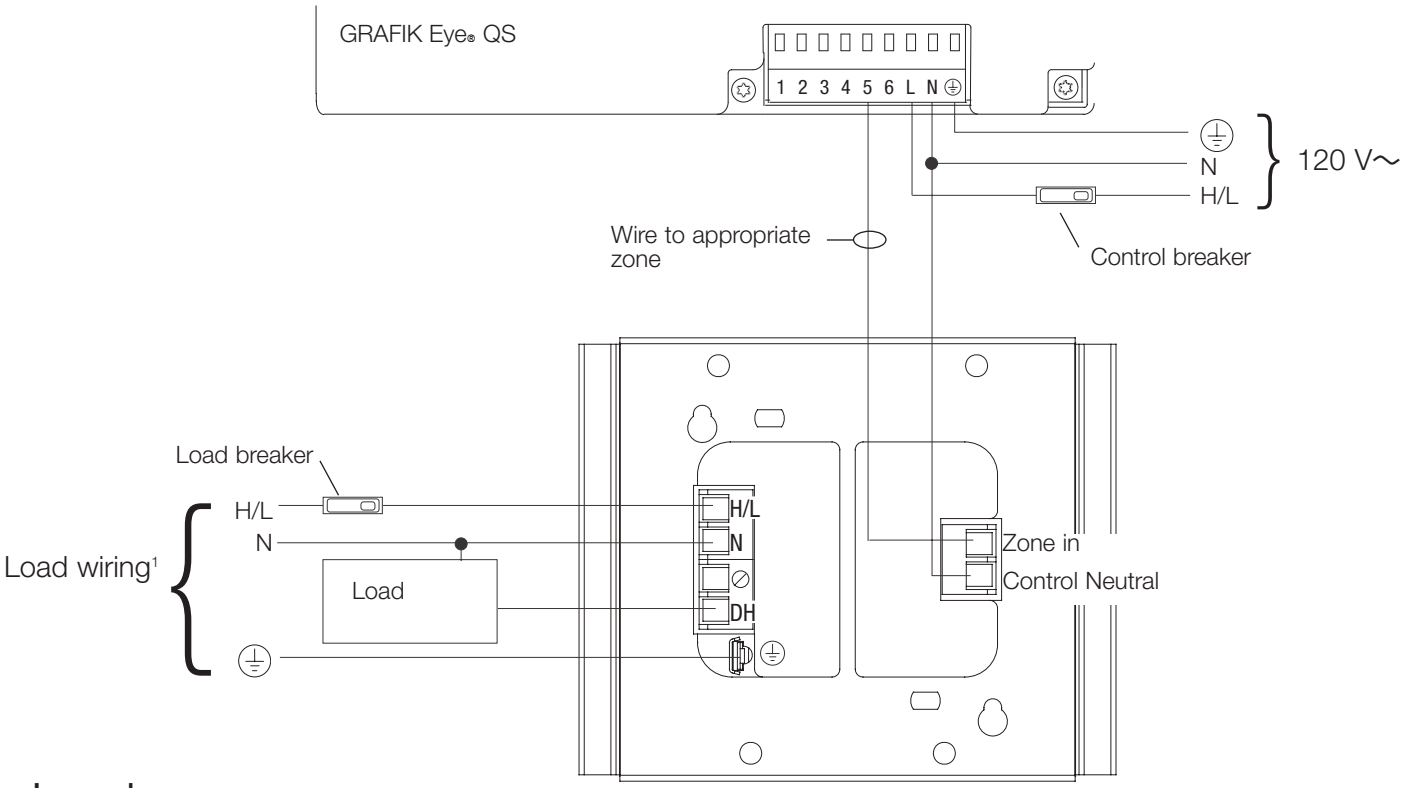
Wiring

Multiple Power Feeds

The load breaker may be on a different phase than the control breaker.



Legend

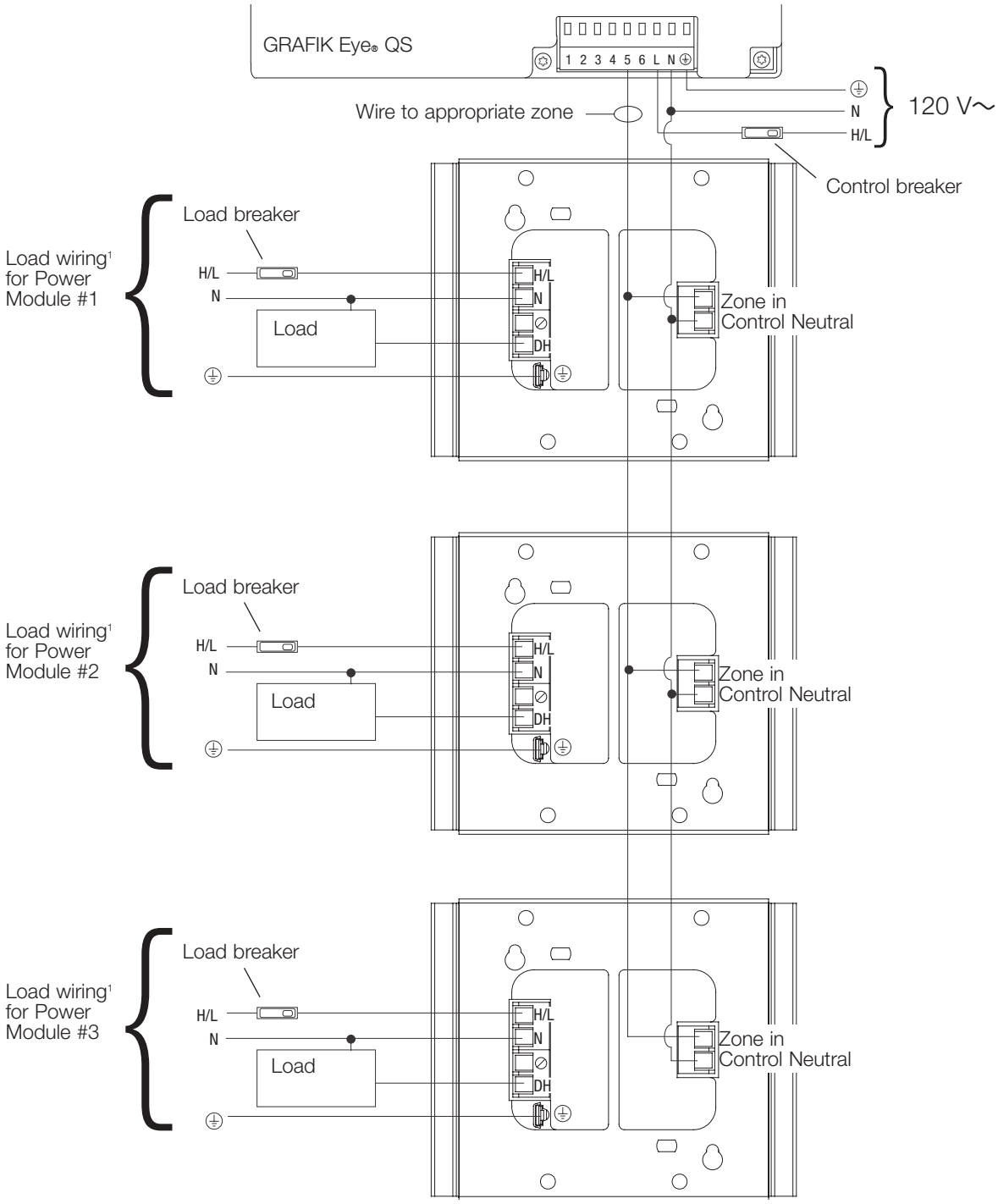
H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⏚	Ground
⊘	Not Used

[1]Load feed: 120 V~ for PHPM-PA-120-WH;
120 – 277 V~ for PHPM-PA-DV-WH

Job Name:	Model Numbers:	
Job Number:		

Wiring Multiple Power Modules to a Single GRAFIK Eye® Zone

Shown with separate feeds for control and loads. All breakers must be turned off prior to installing or servicing the modules. Up to 3 power modules may be wired to a single zone.

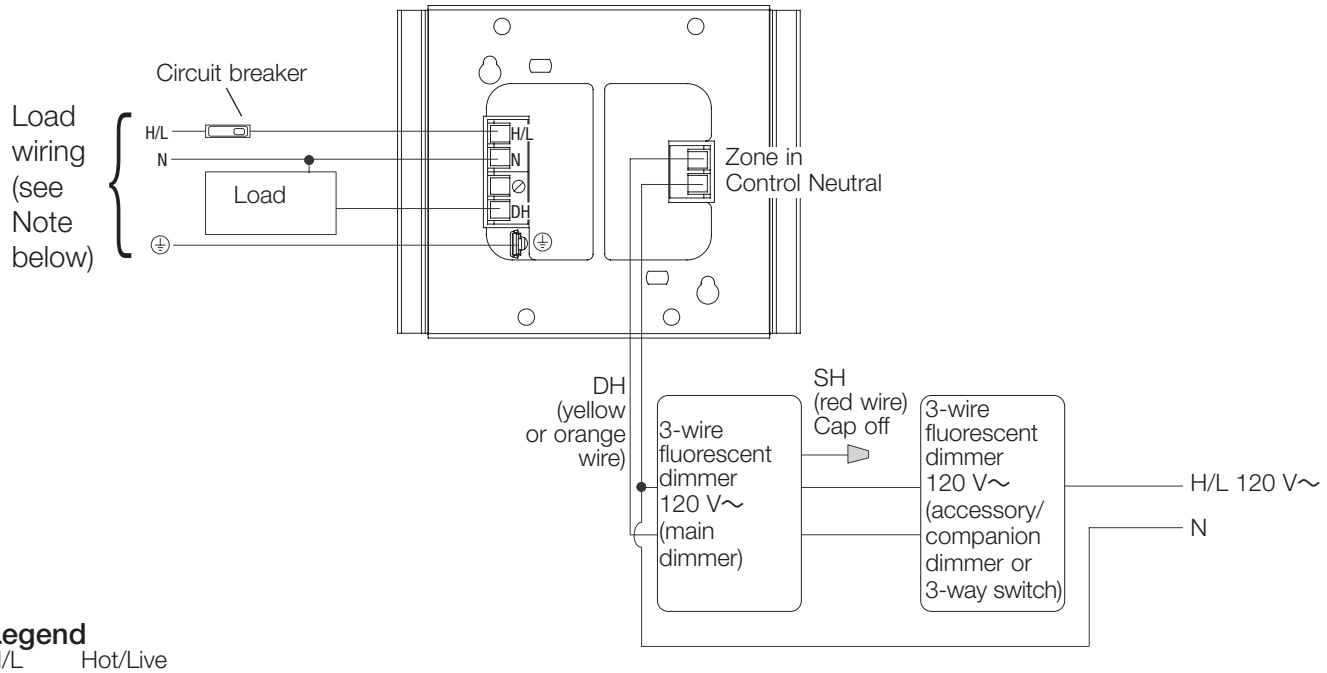


[1]Load feed: 120 V~ for PHPM-PA-120-WH; 120 – 277 V~ for PHPM-PA-DV-WH

Job Name:	Model Numbers:	
Job Number:		

Multi-location Wiring

Note: The power module may be on the same circuit/control zone as the control device only if the total load does not exceed the rating of the breaker (120 V~ only).



Legend

H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⏚	Ground
⊘	Not Used

For specific wire colors, see the wallbox lighting controls catalog at www.lutron.com/wallbox catalog

Note: Load feed: 120 V~ for PHPM-PA-120-WH;
120 – 277 V~ for PHPM-PA-DV-WH

Job Name:	Model Numbers:	
Job Number:		

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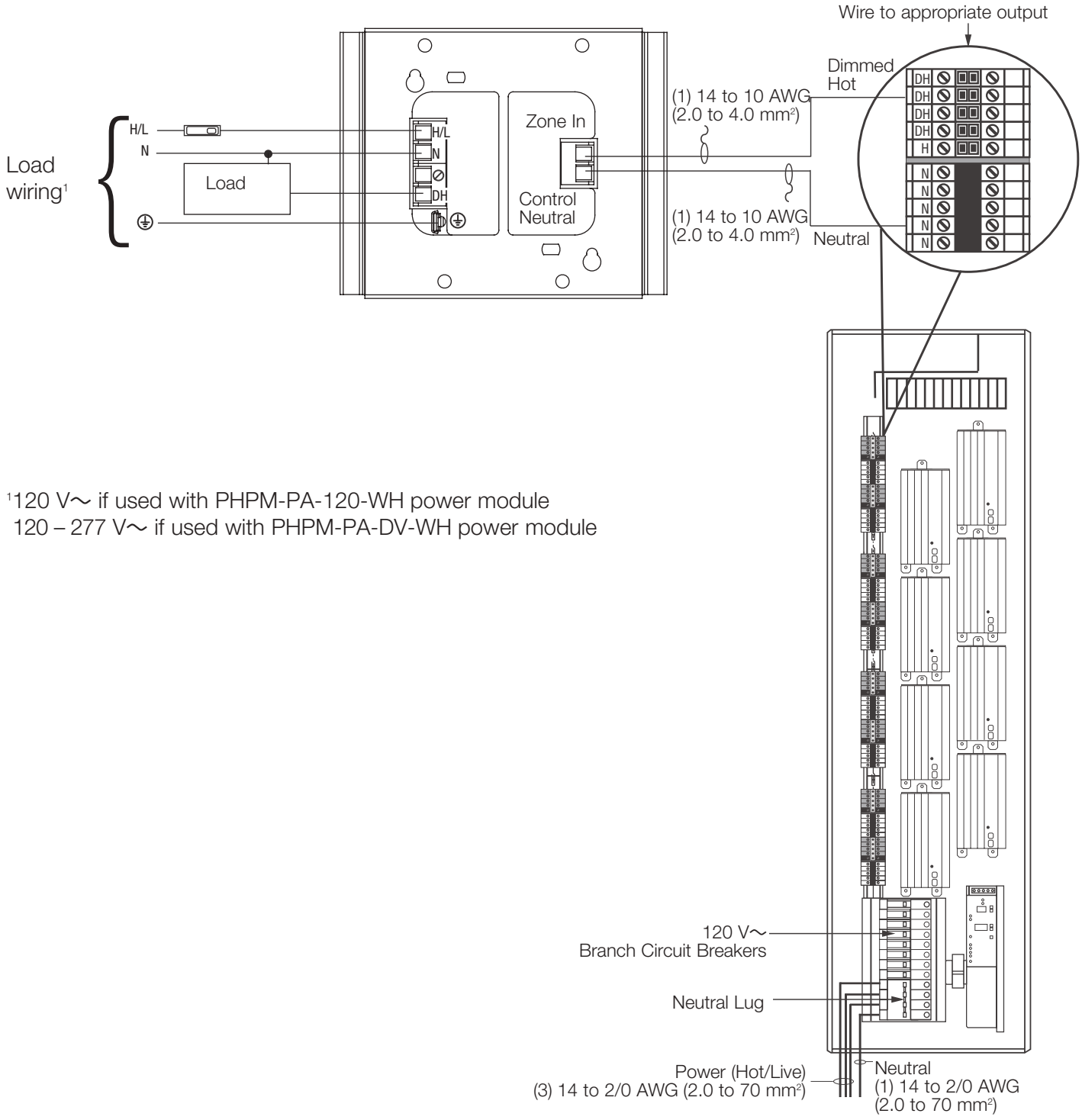
Wiring a Power Module to an LP, LCP, GP, or HomeWorks® Panel

Up to three phase-adaptive power modules may be wired to an output of a 120 V~ LP or LCP panel. The load type for the output must be set appropriately on the panel's circuit selector (for an LP or GP panel), controller (for an LCP panel), or HomeWorks® software (for a HomeWorks® panel).

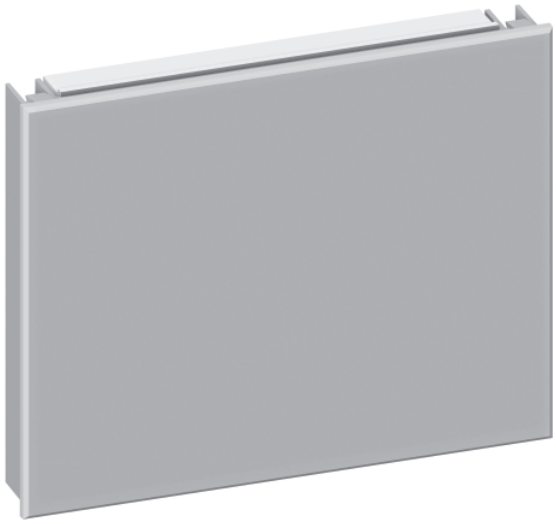


[1]120 V~ if used with PHPM-PA-120-WH power module
120 – 277 V~ if used with PHPM-PA-DV-WH power module

Job Name:	Model Numbers:	
Job Number:		

369357 Rev. C 1 09.02.11

Switching Power Module



Description

- Provides capability for a zone on a GRAFIK Eye® control unit (or other product) to switch a fully loaded circuit of lighting.
- May be used to switch incandescent, electronic low-voltage, magnetic low-voltage, HID, fluorescent ballasts, and neon/cold cathode lighting sources.
- Utilizes Softswitch® arcless switching technology.
- Provides power and switching for one zone.
- Up to 3 power modules may be wired on a single GRAFIK Eye® zone.
- Model available for 120 V~ control power.
- Model available for 120 - 277 V~ load power.

Works with 120 V~ versions of:

- Lutron® 3-wire fluorescent dimmers and RadioRA® 2 dimmers (consult Lutron for Vierti® products); see approved list in the dimmers & switches specification guide at www.lutron.com
- GRAFIK Eye® QS control units
- GRAFIK Eye® 3000 Series control units
- LP, LCP, and GP dimming panels
- HomeWorks® and HomeWorks® QS remote power panels

Model and Capacities

Control Power	Load Power	Capacity	Model Number
120 V~	120 - 277 V~	16 A	PHPM-SW-DV-WH

Job Name:	Model Numbers:	
Job Number:		

Specifications

Power

- Control voltage: 120 V~
- Load voltage: 120 – 277 V~
- Capacity: Full 16 A
  120 – 277 V~: 1920 – 4432 W
- Frequency: 50 / 60 Hz, phase-to-neutral.
- Load (output) power: Phase independent of control device/control voltage.

Sources/Load Types

- Switches the following load types:
  – Incandescent (tungsten)
  – Halogen
  – Magnetic low-voltage transformer (iron core)
  – Electronic (solid-state) low-voltage transformer
  – Magnetic and electronic fluorescent dimming ballasts
  – Neon/cold-cathode
  – HID
- Motors:
  – 1/2 HP at 277 V~
  – 1/3 HP at 120 V~
- May be used with GFI/AFCI breaker protected loads.

Key Design Features

- Patented Softswitch® technology.
- Two LEDs on front of unit provide diagnostic information (visible when faceplate is removed).

Terminals

- Accept up to two 12 AWG (2.5 mm^2) wires.

Environment

- 32 to 104 °F (0 to 40 °C). Relative humidity less than 90% non-condensing.
- Indoor use only.
- Maximum heat output of module: 15 BTU/hour.

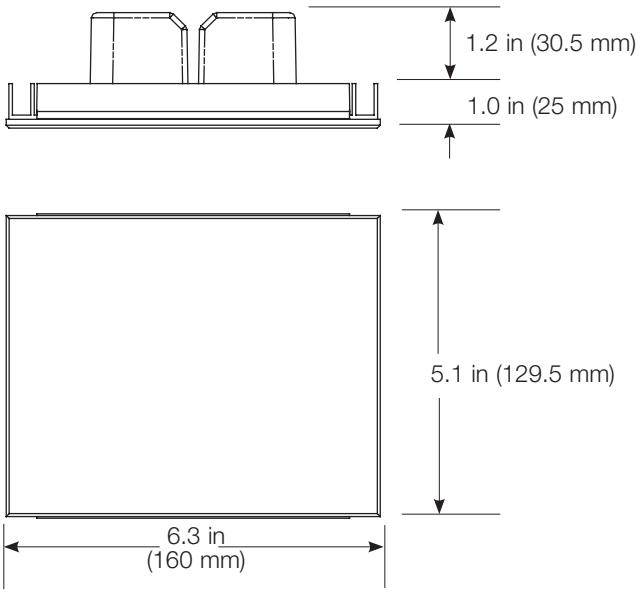
Mounting

- Surface or recess mount.
- Power module is UL tested and approved for use in spaces designed for environmental air handling.

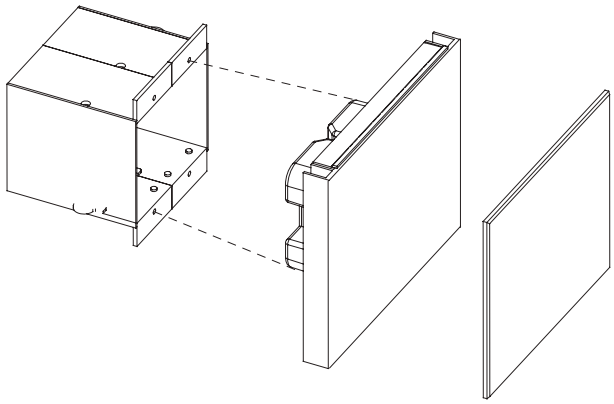
Job Name:	Model Numbers:	
Job Number:		

Dimensions and Mounting

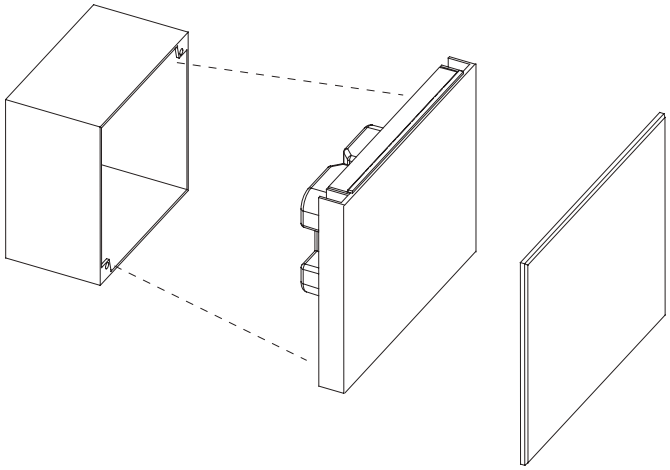
- Mount in a 2-gang U.S. wallbox 3.5 in (89 mm) deep or 4 x 4 in (102 x 102 mm) junction box 2.1 in (53 mm) deep.
- Indoor use only.
- Mount only where ambient temperature is 32 to 104 °F (0 to 40 °C).
- Allow 4.5 in (114 mm) clearance above and below unit and between faceplates when mounting in a vertical layout.
- Mount so line (mains) voltage wiring is at least 6 ft (1.8 m) from sound or electronic equipment and wiring.
- Mount within 7° of true vertical.



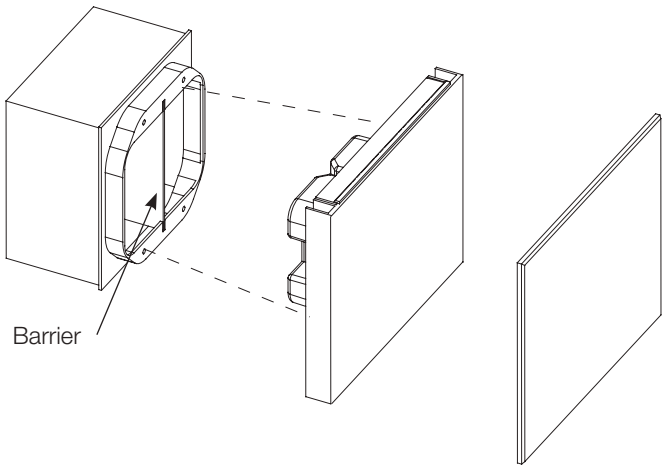
Mount to 2-gang U.S. wallbox



Mount to 4 x 4 in (102 x 102 mm), 2.1 in (53 mm) deep U.S. junction box



Mount to 4 x 4 in (102 x 102 mm), 2.1 in (53 mm) deep U.S. junction box with barrier (for 277 V~ loads if required by local electrical code)



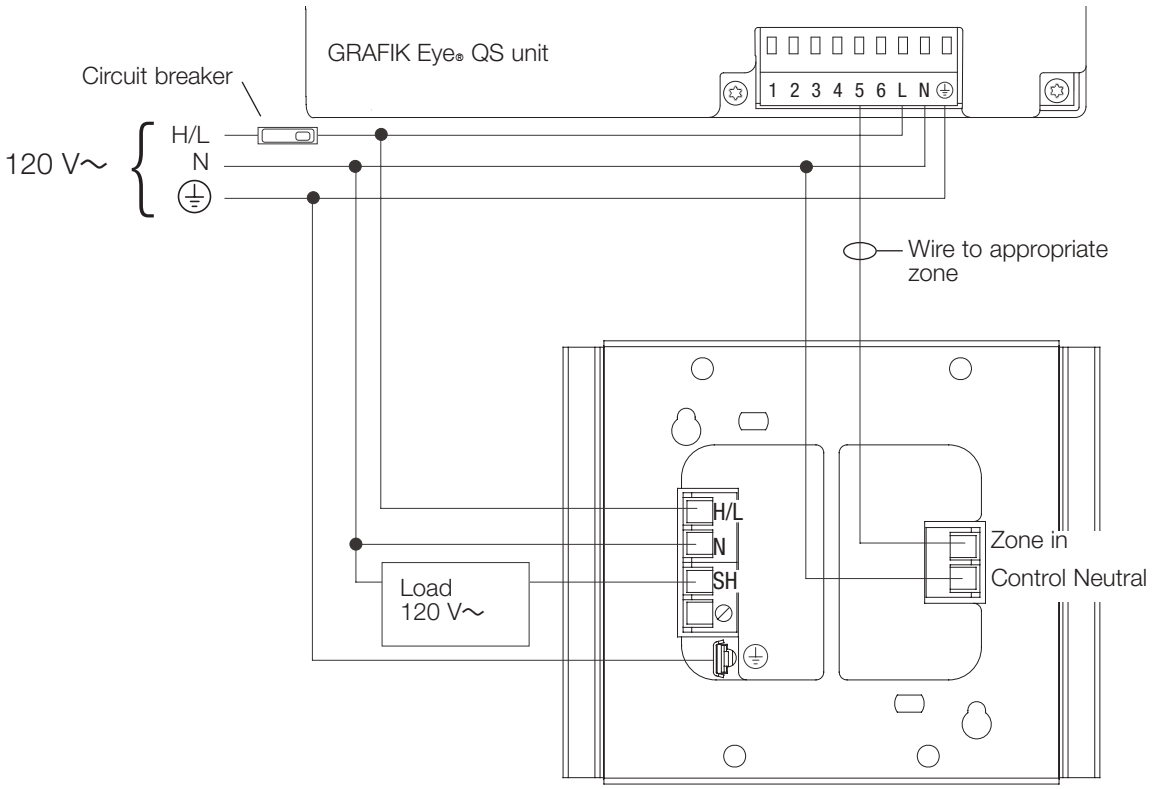
Job Name:	Model Numbers:	
Job Number:		

Wiring

- Pull 12 AWG (2.5 mm²) copper (Cu) wires [167 °F (75 °C)] for input power and load circuit.
- Strip 1/2 in (12 mm) insulation from wires before connecting.
- Run separate neutral for load circuit - no common neutrals.
- May be used with GFI breaker protected loads. Load circuit wiring (from GFI breaker to power module to load) must be run in its own non-metallic conduit, or nuisance tripping may occur. Maximum 100 ft (30.5 m) between power module and load.
- May be used with AFCI breaker protected loads. An AFCI circuit can be loaded to the full allowable NEC® rating for switched lighting. If combining dimmed and switched lighting on the same AFCI circuit, the amount of dimmed lighting should not exceed 1000 W, as this may trip the AFCI breaker.

Single Power Feed

Note: The power modules may be on the same circuit as the control unit only if the total load does not exceed the rating of the breaker.



Legend

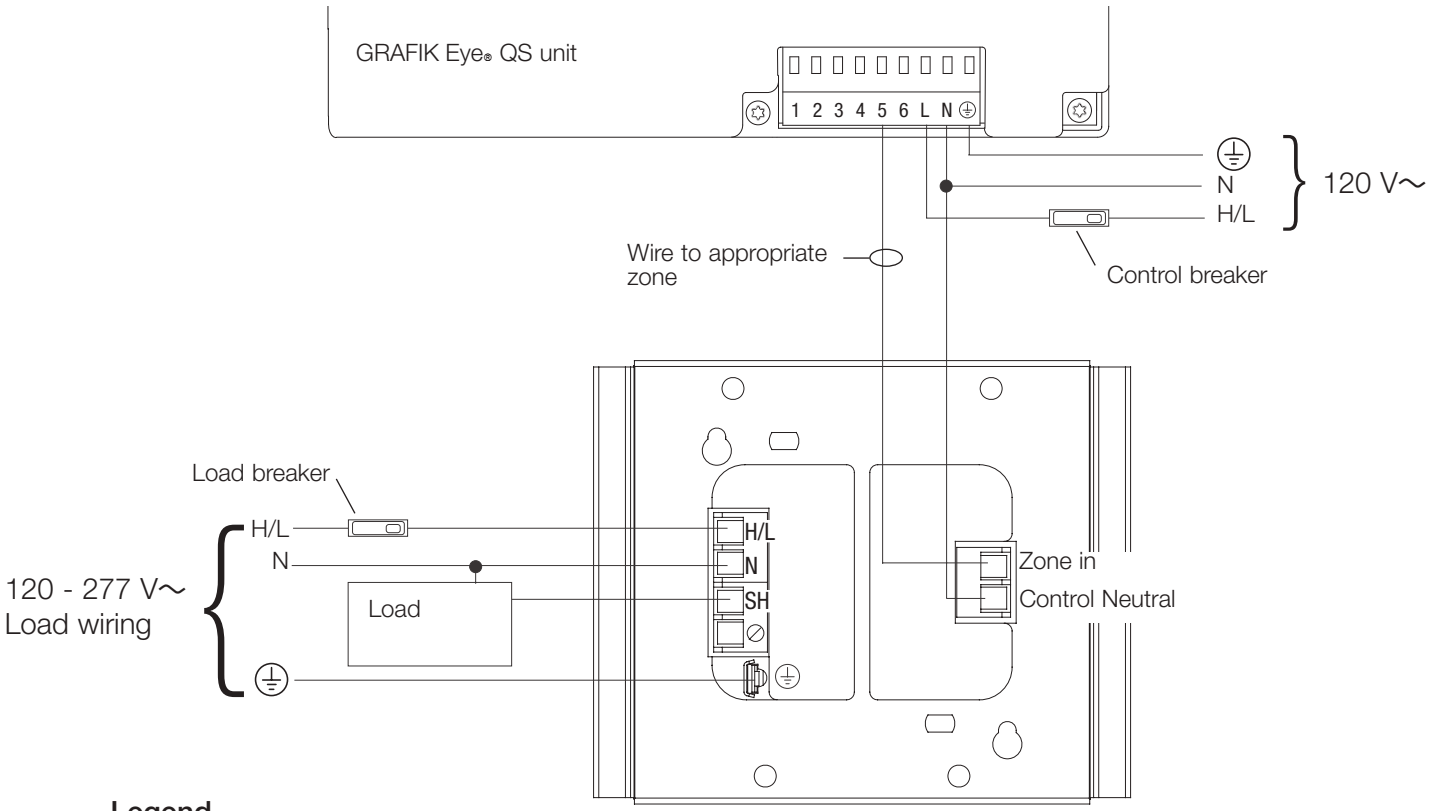
H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⏚	Ground
⊘	Not Used

Job Name:	Model Numbers:	
Job Number:		

Wiring

Multiple Power Feeds

The load breaker may be on a different phase than the control breaker.



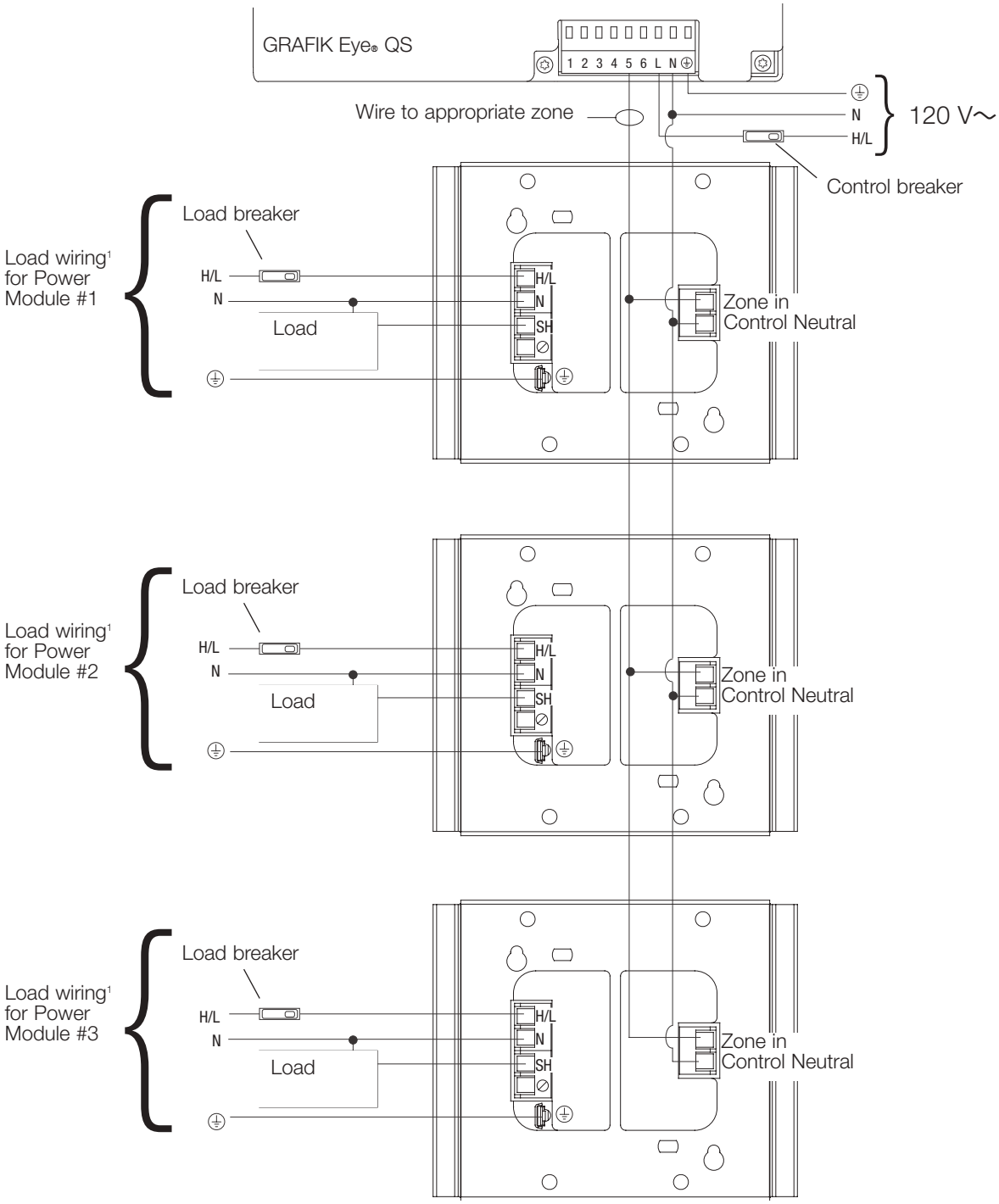
Legend

H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⏚	Ground
⊘	Not Used

Job Name:	Model Numbers:	
Job Number:		

Wiring Multiple Power Modules to a Single GRAFIK Eye® Zone

Shown with separate feeds for control and loads. All breakers must be turned off prior to installing or servicing the modules. Up to 3 power modules may be wired to a single zone.

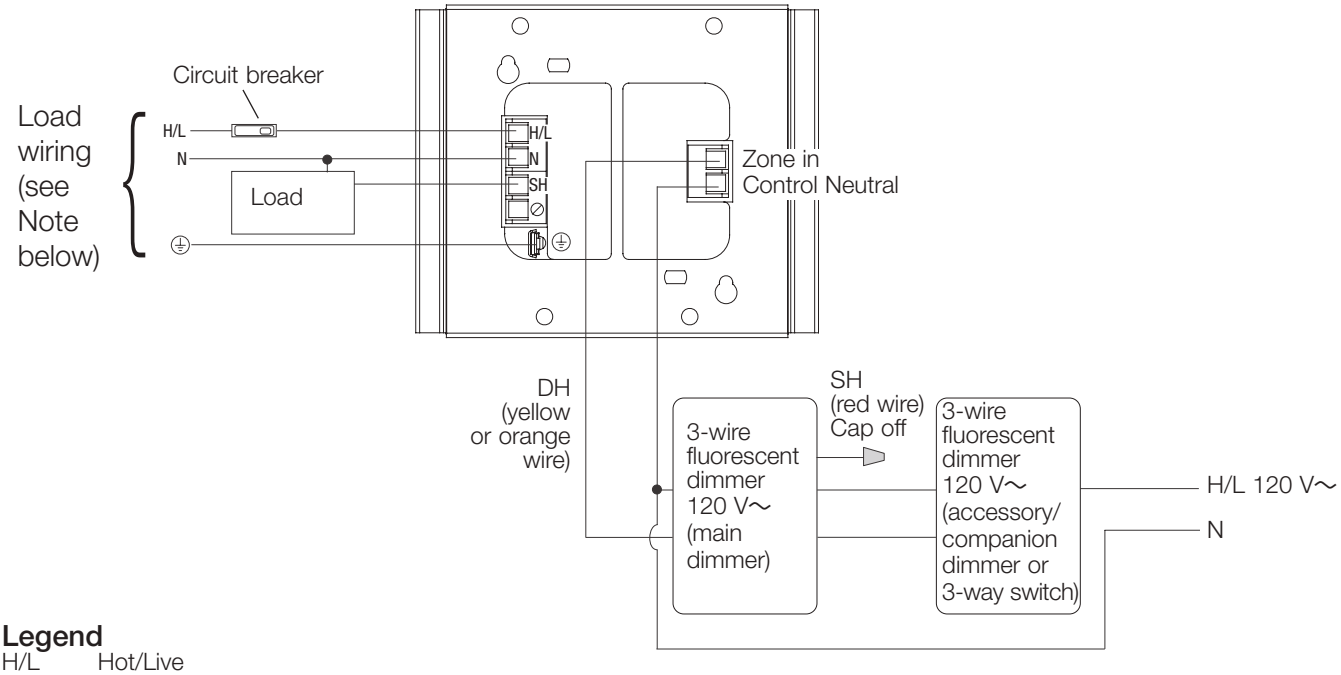


[1]Load feed: 120 - 277 V~ for PHPM-SW-DV-WH

Job Name:	Model Numbers:	
Job Number:		

Multi-location Wiring

Note: The power module may be on the same circuit/control zone as the control device only if the total load does not exceed the rating of the breaker (120 V~ only).



Legend

H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⏚	Ground
⊘	Not Used

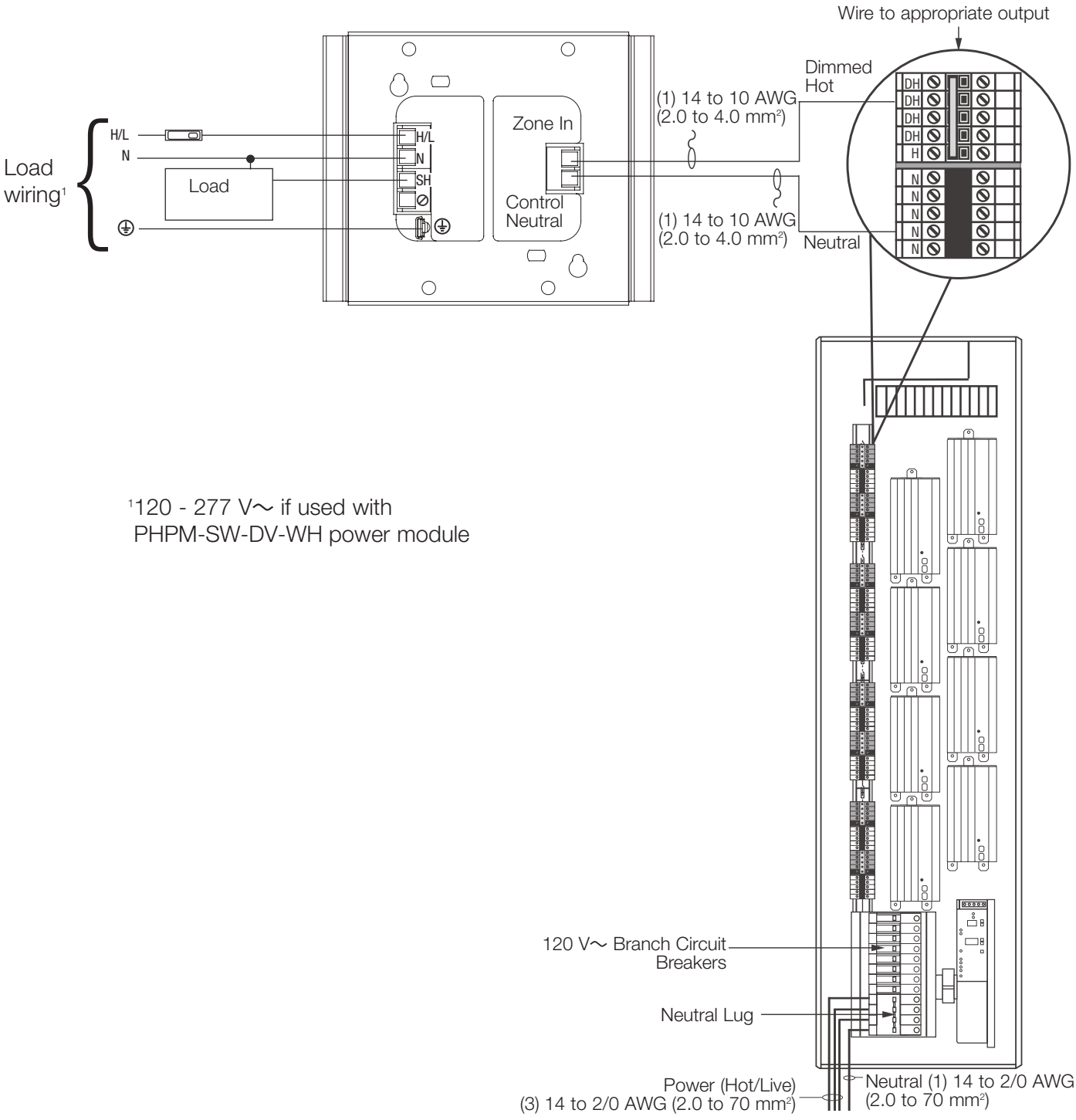
For specific wire colors, see the wallbox lighting controls catalog at www.lutron.com/wallbox catalog

Note: [1]Load feed: 120 - 277 V~ for PHPM-SW-DV-WH

Job Name:	Model Numbers:	
Job Number:		

Wiring a Power Module to an LP, LCP, GP, or HomeWorks® Panel

Up to three switching power modules may be wired to an output of a 120 V~ LP or LCP panel. The load type for the output must be set as non-dim load type on the panel's circuit selector (for an LP or GP panel), controller (for an LCP panel), or HomeWorks® software (for a HomeWorks® panel).



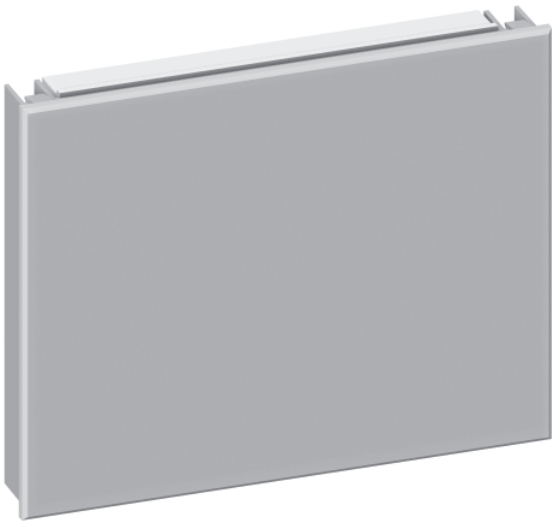
[1]120 - 277 V~ if used with PHPM-SW-DV-WH power module

Job Name:	Model Numbers:	
Job Number:		

3-Wire Fluorescent Power Module

Description

- Provides capability for a zone on a GRAFIK Eye® control unit (or other product) to dim fluorescent lights that have Lutron Hi-lume® and Eco-10® (Eco Series) line-voltage control electronic dimming ballasts.
- Utilizes Softswitch® arcless switching technology.
- Up to 3 power modules may be wired on a single GRAFIK Eye® zone.
- Models available for 120 V~ control power.
- Models available for 120 V~ or 120 - 277 V~ load power.



Works with 120 V~ versions of:

- Lutron 3-wire fluorescent dimmers (consult Lutron for Vierti®); see approved list in the dimmers & switches specification guide at www.lutron.com
- GRAFIK Eye® QS control units
- GRAFIK Eye® 3000 Series control units
- LP, LCP, and GP dimming panels
- HomeWorks® and HomeWorks® QS remote power panels

Models and Capacities

Control Power	Load Power	Capacity	Model Number
120 V~	120 - 277 V~	16 A	PHPM-3F-DV-WH
120 V~	120 V~	16 A	PHPM-3F-120-WH

Job Name:	Model Numbers:	
Job Number:		

Specifications

Power

- Control voltage: 120 V~
- Load voltage: 120 V~ only for PHPM-3F-120-WH
  120 – 277 V~ for PHPM-3F-DV-WH
- Capacity: Full 16 A
  120 V~: 1920 W
  120 – 277 V~: 1920 – 4432 W
- Frequency: 50 / 60 Hz, phase-to-neutral.
- Load (output) power: Phase independent of control device/control voltage.

Sources/Load Types

- Operates Lutron® Hi-lume®, Eco-10® (Eco Series), Compact SE™, EcoSystem®, and EcoSystem® Compact line-voltage control electronic dimming ballasts with a smooth continuous Square Law dimming curve.

Key Design Features

- Patented RTISS™ circuitry compensates in real time for incoming line voltage variations: Compensates for +/-2% change in RMS voltage/cycle and +/-2% Hz change in frequency/second.
- Provides air-gap off.
- Module protects itself during temporary over-current conditions on dimmed output.
- Two LEDs on front of unit provide diagnostic information (visible when faceplate is removed).

Terminals

- Accept up to two 12 AWG (2.5 mm^2) wires.

Environment

- 32 to 104 °F (0 to 40 °C). Relative humidity less than 90% non-condensing.
- Indoor use only.
- Maximum heat output of module: 15 BTU/hour.

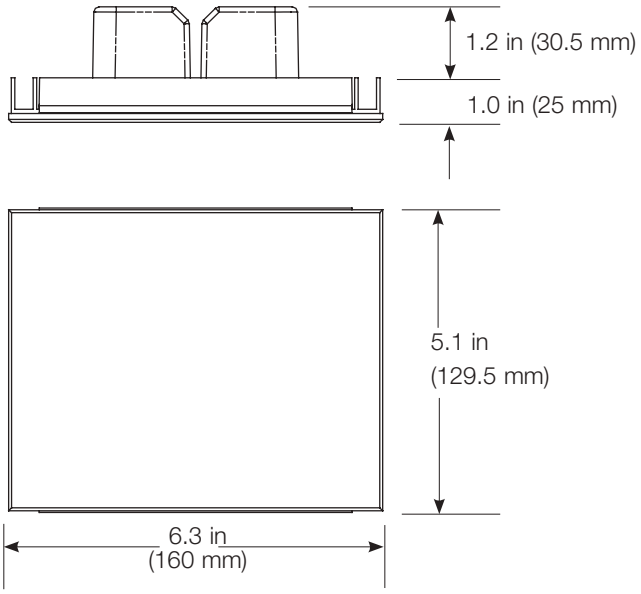
Mounting

- Surface or recess mount.
- Power module is UL tested and approved for use in spaces designed for environmental air handling.

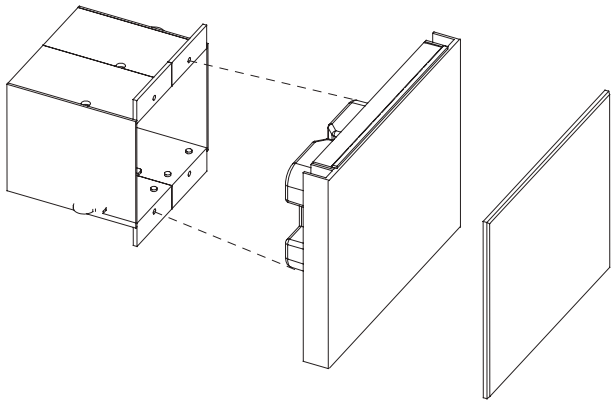
Job Name:	Model Numbers:	
Job Number:		

Dimensions and Mounting

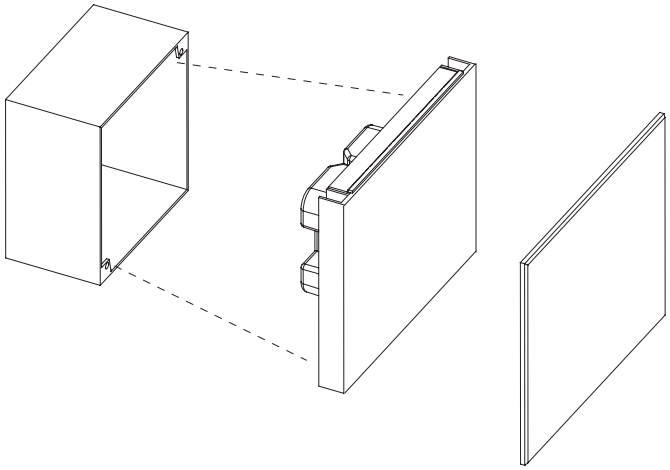
- Mount in 2-gang U.S. wallbox 3.5 in (89 mm) deep or 4 x 4 in (102 x 102 mm) junction box 2.1 in deep (53 mm).
- Indoors only.
- This device generates heat; mount only where ambient temperature is 32 to 104 °F (0 to 40 °C).
- Mount with arrows facing up to ensure adequate cooling.
- Allow 4.5 in (114 mm) above and below unit and between faceplates when mounting several in a vertical layout.
- Mount so line (mains) voltage wiring is at least 6 ft (1.8 m) from sound or electronic equipment and wiring.
- Mount within 7° of true vertical.



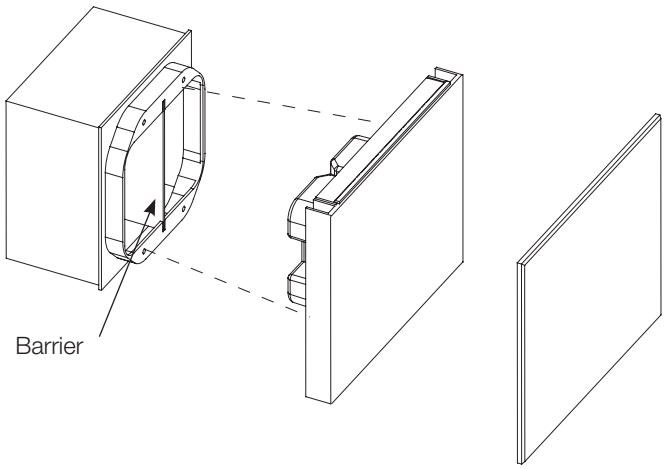
Mount to 2-gang U.S. wallbox



Mount to 4 x 4 in (102 x 102 mm), 2.1 in (53 mm) deep U.S. junction box



Mount to 4 x 4 in (102 x 102 mm), 2.1 in (53 mm) deep U.S. junction box with barrier
(for 277 V~ model if required by local electrical code)



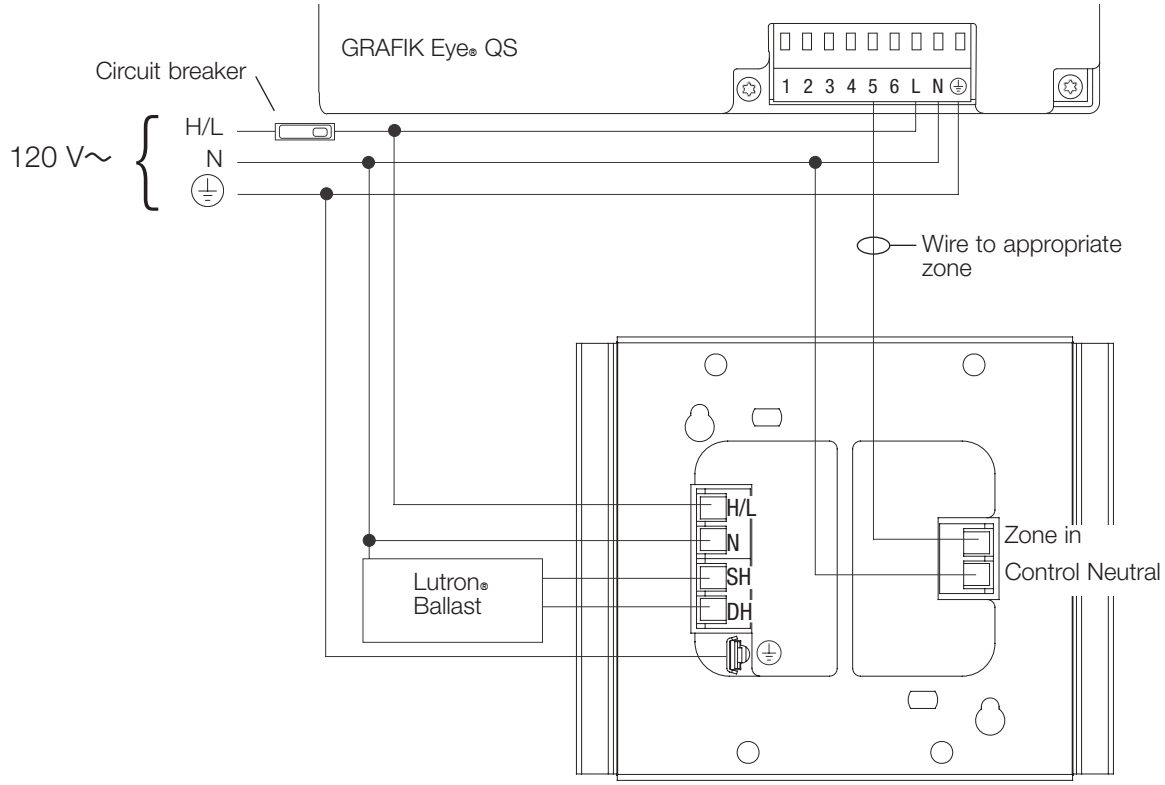
Job Name:	Model Numbers:	
Job Number:		

Wiring

- Pull 12 AWG (2.5 mm²) copper (Cu) wires (75 °C/167 °F minimum) for input power and load circuit.
- Strip 1/2 in (12 mm) insulation from wires before connecting.
- Run separate neutral for load circuit - no common neutrals.

Single Power Feed

Note: The power module may be on the same circuit as the control unit only if the total load does not exceed the rating of the breaker.



Legend

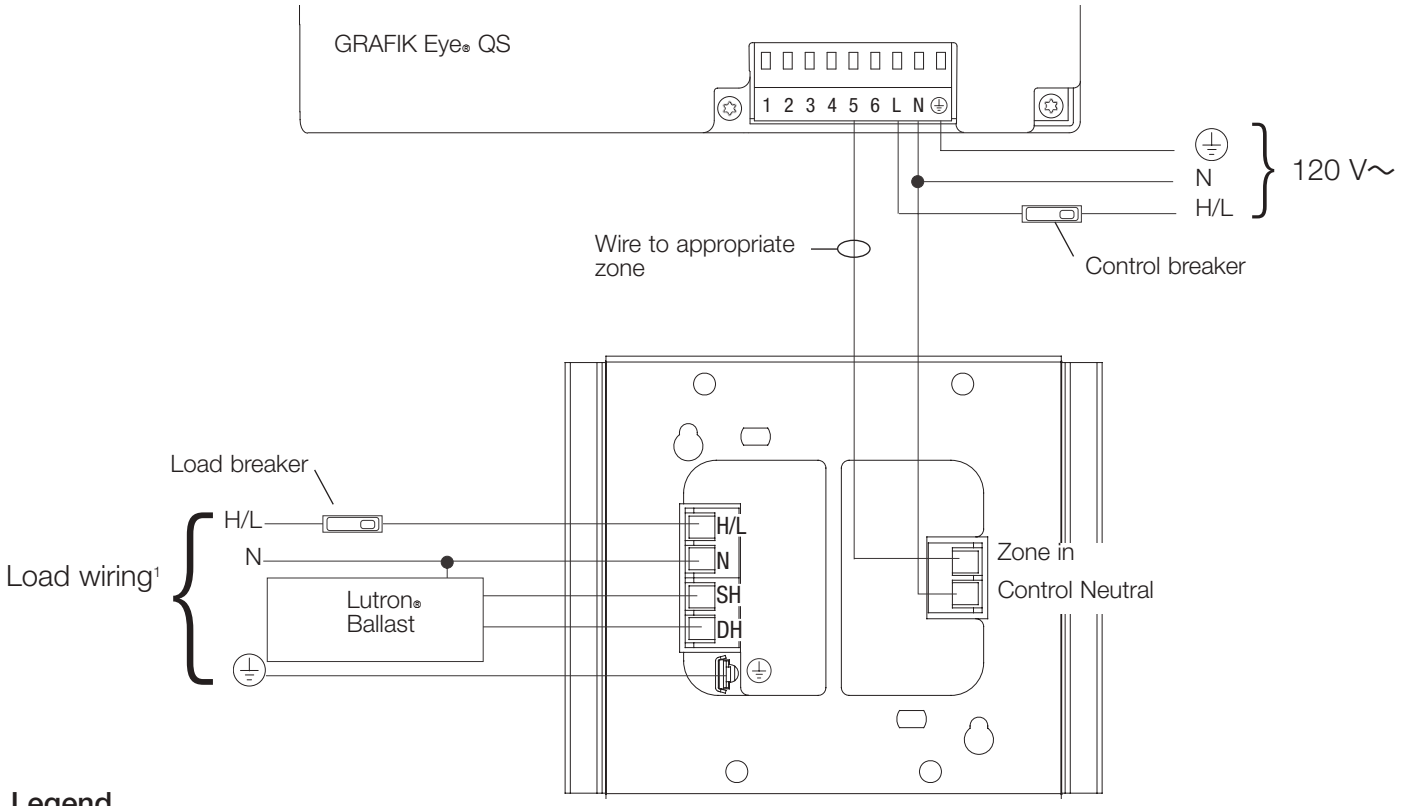
H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⏚	Ground
⊘	Not Used

Job Name:	Model Numbers:	
Job Number:		

Wiring

Multiple Power Feeds

The load breaker may be on a different phase than the control breaker.



Legend

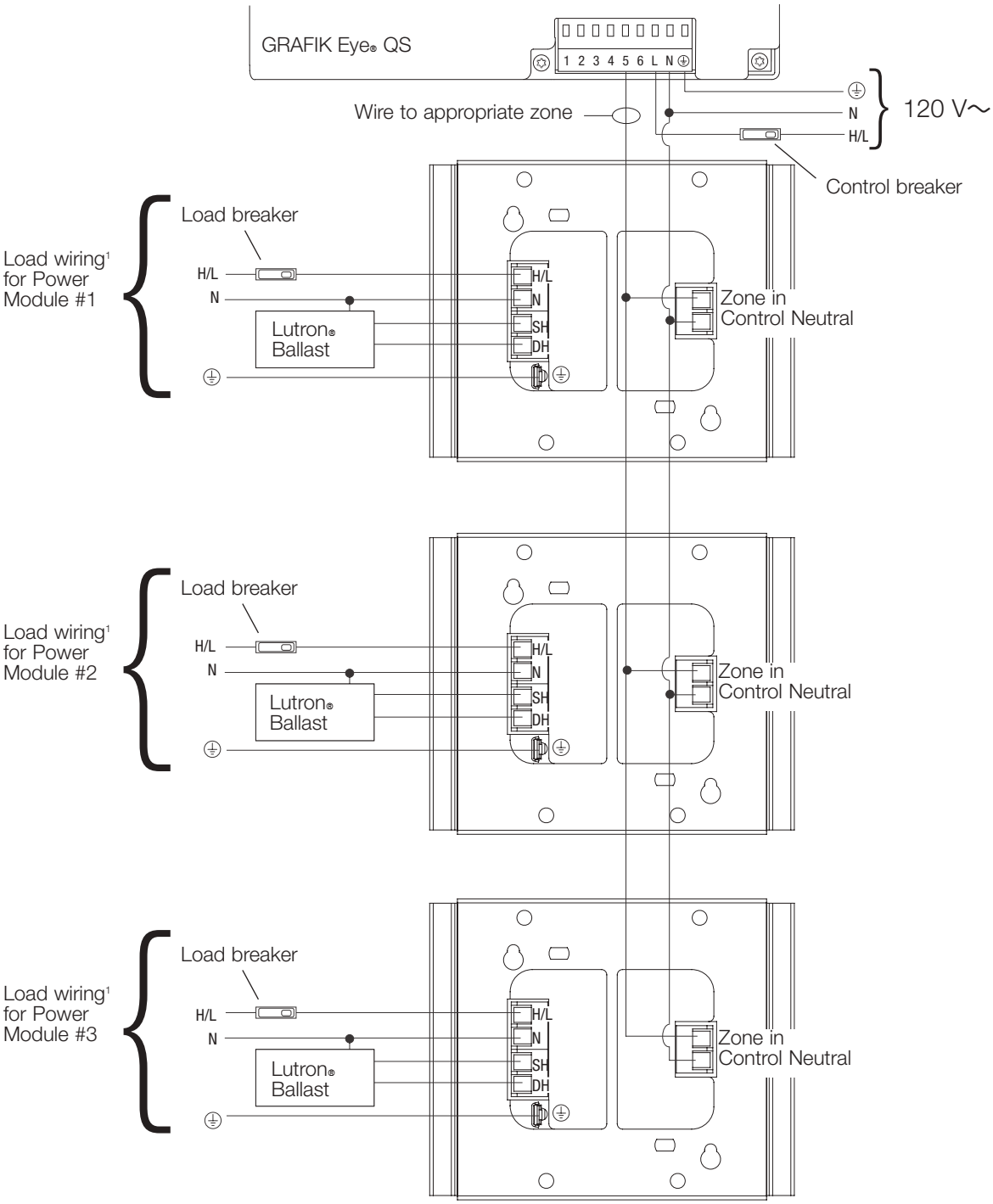
H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⏚	Ground
⊘	Not Used

[1]Load feed: 120 V~ for PHPM-3F-120-WH;
120 – 277 V~ for PHPM-3F-DV-WH

Job Name:	Model Numbers:	
Job Number:		

Wiring Multiple Power Modules to a Single GRAFIK Eye® Zone

Shown with separate feeds for control and loads. All breakers must be turned off prior to installing or servicing the modules. Up to 3 power modules may be wired to a single zone.

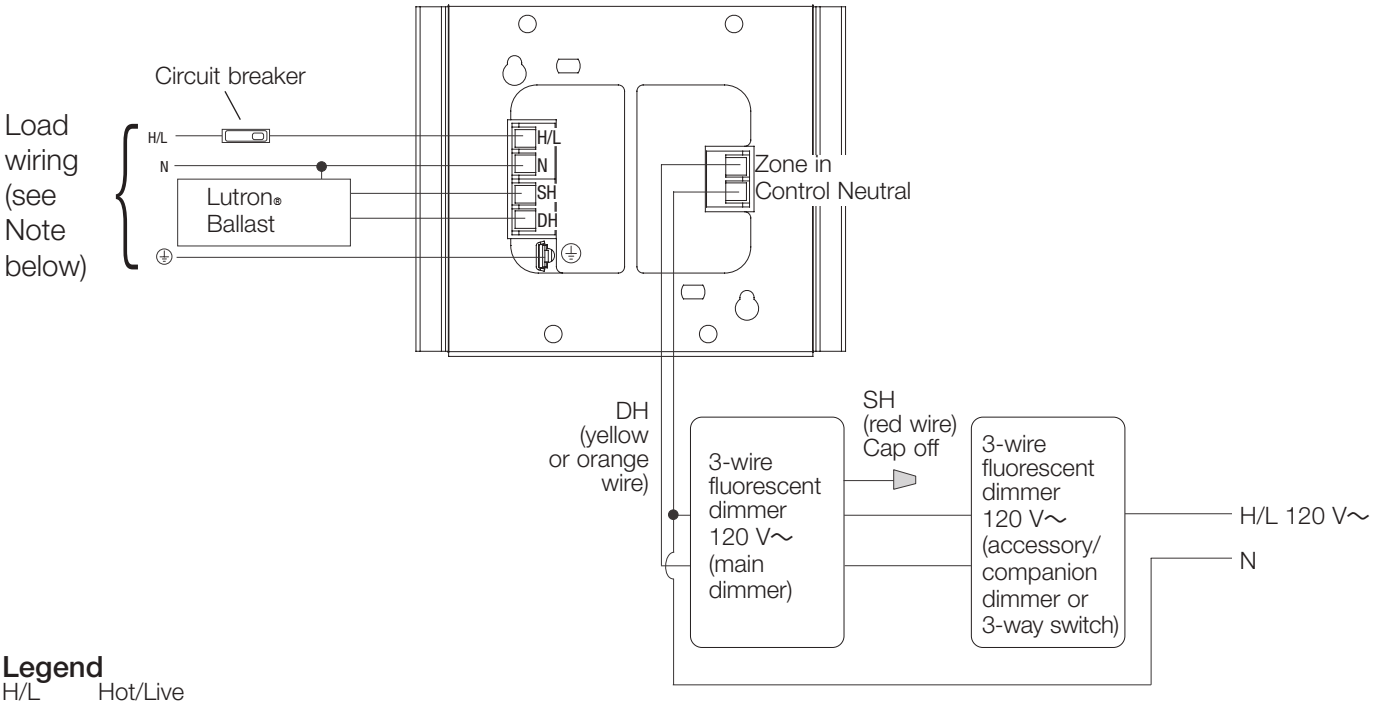


[1]Load feed: 120 V~ for PHPM-3F-120-WH; 120 – 277 V~ for PHPM-3F-DV-WH

Job Name:	Model Numbers:	
Job Number:		

Multi-location Wiring

Note: The power module may be on the same circuit/control zone as the control device only if the total load does not exceed the rating of the breaker (120 V~ only).



Legend

H/L	Hot/Live
N	Neutral
SH	Switched Hot
DH	Dimmed Hot
⏚	Ground
⊘	Not Used

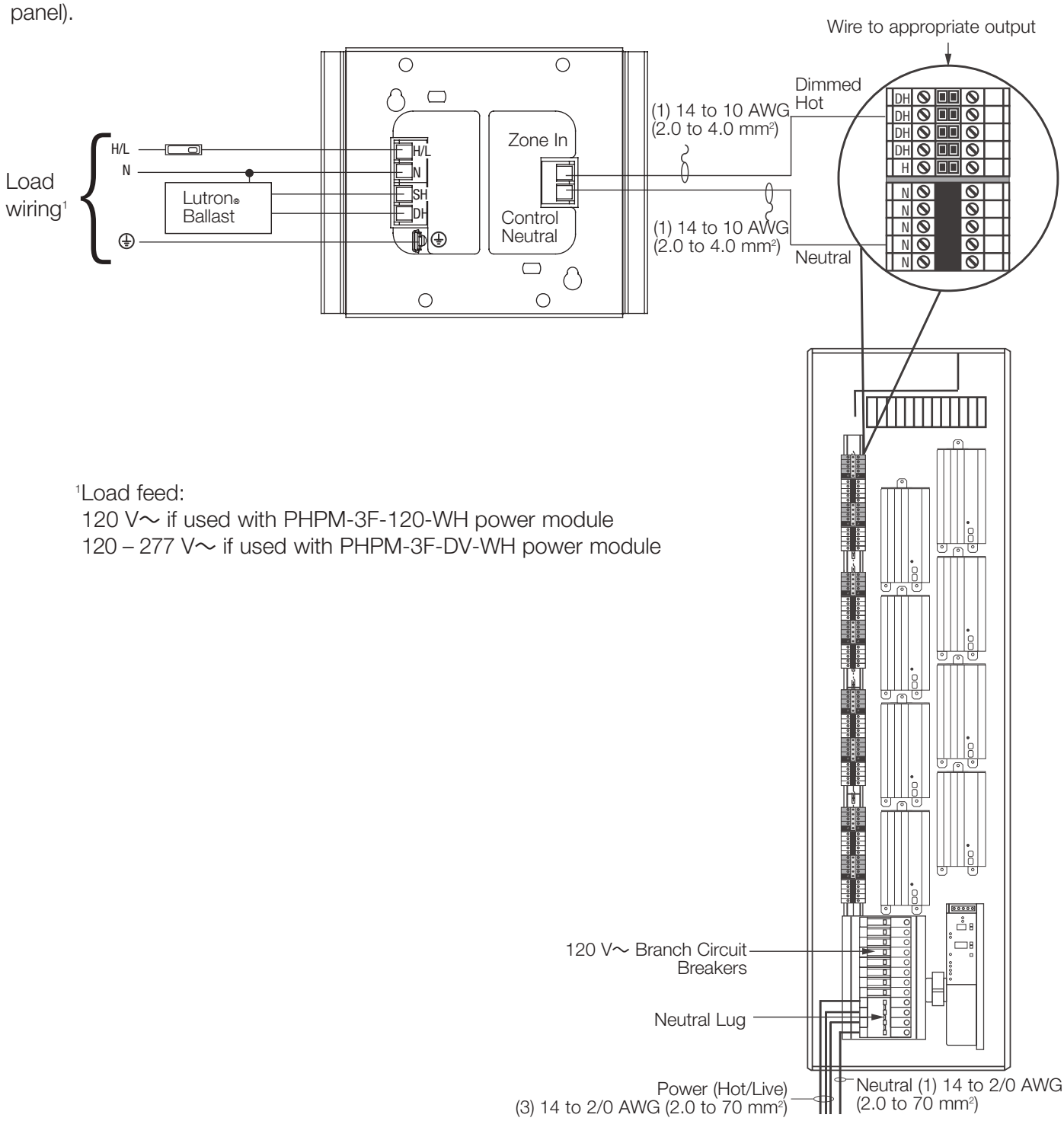
For specific wire colors, see the wallbox lighting controls catalog at www.lutron.com/wallbox catalog

Note: Load feed: 120 V~ for PHPM-3F-120-WH;
120 – 277 V~ for PHPM-3F-DV-WH

Job Name:	Model Numbers:	
Job Number:		

Wiring a Power Module to an LP, LCP, GP, or HomeWorks® Panel

Up to three 3-wire fluorescent power modules may be wired to an output of a 120 V~ LP or LCP panel. The load type for the output must be set as Eco-10® or Hi-lume® fluorescent load type on the panel's circuit selector (for an LP or GP panel), controller (for an LCP panel), or HomeWorks® software (for a HomeWorks® panel).



[1]Load feed:
120 V~ if used with PHPM-3F-120-WH power module
120 – 277 V~ if used with PHPM-3F-DV-WH power module

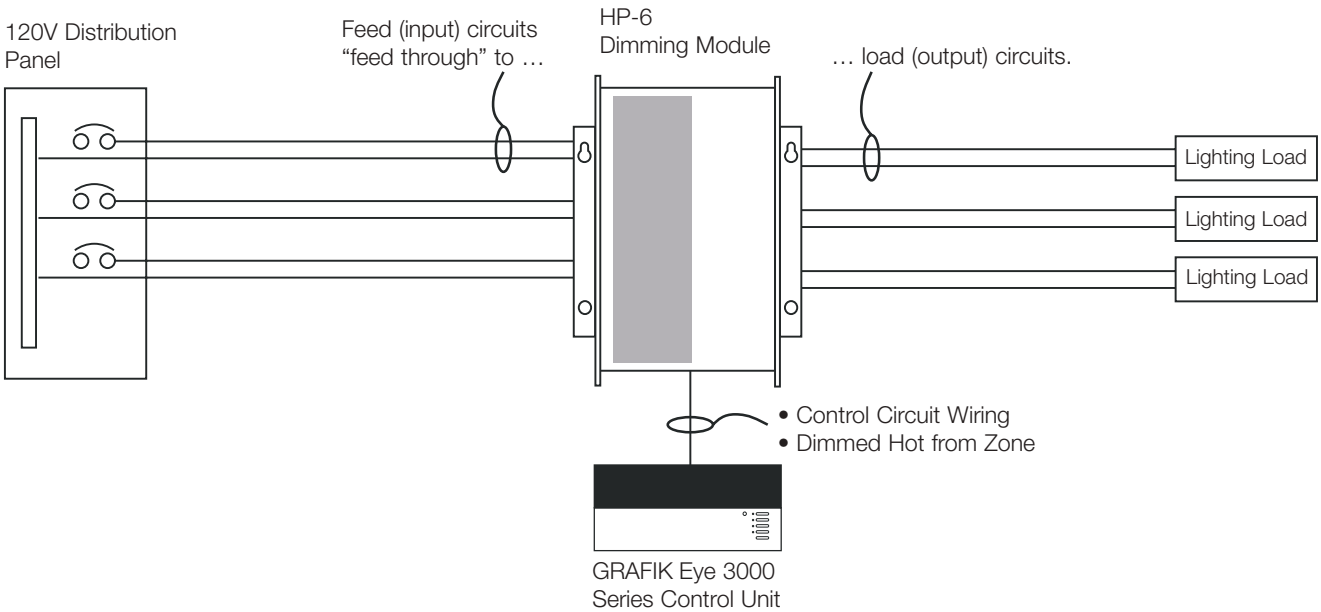
Job Name:	Model Numbers:	
Job Number:		

Hi-Power Dimming Module System

Description

- Used to dim or switch heavily loaded zones. Allows a wall dimmer or one zone on a GRAFIK Eye 3000 Series Control Unit to control loads of up to 30,000W/VA.
- Dims or switches most popular lighting sources and load types.
- Available in one, two, and three-circuit Dimming Modules. Up to five Modules may be linked to obtain the necessary load capacity.
- Accepts either 120V or 277V input power. Not compatible with 220-240V, 230V, or 100V input power.
- Control using GRAFIK Eye 3000 Series Control Units, Lutron Wallbox Controls, Spacer System, or any incandescent dimmer or Class 2 momentary contact raise/lower control.
- Allows control of 277V loads using a 120V lighting control.

Typical Three-Circuit Dimming Module



Job Name:	Model Numbers:	
Job Number:		

Specifications

Power

- Input power: 120V or 277V, 50/60Hz, phase-to-neutral.
- Load (output) circuits: 120V or 277V, 50/60Hz, any phase.

Adjustable Settings

- High-end trim reduces expensive relamping of incandescent/halogen sources.
- Provides raise/lower and “full on” functions when used with external momentary contact switches.
- Provides adjustable fade rate when used with Class 2 raise/lower control.

Weight

15 lbs. (6.8kg)

Mounting

Surface mount indoors only. Allow space for ventilating 200 BTUs/hour per load (output) circuit.

Environment

32-104°F (0-40°C). Non-condensing relative humidity less than 90%.

Job Name:	Model Numbers:	
Job Number:		

Models, Sources, and Capacities

- All Dimming Modules accept either 120V or 277V input power. Do not mix voltages in the same Module.
- Each load circuit on HP-4 and HP-6 Dimming Modules can have different sources. Do not mix sources on the same load circuit.
- Up to five Modules may be linked to obtain the necessary load capacity.
- Do not use the HP Dimming Module with Capacitive Fluorescent Ballasts.

Model Number	Number of Circuits
HP-2	1
HP-4	2
HP-6	3

Load Capacity per Circuit - Dimmed or Switched
(Not to exceed N.E.C. capacity rating; control voltage is always 120V)

Source	Dimmed (120V)	Switched (120V)	Dimmed (277V)	Switched (277V)
Incandescent	16A, 2000W/VA[1]	10A, 1200W/VA	-	-
Electronic Low Voltage[2]	16A, 2000W/VA[1]	10A, 1200W/VA	-	-
Magnetic Low Voltage	16A, 2000W/VA[1]	10A, 1200W/VA	16A, 4432W/VA	-
Fluorescent (Hi-Lume/Compact SE/Eco-10)	16A, 2000W/VA[1]	16A, 1920W/VA	16A, 4432W/VA	-
Fluorescent (Tu-Wire)	16A, 2000W/VA[1]	16A, 1920W/VA	-	-
Fluorescent (magnetic ballasts)	-	16A	-	-
Fluorescent (electronic ballasts)	-	10A	-	-
Neon/Cold Cathode	16A, 2000W/VA[1]	10A, 1200W/VA	-	-
High-Intensity Discharge	-	10A, 1200W/VA	-	-

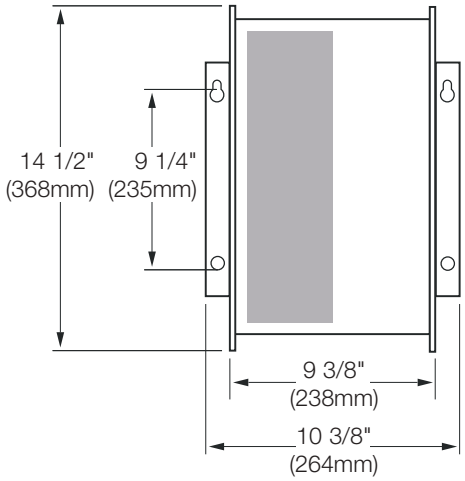
[1] Measured current will not exceed continuous load rating due to voltage drop in the dimmer.

[2] Requires electronic low voltage transformer approved for use with forward phase control dimmers.

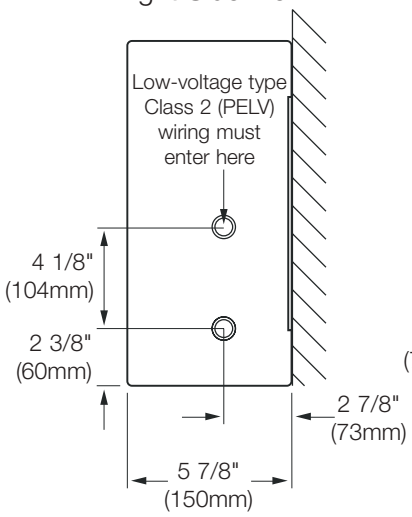
Job Name:	Model Numbers:	
Job Number:		

Dimensions

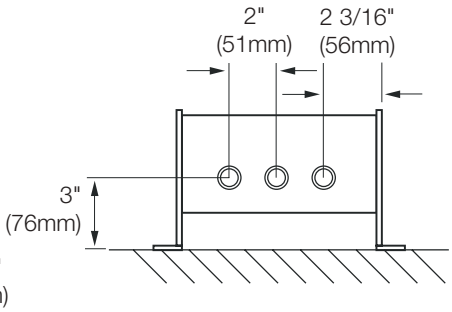
Front View



Right Side View

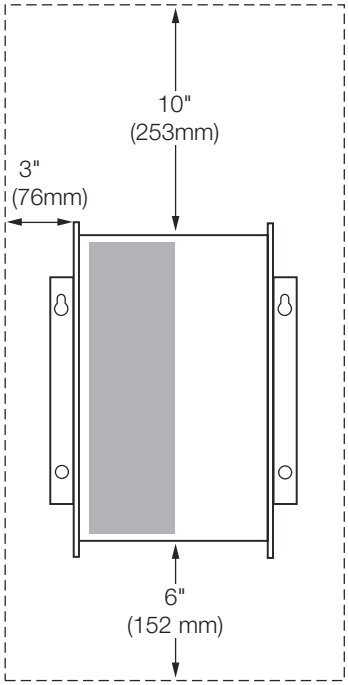


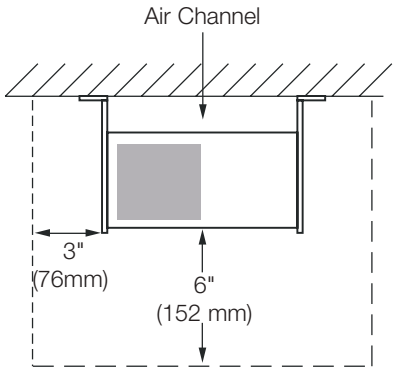
Bottom View



Mounting

- Surface mount indoors.
- Dimming Module generates heat; mount only where ambient temperature is 32-104°F (0-40°C).
- Provide proper space for cooling or the warranty will be void. Leave 6" (152mm) of clearance in front of the Module. Do not block the air channel between the back of the Module and the wall. The space between panels may be reduced to 4.5" (114mm) when mounting several Modules in a vertical layout.
- Mount Modules where audible noise is acceptable. (Modules hum slightly and relays click.)
- Mount Modules so line (mains) voltage wiring is at least 6 feet (1.8m) from sound or electronic equipment and wiring.
- Mount Modules within 7° of true vertical.





Module	Maximum BTUs/Hour	Weight (Without Packaging)
HP-2	200	11 lbs. (5.0kg)
HP-4	400	13 lbs. (5.9kg)
HP-6	600	15 lbs. (6.8kg)

Job Name:	Model Numbers:	
Job Number:		

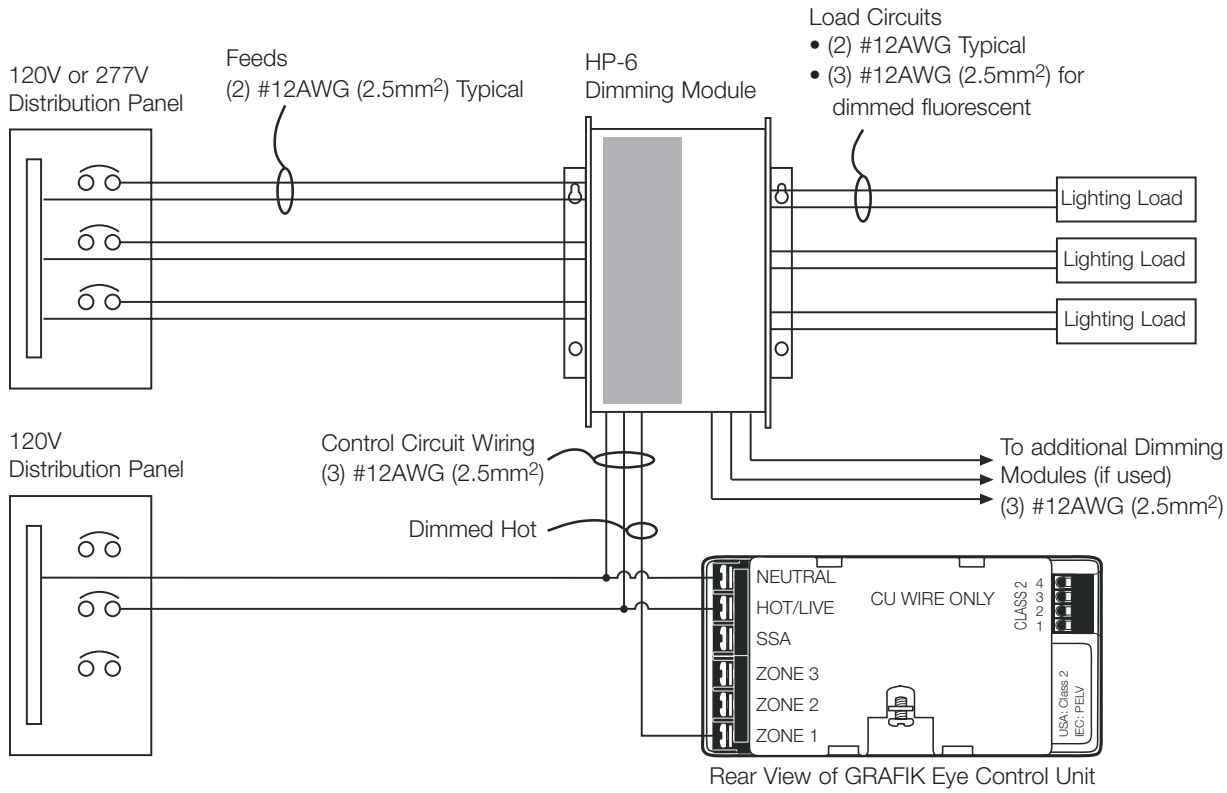
Prewiring Overview

- Each terminal accepts two #12 AWG (2.5mm²) wires.
- Each load circuit on HP-4 and HP-6 Dimming Modules can have different sources. Do not mix sources on the same load circuit.
- Do not use with generator-supplied power.

Feed Wiring

- Pull dedicated feeds from distribution panel to Dimming Module(s): one feed for HP-2, two feeds for HP-4, three feeds for HP-6.
- Run separate neutrals for each feed - no common neutrals.

Load circuit terminals have factory-installed bypass jumper(s) between the H (Hot), SH (Switched Hot), and DH (Dimmed Hot) terminals of each load circuit. Do not remove jumpers until installation is complete and load circuit is cleared of miswires/overloads.

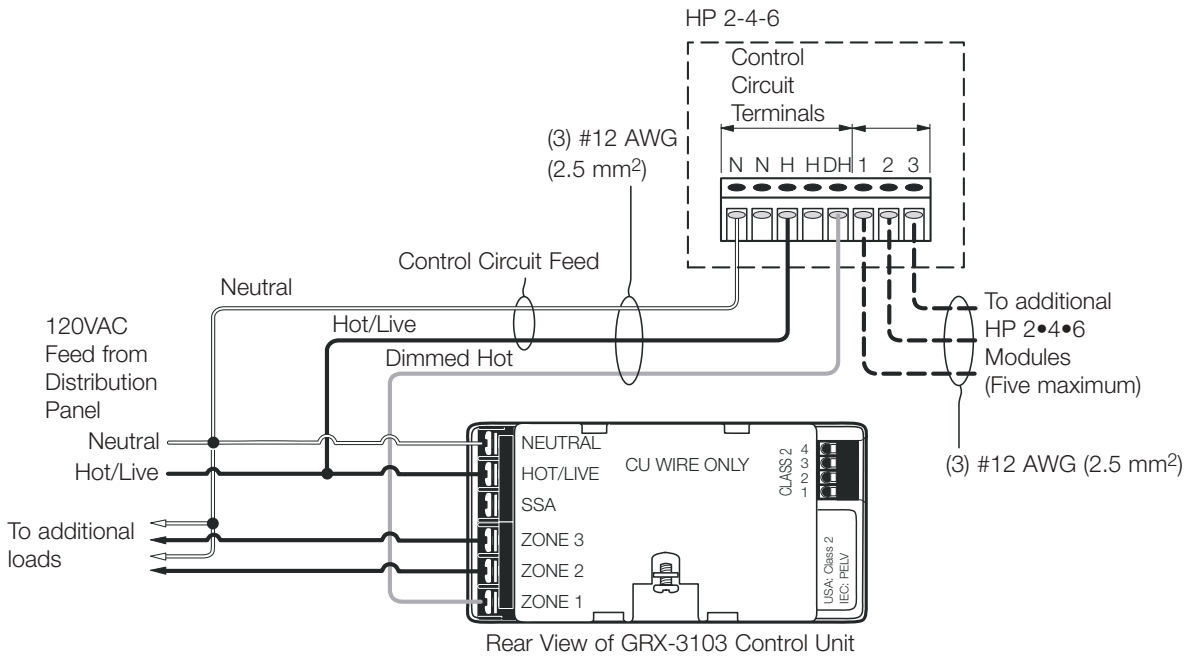


Rear View of GRAFIK Eye Control Unit

Job Name:	Model Numbers:	
Job Number:		

GRAFIK Eye Control Unit Wiring

- Connect the GRAFIK Eye Control Unit to the first Dimming Module used in the zone.
- Use two #12AWG (2.5mm²) wires to connect the Control Unit's feed to the Dimming Module's control circuit. This allows Dimming Modules to draw 40W/VA power for internal operations.
- Use one #12AWG (2.5mm²) wire to carry the zone's dimmed (or switched) hot signal from the Control Unit to the Dimming Module. This allows the Control Unit to control the lighting loads.
- Make sure the power for the control circuit is 120V and on the same phase as the GRAFIK Eye Control Unit.
- Make sure the Control Unit's feed can support all the Dimming Modules drawing off it. Each HP 2-4-6 Dimming Module draws approximately 0.1A of current.
- Use a separate raceway. Do not mix control circuit wiring with feed or load wiring.



Rear View of GRX-3103 Control Unit

Module-to-Module Wiring

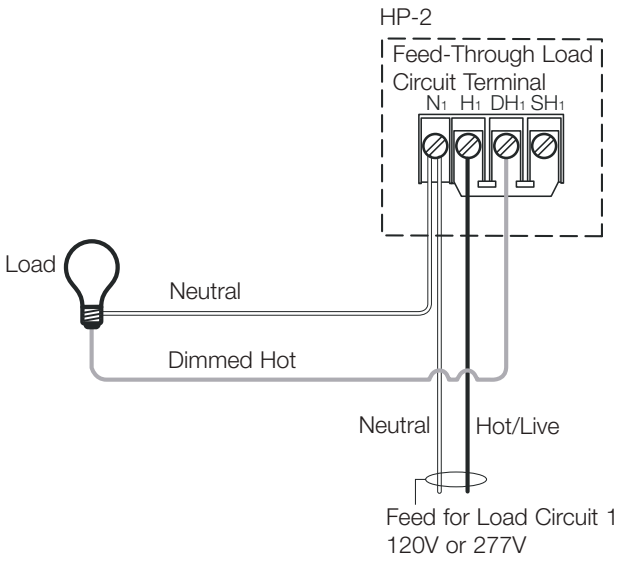
- Pull three #12AWG (2.5mm²) wires between the Dimming Modules to be used on a zone.
- Modules must be daisy-chained.

Job Name:	Model Numbers:	
Job Number:		

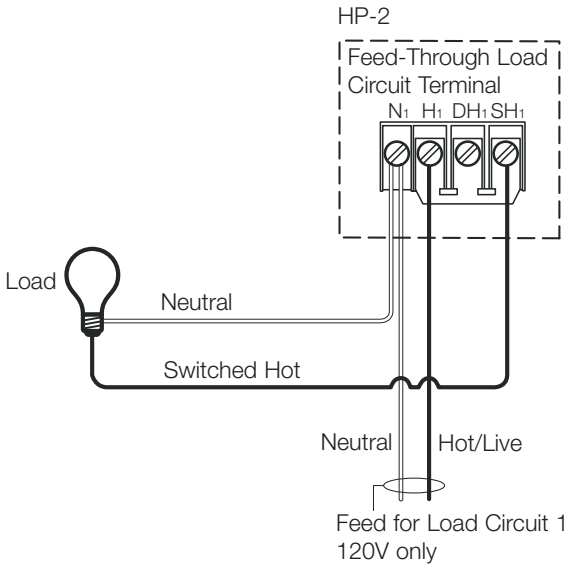
Typical Load Circuits

120V or 277V Dimmed Load Circuits

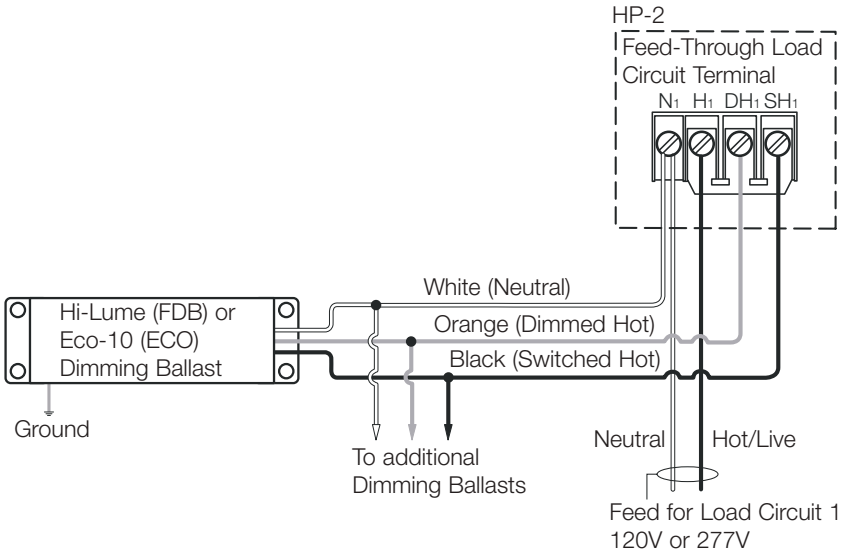
All load types except Lutron Hi-lume® or Eco-10™ (Eco Series) Fluorescent Dimming Ballasts. Circuit 1 shown.



120V Switched Load Circuits



Hi-lume® and Eco-10™ (Eco Series) Fluorescent Dimming Ballasts



Job Name:	Model Numbers:	
Job Number:		

Ten Volt Module (TVM) and Kit

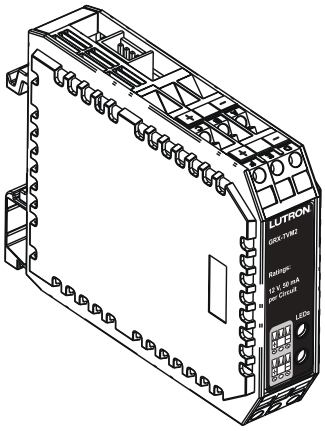
A Ten Volt Module (GRX-TVM2) can control various LED and fluorescent load types when the lighting fixtures use a low-voltage signal ballast or LED driver.

The GRX-TVM2 can be considered as an output module in a Homeworks® QS system; it is used to control load types such as: 0-10 V sink, 0-10 V source, Pulse Width Modulation (PWM), and Tridonic DSI with the addition of a Module Interface (MI). Each TVM has two outputs which can be individually programmed to control any of these load types.

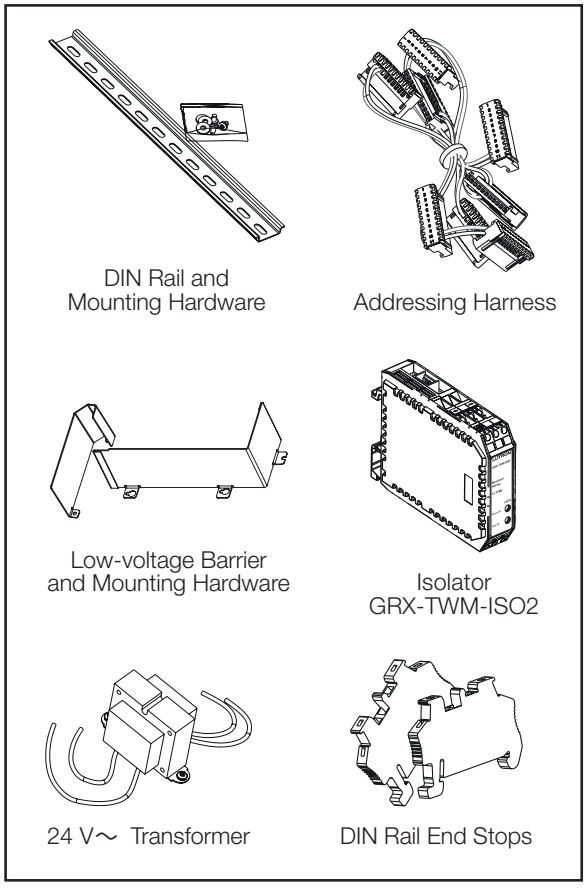
The Ten Volt Module Kit (HW-TVMKIT-120, HW-TVMKIT-230) contains the parts required to install TVMs (TVMs and TVM Kits are sold separately). Each TVM Kit can accommodate up to 12 TVMs, for a total of 24 circuits per panel.

Customers can mount the TVM Kit in their own enclosure or add it to an existing Lutron® enclosure* (HWI-PNL-8, HWAP-8, HWBP-8, PBK-8).

The ISO2 (included in the TVM Kit) provides isolated power to the TVMs. Each ISO2 can provide no more than 750 mA of current — equal to 6 fully loaded TVMs or up to 12 partially loaded TVMs.



GRX-TVM2



HW-TVMKIT-120
HW-TVMKIT-230

Model Numbers

GRX-TVM2	Ten Volt Module
HW-TVMKIT-120	Ten Volt Module Kit (120 V⁓)
HW-TVMKIT-230	Ten Volt Module Kit (230 V⁓)
163198	Low-Voltage Transformer for 120 V Kit (replacement)
163227	Low-Voltage Transformer for 230 V Kit (replacement)
GRX-TVM-ISO2	ISO2 (replacement)

* The HW-TVMKIT is mounted in place of Remote Power Module (RPM) #8

Ten Volt Module (TVM) and Kit

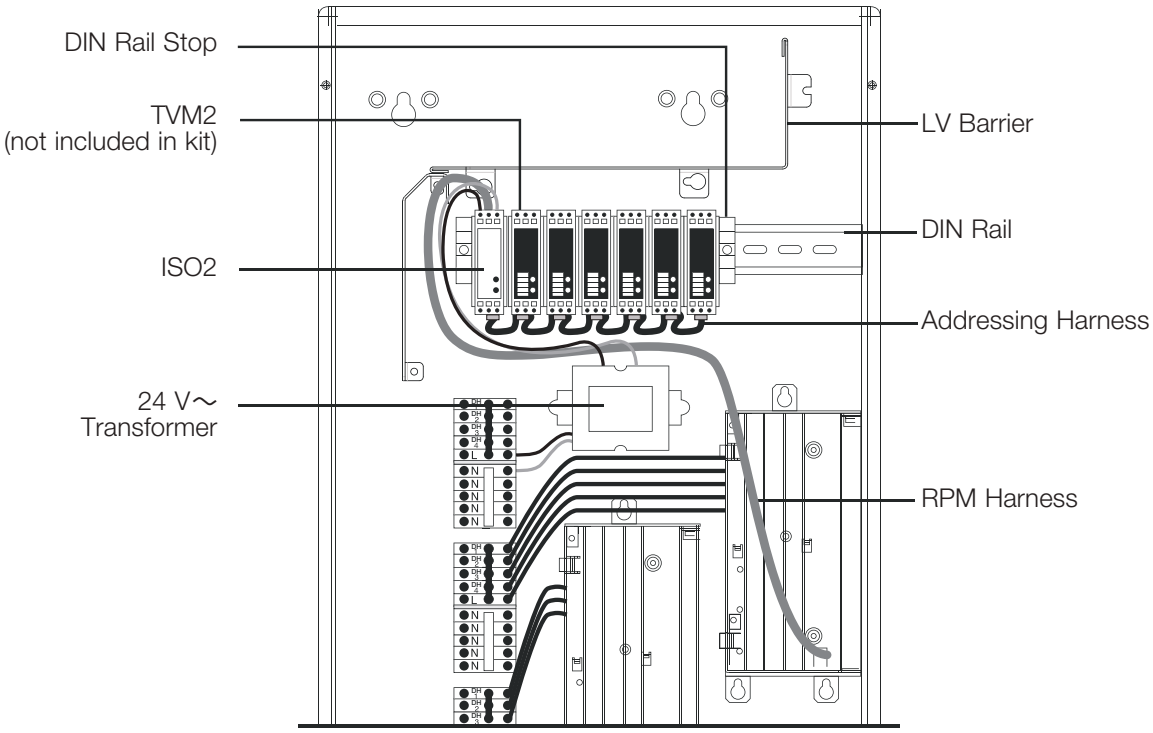
Specifications

Model Number	GRX-TVM2 (Ten Volt Module) HW-TVMKIT-120 (120 V~ Ten Volt Module Kit) HW-TVMKIT-230 (230 V~ Ten Volt Module Kit) *Replacement Kit Accessories:* Low-Voltage Transformer for 120 V Kit: 163198 Low-Voltage Transformer for 230 V Kit: 163227 ISO2 : GRX-TVM-ISO2
Power	**TVM:** 12 V⎓ 50 mA per circuit **TVMKIT-120** **ISO2:** 24 V~ 50/60 Hz 750 mA per ISO2 **Transformer Input:** 120 V~ 50/60 Hz 40 W **Transformer Output:** 24 V~ 1.6 A IEC PELV / NEC® Class 2 **TVMKIT-230** **ISO2:** 24 V~ 50/60 Hz 750 mA per ISO2 **Transformer Input:** 220 V~ – 240 V~ 50 Hz 40 W **Transformer Output:** 24 V~ 1.6 A IEC PELV / NEC® Class 2
Capacity	Each GRX-TVM2 can control up to 2 circuits Each HW-TVMKIT-xxx can hold up to 12 GRX-TVM2s
Low-voltage Connections	11-pin harness connects ISO2 to each TVM2. Low-voltage MI harness connects the ISO2 units to panel interface.
Environment	Ambient operating temperature: 32 to 104 °F (0 to 40 °C). Ambient operating humidity: 0–90% humidity, non-condensing. Indoor use only.
Mounting	Mounts in HWI-PNL-8, HWAP-8, HWBP-8, PBK-8 in place of Remote Power Module (RPM) #8
Warranty	www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf www.lutron.com/TechnicalDocumentLibrary/Intl_Warranty.pdf

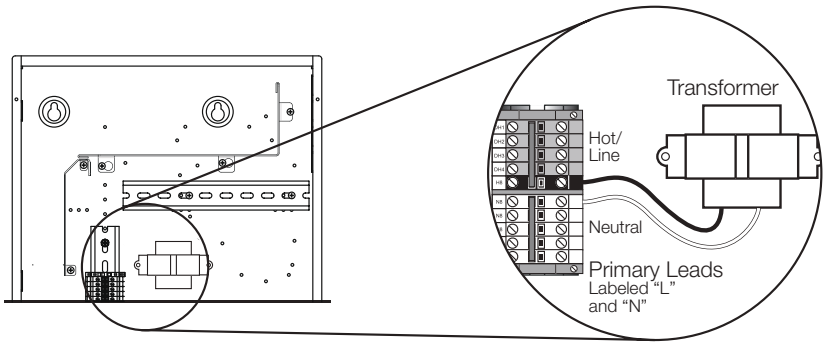
Technical Support: U.S.A. 800.523.9466
Europe +44.(0)20.7680.4481

Ten Volt Module (TVM) and Kit

Installation

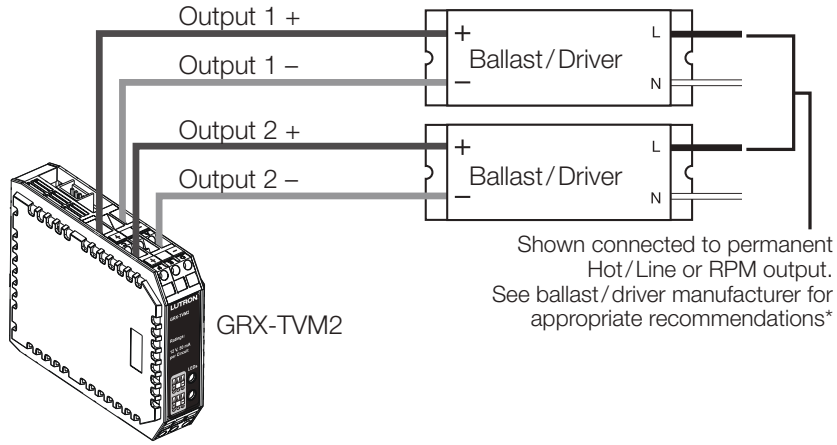


Wiring

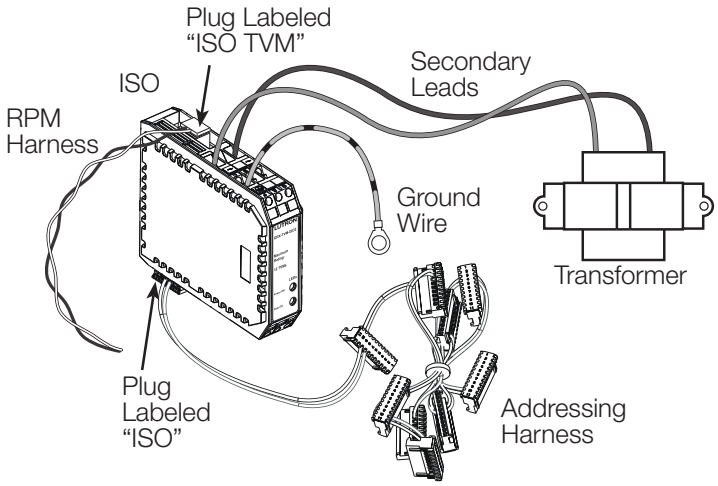


Ten Volt Module (TVM) and Kit

Connecting the Low-voltage Signal Wires



ISO2 Wiring Example



* Some ballasts/drivers require a permanent Hot/Line connection while others must be switched off in conjunction with the TVM. Consult ballast/driver manufacturer instructions for details.

Technical Support: U.S.A. 800.523.9466
Europe +44.(0)20.7680.4481

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GRX-TVI Ten Volt Interface

Features

- Provides 0-10 V control and ballast switching capabilities to switch and dim fluorescent and LED lights.
- Switches and dims 0-10 V electronic dimming ballasts powered by 100-277 V~ (ballast must provide 0-10 V source). Switches up to 16 A of electronic capacitive ballasts.
- Switches motors up to 1/4 HP @ 100-127 V~, 1/2 HP @ 200-277 V~.
- Up to five Ten Volt Interfaces may be connected to one Control Unit zone. This allows one zone to control up to five 16 A circuits of Electronic Dimming Ballasts or five motors.
- Provides 100-277 V~ power to loads.
- Requires 100-127 V~ or 200-240 V~ power for internal operations.

Compatible Controls

Family	Product	Wiring Diagram
Residential Systems	HW-RPM-4U	I, J
	HW-RPM-4A	I, J
	HWI-WPM-6D (Wallbox Power Module)	A, B
	HxD-6ND	C, D
	HWV-FDB-8A	E, F
	Rx-6ND	C, D
	RRD-10ND	C, D
Commercial Systems	LP-RPM-4U	I, J
	LP-RPM-4A	I, J
	GRAFIK Eye® Control Unit	A, B
	GP Panels	K, L

Family	Product	Wiring Diagram
Wallbox Flourescent 3-wire Dimmers	AYF-103P	E, F
	DVF-103P	E, F
	DVSCF-103P	E, F
	LXF-103PL	E, F
	MAF-6AM*	G, H
	MSCF-6AM*	G, H
	NF-10	E, F
	NF-103P	E, F
	NTF-10	E, F
	NTF-103P	E, F
	SF-10P	E, F
	SF-103P	E, F
	SPSF-6A*	G, H
	SPSF-6AM*	G, H
	VF-10	E, F
	VTF-6AM	G, H

* Note: These controls do not conform to IEC929 standard for 0-10 V output signal; they cannot reach the 1 V minimum.

LUTRON® SPECIFICATION SUBMITTAL Page 1

Job Name:	Model Numbers:	
Job Number:		

Specifications

Standards

- UL Listed in US and Canada
- NOM
- CE
- C-Tick

Power

- Load (output) power: 100-277 V~. Phase independent of lighting control.

0-10 V Dimming Control

- Output rating: 10 µA-300 mA. Sinks current only (ballast must source/provide 10 V supply). <1 V minimum, >10 V maximum

Zone Capacity

- Up to five Ten Volt Interfaces per Control Unit zone.

Key Design Features

- Complies with Standard UL 508.
- Provides a Class 2 isolated 0-10 V output signal that conforms to EN60929 and IEC929.
- Accepts a phase control signal (100-127 V~ or 200-240 V~; 50/60 Hz).

Terminals

- Each terminal accepts up to two 12 AWG (2.5 mm^2) conductors.

Physical Design

- Wall-mounted. Indoor use only. Type 1 enclosure.
- Weight: 4.25 lbs (2 kg).

Environment

- Temperature: 32 °F to 104 °F (0 °C to 40 °C)
- 0-90% humidity, non-condensing.

Switching Load Types and Capacities

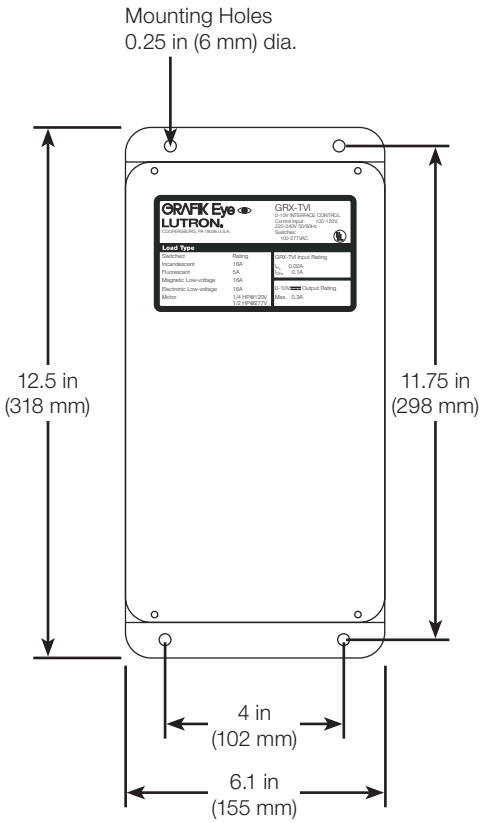
Source/Load Type	100-127 V~ 200-277 V~	230 V~ (CE)
Fluorescent		
• Lutron Eco-10® (TVE Series)	16 A	—
• Electronic Capacitive Non-Dim	16 A	16 A
• Other manufacturers' 0-10 V ballasts	16 A	16 A
LED	16 A	16 A
Incandescent	16 A	16 A
Low-voltage	16 A	16 A
Metal Halide	16 A	16 A
Neon/Cold Cathode	16 A	16 A
Motor	1/4 HP @ 100-127 V~ 1/2 HP @ 200-277 V~	

Job Name:	Model Numbers:	
Job Number:		

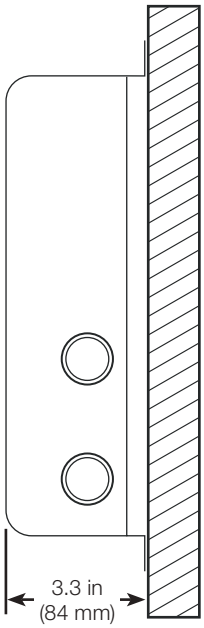
Dimensions and Mounting

- Mount only where ambient temperature is 32 °F to 104 °F (0 °C to 40 °C).
- Allow 4.5 in (114 mm) between Interfaces when mounting several in a vertical layout.
- Mount so that line (mains) voltage wiring is at least 6 ft (1.8 m) from sound or electronic equipment and wiring.
- Mount within 7° of true vertical.

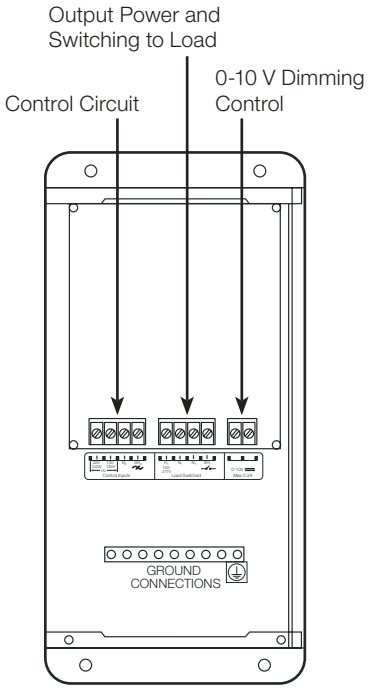
Front View
(cover closed)



Side View



Front View
(cover open)

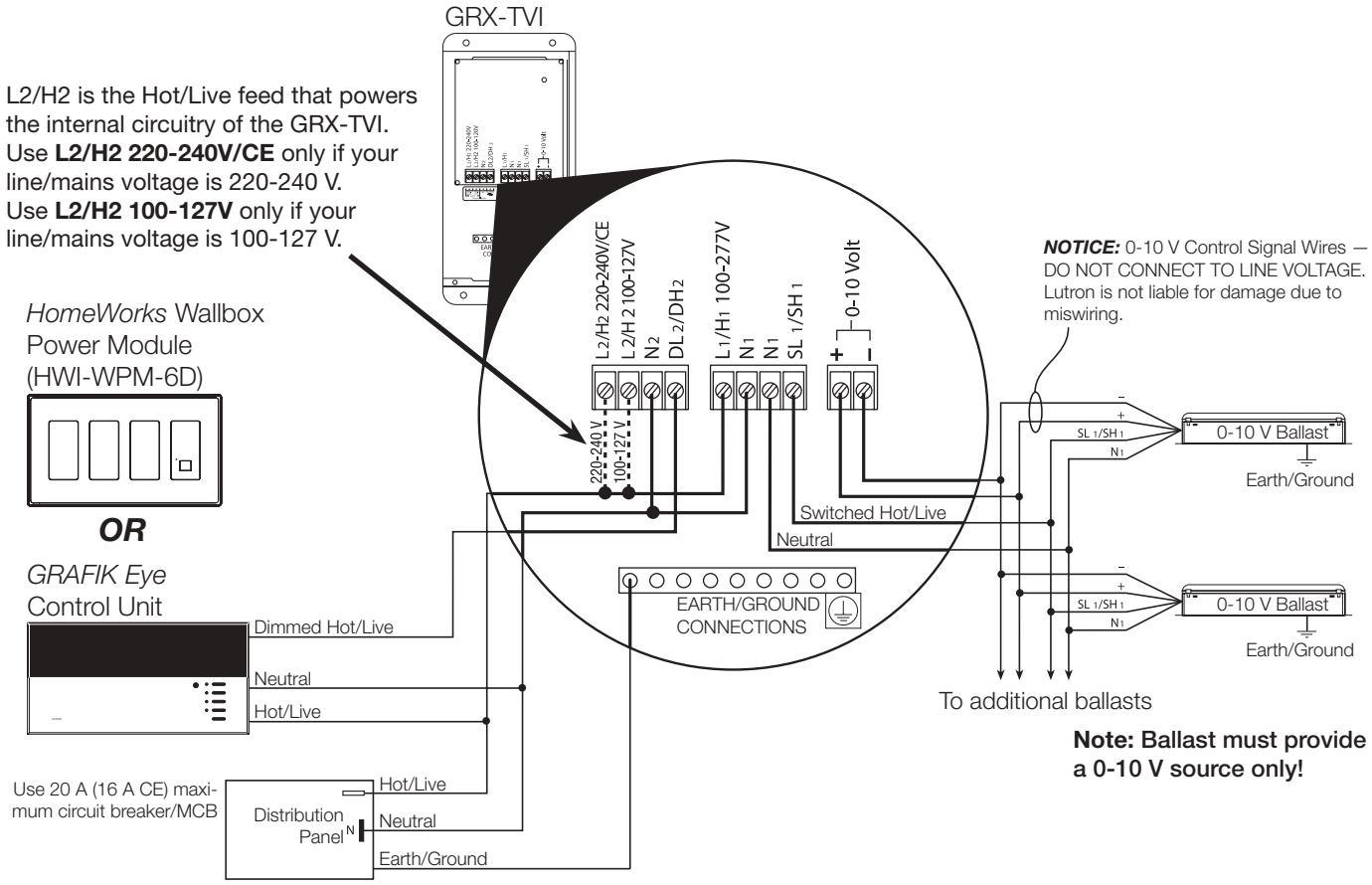


Job Name:	Model Numbers:	
Job Number:		

Wiring Diagrams

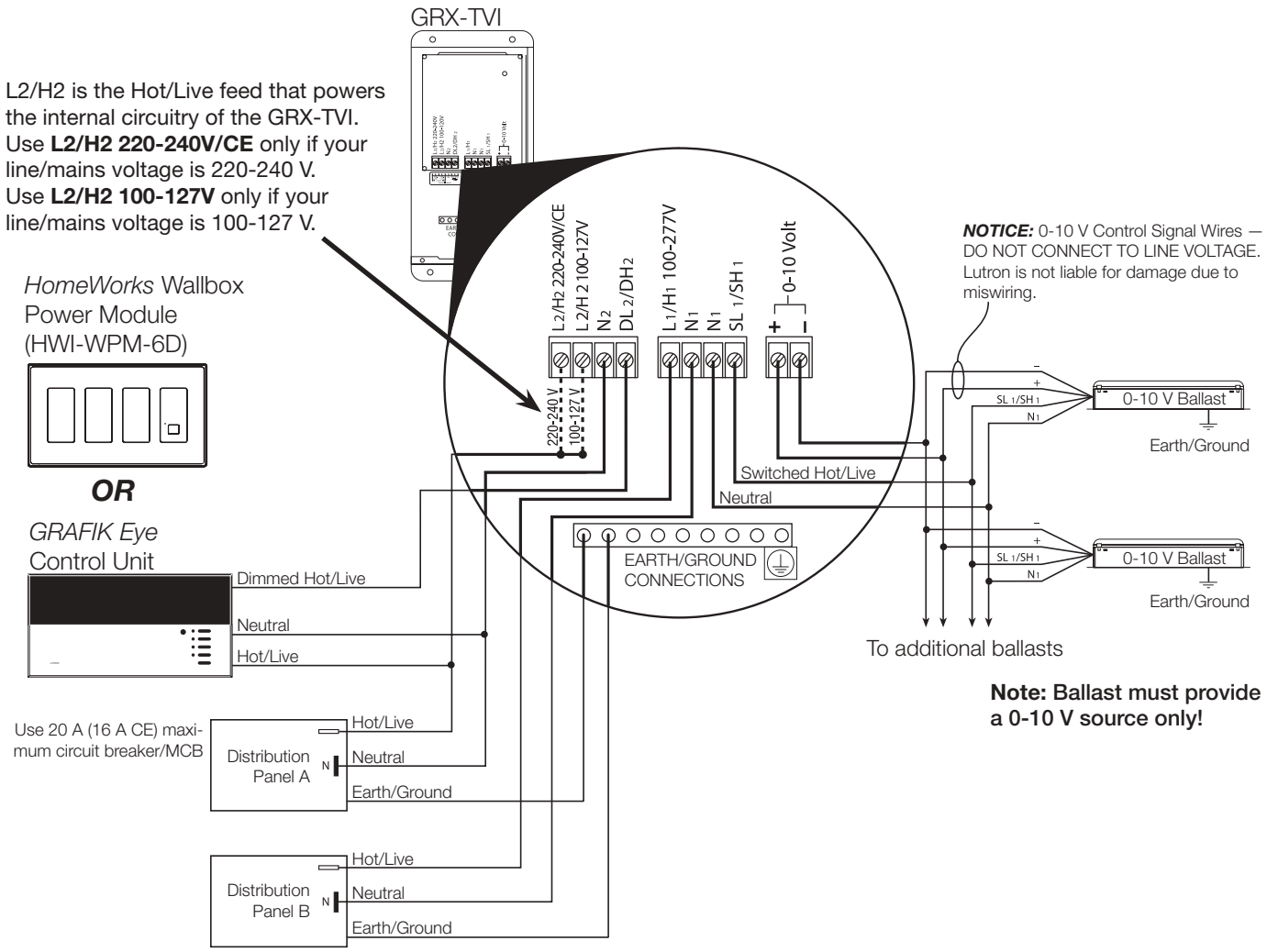
- Each terminal can accept up to two 12 AWG (2.5mm²) conductors.
- L1/H1 is the Live/Hot feed to power the load.
- L2/H2 (on the control circuit terminals) supplies operating power for the Ten Volt Interface.
- Wiring Diagrams A, C, E, G, and I show a GRX-TVI wired from one distribution panel. If the power requirement of the complete system is less than an MCB/circuit breaker rating, one feed can be jumpered inside the enclosure (as shown).
- Wiring Diagrams B, D, F, H, and J show a GRX-TVI wired from two separate distribution panels that may be different phases or voltages.
- Choose the correct L2/H2 terminal for your operating power.
  - Leave one terminal empty - do not use both.
  - Do not connect 277 V to either L2/H2 terminal.
  - Make sure L2/H2 is on the same phase as DL2/DH2 (Dimmed Live/Dimmed Hot) from the lighting control.
- Run separate neutrals for load circuit - no common neutrals.
- NEC® Class 2/IEC PELV, 0-10 V wiring from a ballast to the GRX-TVI must be separated from the power wiring. Enter the Class 2/PELV wires through the knockout adjacent to the 0-10 V terminal blocks. The Nomex® barrier ensures separation and is flexible to allow access to the terminals. The barrier must be in place when installation is complete.

Wiring Diagram A: HomeWorks® Wallbox Power Module/GRAFIK Eye® Control Unit — 1 Distribution Panel



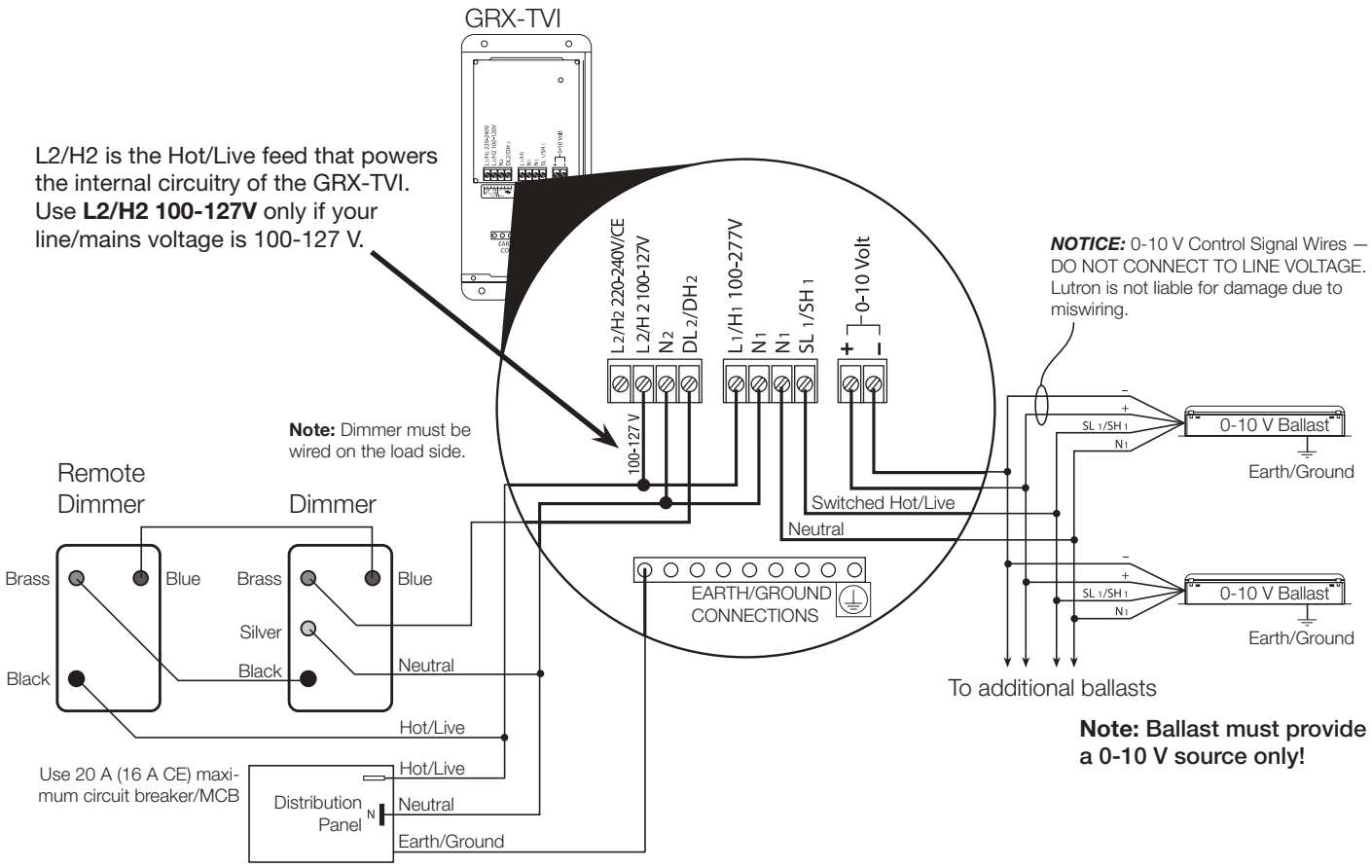
Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram B: HomeWorks® Wallbox Power Module/GRAFIK Eye® Control Unit — 2 Distribution Panels



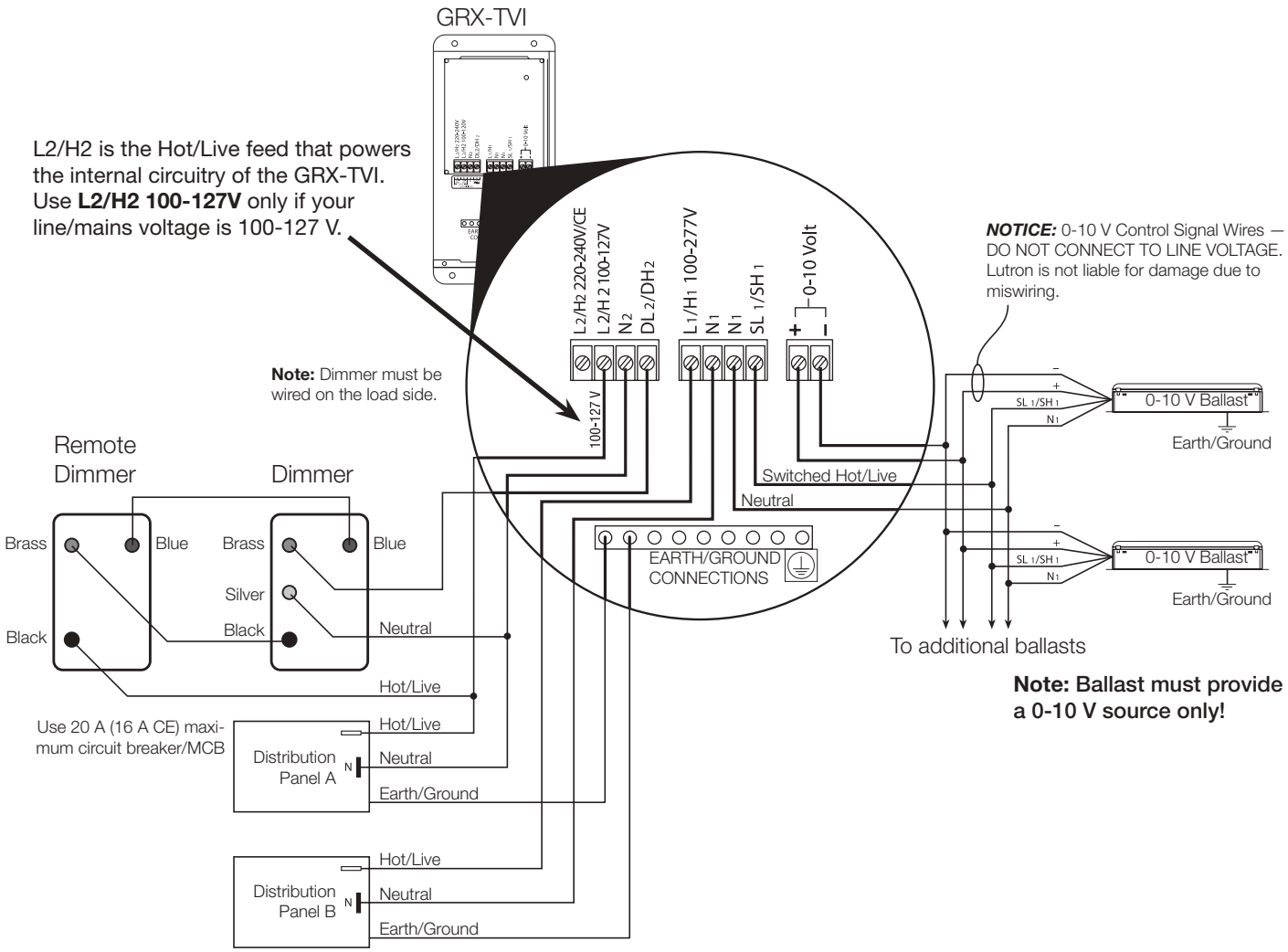
Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram C: HomeWorks® Maestro®/RadioRA®/RadioRA® 2 Dimmers— 1 Distribution Panel



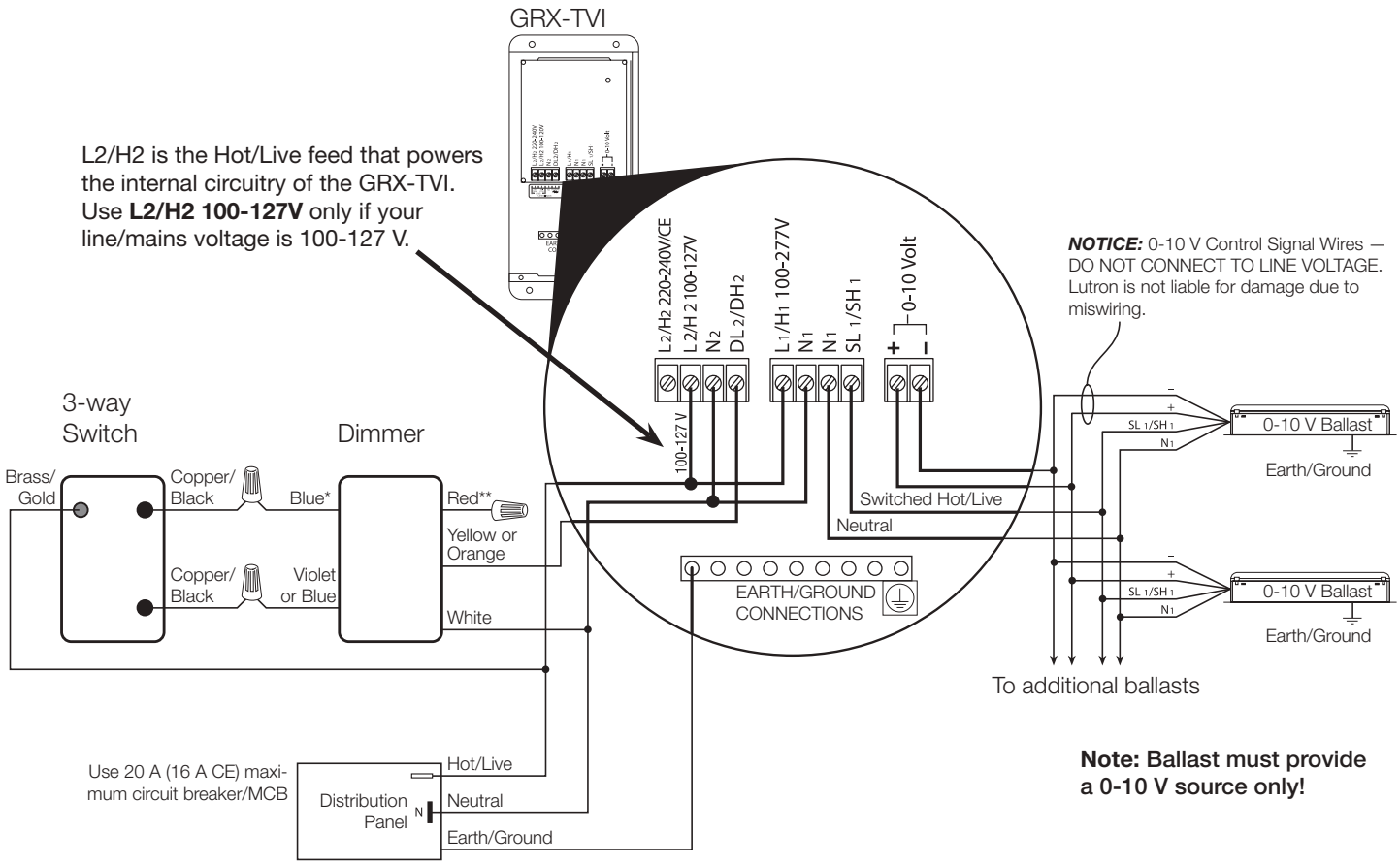
Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram D: HomeWorks® Maestro®/RadioRA®/RadioRA® 2 Dimmers — 2 Distribution Panels



Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram E: Ariadni®/Diva®/Lyneo®/Skylark®/Nova®/Nova T☆®/Vareo®
3-wire Fluorescent Dimmers — 1 Distribution Panel



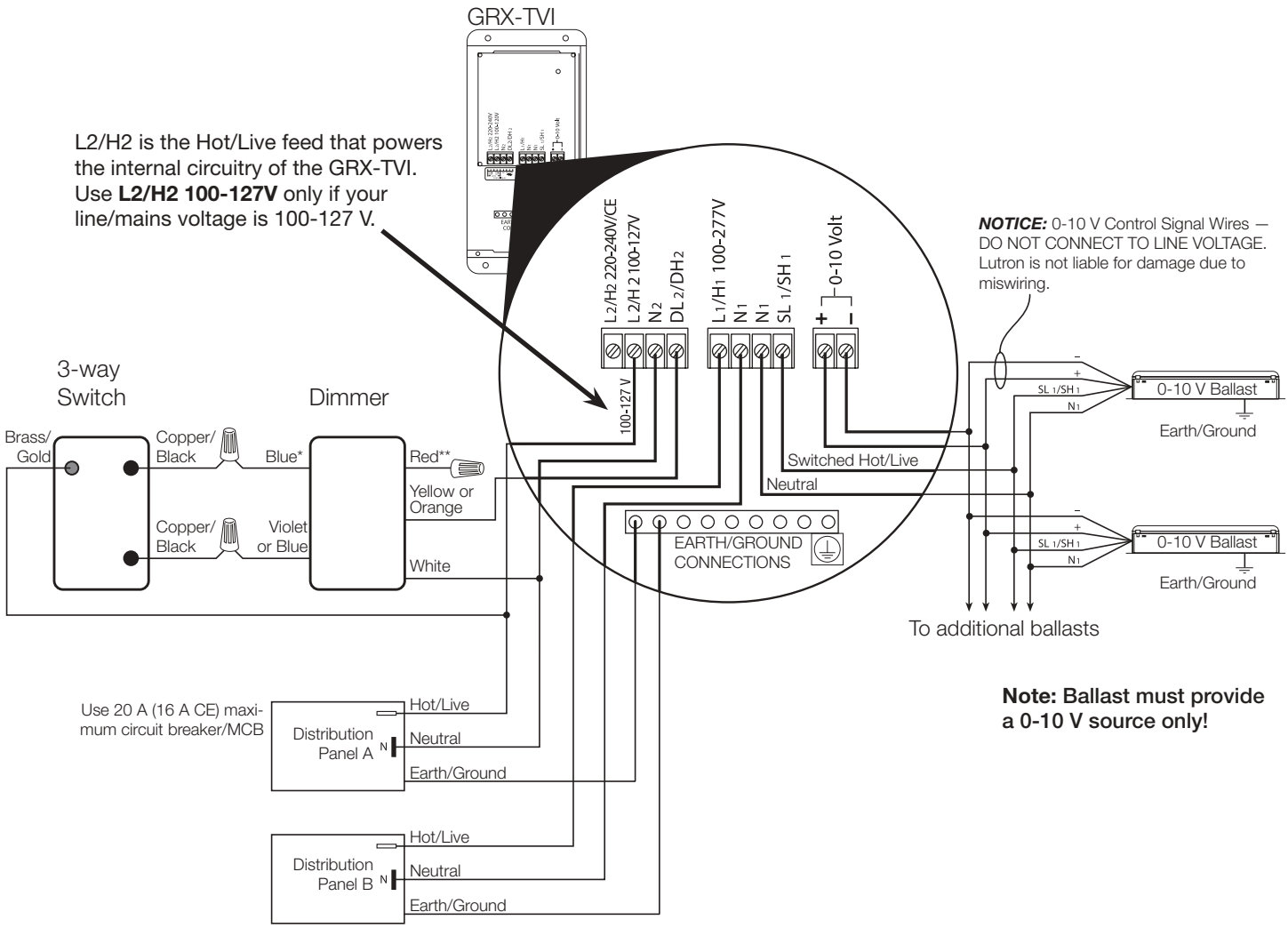
Note: Ballast must provide a 0-10 V source only!

* Single pole dimmers use black for the hot/live wire. Refer to the single-pole dimmer's installation instructions to identify the hot/live wire for that product.

** The red wire is not used. Cap off the red wire using a wire connector. Do not wire the red wire to ground or to any other wiring.

Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram F: Ariadni®/Diva®/Lyneo®/Skylark®/Nova®/Nova T☆®/Vareo®
3-wire Fluorescent Dimmers — 2 Distribution Panels

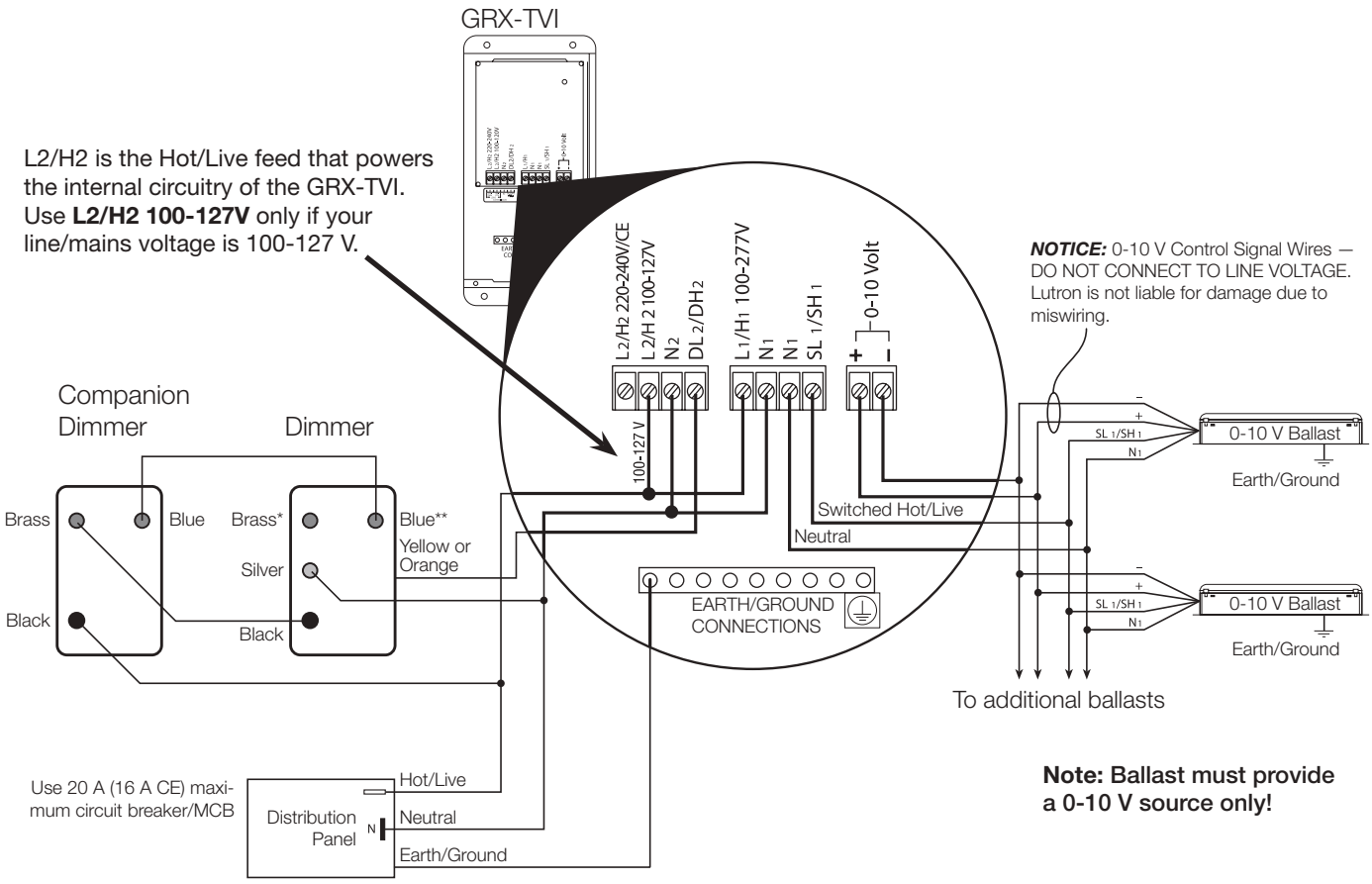


* Single pole dimmers use black for the hot/live wire. Refer to the single-pole dimmer's installation instructions to identify the hot/live wire for that product.

** The red wire is not used. Cap off the red wire using a wire connector. Do not wire the red wire to ground or to any other wiring.

Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram G: Maestro®/Spacer System®/Vierti®
3-wire Fluorescent Dimmers — 1 Distribution Panel

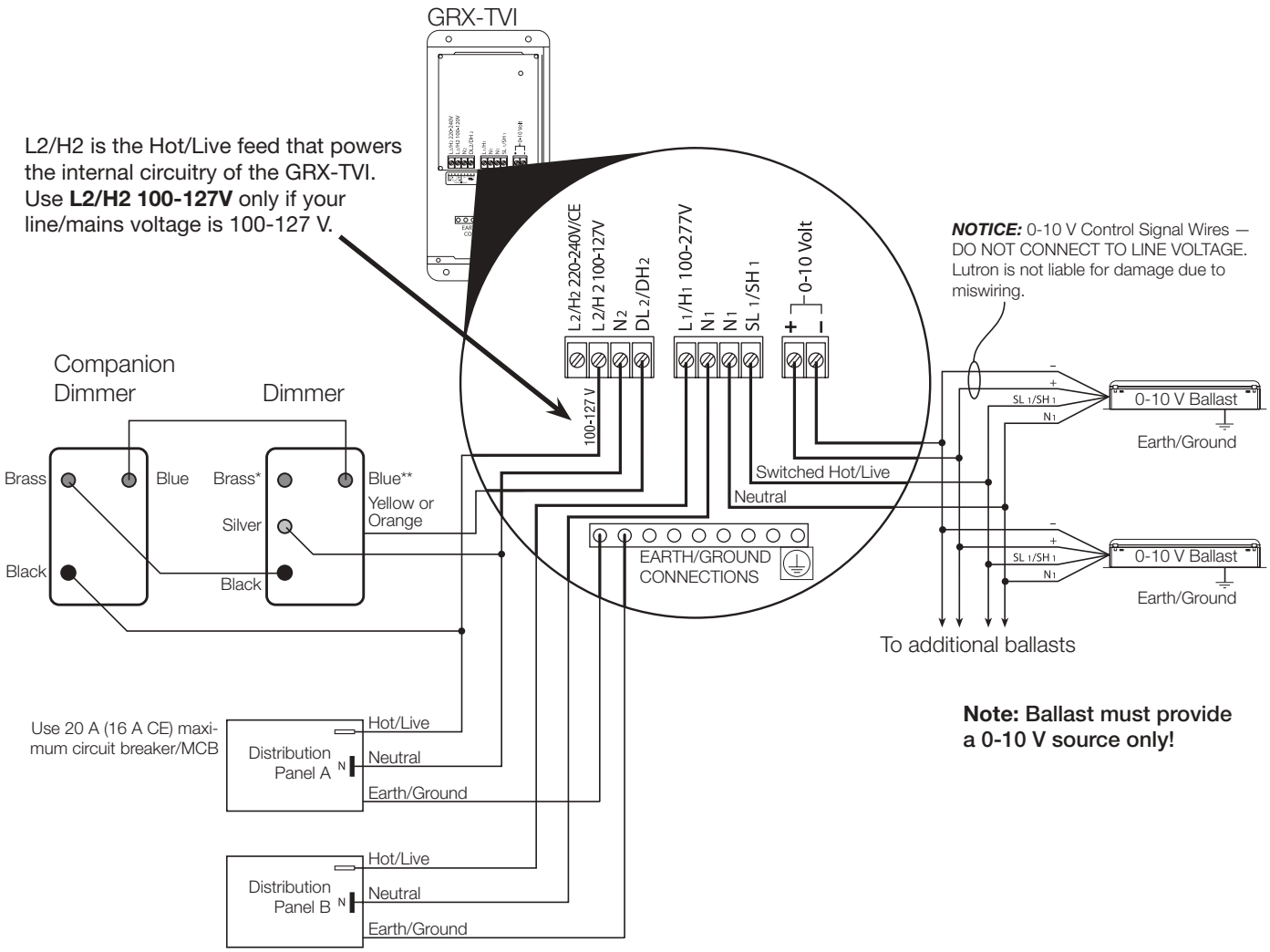


* The brass screw terminal is not used. Tighten the brass screw terminal. Do not connect the brass screw terminal to ground or to any other wiring.

** When used as a single-pole dimmer, the blue screw terminal is not used. When used as a single-pole dimmer, tighten the blue screw terminal—do not connect the blue screw terminal to ground or to any other wiring.

Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram H: Maestro®/Spacer System®/Vierti®
3-wire Fluorescent Dimmers — 2 Distribution Panels

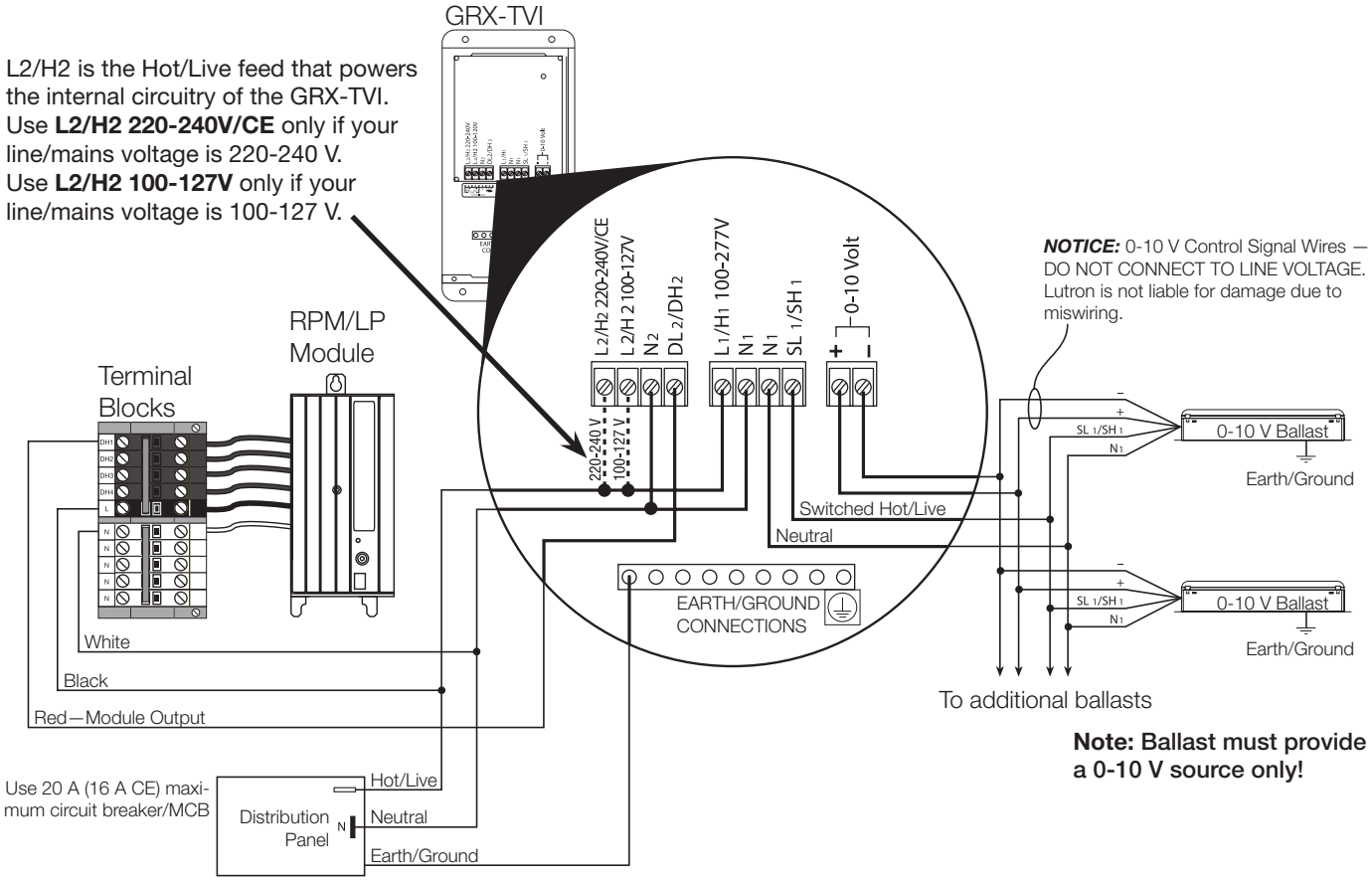


* The brass screw terminal is not used. Tighten the brass screw terminal. Do not connect the brass screw terminal to ground or to any other wiring.

** When used as a single-pole dimmer, the blue screw terminal is not used. When used as a single-pole dimmer, tighten the blue screw terminal—do not connect the blue screw terminal to ground or to any other wiring.

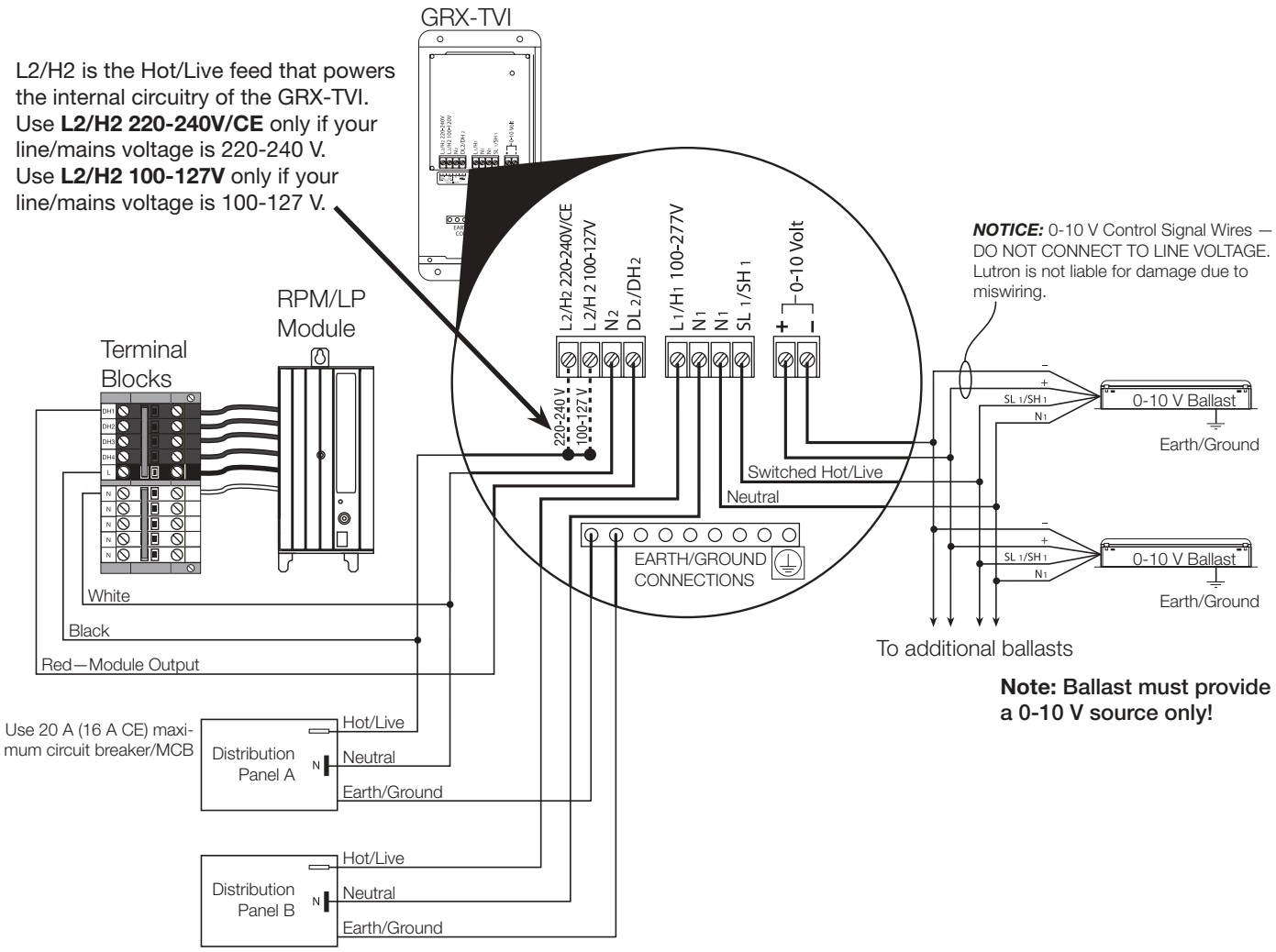
Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram I: HomeWorks® Remote Power Module/LP Module — 1 Distribution Panel



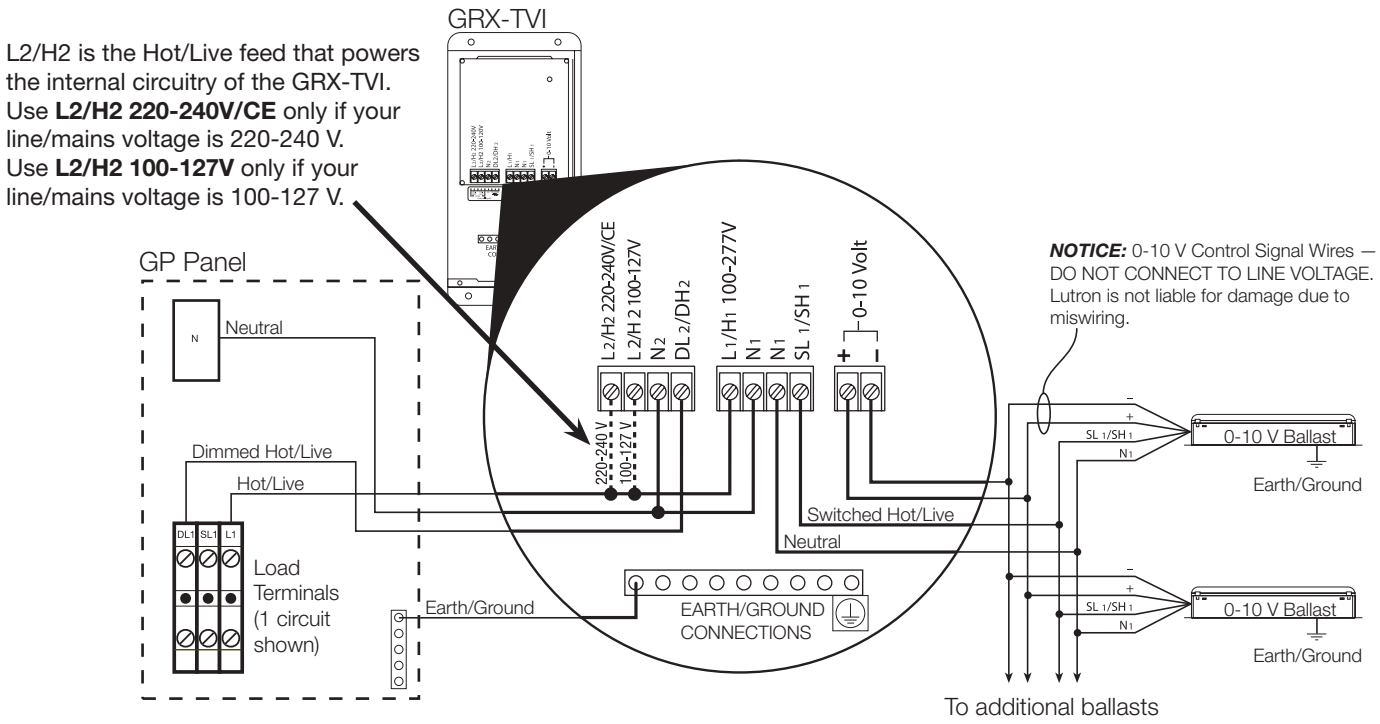
Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram J: HomeWorks® Remote Power Module/LP Module — 2 Distribution Panels



Job Name:	Model Numbers:	
Job Number:		

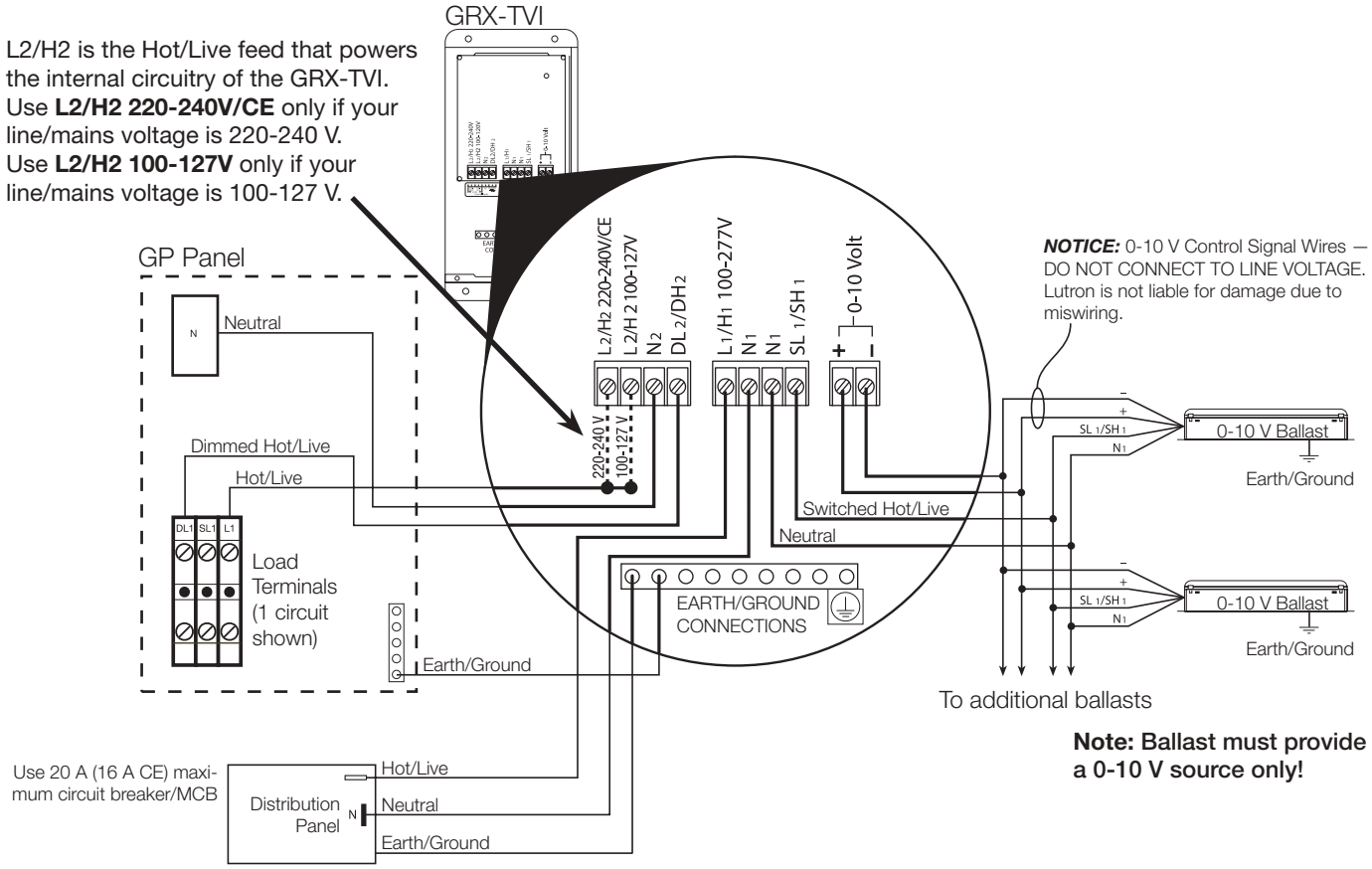
Wiring Diagram K: GP Panel — 1 Distribution Panel



Note: Ballast must provide a 0-10 V source only!

Job Name:	Model Numbers:	
Job Number:		

Wiring Diagram L: GP Panel — 2 Distribution Panels



Job Name:	Model Numbers:	
Job Number:		

LUT-LBX Synthetic Minimum Load

Description

- Provides capability for certain Lutron dimmers to control low-wattage loads from 0 watts up to the dimmer's minimum rating
- Presents a simulated load to the dimmer to meet the minimum load requirements even when the actual load is smaller.
- Works with forward phase or leading edge dimmers and reverse phase or trailing edge dimmers.
- Models available for 120 V~ and 220-240 V~ input power.
- This "load-side" equipment installs on the zone wiring in parallel with the lighting load.
- Dissapates a maximum of 10 watts when the controlling dimmer is near high-end.

Works with:

- GRAFIK Eye® 3000 Series control units
- LP RPM Dimmimg Modules
- HomeWorks® RPM Dimming Modules
- HomeWorks® WPM Dimming Modules
- Neutral-referenced Lutron dimmers
- Two-wire Lutron dimmers

Available Models

Input Power	Model Number
120 V~	LUT-LBX-WH
220 - 240 V~	LUT-LBX-CE-WH

Job Name:	Model Numbers:	
Job Number:		

Specifications

Input

- 120 V~ 100 mA 50/60 Hz (LUT-LBX)
- 220-240 V~ 65 mA 50/60 Hz (LUT-LBX-CE)
- Power dissipation less than 10 watts

Sources/Load Types*

Operates these sources when wired in parallel with the load:

- Incandescent (Tungsten)
- Halogen
- Magnetic Low-Voltage Transformer
- Electronic Low-Voltage Transformer
- Lutron Tu-Wire® Electronic Fluorescent Dimming Ballast
- Neon/Cold Cathode
- LED lighting (refer to Application Note #138 for further details)

Terminals

Accepts up to two 12 AWG (2.5 mm^2) wires.

Environment

32 - 104 °F (0 - 40 °C). Relative humidity less than 90% non-condensing.

Mounting

Surface or recess mount indoors only.

EMC Immunity

- Surge protection up to 6 kV, 3000 A, IEEE std. C62.41
- ESD protection up to 16 kV

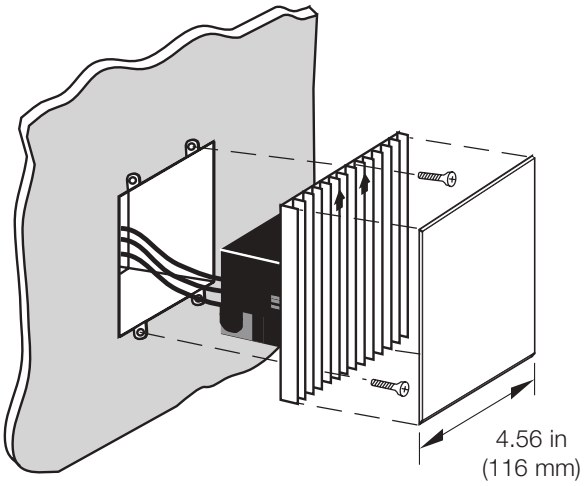
* The dimmer must be rated for the load type being used. The LUT-LBX does not change the approved load types of the dimmer, just the minimum load requirement. For example, MLV loads must still be used with MLV dimmers.

Job Name:	Model Numbers:	
Job Number:		

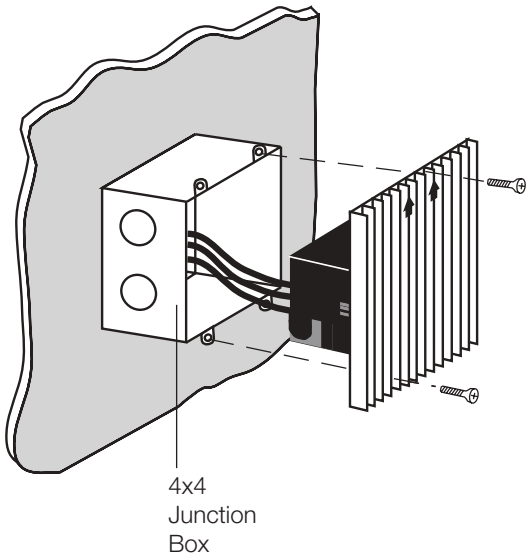
Dimensions and Mounting

- Recess or surface mount in provided 4x4 junction box (Lutron P/N 241-496) 3.5 in (89 mm) deep. Indoors only.
- LUT-LBX generates heat; mount only where ambient temperature is 32 - 104 °F (0 - 40 °C).
- Mount with arrows on yoke facing up to ensure adequate cooling.
- Allow 4.5 in (114 mm) above and below unit and between faceplates when mounting several in a vertical layout.
- For better heat dissipation, surface mount without faceplate.
- Mount so line (mains) voltage wiring is at least 6 ft (1.8 m) from sound or electronic equipment and wiring.
- Mount Interface within 7° of true vertical.

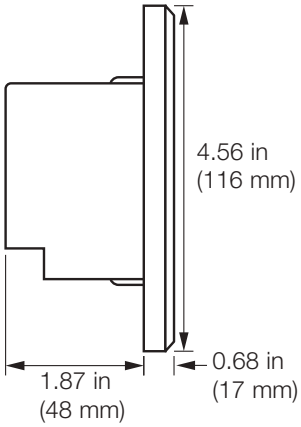
Recess Mount with Faceplate



Surface Mount without Faceplate



Side View

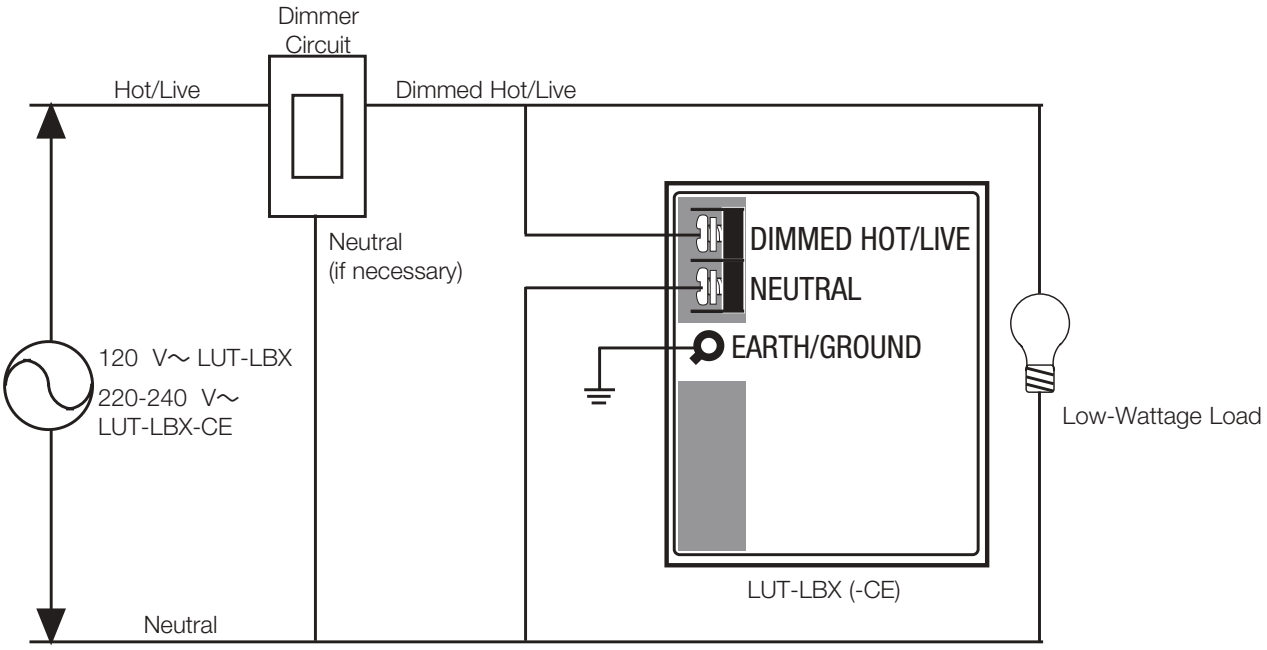


Job Name:	Model Numbers:	
Job Number:		

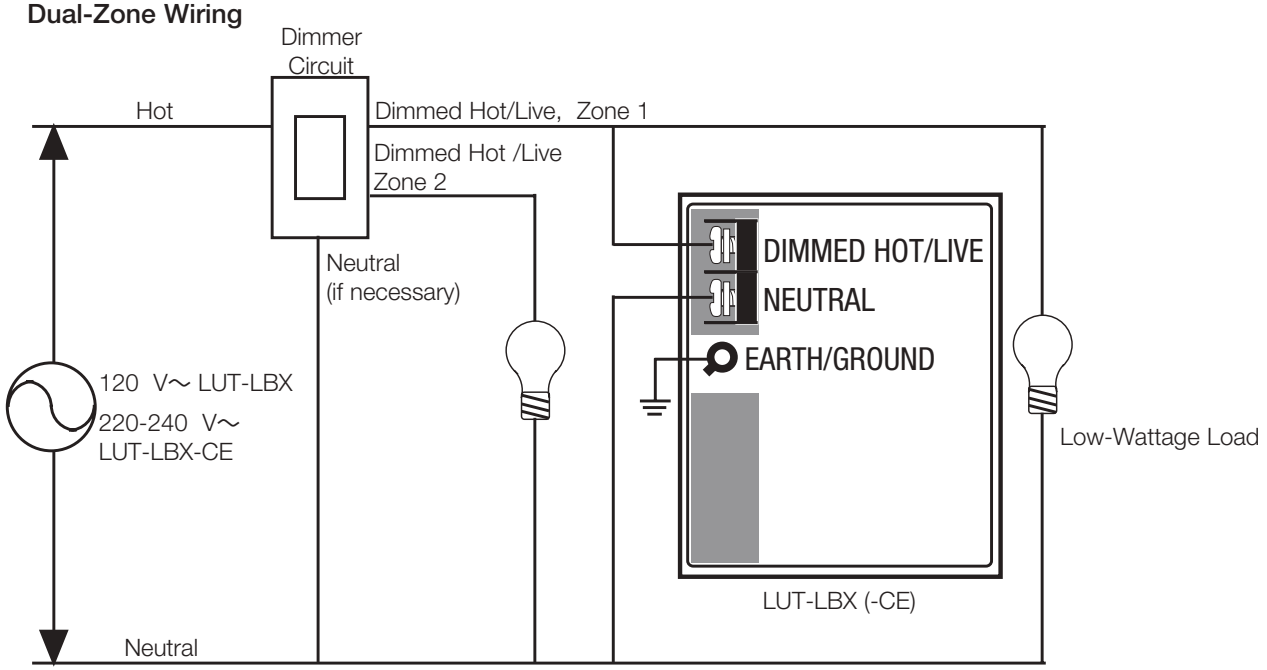
Wiring

- Pull 12 to 16 AWG (2.5 - 1.0 mm²) Copper (Cu) wires (75 °C minimum) for input power and load circuit.
- Strip 0.5 in (12 mm) insulation from wires before connecting.

Single-Zone Wiring

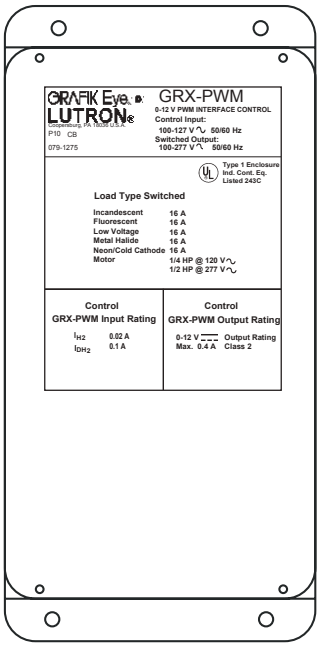


Dual-Zone Wiring



Job Name:	Model Numbers:	
Job Number:		

GRX-PWM Pulse Width Modulation Interface



Description

- Provides capability for a GRAFIK Eye 3000 Series control unit, GP, or LP Panel to switch and dim fluorescent lights that have pulse width modulating (PWM) dimming ballasts.
- Switches and dims any PWM fluorescent dimming ballast powered by 100-277 V~ that conforms to JISC8120-2.
- Switches up to 16 A of fluorescent, incandescent, low-voltage, metal halide neon/cold cathode load.
- Switches motors up to 1/4 HP @ 100/120 V~, 1/2 HP @ 200-277 V~
- Up to five PWM interfaces may be connected to one GRAFIK Eye 3000 control unit zone. This allows one zone to control up to five 16 A circuits of electronic dimming ballasts or five motors.
- Switches 100-277 V~ 50/60 Hz power to loads.
- Requires 100/120 V~ 50/60 Hz power for internal operations.

Job Name:	Model Numbers:	
Job Number:		

Specifications

Standards

- UL listed

Power

- Load (output) power (phase independent of lighting): 100-277 V~
- Input voltage rating (phase independent of lighting control): 100/120 V~, 50/60 Hz
- Switched voltage rating: 100-277 V~, 50/60 Hz
- H_2 terminal input rating: 200 mA
- DH_2 terminal input rating: 100 mA
- 12 V⎓ PWM output rating: 400 mA - sources current only

Zone Capacity

- Up to five PWM interfaces per control unit zone.

Key Design Features

- Complies with Standard UL 508.
- Provides a PELV (Class 2: USA) isolated 12 V⎓ at 1 kHz with 400 mA max drive capability PWM output signal that conforms to IEC60929 and JIS C8120-2.
- Accepts a phase-control constant-gate drive fluorescent input signal (100-120 V~ 50/60 Hz)

Physical Design

- Wall-mounted, NEMA-Type 1 enclosure, IP-20 protection; #16 U.S. Gauge Steel. Indoors only.
- Weight: 4.25 lbs (2 kg)

Mounting

- Surface mount between 16 in. (40 cm) studs

Environment

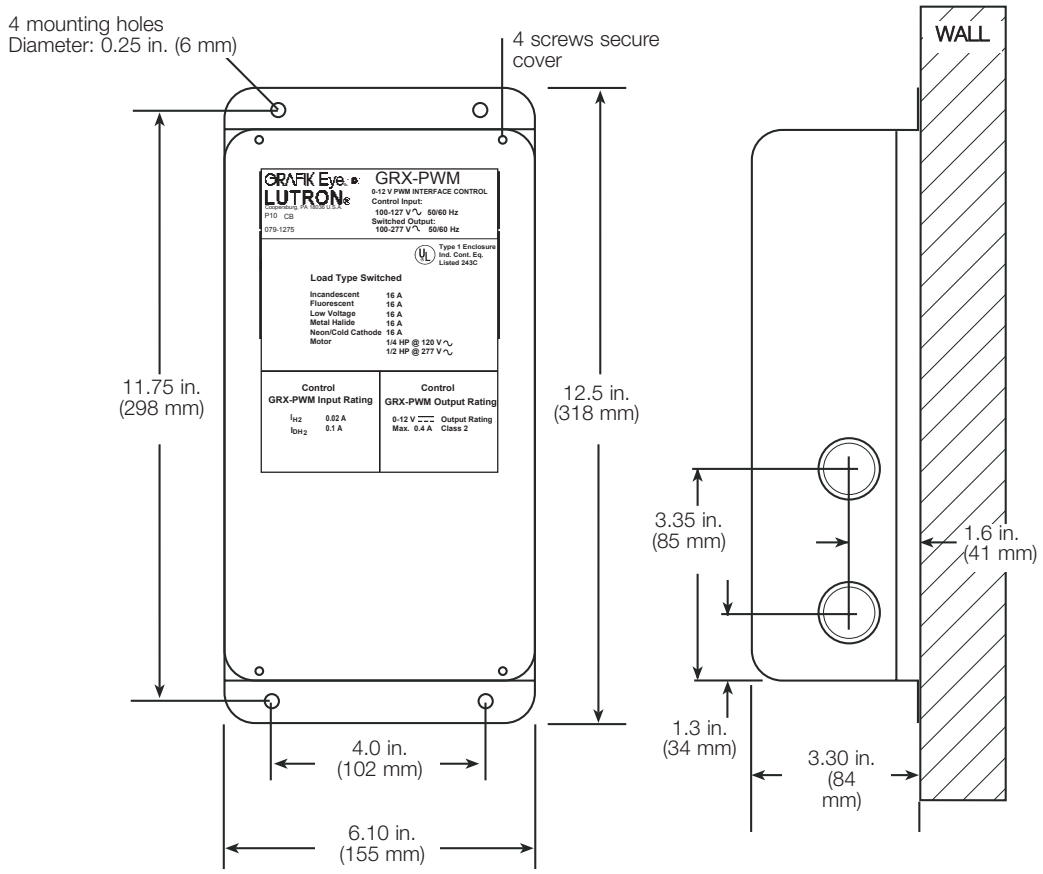
- 32-104 °F (0-40 °C). Relative humidity less than 90% non-condensing.

Source/Load Type	Switched Hot Current 100-277 V~
Fluorescent	16 A
Incandescent	16 A
Low-Voltage	16 A
Metal Halide	16 A
Neon/Cold Cathode	16 A
Motors	1/4 HP @ 100-120 V~ 1/2 HP @ 200-277 V~

Job Name:	Model Numbers:	
Job Number:		

Dimensions and Mounting

- Mount only where ambient temperature is 32-104 °F (0-40 °C); less than 90% non-condensing relative humidity.
- Allow 4.5 in. (114 mm) between interfaces when mounting several in a vertical layout.
- Mount so that line (mains) voltage wiring is at least 6 feet (1.8 m) from sound or electronic equipment and wiring.
- Mount within 7° of true vertical.
- Internal relays click while in operation; mount where audible noise is acceptable.



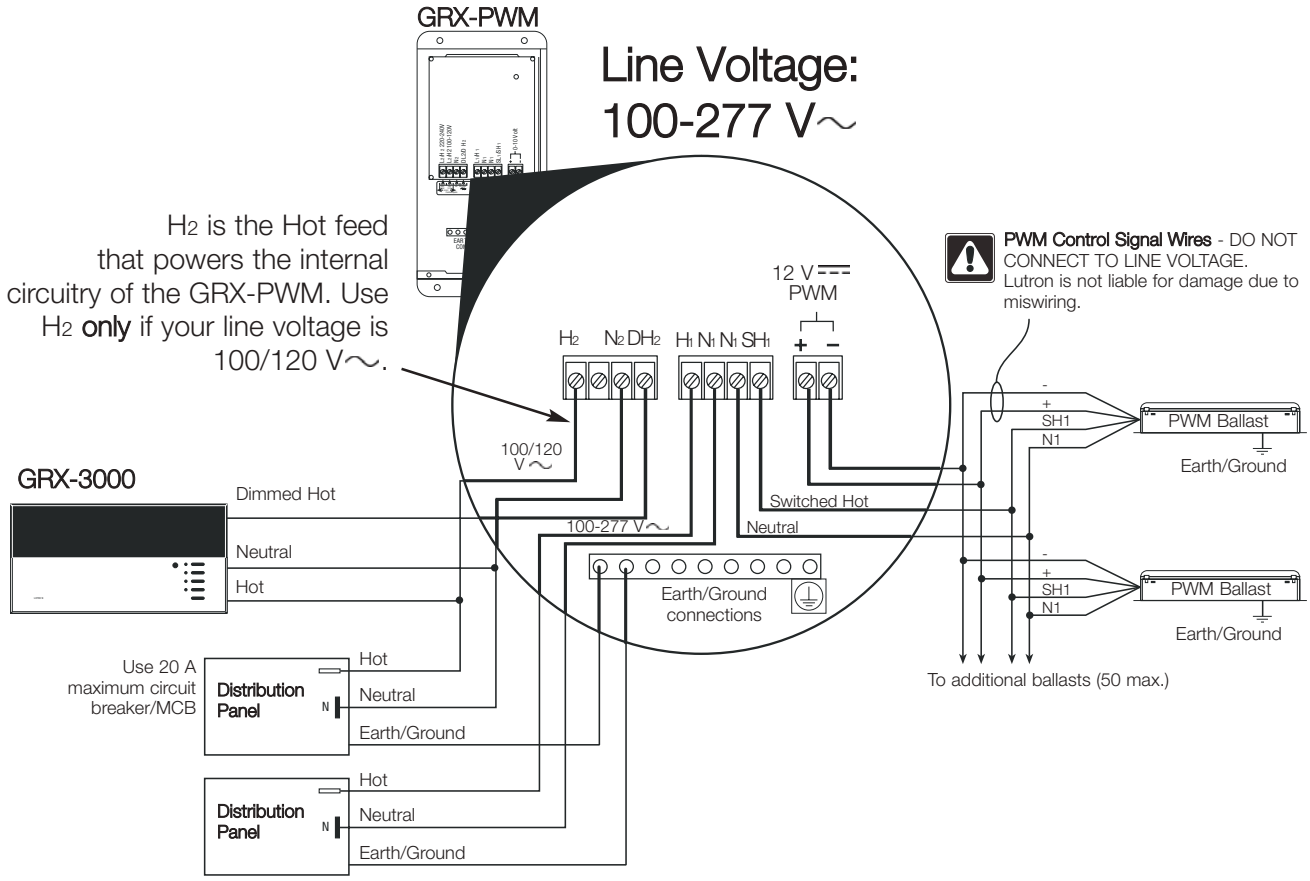
All dimensions in inches (mm).

Job Name:	Model Numbers:	
Job Number:		

Wiring From Two Distribution Panels or Circuit Breakers

- Each terminal can accept up to two #12 AWG (2.5 mm²) conductors.
- H_1 is the Hot feed to power the load.
- H_2 (on the control circuit terminals) supplies operating power for the PWM interface.
- Wire control circuit terminals correctly:
  - — Leave second terminal empty.
  - — Do not connect 200-277 V~ to H_2 terminal.
  - — Make sure H_2 is on the same phase as DH_2 (Dimmed Hot) from the lighting control.
- Run separate neutrals for load circuit - no common neutrals.
- Panels can have different phases and/or voltages.

Wiring Diagram A: 100-277 V~ GRX-PWM: 2 Distribution Panels

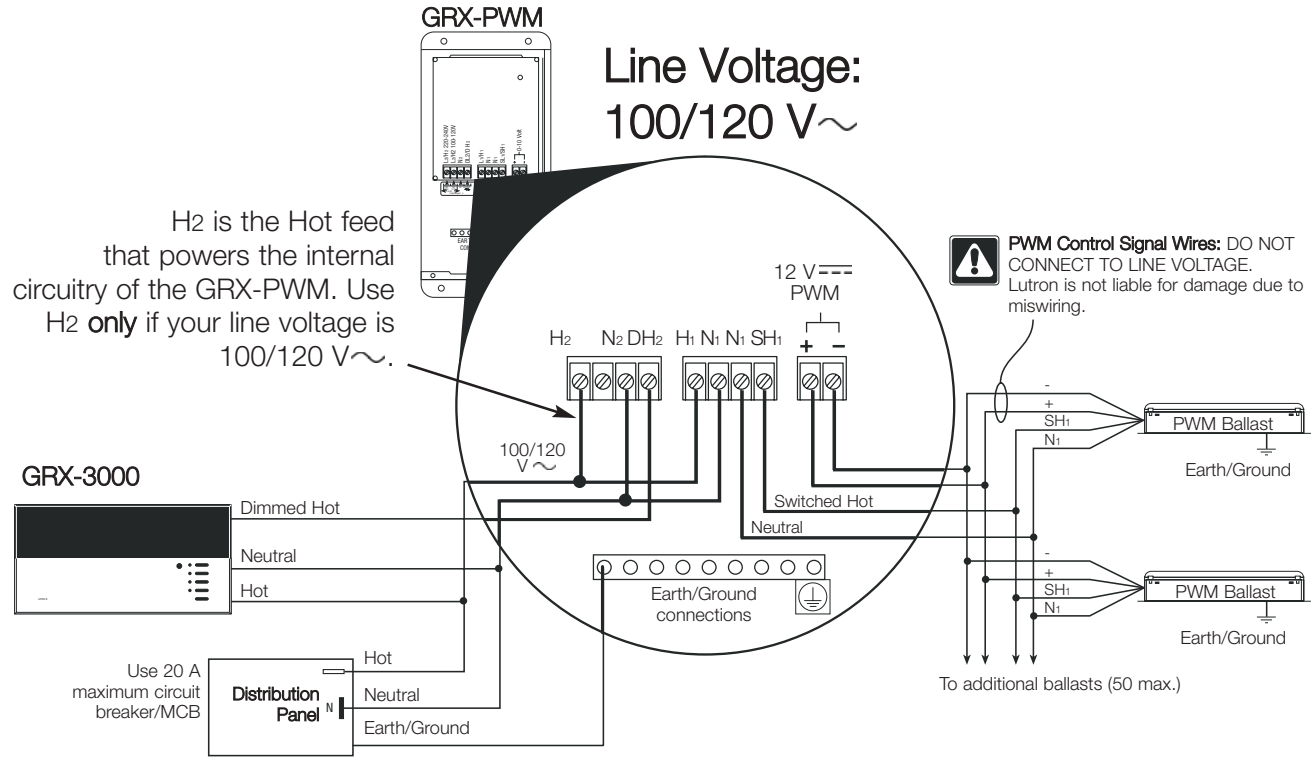


Job Name:	Model Numbers:	
Job Number:		

Wiring From One Distribution Panels or Circuit Breaker

- Each terminal can accept up to two #12 AWG (2.5 mm²) conductors.
- H_1 is the Hot feed to power the load.
- H_2 (on the control circuit terminals) supplies operating power for the PWM interface.
- Wire control circuit terminals correctly:
  - — Leave second terminal empty.
  - — Do not connect 200-277 V~
- Run separate neutrals for load circuit - no common neutrals.
- Use this wiring only if maximum circuit breaker/MCB rating will not be exceeded.

Wiring Diagram B: 100/120 V~ GRX-PWM: 1 Distribution Panel



H1 is the Switched Hot feed to the load. Use a separate lead to H1 if your line voltage is 100-277 V~.

Job Name:	Model Numbers:	
Job Number:		

QSE-CI-DMX Control Interface

The QSE-CI-DMX performs different functions depending on the system in which it is operating. The DMX channels (maximum of 32) are mapped to HomeWorks® QS zones and can be programmed as 1-channel lighting, 1-channel integration, or 3-channel RGB/CMY.

The QSE-CI-DMX can be used to map any HomeWorks® QS zone to any single DMX512 channel. The QSE-CI-DMX can also be used to simultaneously map any HomeWorks® QS zone to three DMX512 channels for RGB/CMY color-control. The QSE-CI-DMX has an integral RGB/CMY lookup table that maps HomeWorks® QS zone intensities to RGB/CMY values (colors). The RGB/CMY lookup table can be customized by using the HomeWorks® QS programming software.

In a HomeWorks® QS system, only 32 DMX channels can be programmed per device. The 32 channels can be any of the 512 available addresses. DMX combiners can be used if more than 32 DMX channels need to be controlled from a single DMX universe.

If the QSE-CI-DMX is part of a HomeWorks® QS system, GRAFIK Eye® QS zones cannot be programmed to control DMX channels.

Model Number

QSE-CI-DMX Control Interface

QSE-CI-DMX Control Interface

Specifications

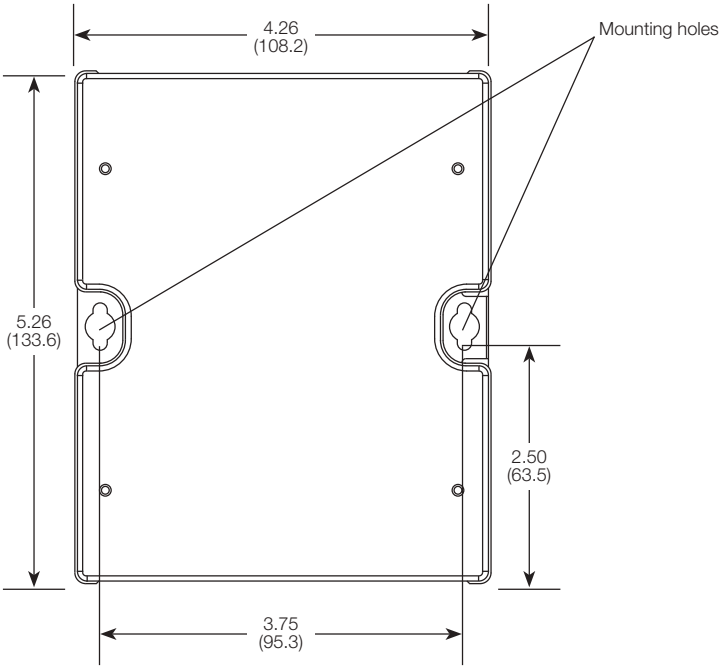
Model Number	QSE-CI-DMX
Power	24 V⎓ 60 mA
Typical Power Consumption	1.2 W; 2 Power Draw Units (PDUs) Test conditions: Status lights normal operation, DMX link connected, device powered at 24 V⎓
Regulatory Approvals	CE, ✓ C-tick, CUL, UL
Environment	Indoor use only; 32 °F to 104 °F (0 °C to 40 °C); 0 to 90% humidity, non-condensing
Power Failure	Power failure memory: should power be interrupted, the DMX will return to its previous state when power is restored
Wiring	Control wire must be 1 pair 18 AWG (1.2 mm^2) IEC PELV/NEC® Class 2 for power and 1 pair 22 AWG to 18 AWG (0.5 mm^2 to 1.0 mm^2) IEC PELV/NEC® Class 2 twisted/shielded for data (see **Wiring**)
Communications	Connects to QS-wired device link on HomeWorks® QS processor
Link Capacities	QSE-CI-DMX counts as one device toward link maximum of 100 devices.
ESD Protection	Meets or exceeds the IEC 61000-4-2 standard.
Surge Protection	Meets or exceeds IEC 61000-4-5 standard.
Mounting	Surface mount on wall, mount on rack (LUT-19AV-1U), or mount in LV14, LV21, PNL8, or LUT-5x10-ENC enclosures
Dimensions	4.26 in (108.2 mm) x 5.26 in (133.6 mm) x 1.06 in (26.9 mm)
DIP Switches	Dip switches do not operate when QSE-CI-DMX is part of a HomeWorks® QS system.
Warranty	www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf www.lutron.com/TechnicalDocumentLibrary/Intl_Warranty.pdf

QSE-CI-DMX Control Interface

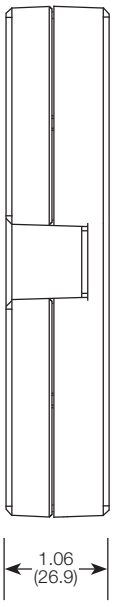
Dimensions

Dimensions shown as: in (mm)

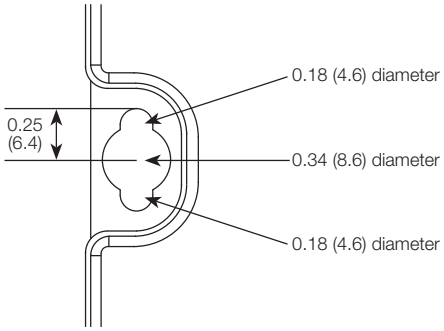
Front View



Side View



Mounting Hole Detail



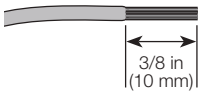
#6 or #8 (M3 or M4) screw recommended

QSE-CI-DMX Control Interface

Mounting Options

Mount where terminal blocks, switches, and LEDs are accessible, using #6 or #8 (M3 or M4) screws (not included). Strip 3/8 in (10 mm) of insulation from wires. Each data link terminal will accept up to two 18 AWG (1.0 mm^2) wires. Connect wiring as shown in the **Wiring** section.

Wire Strip Length

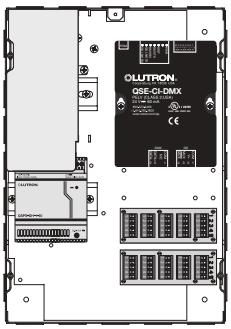


Choose from the following mounting methods:

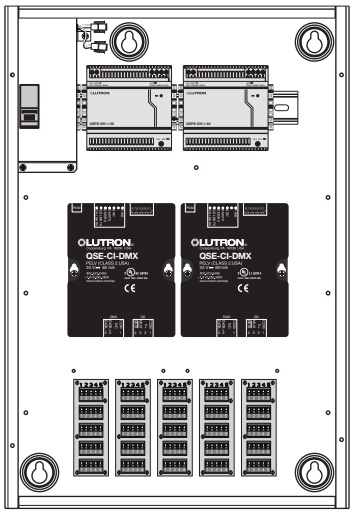
1: Panel Mounting

Mount the control interface in a LV14, LV21, or PNL8 enclosure. The LV14 enclosure can hold only one control interface. The LV21 and PNL8 enclosures can hold up to two interfaces.

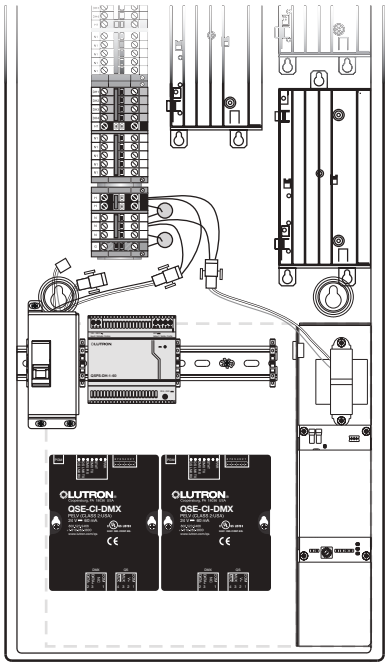
LV14



LV21



PNL8



2: Enclosure Mounting

If conduit is desired for wiring, use the LUT-5x10-ENC to mount one control interface.

LUT-5x10-ENC

3: Rack Mounting

Place the unit in the LUT-19AV-1U AV rack which will hold up to four control interfaces.

LUT-19AV-1U

4: Direct Wall Mounting

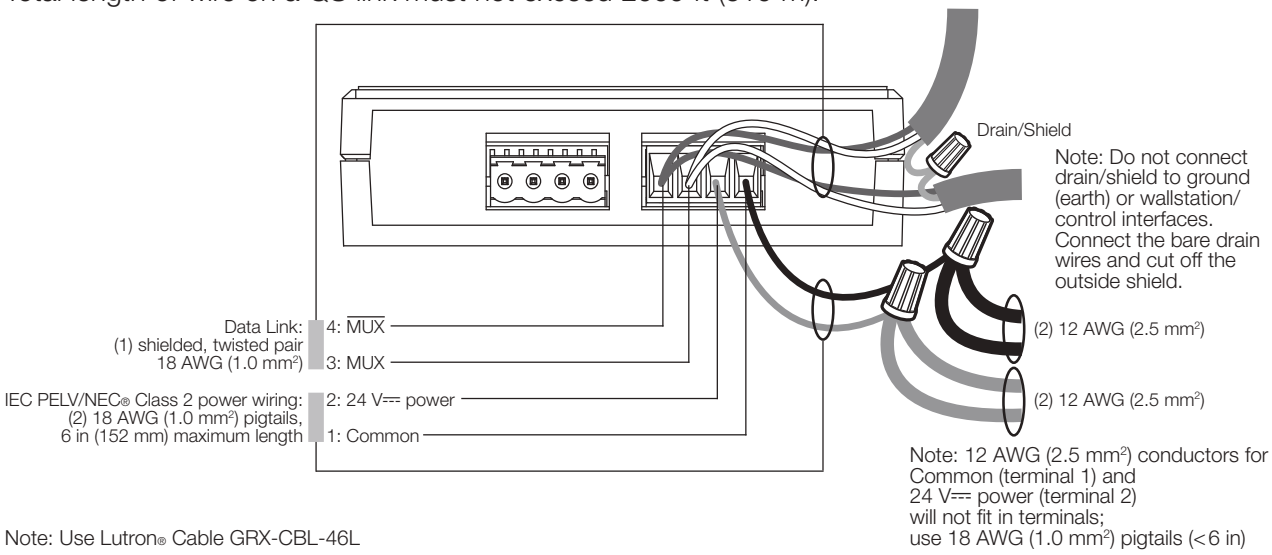
Mount the control interface directly on a wall. When mounting, provide sufficient space for connecting cables.

QSE-CI-DMX Control Interface

Wiring

QS Link Wiring

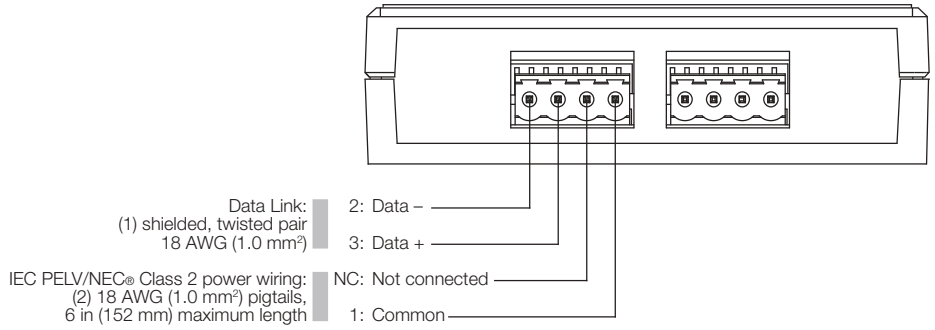
- Wire the QSE-CI-DMX Interface to the IEC PELV/NEC® Class 2 QS link using the MUX terminal.
- The QS-wired communications link is limited to 100 devices and 512 switch legs (each DMX channel = 1 switch leg); 32 DMX channels per QSE-CI-DMX control interface.
- Wiring may be daisy-chain, star, or T-tap configuration.
- Total length of wire on a QS link must not exceed 2000 ft (610 m).



Note: Use Lutron® Cable GRX-CBL-46L

DMX512 Link Wiring

- Connect the DMX link terminals on the QSE-CI-DMX interface to input terminals on DMX512-controlled equipment.
- Each terminal on the QSE-CI-DMX accepts two 18 AWG (1.0 mm²) wires.
- Link must be 1000 ft (305 m) or less.
- Link must begin and end with link terminators (Lutron® part number LT-1).
- Three pins on the DMX connector for connecting the QSE-CI-DMX to DMX512-controlled equipment.



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UL Listed Hi-lume® A-Series Constant Voltage Driver Overview

The UL Listed Hi-lume® A-Series Constant Voltage Driver is a high-performance LED driver that provides smooth, continuous 1% dimming for 12 V⎓ and 24 V⎓ constant voltage LED sources up to 40 W. The UL listing ensures a safe and reliable installation because the driver is pre-packaged with its own specialized wiring and mounting enclosure.

Features

- UL Listed for United States and Canada
- Continuous, flicker-free dimming from 100% to 1%
- 4 in (102 mm) square, metal junction box included to provide a UL Listed wiring compartment
- Guaranteed compatibility with these Lutron® systems:
  - All EcoSystem® compatible products
  - GRAFIK Systems™
  - HomeWorks® QS
  - Maestro Wireless®
  - Quantum®
  - RadioRA® 2
  - Select wallbox products
  - Lutron® wallbox 3-Wire fluorescent controls and interfaces

For a complete list of controls, see charts in the ***Wiring*** section:

- LTE models (pages 5 and 6)
- L3D models (pages 7–9)

Note: L3D models for commercial spaces only.

Hi-lume® A-Series Driver Model LTEA4U1UKL-AV120

- 100% performance-tested at factory
- 100% burned-in at factory
- Protected from miswires of input power to EcoSystem® control inputs
- A rated lifetime of 50,000 hours @ t_c = 65 °C
- FCC Part 15 compliant for commercial and residential applications at 120 V~ (LTE models only)
- FCC Part 15 compliant for commercial applications at 120 V~ and 277 V~ (L3D models only)
- RoHS Compliant
- For more information please go to: www.lutron.com/HilumeLED

LUTRON® SPECIFICATION SUBMITTAL Page 1

Job Name:	Model Numbers:	
Job Number:		

Specifications

Performance

- Dimming Range: 100% to 1%
- Operating Voltage
  – LTE models: 120 V~ at 50/60 Hz
  – L3D models: 120–277 V~ at 50/60 Hz (for commercial space only)
- Output: 12 V⎓ and 24 V⎓ constant voltage

  Note: Not intended for use with MR-16 lamps
- Output: 5–40 W
- A rated lifetime of 50,000 hours @ t_c = 65 °C
- Patented thermal foldback protection
- LEDs turn on to any dimmed level without going to full brightness
- Nonvolatile memory restores all driver settings after power failure
- Power Factor: >0.90 for loads greater than 20 W
- Total Harmonic Distortion (THD): <20% for loads greater than 20 W
- Inrush Current: <2 A
- Inrush Current Limiting Circuitry: eliminates circuit breaker tripping, switch arcing and relay failure
- Output is open-circuit protected
- Output is short-circuit protected
- Turn-on time: ≤1 second
- PWM Dimming Frequency: 550 Hz

Environmental

- Sound Rating: Inaudible in 27 dB ambient
- Relative Humidity: Maximum 90% non-condensing
- Operating ambient temperature
  t_a = 32–104 °F (0–40 °C)

Regulatory Approvals

- Meets ANSI C62.41 category A surge protection standards up to and including 4 kV
- FCC Part 15 compliant for commercial and residential applications at 120 V~ (LTE models only)
- FCC Part 15 compliant for commercial applications at 120 V~ and 277 V~ (L3D models only)
- Manufacturing facilities employ ESD reduction practices that comply with the requirements of ANSI/ESD S20.20
- Lutron® Quality Systems registered to ISO 9001.2008
- UL 8750-listed
- Class 2 output

Driver Wiring and Mounting

- Driver is grounded by green ground wire connection on the enclosure or by ground lug terminal in the junction box
- Driver and junction box must be grounded in accordance with local and national electrical codes
- All wire connections must be made in the junction box to maintain UL listing
- 4 in (102 mm) square junction box is 1.5 in (38 mm) deep with a 22.0 cubic in (360.5 cubic cm) capacity and complies with NEMA® OS 1-2008 Figure 112
- Driver is pre-wired with 6 in (152 mm), 18 AWG (0.75 mm^2) solid copper leads in all terminal blocks
- For 277~ V applications, a suitable barrier should be installed between the input and Class 2 wiring per local and national electrical wiring codes
- Maximum driver-to-LED light engine wire length for **Constant Voltage Drivers:**

Wire Gauge	Maximum Lead Length	
	12 V⎓	24 V⎓
18 AWG (0.75 mm^2)	10 ft (3 m)	15 ft (4.5 m)
16 AWG (1.5 mm^2)	15 ft (4.5 m)	25 ft (7.5 m)
14 AWG (2.5 mm^2)	25 ft (7.5 m)	40 ft (12 m)
12 AWG (4.0 mm^2)	40 ft (12 m)	60 ft (18 m)

Job Name:	Model Numbers:	
Job Number:		

Models Available

		Model[1]	Input Voltage (V~)	Input Current (mA)	Power Factor[2]	Output Power (W)	Output Voltage (V⎓)
2-Wire Forward Phase Control[3]	For 24 V⎓ Constant Voltage LED Loads	LTE A4U1UKL-CV240	120	380	0.99	5–40	24.0
	For 12 V⎓ Constant Voltage LED Loads	LTE A4U1UKL-AV120	120	400	0.98	5–40	12.0
3-Wire or EcoSystem® Control[4,5]	For 24 V⎓ Constant Voltage LED Loads	L3D A4U1UKL-CV240	120	370	0.99	5–40	24.0
			277	170	0.96	5–40	24.0
	For 12 V⎓ Constant Voltage LED Loads	L3D A4U1UKL-AV120	120	390	0.99	5–40	12.0
			277	170	0.95	5–40	12.0

Note for OEMs: Other models available; refer to UL Listed LED Driver Specification Submittals for more details: Lutron® P/N 369767 and P/N 369768.

1 Not intended for use with MR-16 lamps.

2 At max. output power.

3 For wiring options, see ***Wiring*** section, pages 5 and 6.

4 For wiring options, see ***Wiring*** section, pages 7–9.

5 For commercial application only.

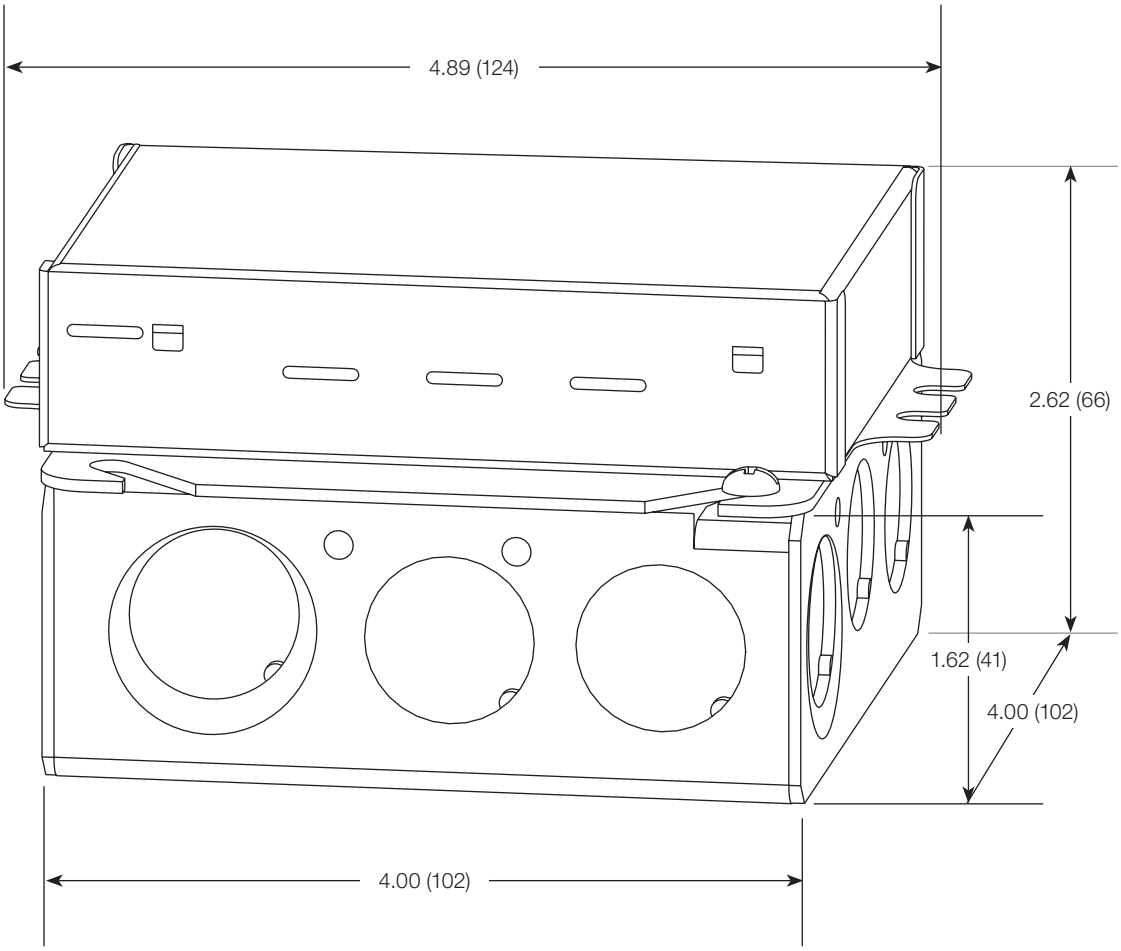
Job Name:

Job Number:

Model Numbers:

KL Enclosure Dimensions

Measurements are shown as: in (mm)



KL enclosure includes a 4 in (102 mm) square junction box which complies with NEMA® OS 1-2008 Figure 112.

Knockouts

- Sides
  - 8 locations: 0.5 in (13 mm)
  - 4 locations: 0.5/0.75 in (13/19 mm)
- Bottom
  - 2 locations: 0.5 in (13 mm)
  - 2 locations: 0.5/0.75 in (13/19 mm)

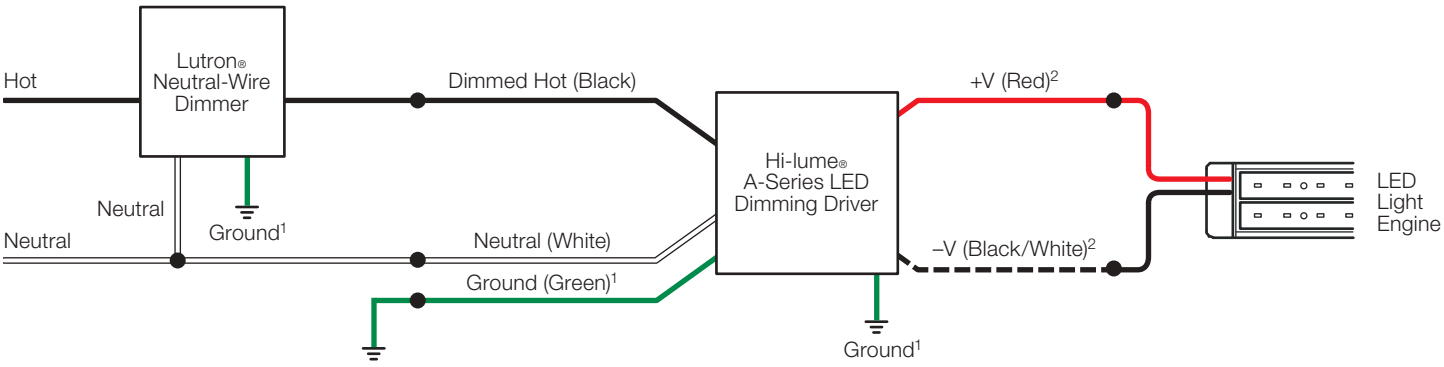
Job Name:	Model Numbers:	
Job Number:		

Wiring

LTE 2-Wire Forward Phase Models: Controls Requiring Neutral

Note: Driver is pre-wired with 6 in (152 mm) solid copper leads of 18 AWG (0.75 mm^2) in all terminal blocks. Colors shown correspond to wires on driver.

Wiring Diagram



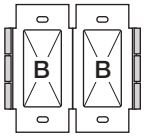
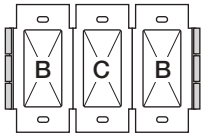
1 Enclosure and junction box must be grounded in accordance with local and national electrical codes. Ground provided by grounding of junction box or by using the green ground wire connection.

2 For maximum driver-to-LED light engine wire length, see charts in ***Driver Wiring and Mounting*** section.

Compatible Controls: Lutron® Neutral-Wire Dimmers

Guaranteed performance specifications with the controls listed in the chart below.

For assistance selecting controls, contact our LED Center of Excellence at 1.877.346.5338 or LEDs@lutron.com

					
			Drivers per Control		
Product	**Part Number**	**Low-End Setting/Load-Type Setting***	**A: Not Ganged**	**B: End of Gang**	**C: Middle of Gang**
Maestro Wireless® dimmer	MRF2-6ND-120-	Trim low-end per Advanced Programming Mode App Note (Lutron® P/N 048370)	1–8	1–8	1–8
RadioRA® 2 adaptive dimmer	RRD-6NA-	Hi-lume® A-Series LTE LED Driver 2-Wire	1–8	1–8	1–8
HomeWorks® QS adaptive dimmer	HQRD-6NA-	LED Lutron® A-Series 2-Wire	1–8	1–8	1–8
HomeWorks® QS 600 W dimmer	HQRD-6ND-	LED Lutron® A-Series 2-Wire	1–8	1–8	1–8
Stanza® dimmer	SZ-6ND-	Trim low-end per Dimmer Installation Guide	1–8	1–8	1–8
RadioRA® 2 1000 W dimmer	RRD-10ND-	Set Device type to “INC/MLV Neutral Dimmer”; Set High-End Trim to 99%; Set Low-End Trim to 35%	1–13	1–13	1–13
HomeWorks® QS 1000 W dimmer	HQRD-10ND-	LED Lutron® A-Series 2-Wire	1–13	1–13	1–13

* Setting the low-end trim and load type is necessary to ensure optimal performance and 1% dimming capability.

Note: For information about Legacy Product use in existing control application, contact LEDs@lutron.com

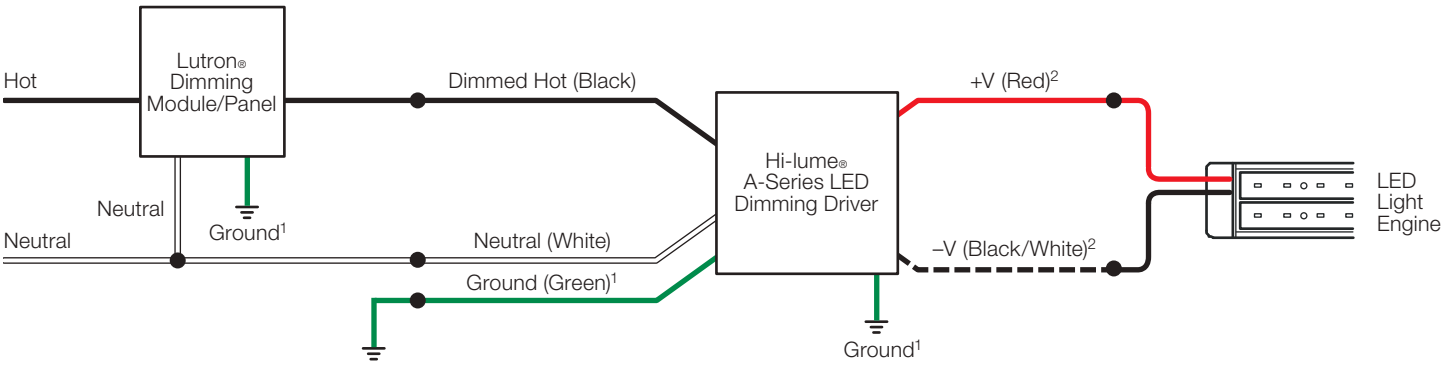
Job Name:	Model Numbers:	
Job Number:		

Wiring (continued)

LTE 2-Wire Forward Phase Models: Controls Requiring Neutral (continued)

Note: Driver is pre-wired with 6 in (152 mm) solid copper leads of 18 AWG (0.75 mm^2) in all terminal blocks. Colors shown correspond to wires on driver.

Wiring Diagram



1 Enclosure and junction box must be grounded in accordance with local and national electrical codes. Ground provided by grounding of junction box or by using the green ground wire connection.

2 For maximum driver-to-LED light engine wire length, see charts in ***Driver Wiring and Mounting*** section.

Compatible Controls: Lutron® Dimming Modules/Panels

Guaranteed performance specifications with the controls listed in the chart below.

For assistance selecting controls, contact our LED Center of Excellence at 1.877.346.5338 or LEDs@lutron.com

Product	Part Number	Drivers per Control	Low-End Setting/Load-Type Setting*
HomeWorks® QS wallbox power module	HQRJ-WPM-6D-120-	1–10 (per output); 26 total per module	LED Lutron® A-Series 2-Wire
GRAFIK Eye® QS control unit	QSGR-, QSGRJ-	1–10 (per output); 26 total per unit	Set load type to “Fluorescent Module”
GRAFIK Eye® 3000 control unit	GRX-3100-, GRX-3500-	1–10 (per output); 26 total per unit	Set load type to “GRX-FDBI or GRX-TVI”
RPM-4U module (LCP, HomeWorks® QS, GRAFIK Systems™, Quantum®)	HW-RPM-4U-120, LP-RPM-4U-120	1–26 (per output); 26 total per module	LED Lutron® A-Series 2-Wire
			Set load type to “2-1”
RPM-4A module (LCP, HomeWorks® QS, GRAFIK Systems™, Quantum®)	HW-RPM-4A-120, LP-RPM-4A-120	1–13 (per output); 26 total per module	LED Lutron® A-Series 2-Wire
			Set load type to “2-1”
GP dimming panels	Various	1–26	Set load type to “2-1”

* Setting the low-end trim and load type is necessary to ensure optimal performance and 1% dimming capability.

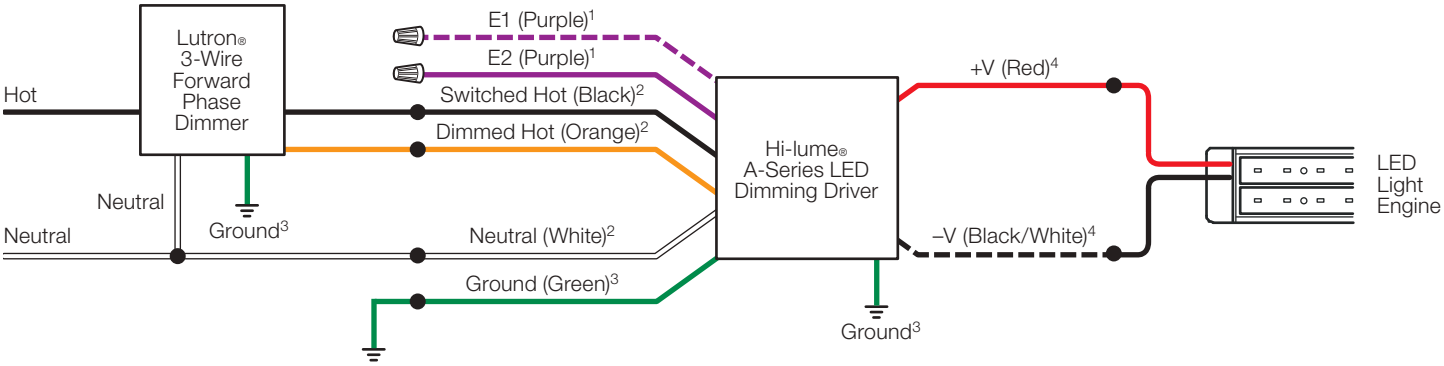
Job Name:	Model Numbers:	
Job Number:		

Wiring (continued)

L3D Models: 3-Wire Controls (Third wire required for control signal)

Note: Driver is pre-wired with 6 in (152 mm) solid copper leads of 18 AWG (0.75 mm^2) in all terminal blocks. Colors shown correspond to wires on driver.

Wiring Diagram



1 Purple wires must be capped off separately if dimmed hot (orange) is being used.

2 For 277 V~ control applications, the 277 V~ wiring and Class 2 wiring should be separated by a barrier in accordance with local and national electrical codes.

3 Enclosure and junction box must be grounded in accordance with local and national electrical codes. Ground provided by grounding of junction box or by using the green ground wire connection.

4 For maximum driver-to-LED light engine wire length, see charts in ***Driver Wiring and Mounting*** section.

Compatible Controls: Lutron® 3-Wire Dimmers

Guaranteed performance specifications with the controls listed in the chart below.

For assistance selecting controls, contact our LED Center of Excellence at 1.877.346.5338 or LEDs@lutron.com

Product	Part Number		Drivers per Control*	
	120 V~	277 V~	120 V~	277 V~
Nova T☆® dimmer	NTF-10-	NTF-10-277-	1–41	1–44
	NTF-103P-	NTF-103P-277-	1–20	1–33
Nova® dimmer	NF-10-	NF-10-277-	1–41	1–44
	NF-103P-	NF-103P-277-	1–20	1–33
Skylark® dimmer	SF-10P-	SF-12P-277-	1–20	1–33
	SF-103P-	SF-12P-277-3-	1–20	1–33
Diva® dimmer	DVF-103P-	DVF-103P-277-	1–20	1–33
	DVSCF-103P-	DVSCF-103P-277-	1–20	1–33
Lyneo® Lx dimmer	LXF-103PL-	LXF-103PL-277-	1–20	1–20
Ariadni® dimmer	AYF-103P-	AYF-103P-277-	1–20	1–44

* No derating required in multi-gang applications provided that driver count does not exceed quantity listed.

Note: For information about Legacy Product use in existing control application, contact LEDs@lutron.com

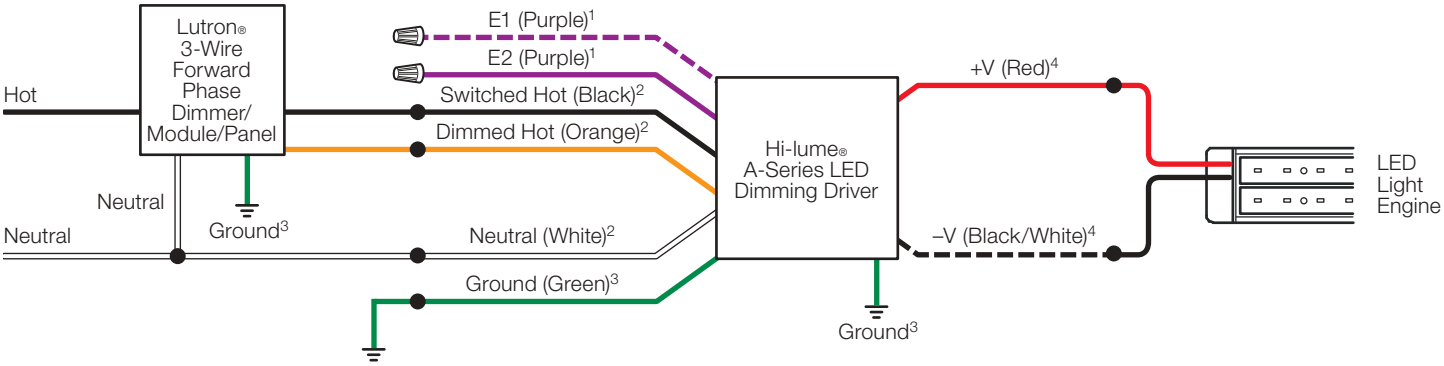
Job Name:	Model Numbers:	
Job Number:		

Wiring (continued)

L3D Models: 3-Wire Controls (Third wire required for control signal) (continued)

Note: Driver is pre-wired with 6 in (152 mm) solid copper leads of 18 AWG (0.75 mm^2) in all terminal blocks. Colors shown correspond to wires on driver.

Wiring Diagram



1 Purple wires must be capped off separately if dimmed hot (orange) is being used.

2 For 277 V~ control applications, the 277 V~ wiring and Class 2 wiring should be separated by a barrier in accordance with local and national electrical codes.

3 Enclosure and junction box must be grounded in accordance with local and national electrical codes. Ground provided by grounding of junction box or by using the green ground wire connection.

4 For maximum driver-to-LED light engine wire length, see charts in ***Driver Wiring and Mounting*** section.

Compatible Controls: Lutron® 3-Wire Dimmers, Modules, and Panels

Guaranteed performance specifications with the controls listed in the chart below.

For assistance selecting controls, contact our LED Center of Excellence at 1.877.346.5338 or LEDs@lutron.com

Product	Part Number		Drivers per Control*	
	120 V~	277 V~	120 V~	277 V~
Vierti® dimmer	VTF-6A-		1–15	1–33
Maestro® dimmer	MAF-6AM-	MAF-6AM-277-	1–15	1–33
	MSCF-6AM-	MSCF-6AM-277-	1–15	1–33
Maestro Wireless® dimmer	MRF2-F6AN-DV-		1–15	1–33
RadioRA® 2 dimmer	RRD-F6AN-DV-		1–15	1–33
HomeWorks® QS dimmer	HQRD-F6AN-DV-		1–15	1–33
Interfaces†	PHPM-3F-120-	—	1–41	–
	PHPM-3F-DV-		1–41	1–88
GP dimming panels	Various		1–41	1–88

* No derating required in multi-gang applications provided that fixture-count does not exceed quantity listed.

† For use with 3-Wire controls, Commercial Systems applications, RadioRA® 2 Systems, or other Home Systems applications.

Note: For information about Legacy Product use in existing control application, contact LEDs@lutron.com

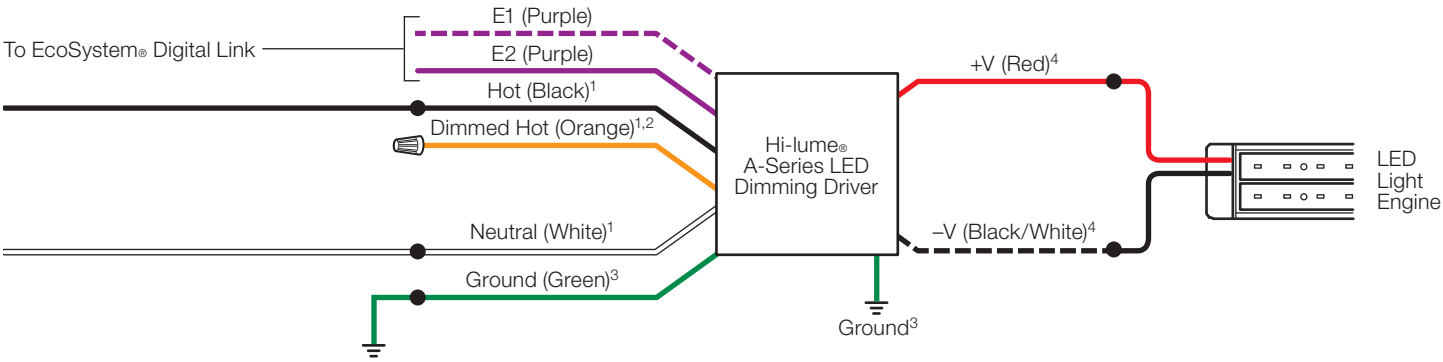
Job Name:	Model Numbers:	
Job Number:		

Wiring (continued)

L3D Models: EcoSystem® Digital Controls

Note: Driver is pre-wired with 6 in (152 mm) solid copper leads of 18 AWG (0.75 mm^2) in all terminal blocks. Colors shown correspond to wires on driver.

Wiring Diagram



1 For 277 V~ control applications, the 277~ V wiring and Class 2 wiring should be separated by a barrier in accordance with local and national electric codes.

2 Dimmed hot (orange) wire must be capped off separately if EcoSystem® control is used.

3 Enclosure must be grounded in accordance with local and national electrical codes. Ground provided by grounding of junction box or by using the green ground wire connection.

4 For maximum driver-to-LED light engine wire length, see charts in ***Driver Wiring and Mounting*** section.

Compatible Controls: Lutron® EcoSystem® Digital Controls

Guaranteed performance specifications with the controls listed in the chart below.

For assistance selecting controls, contact our LED Center of Excellence at 1.877.346.5338 or LEDs@lutron.com

Product	Part Number		Drivers per Control
	120 V~	277 V~	
PowPak® Dimming Module with EcoSystem®	RMJ-ECO32-DV-B		32 per EcoSystem® link
Energi Savr Node™ with EcoSystem® unit	QSN-1ECO-S, QSN-2ECO-S		64 per EcoSystem® link
GRAFIK Eye® QS with EcoSystem® unit	QSGRJ-, QSGR-	—	64 per EcoSystem® link
Quantum® Light Management Hub	QP2-, QP3-, QP4-	—	64 per EcoSystem® link
Homeworks® QS DIN Rail Power Module with EcoSystem®	LQSE-2ECO-D	—	64 per EcoSystem® link

Job Name:	Model Numbers:	
Job Number:		

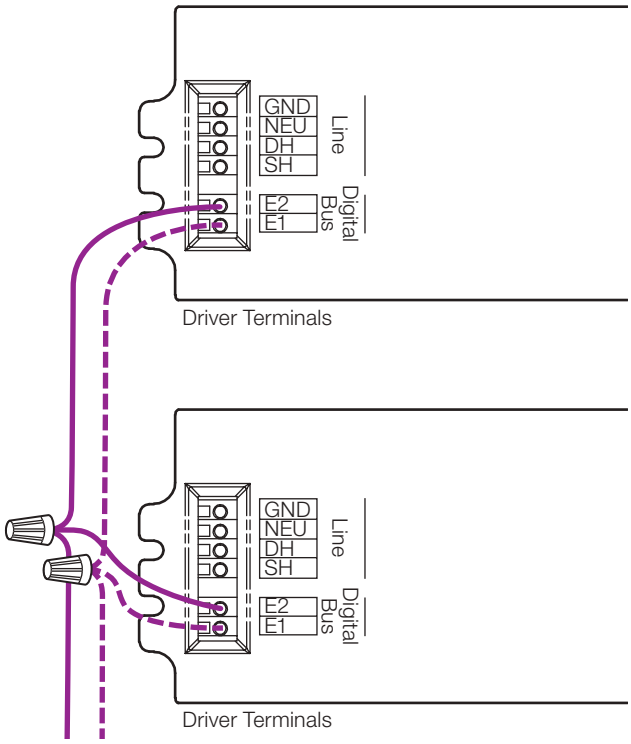
EcoSystem® Digital Link (L3D Models only)

Overview

- The EcoSystem® Digital Link wiring (E1 and E2) connects digital ballasts and drivers together to form a lighting control system
- Each EcoSystem® Digital Link supports up to 64 digital ballasts, LED drivers or EcoSystem® Modules (e.g., C5-BMJ-16A, C5-XPJ-16A), 32 occupancy sensors (64 occupancy sensors with Energi Savr Node™ with EcoSystem®), 16 daylight sensors, and 64 wallstations or IR receivers*
- Sensors do not directly connect to Hi-Lume® A-Series LED drivers
- E1 and E2 (EcoSystem® digital link wires) are polarity-insensitive and can be wired in any topology
- An Energi Savr Node™ with EcoSystem® unit, GRAFIK Eye® QS with EcoSystem® control unit, PowPak® dimming module with EcoSystem®, or Quantum® system provides power for the EcoSystem® Digital Link and supports system programming*
- All EcoSystem® Digital Link programming is completed by using the Energi Savr App for *Apple iPad*, *iPod Touch*, or *iPhone* mobile digital devices, GRAFIK Eye® QS with EcoSystem® control unit, PowPak® dimming module with EcoSystem®, or Quantum® system

Wiring

- Driver EcoSystem® Digital Link terminals accept only one 18 to 16 AWG (0.75 to 1.5 mm^2) solid copper wire per terminal
- Make sure that the supply breaker to the Digital Driver and EcoSystem® Digital Link Supply is OFF when wiring
- Connect the two conductors to the two Digital Driver terminals E1 and E2 as shown
- Using two different colors for E1 and E2 will reduce confusion when wiring several drivers together
- The EcoSystem® Digital Link may be wired Class 1 or Class 2. Consult applicable electrical codes for proper wiring practices



To the EcoSystem® Digital Bus and additional drivers and/or ballasts

Notes

- The EcoSystem® Digital Link Supply does not have to be located at the end of the Digital Link
- EcoSystem® Digital Link length is limited by the wire gauge used for E1 and E2 as follows:

Wire Gauge	Digital Link Length (max)
12 AWG	2200 ft
14 AWG	1400 ft
16 AWG	900 ft
18 AWG	550 ft

Wire Size	Digital Link Length (max)
4.0 mm^2	825 m
2.5 mm^2	515 m
1.5 mm^2	310 m
1.0 mm^2	205 m
0.75 mm^2	155 m

* PowPak® dimming module with EcoSystem® provides power for the EcoSystem® Digital Link and can support 32 digital ballasts, LED drivers, or EcoSystem® Modules, 6 Wireless Occupancy Sensors, 1 Wireless Daylight Sensor, and 9 Pico® Wireless Controllers.

Job Name:	Model Numbers:	
Job Number:		

Electricians and Contractors

Driver Leads

Maximum driver-to-LED light engine wire length for **Constant Voltage Drivers:**

Wire Gauge	Maximum Lead Length	
	12 V⎓	24 V⎓
18 AWG (0.75 mm^2)	10 ft (3 m)	15 ft (4.5 m)
16 AWG (1.5 mm^2)	15 ft (4.5 m)	25 ft (7.5 m)
14 AWG (2.5 mm^2)	25 ft (7.5 m)	40 ft (12 m)
12 AWG (4.0 mm^2)	40 ft (12 m)	60 ft (18 m)

Wiring and Grounding

Driver and junction box must be grounded.

Drivers and junction box must be installed per national and local electrical codes.

LED Load Replacement

Because these are Class 2 rated drivers, the LED load can be changed while the driver is installed and powered.

Maximum Driver Operating Temperature

For 50,000 hour lifetime, enclosure temperature (t_c) must not exceed 65 °C.

Facilities Managers

Service

Warranty

For warranty information, please visit http://www.lutron.com/BallastDriverWarranty

Replacement Parts

When ordering Lutron® replacement parts, please provide the full model number. Consult Lutron Technical Support if you have any questions.

Further Information

For further information, please visit us at www.lutron.com/hilumeLED or contact our LED Control Center of Excellence at 1.877.346.5338 or LEDs@lutron.com

Supporting Documentation

Wiring and Power Guidelines

Revision C

Overview

The wiring of a *HomeWorks* QS system has been made simpler through a reduction in the number of link types and a higher capacity of device addresses on each link compared to previous *HomeWorks* systems. The purpose of this document is to provide guidelines for how to wire and power *HomeWorks* QS devices.

Processor / Network Link:

Each *HomeWorks* QS processor has two RJ-45 Ethernet ports connected by an internal network switch. The Ethernet ports are used to connect processors together in a multi-Processor project, to connect Processors to the home network or other systems for integration and to connect processors to the *HomeWorks* QS software utility for activation, transfer and diagnostics. In a multi-Processor project, each Processor must be connected to the same Ethernet network for proper system operation. To provide for the most flexibility in network architecture, Ethernet cable should be run:

1. Between each processor and the home LAN or router.
2. Between each processor location in the home.

Having this Ethernet wiring in place will allow the Processor / Network Link to be connected in a variety of possible configurations, as described in the *HomeWorks* QS Networking Guide. Each network configuration has different benefits, but wiring in this method provides the most flexibility, especially since the home's networking hardware and software configurations may change over time. Please refer to the *HomeWorks* QS Networking Guide for details (http://resi.lutron.com/Portals/3/Support/App Notes - FAQs/HWQS/HomeWorks QS Networking.pdf).

Configurable Links:

Each *HomeWorks* QS Processor has two RS-485 configurable links that can be individually defined to be one of three types:

- *HomeWorks* Power Panel Link (16 MI addresses / 256 zones)
  - Module Interfaces (MI) and Remote Power Modules (RPM)
- *HomeWorks* QS RF Link (100 devices / 100 zones)
  - Dynamic Keypad, Maestro® style Dimmers/Switches, Lamp Dimmers and Plug-in Devices, RF seeTouch® Keypads, RF Sensors – Occupancy / Vacancy and Temperature, Sivoia® QS Wireless Shades, *seeTouch* Tabletop Keypads, GRAFIK Eye® QS Main Units, Wallbox Power Modules
- *HomeWorks* QS Wired Device Link (100 devices / 500 zones)
  - Control Interfaces, Dynamic Keypad, wired *seeTouch* Keypads, *GRAFIK Eye* QS Main Units, *Sivoia* QS shades, Wallbox Power Modules

The link capacities shown above are the number of logical link addresses or devices that can be controlled on the link. In addition, you must be sure that the power requirements of the devices on each link are planned.

HomeWorks Power Panel Link:

HomeWorks | *HomeWorks* QS Power Panels, Module Interfaces and Remote Power Modules are powered by line-voltage feeds, and therefore do not get powered from the link. Module Interfaces are connected to the Processor on either link when configured as a Power Panel Link. The same standard Lutron 4-conductor cable (GRX-CBL-346S) that has been used in previous versions of *HomeWorks* can be used. This cable has one pair of 18-gauge and one pair of 22-gauge twisted/shielded conductors. Pin 2 should not be connected to the processor or Module Interfaces, as the power is supplied to the MI from a separate 24V~ transformer included with the MI. The Power Panel Link wiring can be daisy-chained from one MI to the next and has a limit of 1000 feet of total wire length. Refer to the HomeWorks Power Panel Link example on page 9.

HomeWorks QS RF Link:

HomeWorks QS RF Link devices are often powered by line-voltage, as is the case with dimmers, by a local power supply, as is the case with *Sivoia* QS Wireless Shades or RF Dynamic Keypads, or by batteries, as is the case with Radio Powr Savr sensors and Pico Wireless Controls. These devices do not get wired to the RF link.

Hybrid Repeaters are required to enable RF communication in *HomeWorks* QS, and at least one Hybrid Repeater must be wired to each RF Link configured on the processor. Each additional Hybrid Repeater (up to 4 total Hybrid Repeaters per link) can be wired to the Processor RF Link, placed within 60 feet of another Hybrid Repeater (wireless), or wired to the RF Link on another Hybrid Repeater. Each Hybrid Repeater can be powered by the RF link on the processor (24VDC) or by a 9VDC plug-in transformer. The three main power and wiring options are:

1. Wired to RF Link for power and communication
2. Wired to RF Link for communication, locally powered
3. RF communication, locally powered

Refer to the HomeWorks QS RF Link example on page 10.

Lutron standard 4-conductor cable (GRX-CBL-346S) can be used with a maximum length of 1000 ft per wire run.

Sivoia QS Wireless shades are most often powered locally by individual plug-in (QSPS-P1-1-50) or junction-box (QSPS-J-1-50) power supplies. *Sivoia* QS Wireless shades can also be powered by the ten-output smart power panel (QSPS-P1-10-60), if the wiring is practical. Each *Sivoia* QS Wireless shade requires its own RF Receiver, regardless of how the shade is powered.

Radio Powr Savr Sensors and Pico Wireless Controls are battery powered and do not require any wiring. Tabletop Keypads can also run on battery power or be powered locally with a 9VDC plug-in transformer.

HomeWorks QS Wired QS Device Link:

HomeWorks QS Wired QS Device Links consist mainly of devices that are powered by the QS Wired Link or dedicated power supplies and therefore the wiring and power requirements must be planned carefully. The power draw of each device is represented in Power Draw Units, or "PDUs." The table at the end of this document defines the PDU count for the various wired devices. Refer to page 11 for the HomeWorks QS Wired QS Device Link example.

Wired *seeTouch* Keypads, wired Dynamic Keypads, and interface devices all draw power from the QS Wired Link.

Lutron standard 4-conductor cable (GRX-CBL-346S) can be used to wire these devices. The QS Wired Link can be wired in daisy-chain, T-Tap, or star configurations, with a maximum wire length of 2000 feet per link. For ease of wiring, Wire Landing Boards (QS-WLB) can be used to land wire in the processor enclosure or a separate enclosure.

Additionally, smart power panels (QSPS-P1-10-60) can be used to distribute power and provide multiple wire connections.

Pin 2 should not be connected to GRAFIK Eye QS main units and Wallbox Power Modules, as these devices source their own power and do not require power from the QS Link.

Sivoia QS Wired shades can be powered locally by individual plug-in (QSPS-P1-1-50) or junction-box (QSPS-J-1-50) power supplies, or from the ten-output smart power panel (QSPS-P1-10-60). Powering one shade per output of the chosen power supply is a fail-safe wiring method. Each of these power supplies provides one or more 4-conductor terminals to be connected to the devices requiring power and communication, and an additional 3-conductor terminal block for landing the communication wiring (Common, MUX, $\overline{\text{MUX}}$) from the processor.

Shades may require larger gauge power conductors to achieve the necessary wire run length. See the table at http://www.lutron.com/TechnicalDocumentLibrary/QS Power Supply Wiring and Power Draw Unit Guidelines.pdf for details. For example, one QS shade, powered by a QSPS-P1-10-60, with 16AWG power conductors (QSH-CBL-M-500) can have a maximum wire run of 200 ft.

In some cases, depending on the size of the shade, the QSPS-P1-10-60 power panel outputs can power two or three shades per output. This can save wire and labor and is useful on dual shade applications in cases where the shades are not large. Consult the Lutron Shading Solutions Product Guide (367-1455) for details and shade sizes where this is practical.

Powering the QS Link:

In planning how to assign devices to your QS Wired Link(s), it is helpful to consider the power requirements of the devices and power supplies you will use to power your devices. A table of Power Supply PDU outputs and device PDU requirements is shown below. All QS Wired Link devices are powered from 24VDC. Because the QS Wired Link can support as many as 100 devices, multiple power supplies will sometimes be necessary. It is common to power shades with dedicated power supplies, rather than from the QS Wired Link. Refer to page 6 for the HomeWorks QS Power Supply example. The chart on page 7 shows the Power Draw Units (PDUs) supplied by each power supply and consumed by each device.

HomeWorks QS Power Supply Example:

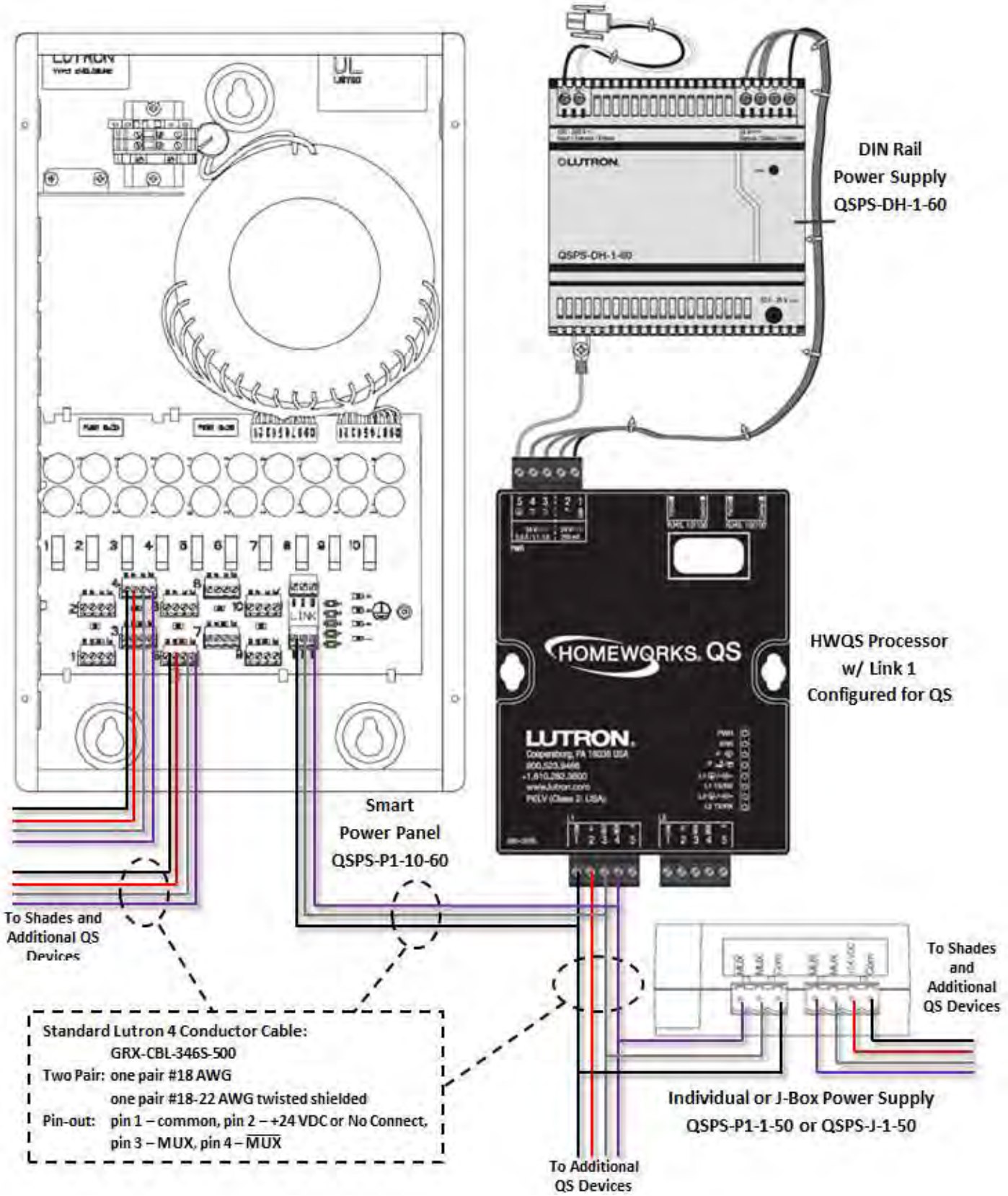
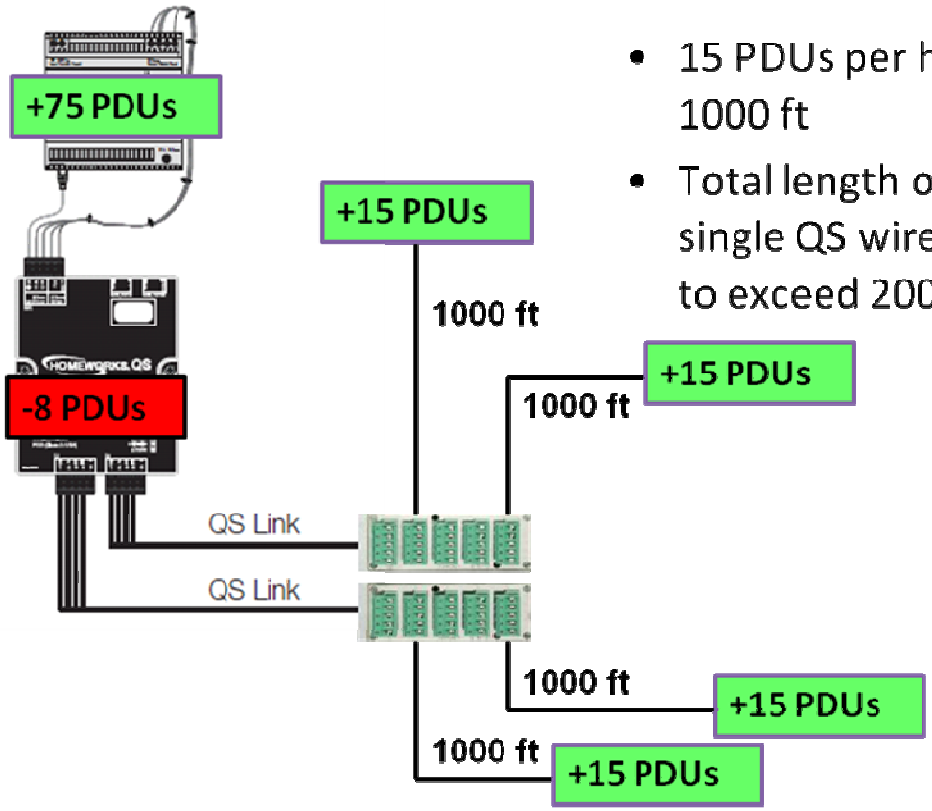


Table of Power Draw Units – PDUs

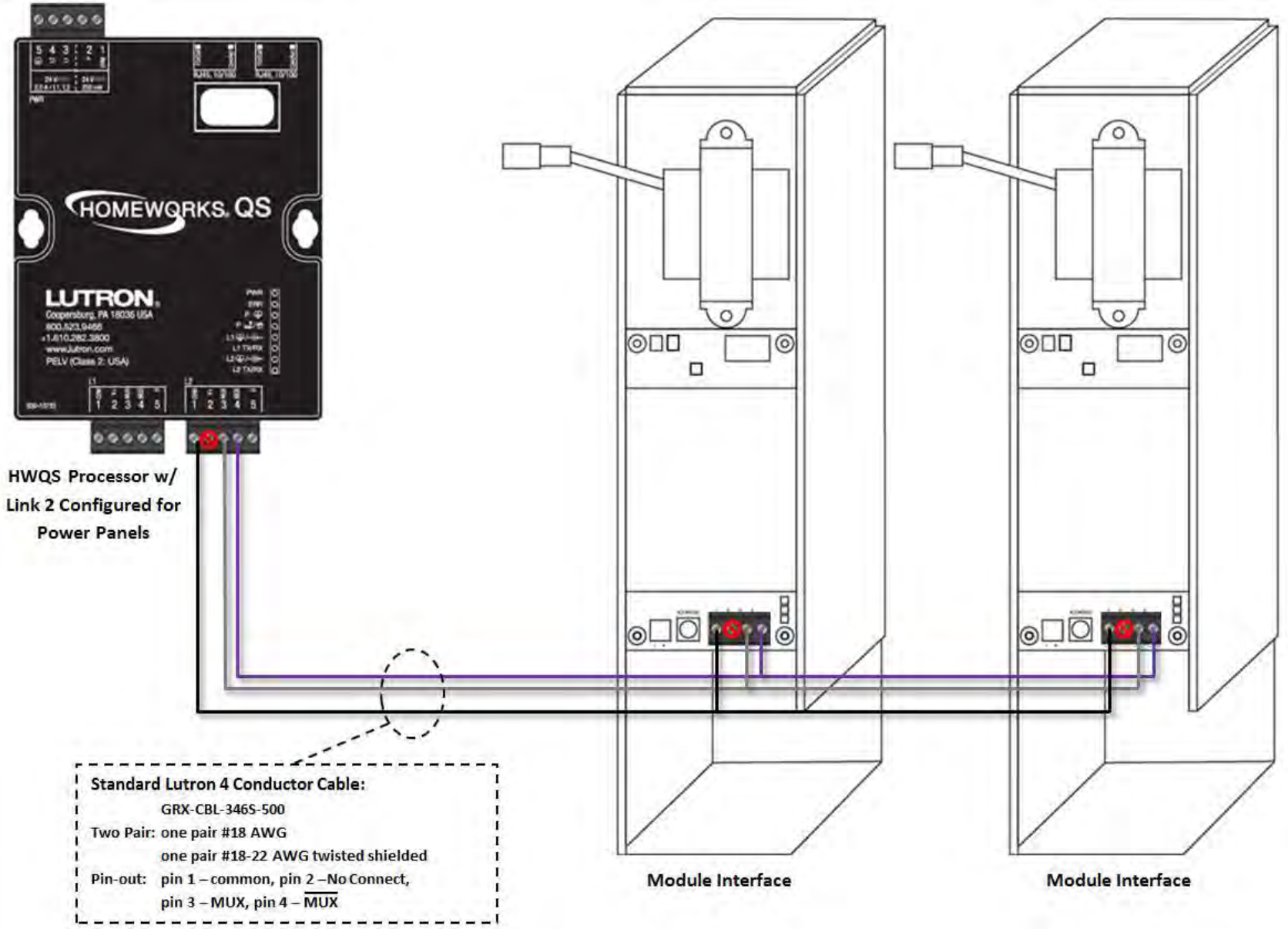
Power Supplies	**Model Number**	**PDU Output**
QS din-rail power supply (1 output)	QSPS-DH-1-60	75
QS smart panel power supply (10 output)	QSPS-P1-10-60	50 per output
QS plug-in power supply (1 output)	QSPS-P1-1-50	8
QS J-box power supply (1 output)	QSPS-J-1-50	8

QS Devices	**Model Number**	**PDUs Required**
HomeWorks QS Processor	HQP6-2-120	8
HWQS Hybrid Repeater (w/o plug-in)	HQR-REP-120	3
HWQS Hybrid Repeater (using plug-in)	HQR-REP-120	0
HWQS seeTouch Keypad	Various	1
HWQS Dynamic Keypad	HQ-J-DK420-	6
HWQS CCI/CCO Interface	QSE-IO	3
HWQS RS-232 Interface	QSE-CI-NWK-E	2
GRAFIK Eye QS Main Unit	QSGRJ-	0
HWQS Wallbox Power Module	HQRJ-WPM-6D-120	0
Sivoia QS Wired Shade	See Sivoia QS Power Supply Guidelines	
Sivoia QS Wireless Shade		

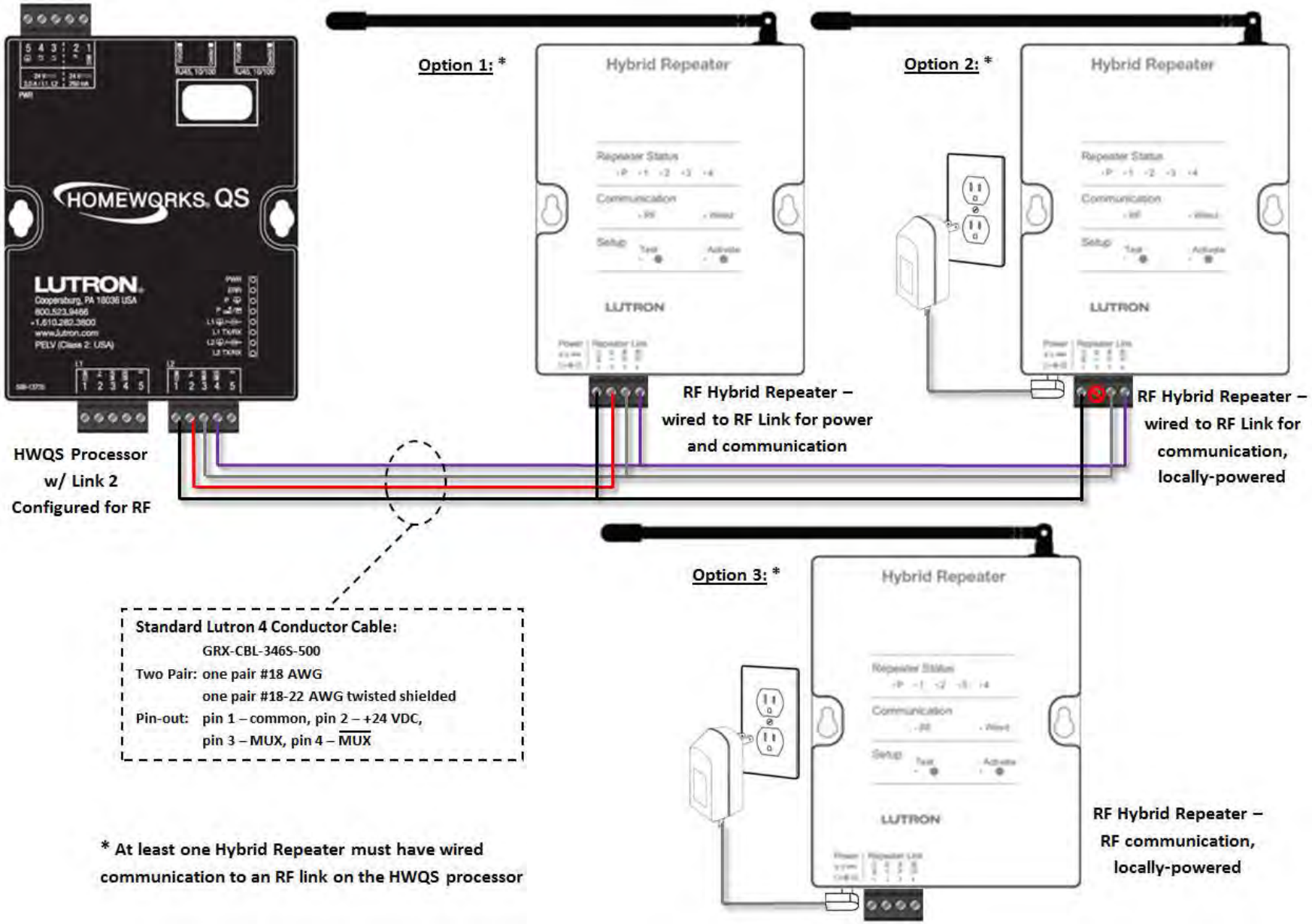


- 15 PDUs per home run of 1000 ft
- Total length of wire on a single QS wired link is not to exceed 2000 ft

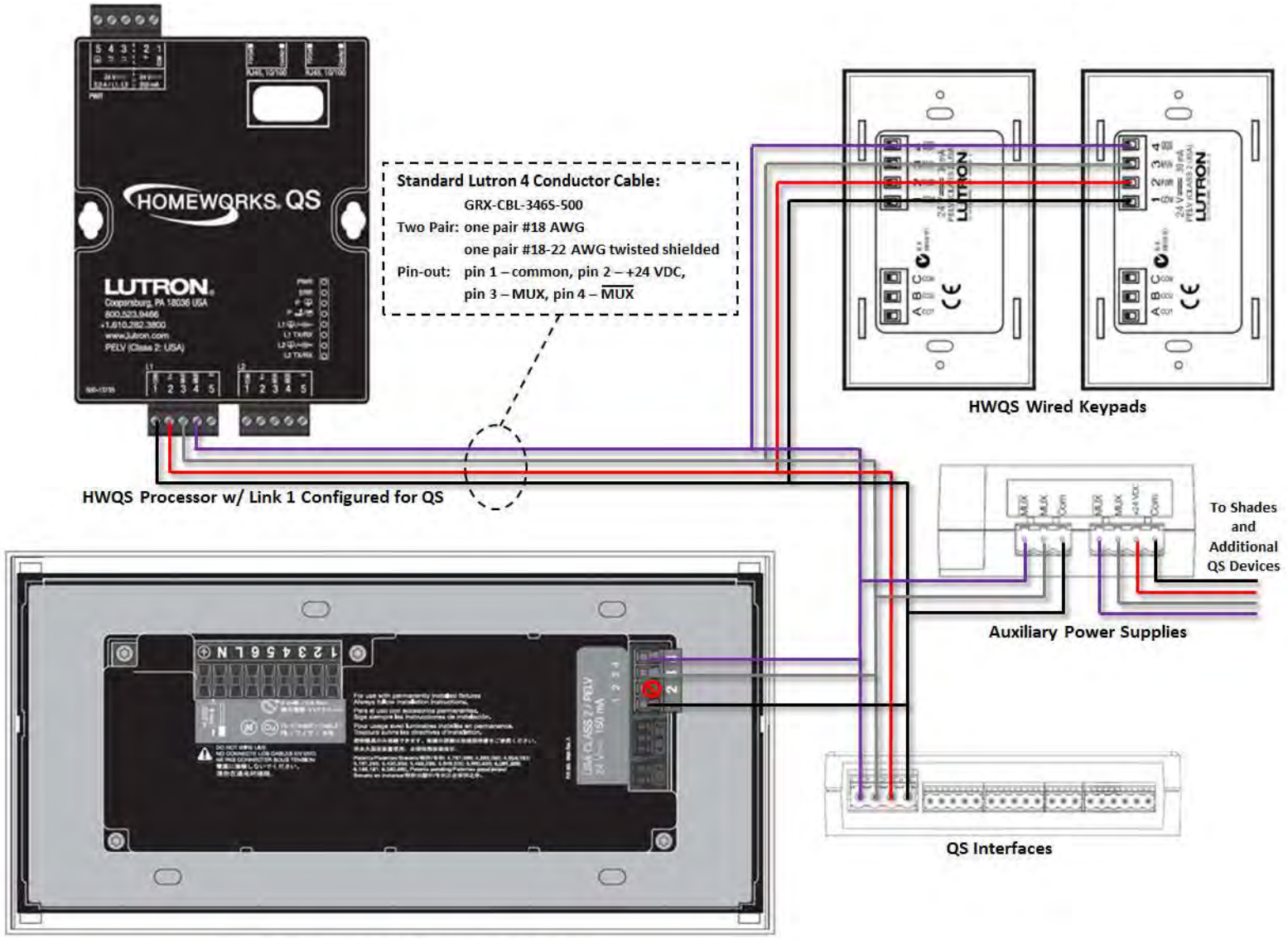
HomeWorks Power Panel Link Example:



HomeWorks QS RF Link Example:



HomeWorks QS Wired QS Device Link Example



Networking Guide

Revision A

Table of Contents

Overview

HomeWorks QS has a very flexible networking architecture. The purpose of this guide is to aid the installer in determining the best approach for how to wire and configure the Processor Link (Ethernet). Many of the topics contained in this document are advanced. Consult a networking professional and provide him/her with this document.

Best Practices

1. Every processor in your project must be connected together using the Processor Link (Ethernet) for successful system operation. This can be through a router/switch or daisy-chained from one processor to the next using the built-in Ethernet switch. Ethernet replaces the inter-processor link used in HomeWorks Illumination systems.

2. A good practice is to run Ethernet wiring from a router/switch to each LV-21 enclosure, and daisy chain the Ethernet between the two processors in each LV-21 enclosure.

3. If your system has 4 or fewer processors, it is best to daisy chain the Processor Link (Ethernet) from one processor to the next and connect the first processor to the router. This ensures that the lighting system will continue to function in the event of a router failure.

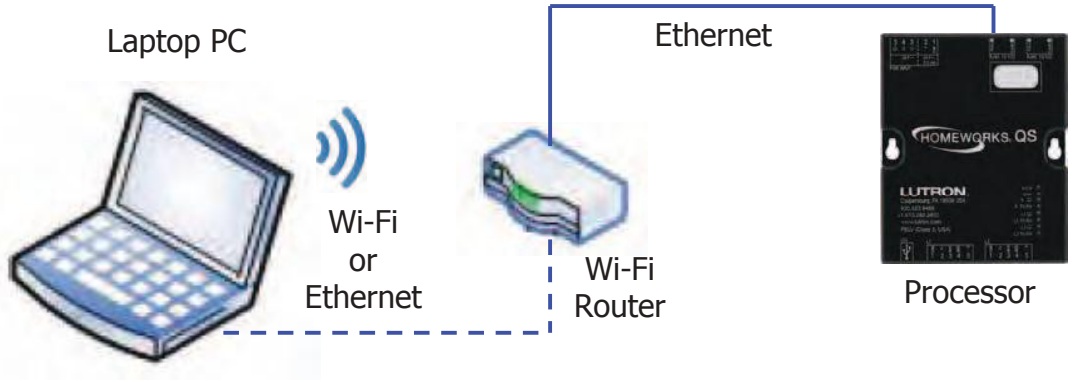
4. Ethernet wiring should be run from a router/switch to every processor in the project in case the processors need to be connected to the network. Ethernet wiring should also be run between each processor location. Having the wiring in place will allow for future networking architecture changes and provides the most flexibility.

5. A Wi-Fi enabled router may be used to connect the laptop to the HomeWorks QS system. This will allow the installer to carry the laptop around during the programming and activation of the system. Wi-Fi may also be needed if the homeowner wants to utilize an iPod or iPad to integrate to the HomeWorks QS system.

6. HomeWorks QS processors should be kept on quiet Ethernet networks or dedicated subnets. This will ensure Internet and home network traffic does not interfere with the operation of the lighting system.

7. Only one Ethernet port on the processor needs to be used when Ethernet is run to each processor from a router. Either of the Ethernet ports may be used in this case.

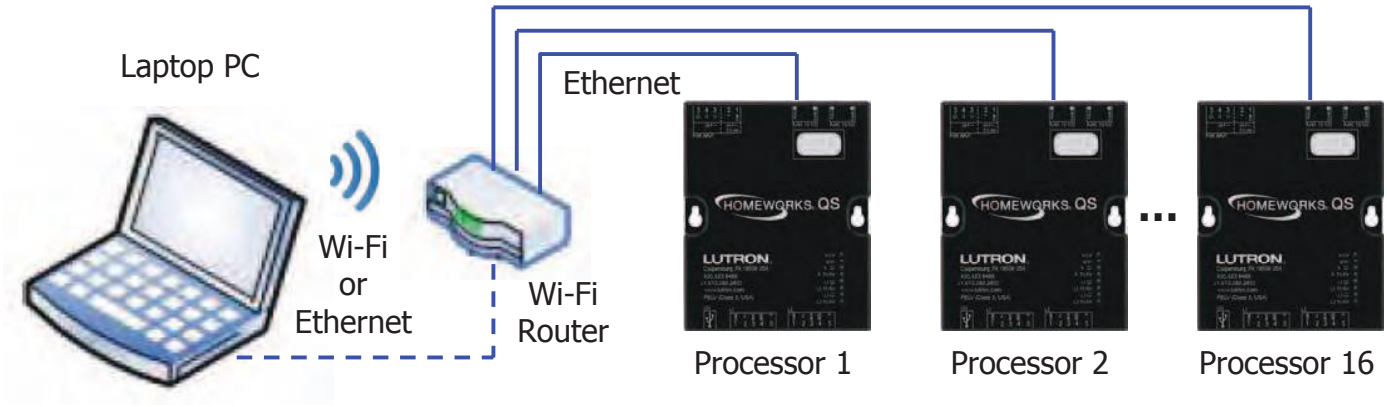
Single Processor Connected to a Router



Example A – DHCP		
WiFi/Ethernet enabled PC IP address DHCP Subnet mask DHCP	**Wi-Fi Router** IP address 192.168.1.1 Subnet mask 255.255.255.0 DHCP range 192.168.1.100-150 DHCP Enabled	**HomeWorks QS Processor** IP address DHCP Subnet mask DHCP
When to use This is the fastest way to setup your system. Every device will use DHCP and the router allocates IP addresses. Using a Wi-Fi router will allow you to carry your laptop around during activation and programming. Either one of the Ethernet ports on the processor can be connected to the router.		

Example B – Static IP		
WiFi/Ethernet enabled PC IP address DHCP Subnet mask DHCP	**Wi-Fi Router** IP address 192.168.1.1 Subnet mask 255.255.255.0 DHCP range 192.168.1.100-150 DHCP Enabled	**HomeWorks QS Processor** IP address 192.168.1.2 Subnet mask 255.255.255.0
When to use The processor is set up with a static IP address and the router will use DHCP to allocate IP addresses for the PC and other devices. Use this on jobs where the processor is accessed via integration using telnet so that the integration device (touchscreen, iPhone, etc) can always find the processor at the same IP address. The static IP address should be outside the range of DHCP addresses. Either one of the Ethernet ports on the processor can be connected to the router.		

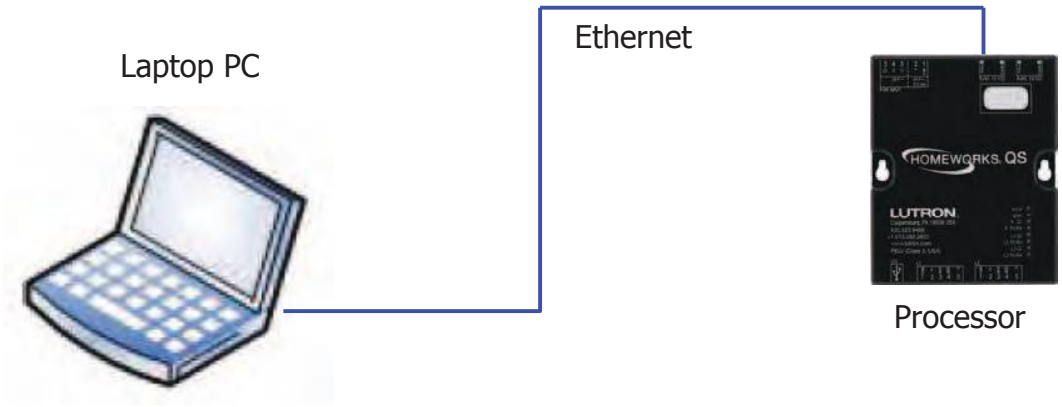
Multiple Processors, All Connected to a Router



Example C – DHCP					
WiFi/Ethernet enabled PC		**Wi-Fi Router**		**HomeWorks QS Processors**	
IP address	DHCP	IP address	192.168.1.1	IP address 1	DHCP
Subnet mask	DHCP	Subnet mask	255.255.255.0	IP address 2	DHCP
		DHCP range	192.168.1.100-150	IP address n	DHCP
		DHCP Enabled		Subnet mask	DHCP
When to use This is the fastest way to setup your system. Every device will use DHCP and the router allocates IP addresses. Using a Wi-Fi router will allow you to carry your laptop around during activation and programming. Either one of the Ethernet ports on the processor can be connected to the router. Every processor must be connected to the router. Up to 16 processors can be connected using this method.					

Example D – Static IP					
WiFi/Ethernet enabled PC		**Wi-Fi Router**		**HomeWorks QS Processors**	
IP address	DHCP	IP address	192.168.1.1	IP address 1	192.168.1.2
Subnet mask	DHCP	Subnet mask	255.255.255.0	IP address 2	192.168.1.3
		DHCP range	192.168.1.100-150	IP address n	192.168.1.n+1
		DHCP Enabled		Subnet mask	255.255.255.0
When to use The processors are set up with static IP addresses and the router will use DHCP to allocate IP addresses for the PC and other devices. Use this on jobs where the processors are accessed via integration using telnet so that the integration device (touchscreen, iPhone, etc) can always find the processors at the same IP addresses. The static IP addresses should be outside the range of DHCP addresses. Either one of the Ethernet ports on the processor can be connected to the router. Every processor must be connected to the router. Up to 16 processors can be connected using this method.					

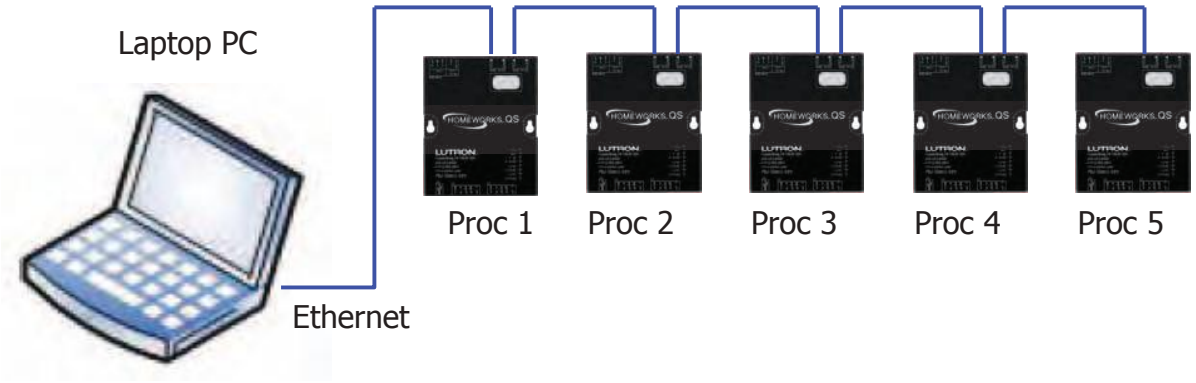
Single Processor Directly Connected to a PC



Example E – Direct Ethernet Connection – DHCP		
Ethernet enabled PC IP address DHCP Subnet mask DHCP	**Standard Ethernet Cable Required**	**HomeWorks QS Processor** IP address DHCP Subnet mask DHCP
When to use This connection method should only be used when no router is available. A standard Ethernet cable can be used to connect the PC and the processor. There is no DHCP server available in this case, but the PC and processor will revert to using Link Local IP addresses after about two minutes. Either one of the Ethernet ports on the processor can be connected to the PC. Note: Processors ship with DHCP enabled. With the above configuration it may take up to two minutes for the HWQS software to recognize the processor after the Ethernet cable is connected.		

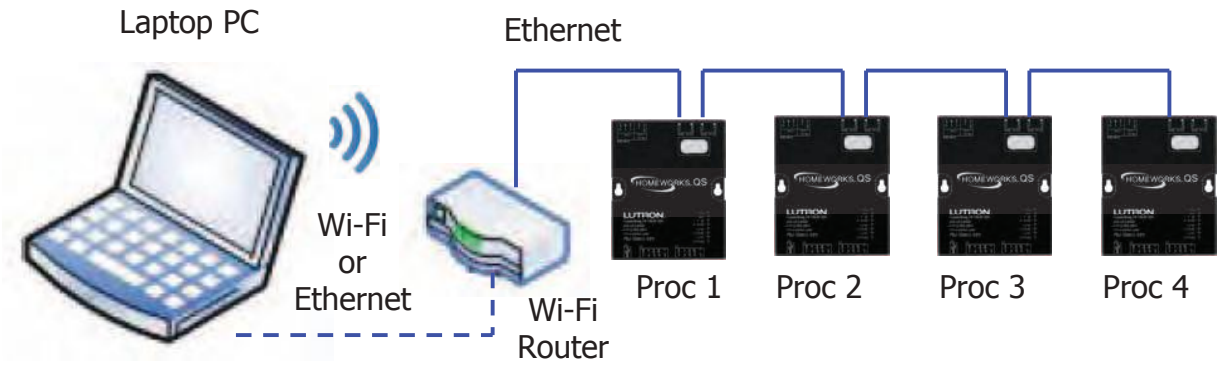
Example F – Direct Ethernet Connection – Static IP		
Ethernet enabled PC IP address 192.168.1.3 Subnet mask 255.255.255.0	**Standard Ethernet Cable Required**	**HomeWorks QS Processor** IP address 192.168.1.2 Subnet mask 255.255.255.0
When to use This connection method should only be used when no router is available. A standard Ethernet cable can be used to connect the PC and the processor. Both the PC and the processor will need to use static IP addresses. Either one of the Ethernet ports on the processor can be connected to the PC. Note: Processors ship with DHCP enabled. With the above configuration it may take up to two minutes for the HWQS software to recognize the processor after the Ethernet cable is connected.		

Multiple Processors Daisy Chained Together



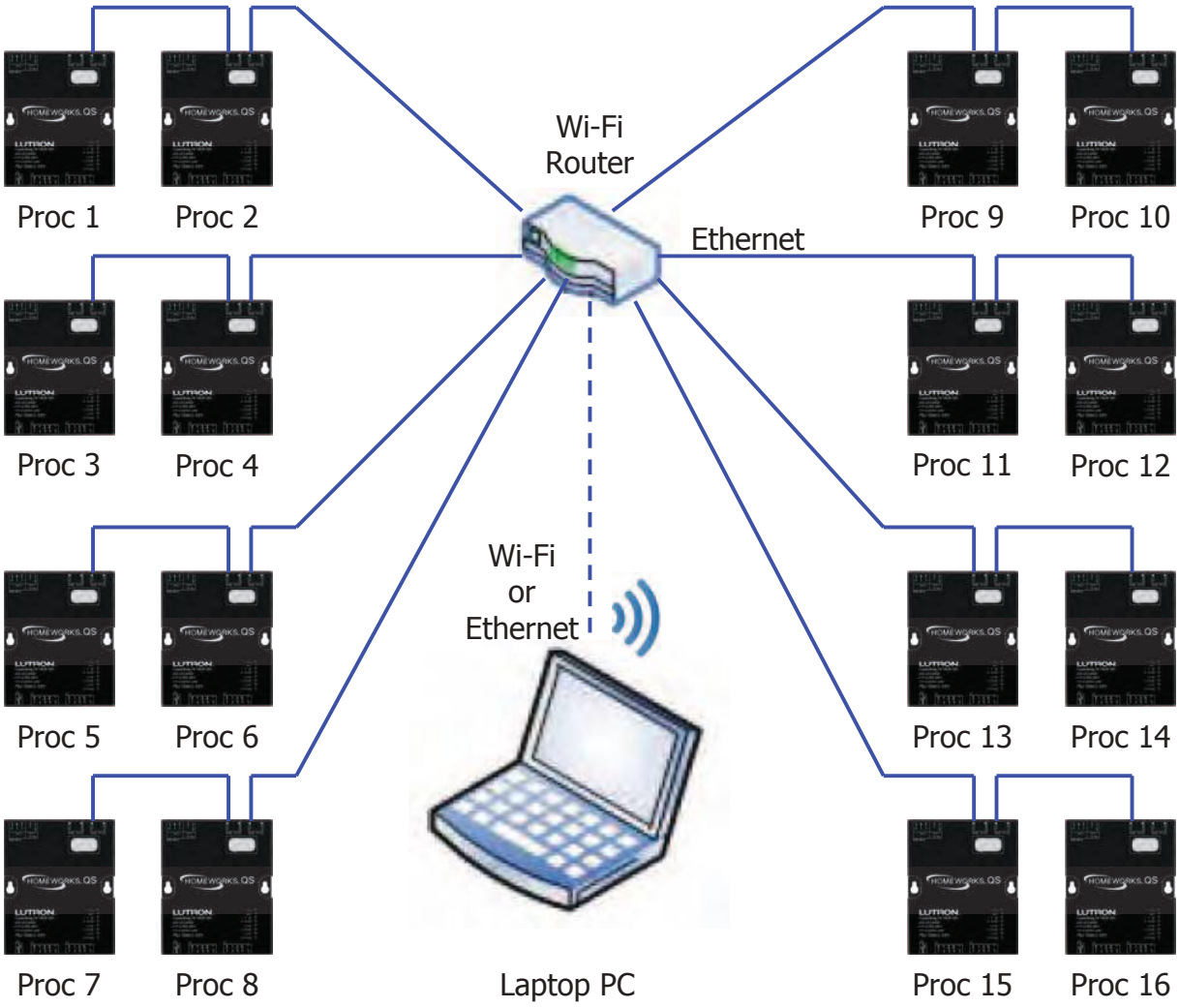
Example G – Daisy Chain with Direct Ethernet Connection (No Router) – DHCP		
WiFi/Ethernet enabled PC IP address DHCP Subnet mask DHCP	**Standard Ethernet Cable Required**	**HomeWorks QS Processors** IP address 1 DHCP … IP address 5 DHCP Subnet mask DHCP
When to use This connection method should only be used when no router is available and the processors are not on an Ethernet network. A standard Ethernet cable can be used to connect the PC to one of the processors. Each processor has two Ethernet ports to allow daisy-chaining the processors together using Ethernet cables. Every processor must be connected to another processor or the PC. The PC and the processors will need to use static IP addresses. It is not recommended to exceed 5 processors connected using this method. Note: Processors ship with DHCP enabled. With the above configuration it may take up to two minutes for the HWQS software to recognize the processor after the Ethernet cable is connected.		

Example H – Daisy Chain with Direct Ethernet Connection (No Router) – Static IP		
WiFi/Ethernet enabled PC IP address 192.168.1.100 Subnet mask 255.255.255.0	**Standard Ethernet Cable Required**	**HomeWorks QS Processors** IP address 1 192.168.1.2 … IP address 5 192.168.1.6 Subnet mask 255.255.255.0
When to use This connection method should only be used when no router is available and the processors are not on an Ethernet network. A standard Ethernet cable can be used to connect the PC to one of the processors. Each processor has two Ethernet ports to allow daisy-chaining the processors together using Ethernet cables. Every processor must be connected to another processor or the PC. The PC and the processors will need to use static IP addresses. It is not recommended to exceed 5 processors connected using this method. Note: Processors ship with DHCP enabled. With the above configuration it may take up to two minutes for the HWQS software to recognize the processor after the Ethernet cable is connected.		



Example I – Daisy Chain with Router					
WiFi/Ethernet enabled PC		**WiFi Router**		**HomeWorks QS Processors**	
IP address	DHCP	IP address	192.168.1.1	IP address 1	DHCP or 192.168.1.2
Subnet mask	DHCP	Subnet mask	255.255.255.0	…	…
		DHCP range	192.168.1.100-150	IP address 4	192.168.1.5
		DHCP Enabled		Subnet mask	255.255.255.0
When to use This connection method should only be used when it is not possible to connect Ethernet between the router and each processor. Standard Ethernet cables can be used to connect the PC and all of the processors. Each processor has two Ethernet ports to allow daisy-chaining the processors together using Ethernet cables. Every processor must be connected to another processor or the router. The PC and the processors can use DHCP or static IP addresses. The static IP addresses should be outside the range of DHCP addresses. It is not recommended to exceed 4 processors connected using this method.					

Multiple Processors – Maximum System



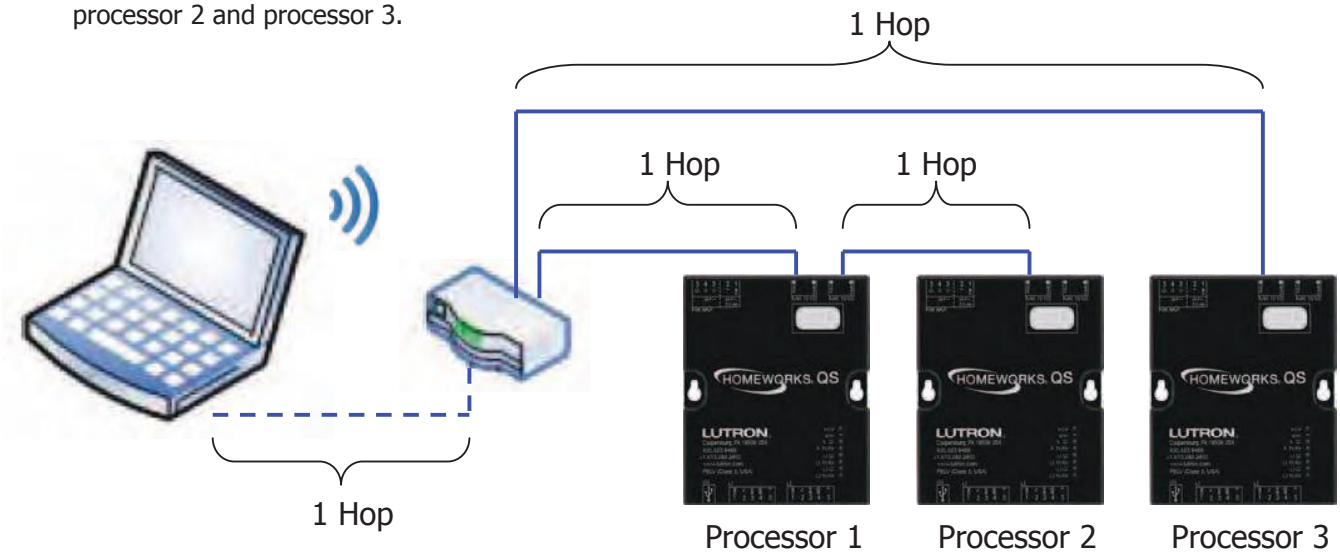
Example J – Hybrid Ethernet Connection					
WiFi/Ethernet enabled PC		**WiFi Router**		**HomeWorks QS Processors**	
IP address	DHCP	IP address	192.168.1.1	IP address 1	DHCP or 192.168.1.2
Subnet mask	DHCP	Subnet mask	255.255.255.0	…	…
		DHCP range	192.168.1.100-150	IP address 16	192.168.1.17
		DHCP Enabled		Subnet mask	255.255.255.0

When to use

This connection method can be used when Ethernet wiring cannot be run from a router to each individual processor. Typically two processors will be mounted in each LV-21 enclosure. These processors should be daisy-chained together with a single Ethernet connection between the LV-21 and the router. Standard Ethernet cables can be used to connect the PC and all of the processors. Each processor has two Ethernet ports to allow daisy-chaining the processors together using Ethernet cables. Every processor must be connected to another processor or the router. The PC and the processors can use DHCP or static IP addresses. The static IP addresses should be outside the range of DHCP addresses. Up to 16 processors can be connected in the system, however it is not recommended to have more than 2 processors daisy-chained together when using this method.

Maximum Ethernet Hops

For optimal system performance, no more than 5 Ethernet hops should exist between any two processors or any processor and the PC in the HomeWorks QS system. An Ethernet hop is best described as a connection between two devices (router, switch, processor, or PC). In the following example, there is only 1 Ethernet hop between processor 1 and processor 2, but there are 3 Ethernet hops between processor 2 and processor 3.



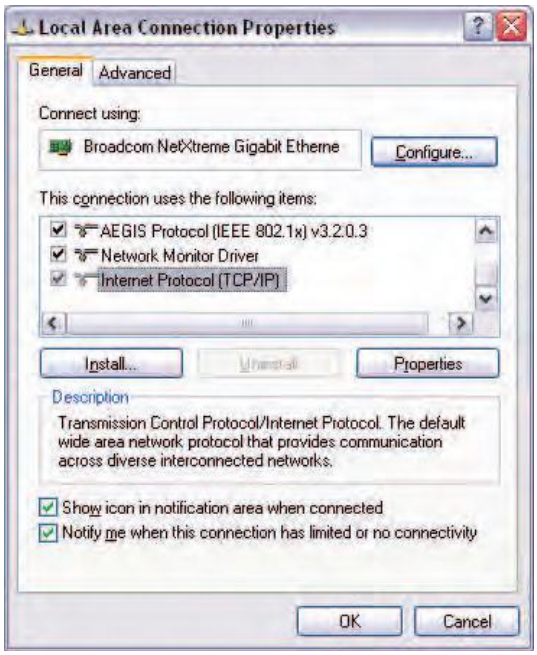
Connection Method	Ethernet Hops	Notes
A – DHCP, Single Processor	2	1 Processor
B – Static IP, Single Processor	2	1 Processor
C – DHCP, Multiple Processors Connected Through Router	2	
D – Static IP, Multiple Processors Connected Through Router	2	
E – Direct Ethernet Connection, Single Processor – DHCP	1	1 Processor, defaults to using Link Local IP addresses
F – Direct Ethernet Connection, Single Processor – Static IP	1	1 Processor
G – Direct Ethernet Connection to 1 Processor, Multiple Processors Daisy Chained – DHCP	Up to 5	Uses Link Local IP addresses. Not recommended for more than 5 processors.
H – Direct Ethernet Connection to 1 Processor, Multiple Processors Daisy Chained – Static IP	Up to 5	Not recommended for more than 5 processors.
I – 1 Processor Connected Through Router, Multiple Processors Daisy Chained	Up to 5	Not recommended for more than 4 processors.
J – Hybrid of Processors Connected Through Router and Daisy Chained	Up to 5	Not recommended to have more than 2 processors daisy-chained.

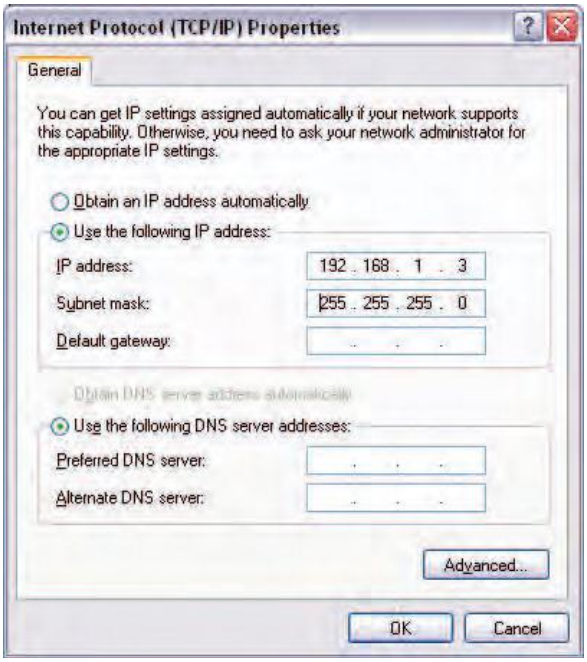
How To Change Network Settings

Step 1: Change your PC network settings

A. This step is only necessary when setting up a static IP address on your laptop or PC.
B. Go to the control panel and select Network Settings. Depending on whether you are connecting wirelessly or through a wire, right click and select 'Properties' on either your LAN or Wireless network connection.

C. Highlight the Internet Protocol (TCP/IP) settings and press the 'Properties' button.
D. Change the settings accordingly and save.

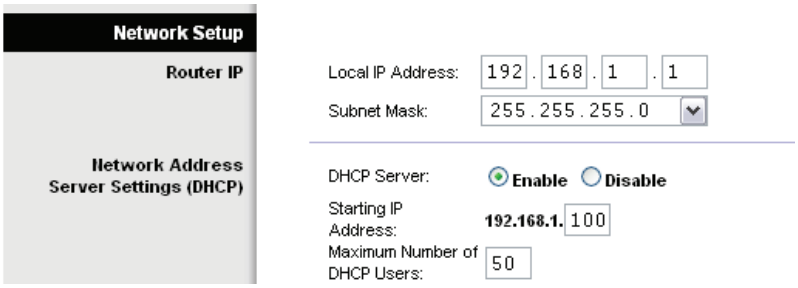




***NOTE: Windows XP shown. Contact operating system provider or a networking professional for other operating systems.**

Step 2: Change network settings on router

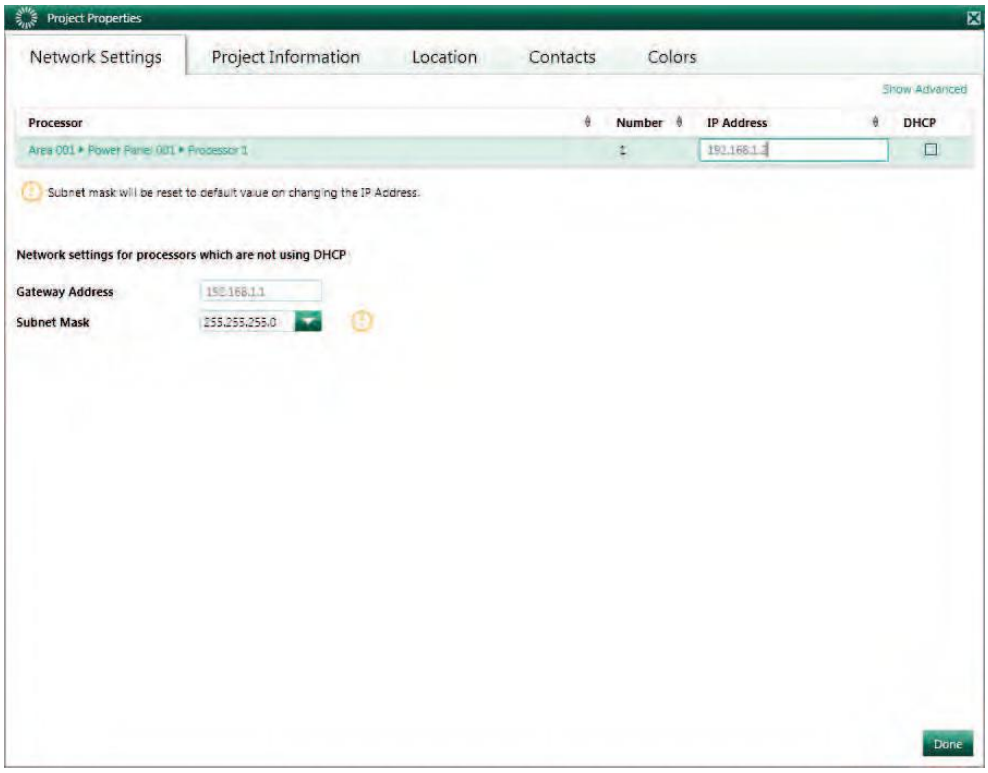
A. Connect your computer to your Wi-Fi router.
B. Open your web browser and type in your router's IP address:
    a. Linksys and Belkin default – 192.168.1.1
    b. D-Link and Netgear default – 192.168.0.1
    c. Other routers – consult your router's documentation
    d. If using DHCP, this is typically listed as the default gateway address.
C. Enter the user name and password. These vary by manufacturer and model. Some common ones are admin:admin or admin:password. Please consult your router's documentation.
D. Navigate to the Network setup, modify, and save your settings.



*NOTE: Linksys shown. For others, refer to router documentation.

Step 3: Change network settings on processors

A. Connect your processor(s) to your network.
B. Open the "Project Properties" in the HomeWorks QS software.
C. Uncheck the DHCP box beside the processor(s) and enter a static IP address in the "IP Address" field.
D. Set the gateway address and subnet mask to match the settings of your network.



Basic Networking – Local Area Networks

What is a network?

A network is a set of devices that are connected together to exchange digital information or commands. Devices can include desktop computers, laptops, Wi-Fi routers, or HomeWorks QS Processors. A local area network, or LAN, is a network of devices that are connected together by physical wires or over Wi-Fi and are in close physical proximity to each other.

What is an IP address?

An IP address, or Internet Protocol address, is a unique way to identify a device on your network. An IP address is analogous to a house number. On any given street, all the house numbers are unique just as on any given network all the IP addresses are unique.

An IP address consists of 4 "octets" of numbers ranging from 0 to 255.

Example
IP address: 192.168.1.100

How does a device on my network get an IP address?

Devices can get an IP address in multiple ways:
1. The device can have a static IP address assigned to it. The static IP address can be manually changed using configuration software for that device. See "What is a static IP address?"
2. A network device can hand out IP addresses when the network is powered up. See "What is DHCP?"
3. A device can choose its own IP address if set to DHCP and no network device is handing out IP addresses. See "What is Link Local?"

What is DHCP?

DHCP, or Dynamic Host Configuration Protocol, defines a series of events which would allow devices to systematically allocate IP addresses. In networks where DHCP is used, one device, called the DHCP host, is responsible for handing out IP addresses to all the other devices. The IP addresses are temporary and are re-allocated any time the host or devices are powered up.
The DHCP host hands out IP addresses from a range that was set up during the host's configuration. Devices that would like to receive IP addresses from the DHCP host are set up to obtain IP addresses automatically using DHCP. The DHCP host is usually your home router.

Example
DHCP IP address range: 192.168.1.100 to 192.168.1.149

What is a static IP address?

A static IP address is an IP address that doesn't change. A static IP address is manually configured before the network is used. Static IP configuration requires careful planning so that all devices have unique IP addresses.

What is Link Local?

If a device is configured to use DHCP but no DHCP server exists on the network, the device may choose to implement the Link Local protocol. This protocol allows the device to assume an IP address and verifies that no other device is using that IP address. This process may take up to two minutes. Link Local IP addresses all begin with 169.254.x.x.

Example
Link Local IP address: 169.254.1.123

Can I mix a DHCP network with a static IP addresses?

Yes, however careful planning must be given to the static IP addresses. The static IP addresses cannot be the same as the DHCP host's IP address and must fall outside of the range of the IP addresses the DHCP host hands out.

> *Example*
> *Router (DHCP host) IP address: 192.168.1.1*
> *Router DHCP range: 192.168.1.100 to 192.168.1.150*
> *HomeWorks QS Processor static IP address: 192.168.1.2*
> *Wi-Fi laptop using DHCP: given out from router. Changes each time laptop is connected to network*

What is a subnet mask?

A subnet mask is used to tell what messages are for this network and which are for another network. A subnet mask consists of 4 "octets" of numbers ranging from 0 to 255. The subnet masks should match on all devices that are part of the same network.

> *Example*
> *Subnet mask: 255.255.255.0*
> *The 255 in the first three octets forces the listening device to listen to any messages where the first three octets of the incoming IP address match. If the receiving device's IP address is 192.168.1.100 and the incoming message is from IP address 192.168.1.2, then the device should listen.*

What is a straight through or patch Ethernet cable?

A straight through or patch Ethernet cable (often referred to as simply an Ethernet cable) is a cable consisting of 4 pairs of twisted wire with an RJ-45 connector on each end. The wires connect straight through from one connector to the other (i.e. pin 1 connects to pin 1, pin 2 connects to pin 2, etc). This is the most common type of network cable and is used when connecting a device to a network through a router or switch.

What is a crossover Ethernet cable?

A crossover Ethernet cable is similar to a straight through Ethernet cable, with the exception that the pairs of wire are reversed from one connector to the other. This allows the transmit pairs on one connector to connect to the receive pairs on the other connector. This cable is often used when connecting two devices directly without a router in between, however is **not necessary** in HomeWorks QS.

Basic Networking – Wide Area Networks

What is a Wide Area Network?

A wide area network is collection of networks that are not physically connected together. Accessing your home network remotely from an office or other place away from your home is a WAN. The Internet is the most commonly known Wide Area Network.

How does your home network connect to the Internet?

Your home network is connected to the Internet via a gateway device. Cable modems and DSL modems are examples of gateway devices. Sometimes gateway devices are also routers.

What is a gateway IP address?

A gateway is a device that connects your network to the Internet such as a cable modem or DSL router. The gateway address only needs to be setup when you want to remotely access a device on your network from another device on the Internet. If your network is not connected to the Internet, then the gateway address is not used. If your device does not need to be accessed from the Internet, then the gateway address is also not used. The gateway address on a device should be set to the address of the gateway device. In most cases this is your network router.

Example
Router IP address: 192.168.1.1
Gateway address of devices attached to router: 192.168.1.1

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