

APPENDIX



SPACE NAME	ROOM NUMBER	MANUAL ON	MANUAL OFF	DIMMING SWITCH	OVERRIDE SWITCH	TIMECLOCK ON/OFF	OCCUPANCY SENSOR	VACANCY SENSOR	PHOTOCONTROL DIMMING	EXTERIOR PHOTOCELL ON/OFF	FACILITY MANAGEMENT TOOL	4-BUTTON SCENE CONTROL	NETWORKED CONTROLS (DMX)	SEQUENCE OF OPERATIONS
Main Reading Room - F1 / F2	2318B	X	X		X	X	X		X	X	X			1
North Wing - F1	2318A	X	X		X	X	X		X	X	X			1
South Wing - F1	2318C	X	X		X	X	X		X	X	X			1
Entry - F1	2318B	X	X	X	X	X	X		X	X	X			2
North Wing - F2	3001A	X	X		X	X	X		X	X	X			1
South Wing - F2	3001D	X	X		X	X	X		X	X	X			1
Front Study Room - F2	3001C	X	X	X	X	X	X		X	X	X	X		3
Rear Study Room - F2	3001B	X	X	X	X	X	X		X	X	X	X		3

SPACE NAME	ROOM NUMBER	MANUAL ON	MANUAL OFF	DIMMING SWITCH	OVERRIDE SWITCH	TIMECLOCK ON/OFF	OCCUPANCY SENSOR	VACANCY SENSOR	PHOTOCONTROL DIMMING	EXTERIOR PHOTOCELL ON/OFF	FACILITY MANAGEMENT TOOL	4-BUTTON SCENE CONTROL	NETWORKED CONTROLS (DMX)	SEQUENCE OF OPERATIONS
Audience	2309	X	X		X	X					X		X	4
Stage	2313	X	X		X	X					X		X	4
Prefunction	L2-C-07	X	X		X	X					X	X		5
Prefunction Hall	2309A	X	X	X	X	X					X			6

SPACE NAME	ROOM NUMBER	MANUAL ON	MANUAL OFF	DIMMING SWITCH	OVERRIDE SWITCH	TIMECLOCK ON/OFF	OCCUPANCY SENSOR	VACANCY SENSOR	PHOTOCONTROL DIMMING	EXTERIOR PHOTOCELL ON/OFF	FACILITY MANAGEMENT TOOL	4-BUTTON SCENE CONTROL	NETWORKED CONTROLS (DMX)	SEQUENCE OF OPERATIONS
Display Gallery	L1-C-02	X	X	X	X	X	X			X	X	X		7
Display Gallery Hall	L1-C-03	X	X	X	X	X		X		X	X			9
Special Collections	1218	X	X	X	X	X		X	X	X	X	X		8

SPACE NAME	ROOM NUMBER	MANUAL ON	MANUAL OFF	DIMMING SWITCH	OVERRIDE SWITCH	TIMECLOCK ON/OFF	OCCUPANCY SENSOR	VACANCY SENSOR	PHOTOCONTROL DIMMING	EXTERIOR PHOTOCELL ON/OFF	FACILITY MANAGEMENT TOOL	4-BUTTON SCENE CONTROL	NETWORKED CONTROLS (DMX)	SEQUENCE OF OPERATIONS
Main Lobby	L1-C-01	X	X	X	X	X	X			X	X	X		✓

SPACE NAME	ROOM NUMBER	MANUAL ON	MANUAL OFF	DIMMING SWITCH	OVERRIDE SWITCH	TIMECLOCK ON/OFF	OCCUPANCY SENSOR	VACANCY SENSOR	PHOTOCONTROL DIMMING	EXTERIOR PHOTOCELL ON/OFF	FACILITY MANAGEMENT TOOL	4-BUTTON SCENE CONTROL	NETWORKED CONTROLS (DMX)	SEQUENCE OF OPERATIONS
Info Commons (Dome)	L2-C-13	X	X	X	X	X	X		X	X				10
Technology Commons	2314	X	X	X	X	X	X		X	X				10
Media Center	2317	X	X	X	X	X	X		X	X				10

SPACE NAME	ROOM NUMBER	MANUAL ON	MANUAL OFF	DIMMING SWITCH	OVERRIDE SWITCH	TIMECLOCK ON/OFF	OCCUPANCY SENSOR	VACANCY SENSOR	PHOTOCONTROL DIMMING	EXTERIOR PHOTOCELL ON/OFF	FACILITY MANAGEMENT TOOL	4-BUTTON SCENE CONTROL	NETWORKED CONTROLS (DMX)	SEQUENCE OF OPERATIONS
East Facade	N/A	X	X		X	X				X	X			11

SEQUENCE OF OPERATIONS LEGEND

1	At 7:00 AM the timeclock of the facility management system will switch the designated zone ON (if exterior photocell conditions are met); for the duration, the lights may turn OFF if the occupancy sensor detects no movement, turning back ON upon detection. Lights will DIM according to daylight sensors. At 10:00 PM the zone will turn OFF. Overrides include a user-operated manual ON/OFF.
2	At 7:00 AM the timeclock of the facility management system will switch the designated zone ON (if exterior photocell conditions are met); for the duration, the lights may turn OFF if the occupancy sensor detects no movement, turning back ON upon detection. Lights will DIM according to daylight sensors. At 10:00 PM the zone will turn OFF. Overrides include a user-operated manual ON/OFF and user-operated manual dimming.
3	At 7:00 AM the timeclock of the facility management system will switch the designated zone ON (if exterior photocell conditions are met); for the duration, the lights may turn OFF if the occupancy sensor detects no movement, turning back ON upon detection. Lights will DIM according to daylight sensors. At 10:00 PM the zone will turn OFF. Overrides include a user-operated manual ON/OFF, user-operated manual dimming, and user-operated 4-button scenes.
4	At 8:00 AM the timeclock of the facility management system will switch the designated zone ON (if exterior photocell conditions are met); for the duration, the lights may turn OFF if the occupancy sensor detects no movement, turning back ON upon detection. At 8:00 PM the zone will turn OFF. Overrides include DMX network controls and user-operated manual ON/OFF.
5	At 8:00 AM the timeclock of the facility management system will switch the designated zone ON (if exterior photocell conditions are met); for the duration, the lights may turn OFF if the occupancy sensor detects no movement, turning back ON upon detection. At 8:00 PM the zone will turn OFF. Overrides include user-operated manual ON/OFF and a user-operated 4-button scene switch.
6	At 8:00 AM the timeclock of the facility management system will switch the designated zone ON (if exterior photocell conditions are met); for the duration, the lights may turn OFF if the occupancy sensor detects no movement, turning back ON upon detection. At 8:00 PM the zone will turn OFF. Overrides include user-operated manual ON/OFF and a user-operated dimming switch.
7	At 7:00 AM the timeclock of the facility management system will switch the designated zone ON (if exterior photocell conditions are met); for the duration, the lights may turn OFF if the occupancy sensor detects no movement, turning back ON upon detection. At 10:00 PM the zone will turn OFF. Overrides include a 4-button scene switch, a dimming switch, and user-operated manual ON/OFF.
8	At 7:00 AM the timeclock of the facility management system will switch the designated zone ON (if exterior photocell conditions are met); for the duration, the lights may turn OFF if the vacancy sensor detects no movement. At 10:00 PM the zone will turn OFF. Overrides include a 4-button scene switch, a dimming switch, and user-operated manual ON/OFF.
9	At 7:00 AM the timeclock of the facility management system will switch the designated zone ON (if exterior photocell conditions are met); for the duration, the lights may turn OFF if the vacancy sensor detects no movement. At 10:00 PM the zone will turn OFF. Overrides include a dimming switch and a user-operated manual ON/OFF.
10	Upon entrance to the space, the occupancy sensor will turn the zone ON. The lights may turn OFF if the occupancy sensor detects no movement, turning back ON upon detection. Lights will DIM according to daylight sensors. Overrides include a user-operated manual ON/OFF and user-operated dimming.
11	At 5:00 PM the timeclock of the facility management system will switch the designated zones ON (if exterior photocell conditions are met); at 7:00 AM, the system will switch them OFF (again, if photocell conditions are met). Override is a manual ON/OFF switch.

PANELBOARD EH1 SCHEDULE

RATED FOR 100 A (REFERENCED FROM RISER DIAGRAM)

LOAD SERVED		LOAD (AMPS)			BKR TRIP	CKT NO.	PHASE A B C	CKT NO.	BKR TRIP	LOAD (AMPS)			LOAD SERVED
		A	B	C						A	B	C	
	LTG 143D	8.5			20/1P	1	A	2	20/1P				LTG EXTERIOR
	LTG 143D		8.0		20/1P	3	B	4	20/1P				SPARE
	LTG 142,3,154-6			9.0	20/1P	5	C	6	20/1P				SPARE
	LTG 1202, 1211-3, L1-C-01, 9	12.2			20/1P	7	A	8	20/1P				SPARE
	LTG 1211, 2, 4, 6, 8, 20, L1-C-02		8.2		20/1P	9	B	10	20/1P				SPARE
	LTG 2302, L2-C-02, 3			8.6	20/1P	11	C	12	20/1P				SPARE
	LTG 2308-10, L2-C-05-09	6.3			20/1P	13	A	14	20/1P				SPARE
	LTG ST-G		1.2		20/1P	15	B	16	20/1P				SPARE
	LTG 2309			4.2	20/1P	17	C	18	20/1P				SPARE
	LTG 2314, 2317	6.3			20/1P	19	A	20	20/1P				SPARE
LTG 2316, L2-C-13, 12, 3, 6, 7, 8, 4			10.3		20/1P	21	B	22	20/1P				SPARE
	LTG ST-H			1.9	20/1P	23	C	24	20/1P				SPARE
	LTG 2319, ST-J	3.1			20/1P	25	A	26	20/1P				SPARE
	LTG ST-L, K		3.2		20/1P	27	B	28	20/1P				SPARE
	LTG 3001			3.8	20/1P	29	C	30	20/1P				SPARE
	LTG 3001	11.1			20/1P	31	A	32	20/1P				SPARE
	LTG 2318B		9.9		20/1P	33	B	34	20/1P				SPARE
	LTG ATTIC			6.0	20/1P	35	C	36	20/1P			4.0	GAS SHUT-OFF
	SPARE				20/1P	37	A	38	20/1P	26			PANEL EP1 VIA XFMR
	SPARE				20/1P	39	B	40	20/1P		14.2		
	SPARE				20/1P	41	C	42	20/1P			11.8	
TOTAL		47.5	40.8	33.5						26	14.2	15.8	TOTAL
TOTAL CONNECTED AMPS A: 73.5 B: 55.0 C: 49.3													

RATED FOR 100 A (REFERENCED FROM RISER DIAGRAM)

TOTAL CONNECTED AMPS A: 68.2 B: 55.3 C: 54.3



UPC Code : 078477239261

Country Of Origin : United States

Available Colors :



1223-SW

20 Amp, 120/277 Volt, Toggle 3-Way AC Quiet Switch, Heavy Duty Spec Grade, Grounding, Back & Side Wired - WHITE

Leviton's Industrial Grade AC toggle switches for extra heavy-duty applications represent top-of-the-line quality and peak performance. Leviton uses the finest materials available and the highest production standards to produce industrial switches of unmatched versatility and reliability.

Technical Information

AC Horsepower Ratings

HP Rating : 1HP-120V 2HP-240V-277V

Electrical Specifications

Amperage : 20 A

Dielectric Voltage : Withstands 1500V for 1 minute

Grounding : Self-Grounding

Max. Amperage : 16 Amp

Temperature Rise : Maximum 30 degrees C rise

Voltage : 120/277 VAC

Environmental Specifications

Flammability : Rated V-2 per UL 94

Operating Temperature : -40°C to 65°C

Material Specifications

Actuator Material : Thermoplastic

Base Material : PBT

Body Material : Thermoplastic

Color : White

Contacts : Silver-Cadmium .031 Thick

Cover Material : Nylon

Strap Material : Steel

Terminal Screws : Steel 8-32

Toggle : Polycarbonate

Mechanical Specifications

Product ID : Stamped on Strap

Terminal Accom. : 14-#10 AWG back wired; #14-#12 AWG side wired

Terminal ID : Brass-Hot, Green-Ground, Silver-Neutral

Termination : Back or Side Wire

Torque Range : 12-14 inch pounds

Product Features

Actuator Material : Thermoplastic

Color : White

Device Type : Toggle Switch

Function : 3-Way

Grade : Heavy-Duty Industrial Specification Grade

Voltage : 120/277 VAC

Warranty : 10-Year Limited

Standards and Certifications

ANSI : C-73

CSA C22.2 No. 111 : File #152105

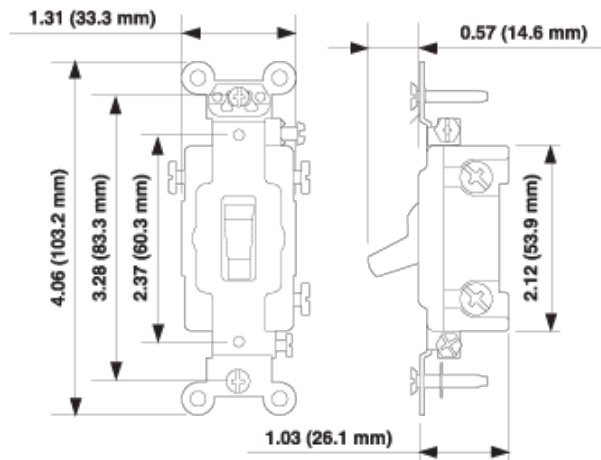
NEMA : WD-1 & WD-6

NOM : 057

UL Fed Spec WS896F : File #E7458

UL Standard : UL 20

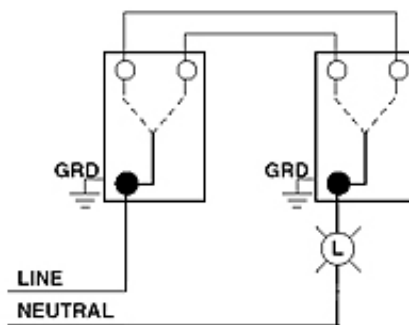
Warranty : 10-Year Limited



3-WAY

Wiring Diagram

3-Way to 3-Way



SPECIFICATION SUBMITTAL

JOB NAME:	CATALOG NUMBERS:	
JOB NUMBER:		

Leviton Manufacturing Co., Inc.

201 North Service Road, Melville, NY 11747

Telephone: +1-800-323-8920 · FAX: +1-800-832-9538 · Tech Line (8:30AM-7:30PM E.S.T. Monday-Friday):

+1-800-824-3005

Leviton Manufacturing of Canada, Ltd.

165 Hymus Boulevard, Pointe Claire, Quebec H9R 1E9 · Telephone: +1-800-469-7890 ·

FAX: +1-800-824-3005 · www.leviton.com/canada

Leviton S. de R.L. de C.V.

Lago Tana 43, Mexico DF, Mexico CP 11290 · Tel.: (+52)55-5082-1040 · FAX: (+52)5386-

1797 · www.leviton.com.mx

Visit our Website at: www.leviton.com

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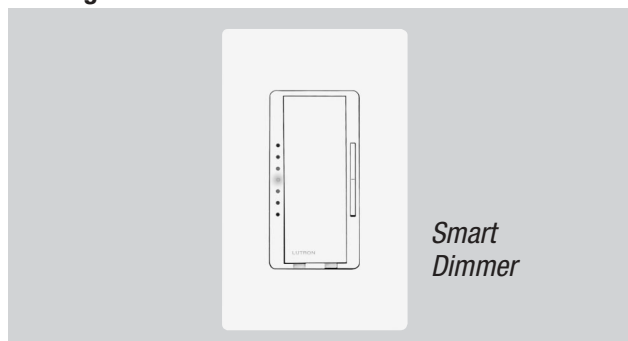
Leviton has a global presence.

If you would like to know where your local Leviton office is located please go to:

www.leviton.com/international/contacts/



The High-Tech Multi-Location Dimmer



PRODUCT FAMILY FEATURES

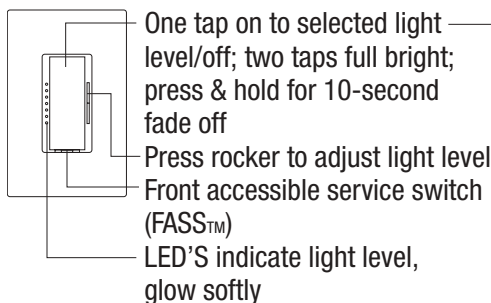
- High-tech “Smart Dimmer” with microprocessor technology for a standard designer wallplate opening
- Features a clean, flush, stylish appearance
- Special Features! Two taps on the switch brings lights on to full brightness; press and hold the switch to slowly fade lights to off over 10 seconds
- LED’s indicate light level and glow softly as a locator light in the dark
- Multi-location dimming from up to 10 locations
- Uses standard single-pole and 3-way wiring for easy installation in any home
- Raise from off

SPECIFICATION FEATURES

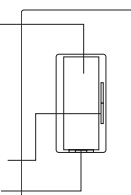
- Power- failure memory
- Frequency compensation
- Includes Radio Frequency Interference suppression
- Front accessible service switch (FASS™) to disconnect load power
- Electrostatic discharge tested
- Precise color matching across all controls

MAESTRO CONTROLS

Smart Dimmers



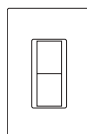
Smart Remotes



Note: For multi-location dimming only-use one Smart Dimmer (left) with up to nine Smart Remotes

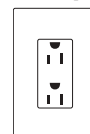
CLARO ACCESSORIES

Rocker Switch

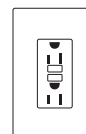


Switch

Receptacles

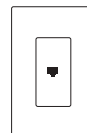


15A
Receptacle

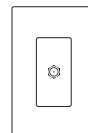


15A GFCI
Receptacle

Jacks

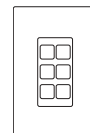


Single
Telephone
Jack



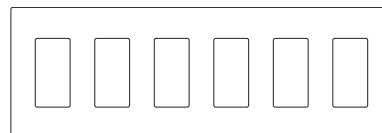
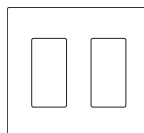
Cable
TV
Jack

Ports



6-Port
Frame

Custom Multigang Wallplates



2-gang to 6-gang wallplates

STANDARDS



JOB NAME	AREA CONTROLLED
LOCATION	JOB NUMBER
TITLE	PAGE NO.

Description	Model #
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SMART DIMMERS

Incandescent

Preset Smart Dimmers

Single Pole/Multi-Location	600W	MA-600-□
Single Pole/Multi-Location	1000W	MA-1000-□

Products above: For multi-location dimming, use one Maestro Smart Dimmer with up to nine Maestro Smart Remotes, MA-R-. Not for use with mechanical 3-way or 4-way switches. Minimum load on dimmer is 40W. Derating required if ganged, see page 5.

Electronic Low Voltage

Preset Smart Dimmers

Single Pole/Multi-location	600W	MAELV-600-□
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Products above: For multi-location dimming, use one Maestro Smart Dimmer with up to nine Maestro Smart Remotes, MA-R-. Requires neutral wire connection. Not for use with mechanical 3-way or 4-way switches. Minimum load on dimmer is 5W. Derating required if ganged, see page 5.

Magnetic Low Voltage

Preset Smart Dimmers

Single Pole/Multi-Location	600VA (450W ¹)	MALV-600-□
Single Pole/Multi-Location	1000VA (800W ¹)	MALV-1000-□

Products Above: For Multi-location dimming, use one Maestro Smart Dimmer with up to nine Maestro Smart Remotes, MA-R-. Not for use with mechanical 3-way or 4-way switches. Minimum load on dimmer is 40W. Derating required if ganged, see page 5.

Fluorescent

For control of fluorescent loads, use Lutron Hi-lume®, Eco 10™ line voltage, or Tu-Wire® electronic dimming ballasts with MA-600- and Hi-Power 2•4•6 dimming module. For a coordinated look, consider using Spacer System dimmers for controlling fluorescent loads.

HI-POWER 2•4•6™ DIMMING MODULES

To increase load capacity up to 30,000W/VA in most popular sources, use one MA-600- and add up to five dimming modules.

SMART REMOTES

Provide Multi-Location Dimming from up to Nine Additional Locations.

Smart Remotes

Smart Remotes	MA-R-□
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For multi-location dimming, use up to nine Smart Remotes with only one of the following Maestro multi-location dimmers: MA-600-, MA-1000-, MAELV-600-, MALV-600-, or MALV-1000-. No derating required if ganged. Maximum traveler wiring run for multi-location applications is 250' (76.2m).

1. Actual lamp wattages.

Description	Rating	Model #
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SWITCHES

General Purpose Switching of all Lighting Sources and Motor Loads

Single Pole, 120/277V	15A	CA-1PSH- ☐
3-way, 120/277V	15A	CA-3PSH- ☐
4-way, 120/277V	15A	CA-4PSH- ☐

Products above: No derating required if ganged.

ACCESSORIES

Receptacles

Receptacle	15A, 125V	CAR-15H- ☐
GFCI Receptacle	15A, 125V	CAR-15-GFCIH- ☐

Products above: No derating required if ganged.

Single Jacks

A physical barrier (partition) must exist when gangling with line-voltage products

Single Telephone Jack	6-conductor, RJ11	CA-PJH- ☐
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Note: Also accepts most 4-conductor plugs

Single Cable Jack ¹	F-style 75-Ohm, coaxial cable	CA-CJH- ☐
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No derating required if ganged.

Field Customizable Multi-Port Frame

6-Port Frame	Shipped with 6 blanks <i>Shown with blanks</i>	CA-6PF- ☐
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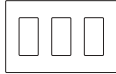
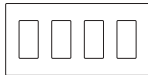
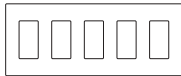
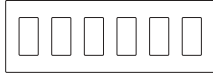
Product above: For use with Lutron connectors shown below. Also compatible with Hubble Xcelerator™ and snap-fit connectors.

Connectors

For use with 6-port frame (CA-6PF-). Each connector fills one port.

	Phone Jack	6-conductor, RJ11, Category 3	CON-1P-C3-WH
	Phone Jack	8-conductor, RJ45, Category 5e	CON-1P-C5E-WH
	Phone Jack	8-conductor, RJ45, Category 6	CON-1P-C6-WH
	Fiber Jack	MT-RJ Feed-Through	CON-1F-MTRJ-WH
	Fiber Jack	SC Simplex	CON-1F-SC-WH
	Fiber Jack	LC Non-Flush Mount	CON-1F-LC-WH
	Fiber Jack	ST Style	CON-1F-ST-WH
	Cable Jack	F-Style, 75-Ohm Coaxial cable	CON-1C-WH
	BNC Jack	BNC connector	CON-1B-WH

Connectors available in white (WH) only. For information about additional colors contact Lutron Customer Service.

	Description	Model #
	STANDARD WALLPLATES	
	<i>1-Gang</i> W: 2.94" (75mm) x H: 4.69" (119mm) x D: 0.30" (7.6mm)	CW-1- 
	<i>2-Gang</i> W: 4.75" (121mm) x H: 4.69" (119mm) x D: 0.30" (7.6mm)	CW-2- 
	<i>3-Gang</i> W: 6.56" (167mm) x H: 4.69" (119mm) x D: 0.30" (7.6mm)	CW-3- 
	<i>4-Gang</i> W: 8.37" (213mm) x H: 4.69" (119mm) x D: 0.30" (7.6mm)	CW-4- 
	<i>5-Gang</i> W: 10.18" (259mm) x H: 4.69" (119mm) x D: 0.30" (7.6mm)	CW-5- 
	<i>6-Gang</i> W: 12.00" (305mm) x H: 4.69" (119mm) x D: 0.30" (7.6mm)	CW-6- 

STANDARD COLORS/FINISHES

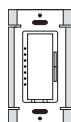
Gloss Finishes (Ships in 48 hours)

Add color/finish suffix to model number to order.

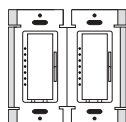
Example: MA-600P-**WH**

WH	White
IV	Ivory
AL	Almond
LA	Light Almond
GR	Gray
BR	Brown
BL	Black

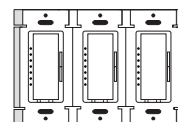
DERATING/MAXIMUM CAPACITY



No side sections removed
(Full Capacity)



One side section removed
(End Units)



Two side sections removed
(End Units)

Incandescent Dimmers ¹

600W
1000W

500W
800W

400W
650W

Electronic Low Voltage ²

600W

500W

400W

Magnetic Low Voltage ¹

600VA
(450W ²)

500VA
(400W ³)

400VA
(300W ²)

1000VA
(800W ²)

800VA
(650W ³)

650VA
(500W ²)

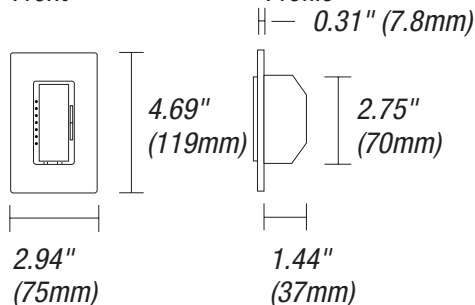
DIMENSIONS

Including Claro® wallplates – Wallplates sold separately.

Dimmer

Front

Profile



¹ Requires 40W minimum load.

² Requires 5W minimum load.

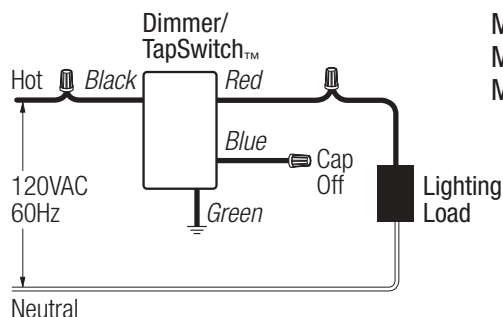
³ Actual lamp wattage.

WIRING DIAGRAMS

Wiring Diagram 1 Single-Location Wiring

Model

MA-600-
MA-1000-
MALV-600-
MALV-1000-



Ground



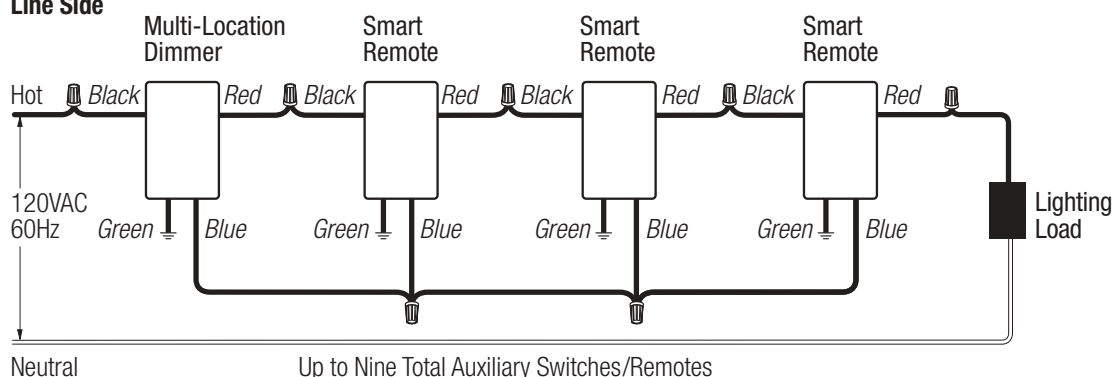
Wire Connectors

Wiring Diagram 2 Multi-Location Wiring

Model

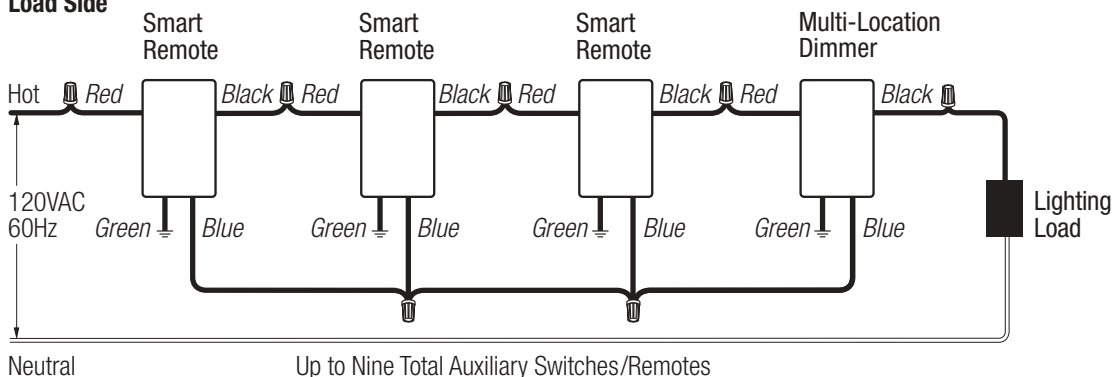
MA-R-
MA-600-
MA-1000-
MALV-600-
MALV-1000-

Control Line Side



OR

Control Load Side



Ground

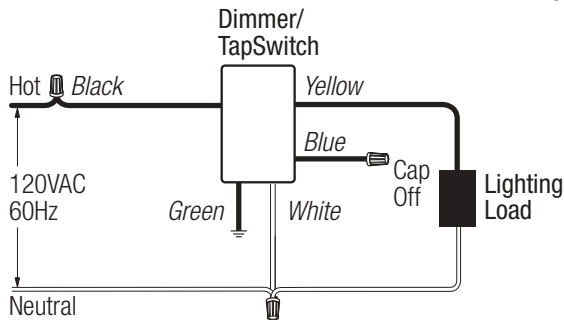


Wire Connectors

WIRING DIAGRAMS

Wiring Diagram 4
Multi-Location Control with Neutral
Used for Single-Location Wiring

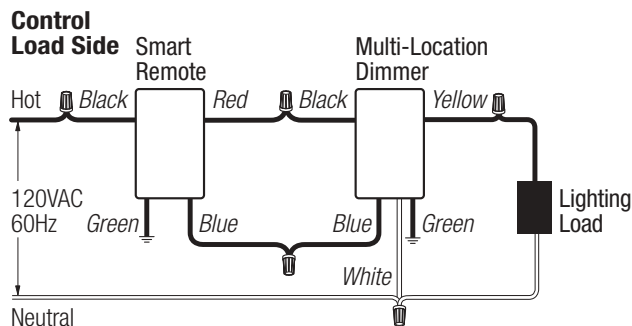
Model #
MAELV-600-



- Ground
- Wire Connectors

Wiring Diagram 5
Multi-Location Wiring

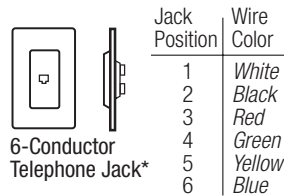
Model #
MAELV-600-
MA-R-



- Ground
 - Wire Connectors
- Up to Nine Total MA-R Units

Wiring Diagram 6
Telephone Jack Wiring

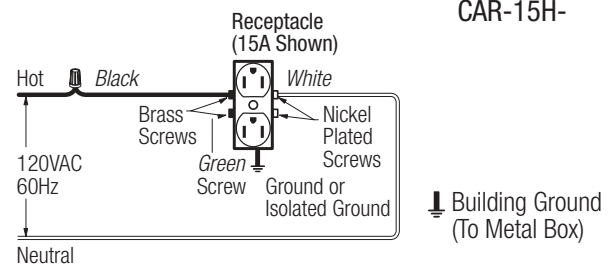
Model #
CA-PJH-



*accepts most 4-conductor jacks

Wiring Diagram 7
Receptacle Wiring

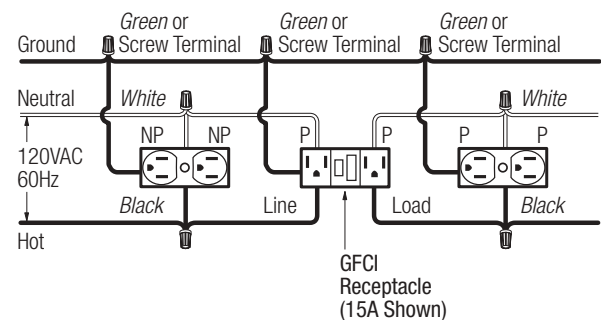
Model #
CAR-15H-



- Ground
- Wire Connectors

Wiring Diagram 8
GFCI Receptacle Wiring

Model #
CAR-15-GFCIH-



- P-Protected
- NP-Not Protected
- Wire Connectors

MAESTRO CONTROLS AND ACCESSORIES

PART 1 – GENERAL

1.01 SUMMARY

- A. Scope: Provide, install and test all switches, dimmers and related devices as specified herein for the areas indicated on the drawings, specifications, and load schedules.
- B. Related Sections: Section 16580 (Ballasts), Section 16570 (Dimming Systems).

1.02 REFERENCES

- A. UL 1472, CSA, NOM, ISO 9001

1.03 SYSTEM DESCRIPTION AND OPERATION

- A. Permanently installed, wallbox mounted switches and dimmers
- B. Permanently installed, wallbox mounted receptacles
- C. Permanently installed, wallbox mounted data, voice and cable jacks
- D. Screwless, seamless wallplates

1.04 SUBMITTALS

- A. Submit manufacturer's standard catalog data giving all application, wiring, and installation information on basic components and wallplate kits.
- B. Provide test data and/or samples as required to demonstrate conformance with PART 2 of this specification.

1.05 QUALITY ASSURANCE

- A. Manufacturer shall have a minimum of 10 years continuous experience in manufacturing wallbox dimming products.
- B. Dimmers shall be UL listed, CSA and NOM approved specifically for each required load (i.e., tungsten, electronic low voltage transformer, and magnetic low voltage transformer). Manufacturer shall provide file card or certificate upon request. Universal load-type dimmers shall not be acceptable.
- C. Manufacturer shall maintain ISO 9001 certification and provide a copy of the certificate upon request.

1.06 WARRANTY

- A. All devices shall be covered by a minimum one-year warranty.

PART 2 – EQUIPMENT

2.01 ACCEPTABLE MANUFACTURERS

- A. Lutron Electronics Co., Inc.
- B. Unless otherwise noted, all basic components (dimmer, switch, receptacle, telephone jack and cable jack) and wallplate kits shall be provided by one manufacturer.

2.02 EQUIPMENT

A. Controls Lutron Maestro Style

1. Performance

- a. Dimmers shall provide full-range, smooth and continuously variable control of light intensity.
- b. All dimmers shall be designed to minimize effects of changing line frequency.
- c. An actuator, accessible from the front of the unit, with the wallplate attached, shall activate a mechanical air-gap switch disconnecting power from the load during "safety off" condition; no leakage current shall be present at the fixture(s). This front accessible safety switch (FASS™) shall be separate from the tapswitch and raise/lower rocker.
- d. Dimmer shall be capable of on/off, raise/lower and mechanical air-gap "safety off" from up to 9 additional locations using aesthetically coordinated remotes.
- e. Controls shall meet ANSI/IEEE Std. C62.41-1980, tested to withstand voltage surges of up to 4000V and current surges of up to 200A without damage.
- f. Controls shall not be susceptible to damage or loss of memory due to static discharge.
- g. Controls shall be capable of operating at the rated capacity; this includes modified capacities for ganging configurations which require the removal of fins. Operation at rated capacity shall be possible across the full ambient temperature range, without shortening design lifetime.
- h. Controls shall operate in an ambient temperature range of 0°C (32°F) to 40°C (104°F).
- i. Controls shall incorporate power-failure memory. Should power be interrupted and subsequently returned, the lights will come back on to the same levels set prior to the power interruption. Restoration to some other default level is not acceptable.
- j. Dimmers shall be designed to reduce interference with radio, audio, and video equipment.
- k. To ensure a precise color match between all plastic parts, color variation of any gloss part shall not exceed a just noticeable level, delta E of 1, as defined in ASTM E 308-99.
- l. Visible parts of dimmers, switches, standard receptacles, cable jacks or any wallplate shall exhibit ultraviolet stability when tested as defined in ASTM D4674-89.
- m. All actuators shall be captured internally to the control.

- n. Remotes shall wire using conventional 3-way and 4-way wire runs.
 - o. Multi-location dimmers without neutral shall be capable of operating in either 3-way switch location.
 - p. Wall controls shall fit a decorator wallplate opening with a flush tapswitch. Dimmers and remotes shall have a small, raised rocker to the right of the tapswitch. Dimmers shall have seven discrete LEDs to the left of the tapswitch. Tapswitches shall remain flush in both the on and off state. Wall controls shall have a gloss finish.
 - q. A single tap of the tapswitch shall raise lights from off to the preset light level, or fade light to off. The raise/fade rate shall travel the dimming range in 3 seconds. A rapid double tap of the tapswitch shall raise lights to full-on in 1.5 seconds. Pressing and holding the tapswitch shall activate a delay fade-to-off function. Lights shall fade to off over 10 seconds.
 - r. The LEDs on the left side of the tapswitch shall indicate light level when the dimmer is on. When the dimmer is off, the LEDs shall glow softly as a night light with the preset level slightly brighter than any of the other LEDs.
 - s. The rocker on dimmers and remotes shall raise and lower the light level; this new light level becomes the preset. The rocker shall be able to raise the lights from off to low end and up, and shall lower the lights to low-end, not to off.
2. Incandescent Dimmers
 - a. Provide incandescent dimmers for direct control of up to 1000 watts.
 - b. Dimmers shall have a high-end of no less than 90% of line voltage.
 3. Electronic (Solid-State) Low Voltage (ELV) Transformer Dimmers
 - a. Provide ELV dimmers for direct control of up to 600 watts of electronic low voltage load.
 - b. Dimmers shall contain circuitry specifically designed to control the input of electronic (solid state) low voltage transformers. Dimmers using standard phase control shall not be acceptable.
 - c. Dimmers shall have a resettable overload protection that automatically shuts off when dimmer capacity is exceeded. Protection methods that are non-resettable or require the device to be removed from the wall to reset shall not be acceptable.
 - d. Dimmers shall be designed to withstand a short, per UL 1472 section 5.10, between load hot and either neutral or ground without damage to the dimmer.
 - e. Dimmers shall have a high-end of no less than 90% of line voltage.
 4. Magnetic Low Voltage (MLV) Transformer Dimmers
 - a. Provide MLV dimmers for direct control of up to 1000VA of magnetic low voltage load.
 - b. Dimmers shall contain circuitry specifically designed to control and provide a symmetrical AC waveform to the input of magnetic low voltage transformers per UL1472 section 5.11.
 - c. Dimmers shall not cause a magnetic low voltage transformer to operate above the transformers rated operating current or temperature.
 - d. Dimmers shall have a high-end of no less than 90% of line voltage.
 5. Remote dimming modules for high power loads
 - a. Where lighting loads exceed the full rated capacity of single dimmers, provide a Maestro incandescent dimmer driving high power modules. High power module and dimmer shall be from the same manufacturer to ensure compatibility.
 - b. High power modules shall be remotely mounted.
 - c. High power module shall be rated and UL listed for control of incandescent, electronic low voltage, magnetic low voltage, neon/cold cathode, and fluorescent loads in increments of 2,000 Watts up to 30,000 Watts.
 6. Remotes for multi-location control
 - a. Remotes shall provide multi-location control and mechanical air-gap switch. All tapswitch and rocker functions shall operate from each remote. Up to 9 remotes may be used with a Maestro dimmer.
 - b. Remotes shall not have any LEDs.
- B. Accessories Lutron Claro Style
 1. Switch Components Lutron Claro Style
 - a. Switches shall provide on/off control of any 120/277 VAC load up to 15A. Switches shall be UL Listed as general-use AC switches, Lutron Claro style.
 - b. Switches shall be available in single-pole, 3-way and 4-way configurations.
 2. Receptacle Components Lutron Claro Style
 - a. All receptacles shall be UL Listed, CSA and NOM approved.

- b. Receptacles shall be two pole, three wire ground and rated for 15A at 125VAC. All receptacles shall be NEMA configuration type 5-15R.
 - c. Ground-fault interrupter receptacles shall be Lutron Claro style with two-pole, three-wire ground and rated 15A at 125VAC Configuration shall be of the duplex type with rectangular NEMA WD-6 design. Receptacles shall have a 5 milliampere ground-fault trip level with "test" and "reset" buttons.
3. Telephone, Cable, Fiber and BNC Jacks Lutron Claro Style
- a. Contractor shall provide an appropriate barrier (partition) to isolate jacks from high-voltage wiring when ganged together. This complies with NEC Articles 800-3 and 820-13.
 - b. Telephone jack shall be designed to mate with standard 4- or 6-conductor modular jacks, and be compatible with 2, 4, or 6 conductor lines. Telephone jacks shall meet FCC Part 68, paragraph F standards to ensure compatibility with U.S. telephone systems.
 - c. Cable jacks shall be the coaxial type, designed for use with standard 75-Ohm cables.
 - d. Fiber jacks shall meet EIA/TIA-568-B.3 specifications for optical, mechanical and environmental performance.
 - e. BNC connectors shall be F/F couplers.
- C. Wallplates Lutron Claro Style
- 1. Wallplates shall be manufactured from durable polycarbonate plastic with gloss finish, and shall attach to the basic components without using exposed hardware or screws.
 - 2. Multigang wallplates shall provide a continuous, seamless cover for up to six-ganged decorator-style control and accessory combinations with no exposed hardware or screws.
 - 3. Multigang wallplates shall include an adapter plate for proper device alignment and wallplate attachment.
 - 4. Control, accessory and wallplate profiles shall not exceed .30 inches from wall surface to faceplate front surface.
 - 5. To ensure a precise color match between all plastic parts, color variation of any gloss part shall not exceed a just noticeable level, delta E of 1, as defined in ASTM E 308-99.
 - 6. Visible parts of dimmers, switches, standard receptacles, cable jacks or any wallplate shall exhibit ultraviolet stability when tested as defined in ASTM D4674-89.

2.03 SOURCE QUALITY CONTROL

- A. All dimming controls shall be 100% function tested at the time of manufacture. Statistical sampling plan shall not be acceptable.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Contractor shall furnish all devices (dimmers, accessories, & wallplate kits), labor and other services necessary for the proper installation of the devices as indicated on the drawings and specified herein.
- B. Contractor shall be responsible for derating dimmer capacity if side sections are removed.
- C. Contractor shall run separate neutral wires in 120/208 VAC installations.
- D. Contractors shall install all backboxes with a minimum wallbox depth of 2.5 inches.
- E. Devices shall be installed utilizing manufacturer's recommended application, wiring and installation instructions.
- F. Contractor to provide seamless wallplate covers per specification 2.02 for all devices ganged in a common box. Contractor shall provide barriers within the box where required by code.

3.02 FIELD QUALITY CONTROL

- A. Twenty-four hours a day, seven days a week, global customer service and technical hotline available.
- B. Supplemental information shall be provided by manufacturer's Internet site.

Lutron Electronics Co., Inc.
 7200 Suter Road • Coopersburg, PA 18036 U.S.A.
 Made and printed in U.S.A. 2/03

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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-W3SN-XX*	3 Scene with Raise/Lower Keypad
RKA-W3SN-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-W3SN



HQWA-W4BSN



HQWA-W4SN



HQWA-W5BN



HQWA-W5BRLN



HQWA-W5BIRN



HQWA-W6BN



HQWA-W6BRLN



HQWA-W7BN



HQWA-W1RLDN



HQWA-W2RLDN



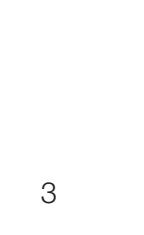
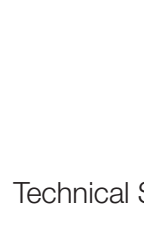
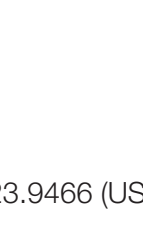
HQWA-W3BDN

*"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-W3SI-XX*	3 Scene with Raise/Lower Keypad				
RKA-W3SI-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-W5BIRI-XX*-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				

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

HomeWorks® QS Wired seeTouch® Architectural Keypads

Specifications

Model Numbers	See pages 2 and 3 for complete lists of model numbers.
Power	24–36 V $\overline{=}$ 30 mA SELV/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 $\overline{=}$
Regulatory Approvals	UL, cUL, 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	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 3 1/2 in (89 mm) deep, 2 1/4 in (57 mm) deep minimum, or low-voltage mounting bracket
Wiring	Control wire must be 1 pair 18 AWG (1.0 mm ²) SELV/PELV/NEC® Class 2 for power and 1 pair 22 to 18 AWG (0.5 to 1.0 mm ²) SELV/PELV/NEC® Class 2 twisted/shielded for data (see Wiring).
Warranty	www.lutron.com/TechnicalDocumentLibrary/Warranty.pdf

Design Features

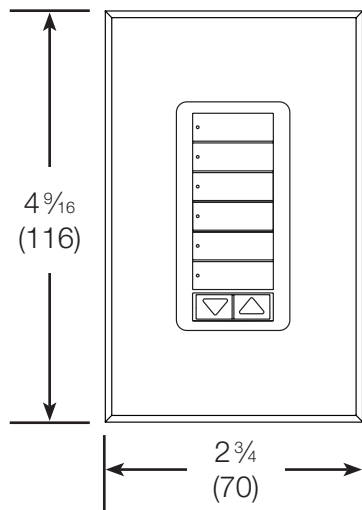
- Green status LEDs.
- Backlit button/engraving.
- Field-changeable Replacement Kits make for easy customization.
- All terminal block inputs are over-voltage and miswire-protected against wire reversals and shorts.
- Use Lutron® Nova T★® wallplates. Wallplates are included with the keypad.
- Lutron® 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

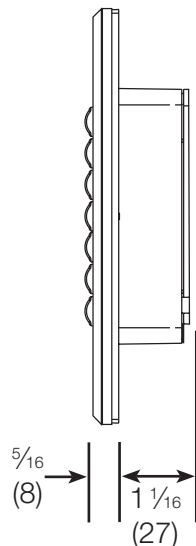
Dimensions

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

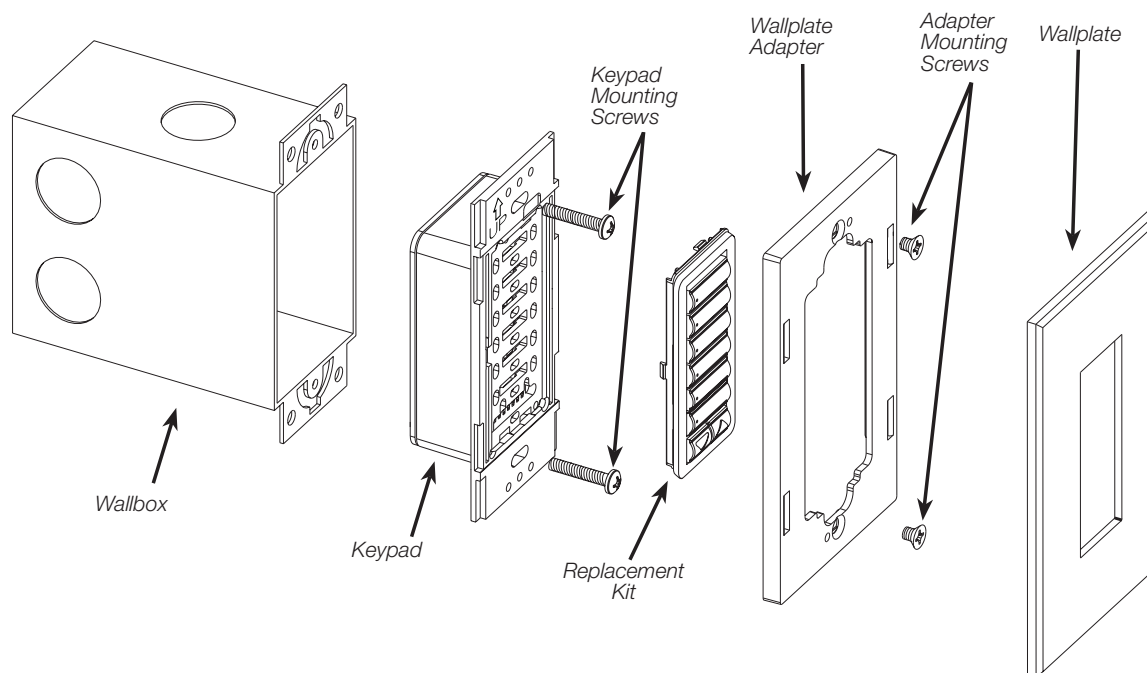
Front View



Side View

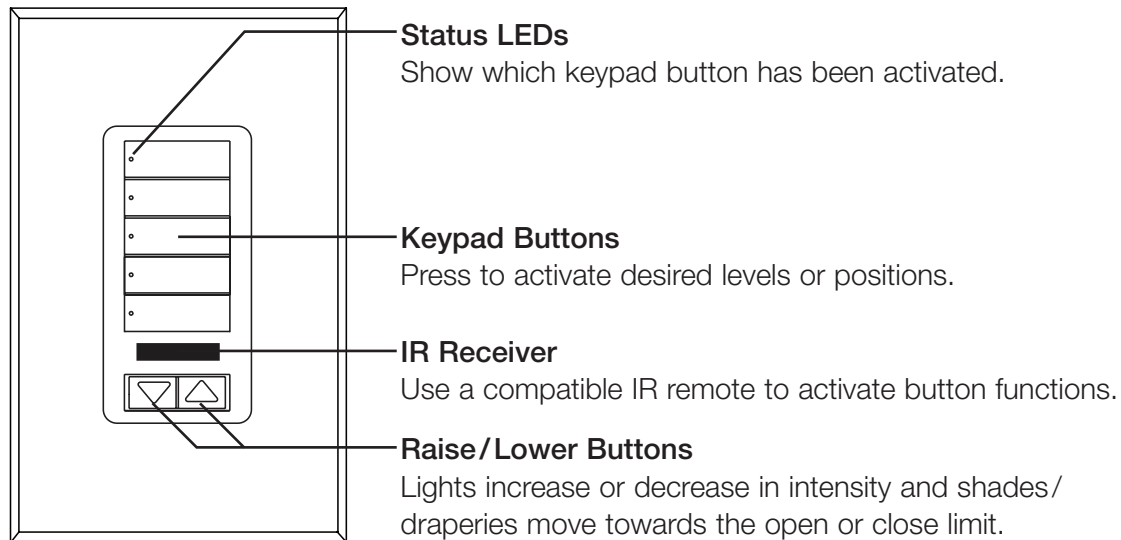


Mounting and Parts Identification



HomeWorks® QS Wired seeTouch® Architectural Keypads

Operation



HomeWorks[®] QS Wired seeTouch[®] Architectural Keypads

Wiring

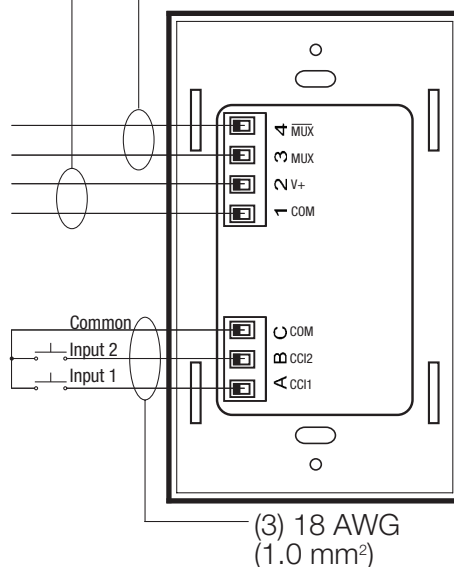
Wiring Notes

- 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.

SELV/PELV/NEC[®] Class 2 control wiring:

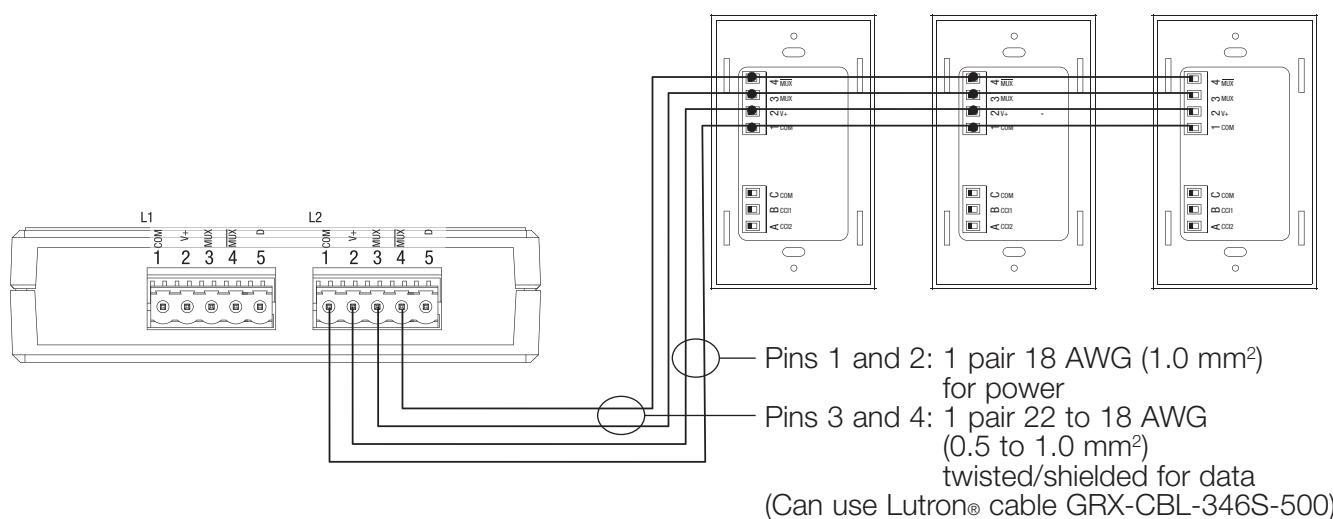
18 AWG (1.0 mm²)

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



Contact Closure Input

- 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_{CC} and sink 3.0 mA
 - Open collector PNP or active-high on-state voltage must be greater than 12 V_{CC} and source 3.0 mA
- Keypad is miswire protected up to 36 V_{CC}.
- Outputs must stay in the closed or open states for at least 40 msec 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



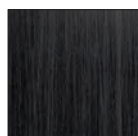
Bright Brass
BB



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

WIRELESS RGBW MULTI-ZONE LED WALL CONTROLLER

MODEL: AL-CTLR-RGBW-3ZRF-WMT



Description

This permanently mounted in-wall controller allows you to control your RGBW LED fixtures, providing full color and brightness control. Simply connect this unit to its receiver (or control box), your RGBW LED fixtures and a power supply, mount your wall plate, and start controlling your fixture. Choose any color output using the touch wheel and easily turn your dedicated white chips on and off.

This RGBW LED controller is compatible with all of aspectLEDs RGBW LED fixtures. Please note, this remote controller requires a Wireless RGBW 4 Channel LED Controller (AL-CTLR-RGBW-4CP) base unit. This in-wall controller communicates with its receiver wirelessly, but must be hardwired with low voltage wire to your power supply. To pair this controller with its base unit, turn the in-wall unit on, then the desired zone number on the remote (1-3). Press the learning key on the base unit, then touch the color wheel. Your lights should blink, and your controller should be paired.

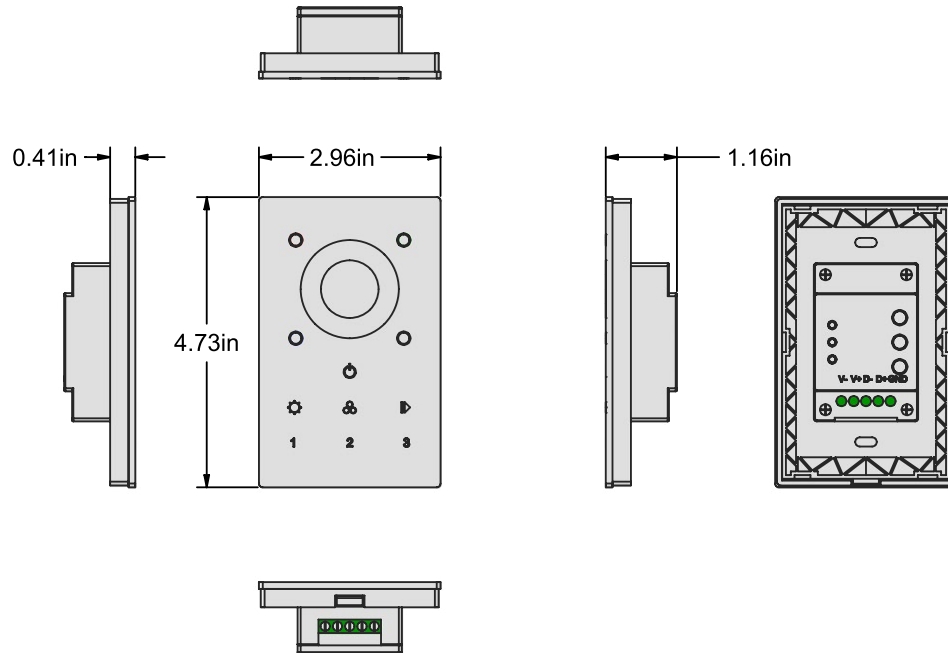


[Learn more](#)

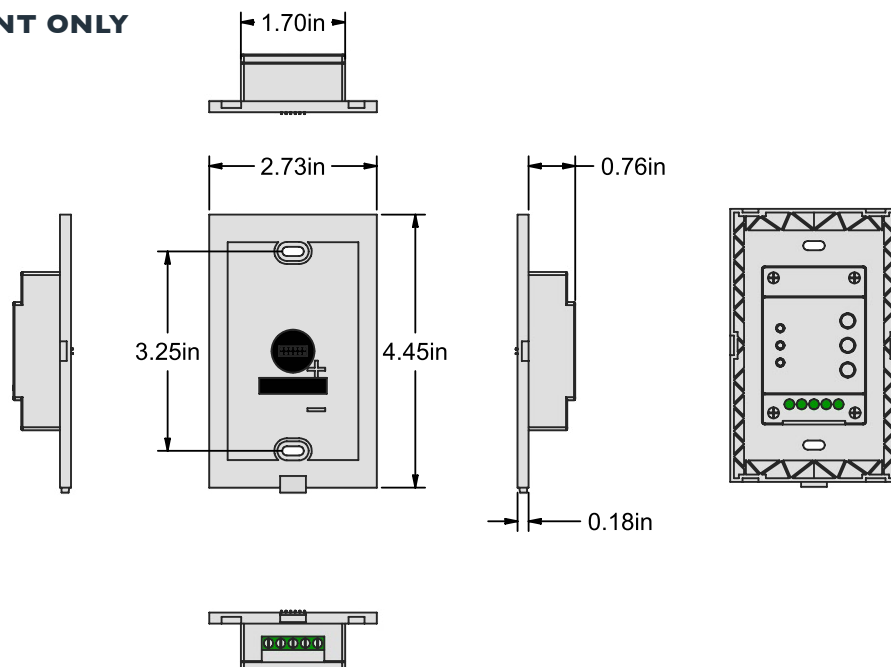
	AL-CTLR-RGBW-3ZRF-WMT
In-Wall Remote Dimensions	4.73" (120.1mm) long 2.96" (75.2mm) wide 1.16" (29.5mm) thick
RF Receiver/Control Box	Wireless RGBW 4 Channel LED Controller with Channel Pairing
Input Voltage	12VDC or 24VDC
Power Source	12VDC or 24VDC power supply
Output Signal	Wireless (RF) Remote Control, DMX
Compatible Power Supplies	Non-dimmable power supplies
Weight	0.9 lbs
Warranty	1 Year

Dimensions

FACEPLATE & BOX MOUNT



BOX MOUNT ONLY



Infrared Ceiling Mount Sensor

The LOS-CIR Series passive infrared ceiling-mount 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 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 (PIR) 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 ft² to 1500 ft² (42 m² to 140 m²) coverage when mounted on an 8 ft to 12 ft (2.4 m 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

Model	Color	Coverage	Field of View
LOS-CIR-450-WH	White	450 ft² (42 m²)	360°
LOS-CIR-1500-WH	White	1500 ft² (140 m²)	360°

Self-Adaptive Feature

The LOS-CIR Series sensors provide 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

Regulatory Approvals

- UL® and cUL® listed

Power

- Operating voltage: 20 – 24 V_{AC}, IEC PELV/NEC® Class 2
- Operating current: 33 mA nominal
- Control output: 20 – 24 V_{AC} active high logic control signal with short-circuit protection, open collector when unoccupied

Environment

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

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

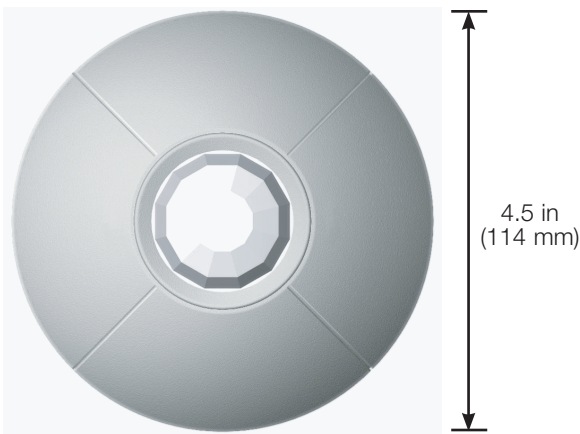
Housing

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

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)

Dimensions



Front View



Side View

Job Name:

Model Numbers:

Job Number:

Wiring: System Control

Power packs may be required when interfaced to Lutron® lighting control systems. If more than 1 occupancy sensor is connected to the same input, a power pack is required. A maximum of 3 occupancy sensors can be connected to the same input. If more than 3 sensors are required per input, use one of the following models: LOS-CDT-500R-WH, LOS-CDT-1000R-WH, or LOS-CDT-2000R-WH.

Power Supply Options

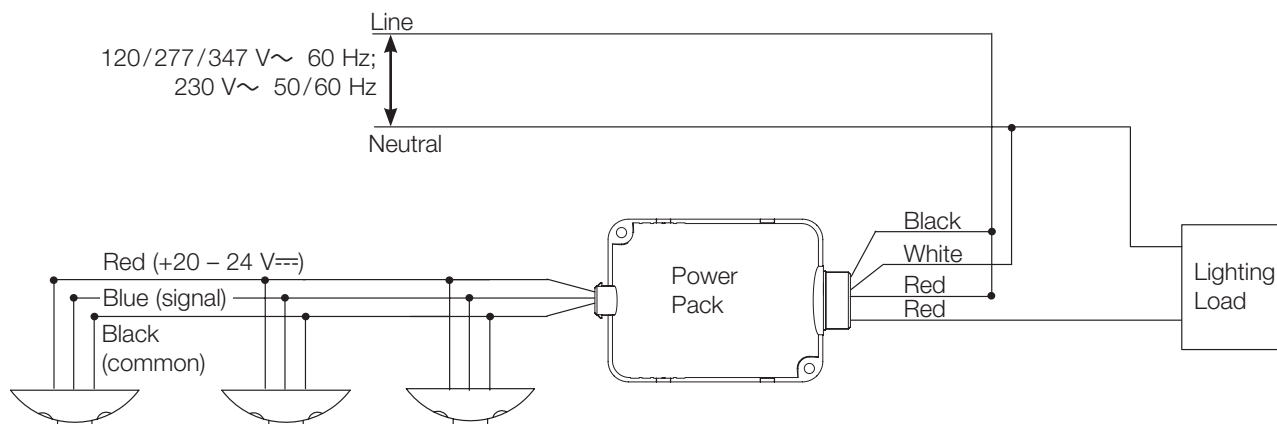
Lutron® Lighting Control System	Power Pack Required?
Digital microWATT™	No
EcoSystem®	No
Energi Savr Node™	No*
GRAFIK 5000™/6000®/7000™	No, when used with seeTouch® wallstations with occupancy sensor connections.
GRAFIK Eye® 3000/4000	Yes
GRAFIK Eye® QS	No*
HomeWorks®	Yes
HomeWorks® QS	No*
LCP128™	No, when used with seeTouch® wallstations with occupancy sensor connections.
microWATT®	No
Quantum®	No*
RadioRA®	Yes
RadioRA® 2	Yes
Softswitch128®	No, when used with seeTouch® wallstations with occupancy sensor connections.

* Some system components do not supply external power for occupancy sensors. Refer to individual product specifications for more information.

Job Name:	Model Numbers:
Job Number:	

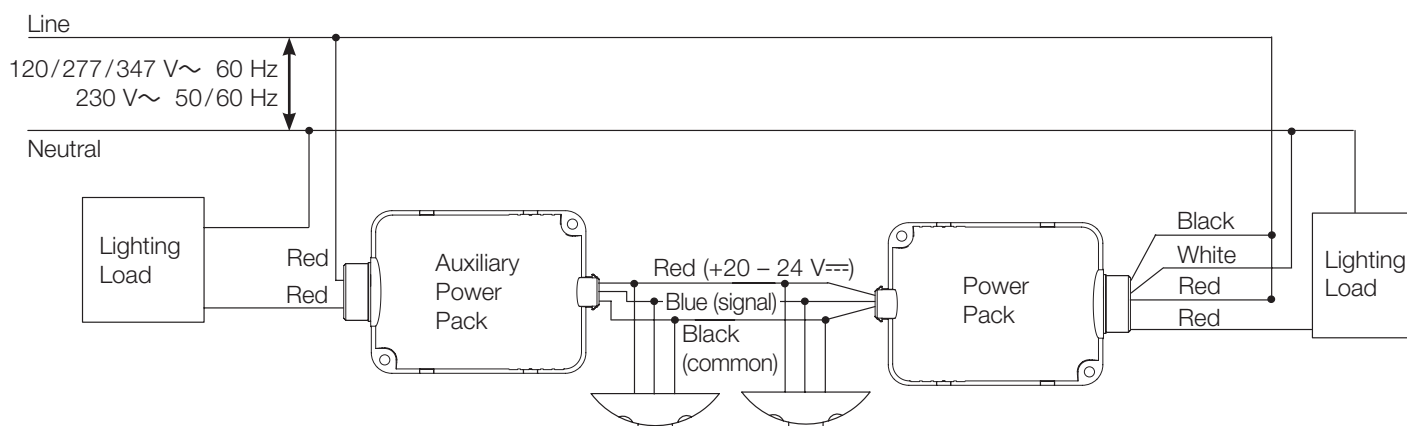
Wiring: Stand-Alone Control

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

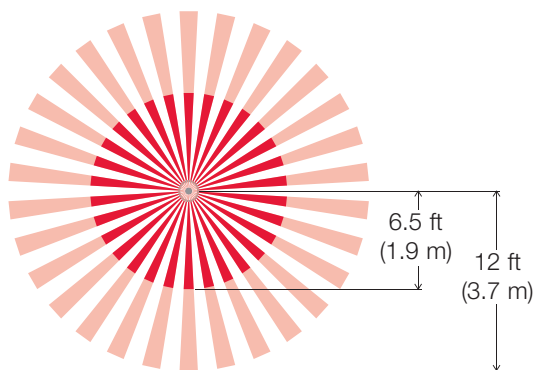
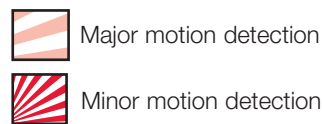
Sensor Setup

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

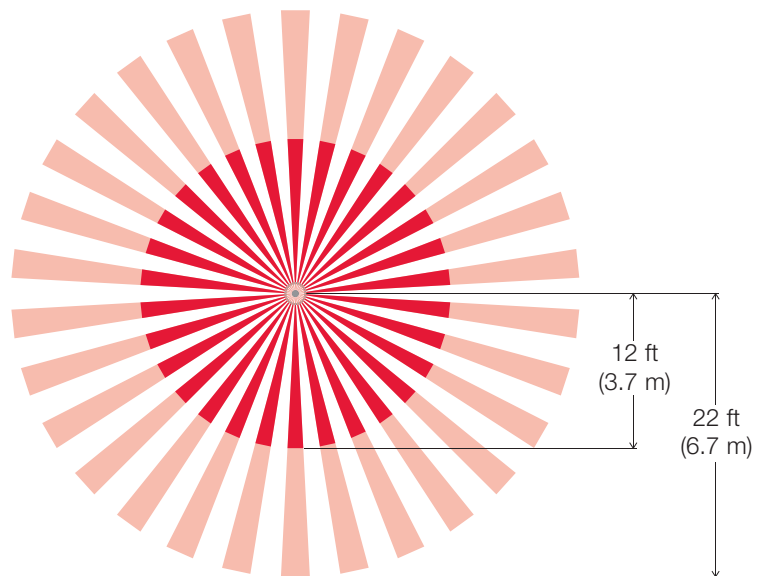
Sensor Placement

- The occupancy sensor must have an unobstructed view of the room. Do not mount behind or near tall cabinets, shelves, indirect hanging fixtures, etc.
- Do not place sensor within 4 ft (1.2 m) of air vents, air handlers, windows, fans, etc., as this may cause false triggering.
- Closely follow the diagrams shown concerning major and minor motion coverage. The sensor can detect major motion (e.g. person taking a half-step) at a greater distance than it can detect minor motion (e.g. writing at a desk or reading a book).
- May not detect occupancy with no significant difference between ambient and body temperatures.

Range Diagrams



LOS-CIR-450



LOS-CIR-1500

Job Name:

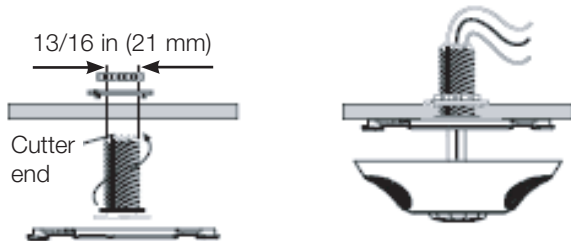
Model Numbers:

Job Number:

Mounting

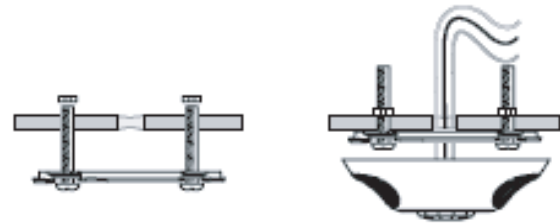
Normal Mounting

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.

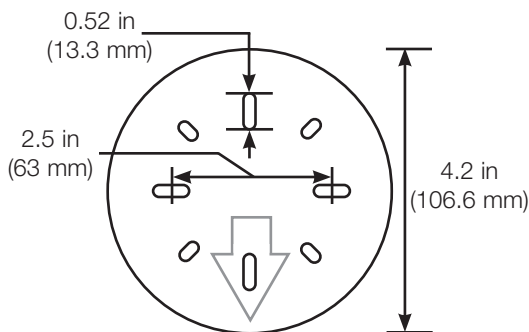


Mounting to Non-Standard Ceiling or Fixture

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.



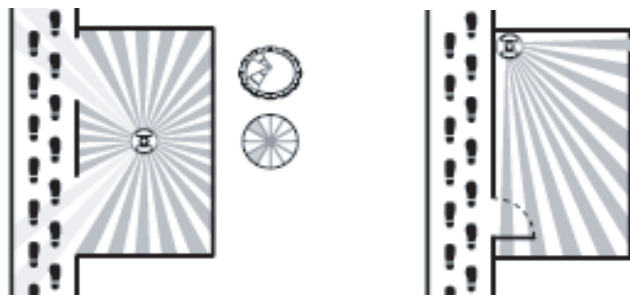
Mounting Plate Dimensions



Wire Lengths

Number of Sensors	1	2	3	1	2	1
Number of Auxiliary Power Packs	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

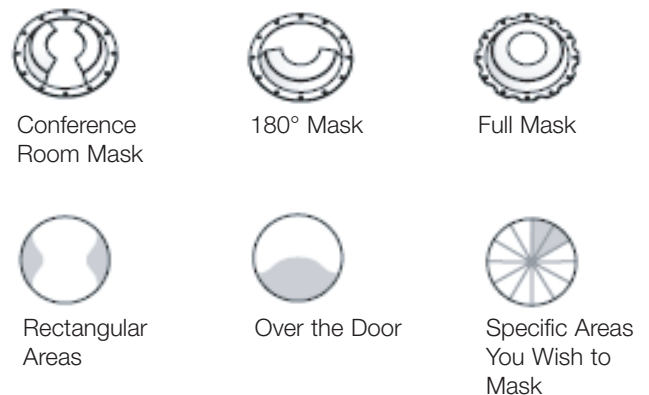
Using the Infrared Mask



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

Corner Ceiling Mount
(No mask needed)

Typical Mask Patterns



Job Name:

Model Numbers:

Job Number:

Sensor Adjustments

Override Settings

Auto/Manual

Threshold

LED Motion Indicator

Reset Learned Settings

OFF

ON

A

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

Strong Airflow Compensation

Over Doorway Installation

Timer Adjust

Auto Sensitivity

OFF

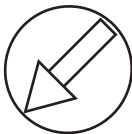
ON

B

	Off (Default)	On
1	Disable Compensation (Normal)	Enable Compensation
2	No (Normal)	Yes (Use increased turn-on threshold)
3	Adjust Timer Automatically	Use Manual Setting (No adjustment)
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 in (1.5 mm) clockwise to make the setting slightly above minimum (just above the 8 minute setting).

Factory Settings

Red:
Infrared
sensitivity
75% default

ON

ON

A

1
2
3
4

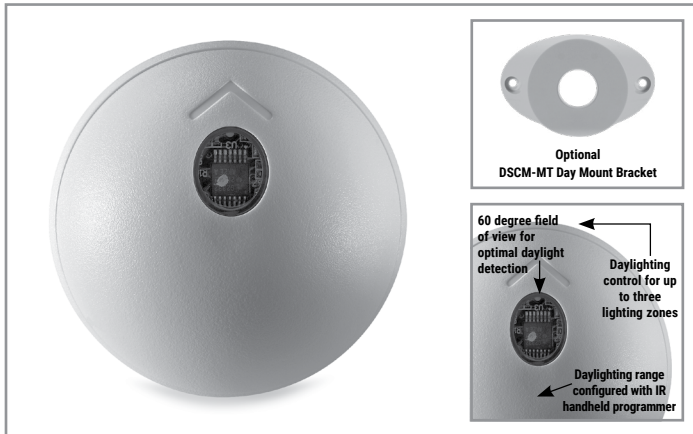
B

1
2
3
4

Black:
Timer
8 min

Job Name:	Model Numbers:
Job Number:	

Project		Catalog #		Type	
Prepared by		Notes		Date	



Greengate

Open Loop

Daylight Sensor/IR Receiver

Interactive Menu

- Order Information page 2
- Additional Resources page 2
- Wiring Diagrams page 3
- Connected Systems page 5
- Product Warranty

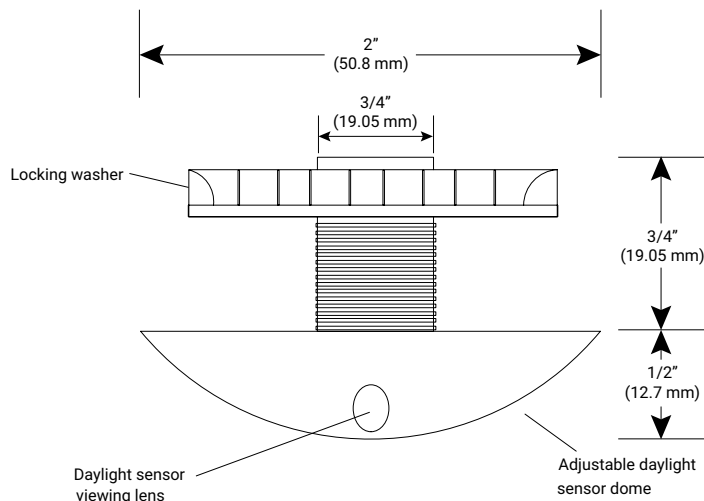
Product Certification



Top Product Features

- RJ45 connection
- Easily installed in suspended fixture or drop ceiling
- Three light sensor ranges (3-300 lux, 30-3000 lux, 300-30000 lux)
- Feedback LED
- Mounting bracket for installation in light well or hard ceiling

Dimensional and Mounting Details



additional product diagrams

Order Information

SAMPLE ORDER NUMBER: **DSRC-FMOIR, DSCM-MT**

Catalog Number	Description	Connection	Range
DSRC-FMOIR	Open Loop Daylight Sensor/IR Receiver (GGRC-COUPLER included)	RJ45	Low (3-300 lux) High (30-3000 lux) Direct Sun (300-30000 lux)
DSCM-MT	Daylight Sensor Mounting Bracket		

Optional Accessories

Room Controller	Description
HHPRG-RC	Handheld daylight zone remote programmer
HHPR-RC	Room Controller Personal Remote

DLVP	Description
LVHH-01	DLVP Programming Remote
LVHH-02	DLVP Personal Remote

Product Specifications

Electrical

- Class 2, LPS

Mechanical

Size: Sensor Head: 2" W x 1/2" H (50.8 mm x 12.7 mm)

Mounting Stem: 3/4" H x 3/4" W (19.05 mm x 19.05 mm)

Environment:

- **Operating temperature:** 32°F to 104°F (0°C to 40°C)
- **Relative humidity operating:** Less than 95%, non-condensing
- For indoor use only

Mounting: Height and position changes depending on application.

Voltage

Voltage:

- 24 VDC supplied controller

Connection:

- RJ45

Light Sensor Range

- Low: (3-300 lux)
- High: (30-3000 lux)
- Direct Sun: (300-30000 lux)

Status Indicator

- Multi-function Red and Green LEDs
- Selectable 5, 15, 30 minutes

Standards/Ratings

- cULus Listed - Energy Management Equipment (UL916)
- UL 508 Listed

Warranty

Five year warranty standard

Overview

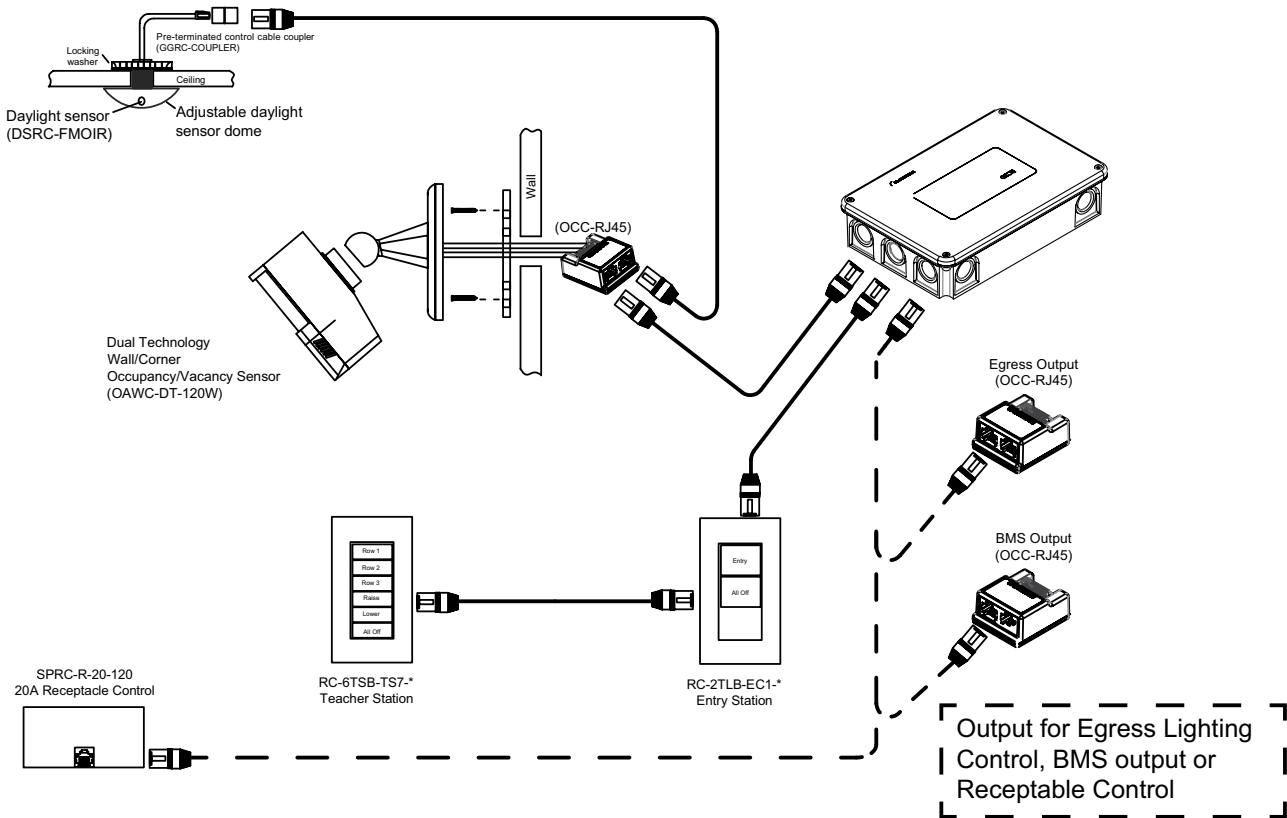
The DSRC-FMOIR is an open loop daylight sensor that measures the natural light contribution in order to automatically adjust lighting zones. It is part of the Room Controller and DLVP system and provides three easily distinguished light levels, Low (3-300 lux), High (30-3000 lux) and Direct Sun (300-30000 lux). The sensor range can be adjusted using the IR handheld programmer.

The DSRC-FMOIR is powered by the Room Controller or DLVP power module Class 2 power supply and is pre-configured to automatically adjust the dimming zones based on the natural light contribution. The DSCM-MT mounting bracket allows the daylight sensor to be mounted to a hard ceiling or a light well. The handheld remote programmer simplifies light sensor range setting by using simple language to describe the ranges (Low, High, Direct Sun) in addition to standard foot candle values. Individual zone control buttons allow the lighting levels and dimming curves to be adjusted in the Room Controller unit via the Daylight Sensor using the HHPRG-RC personal remote. Additional information on preset dimming curves and adjustments can be found in the installation instructions for Room Controller.

Low-voltage devices are connected using pre-terminated control cables (ordered separately).

Wiring Diagrams

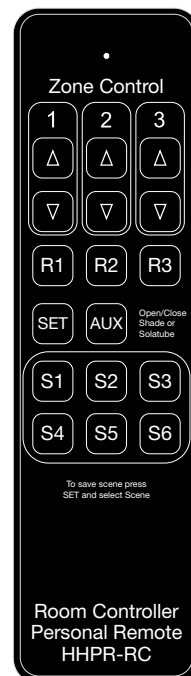
Room Controller System Architecture Topology



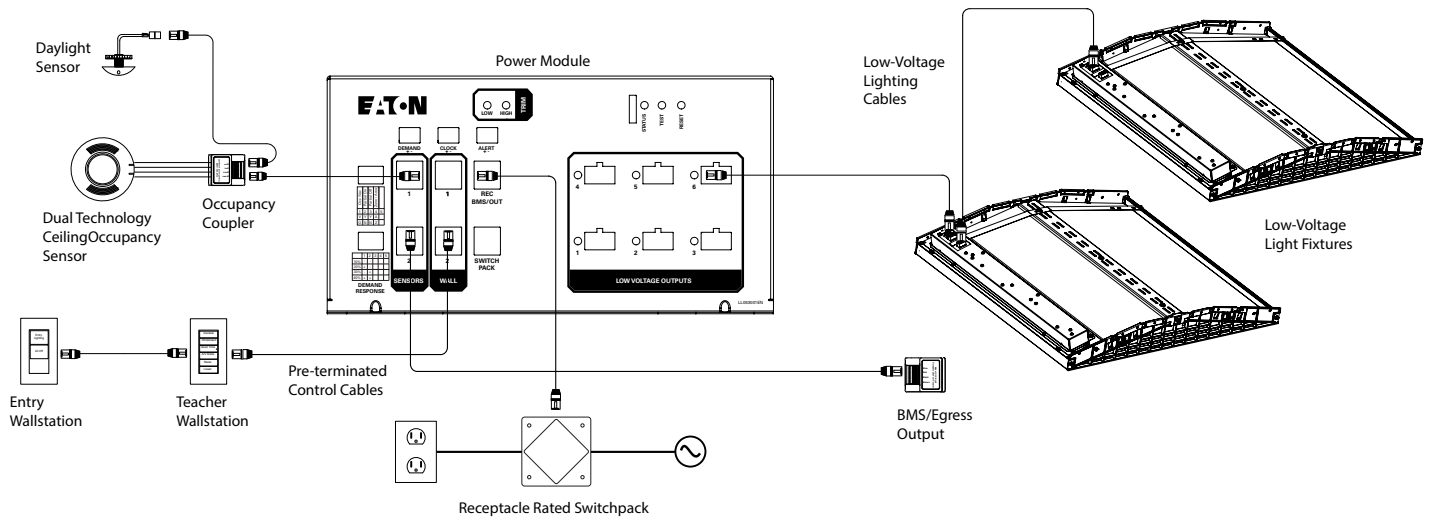
Handheld Remote Programmer HHPRG-RC

Personal Remote HHPR-RC

Daylight Settings



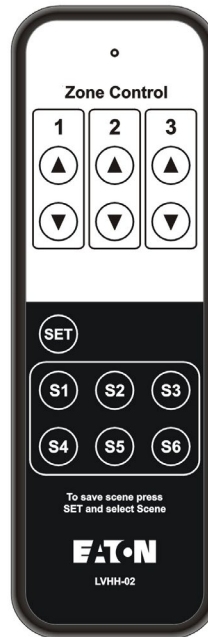
DLVP System Topology



Programming Remote (LVHH-01)

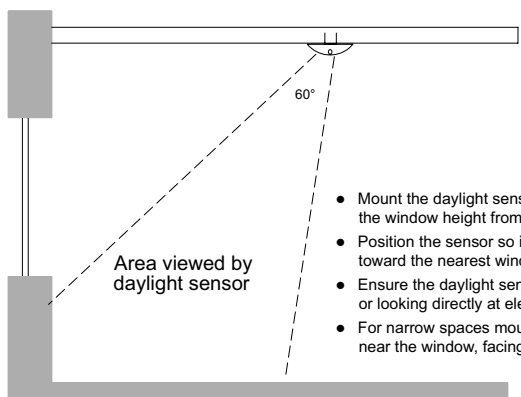


Personal Remote (LVHH-02)



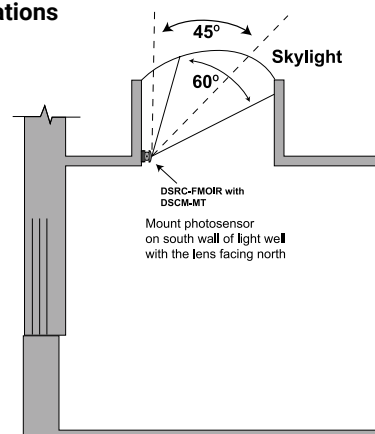
Application

Sidelight Applications



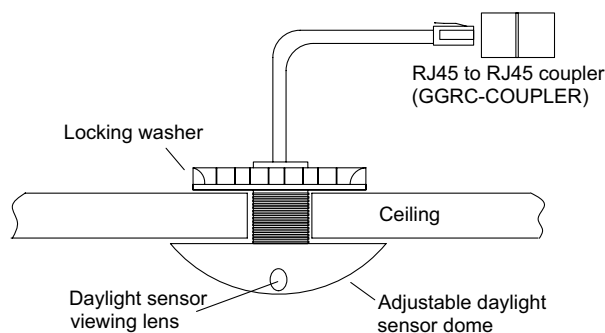
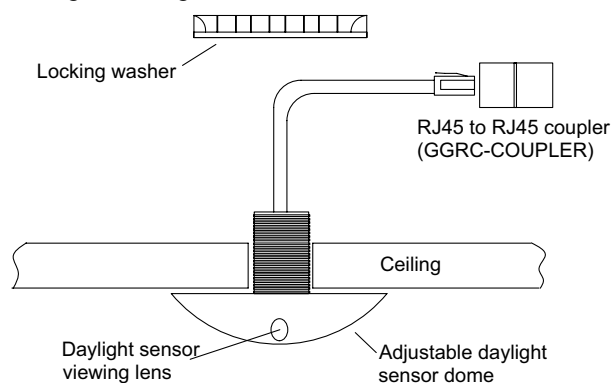
- Mount the daylight sensor one to two times the window height from the window wall.
- Position the sensor so its arrow is pointed toward the nearest window.
- Ensure the daylight sensor is not obstructed or looking directly at electric light.
- For narrow spaces mount the daylight sensor near the window, facing into the space.

Skylight Applications

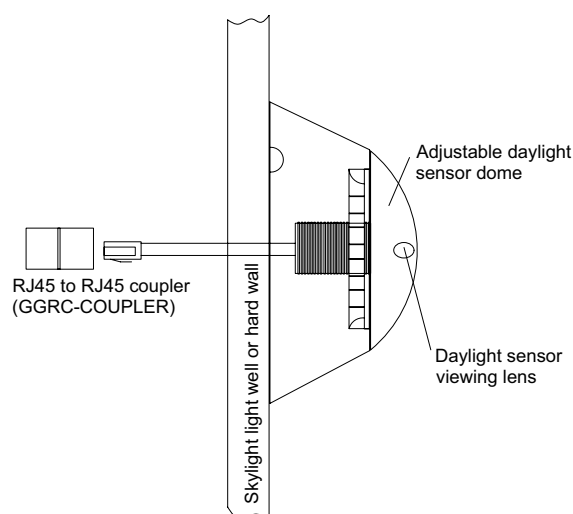
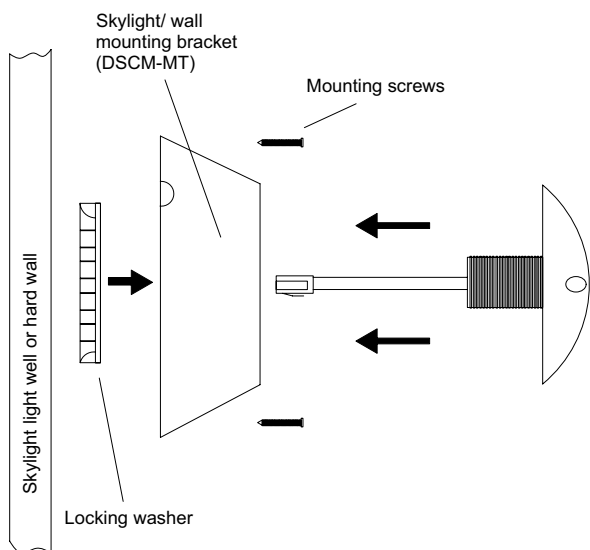


Mounting

Ceiling Mounting



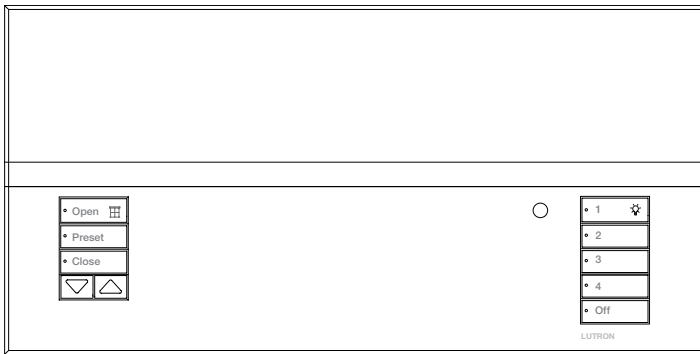
Light Well Mounting with DSCM-MT



Control Systems

- Greengate

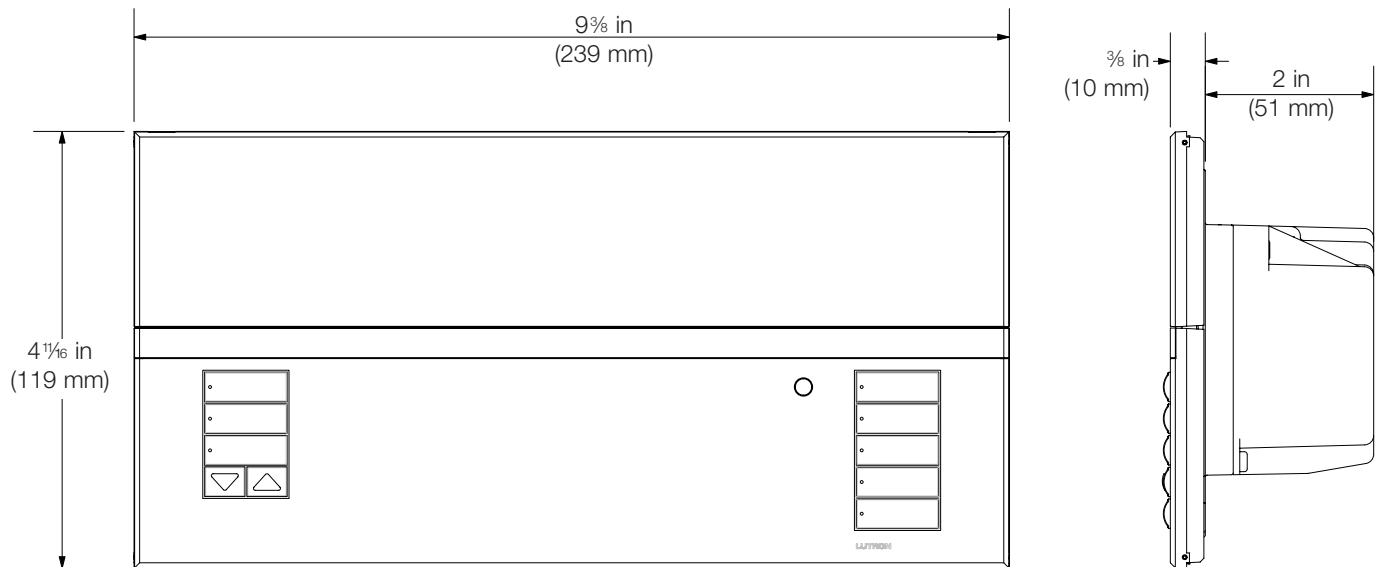
GRAFIK Eye QS Control Unit



Description

GRAFIK Eye QS is the premier energy-saving light and shade control. The GRAFIK Eye QS control unit includes an astronomic timeclock, intuitive lighting presets, and direct shade control. Additionally, the GRAFIK Eye QS control unit is compatible with all Lutron wired QS products and systems, including Quantum systems.

Mechanical Dimensions



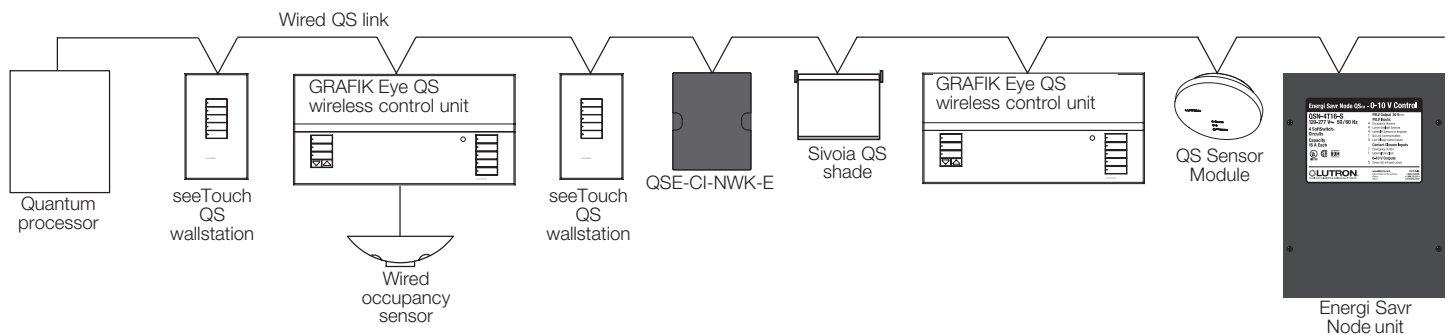
Front View

Side View

Fits into a 4-gang U.S. backbox, 3 1/2 in (90.4 mm) deep (Lutron P/N 245-254) or 3 in (76.2 mm) deep (Lutron P/N 241-400)

System Topology

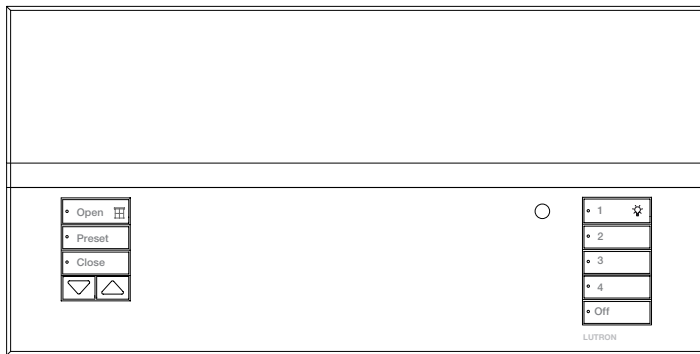
Example of Wired System



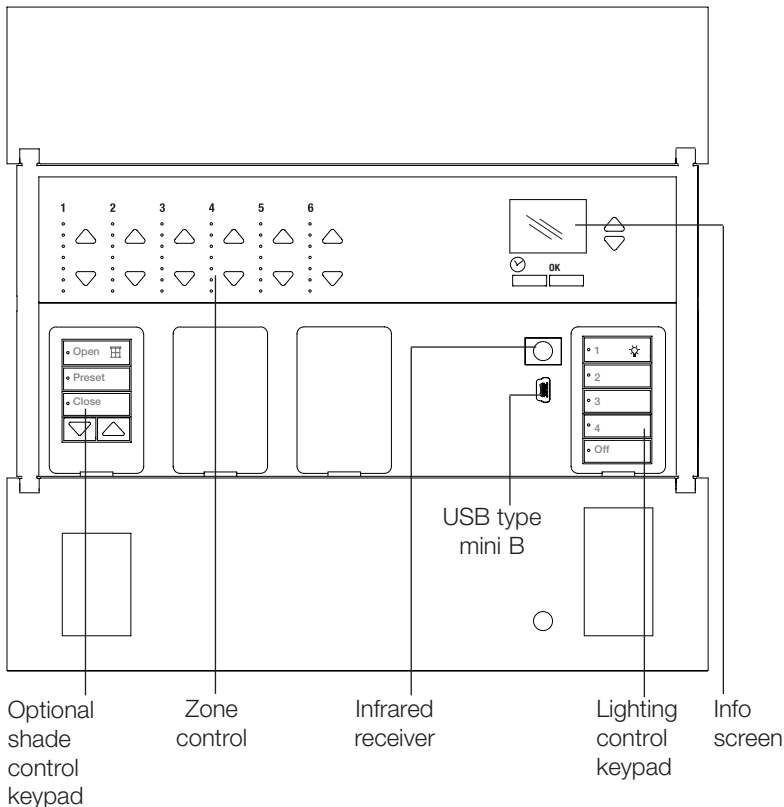
Job Name:

Model Numbers:

Job Number:



Note: General Engraving (-EGN) shown.



Features

- Pushbutton recall of four preset lighting scenes, plus Off.
- Sixteen (16) total available scenes, plus Off scene.
- Zones can control many light source types directly or through power modules.
- Optional integrated shade control buttons, which can also be added to the unit after installation.
- Master override buttons to raise and lower all lights.
- Allows setup of lighting scenes and shade presets using buttons on the control unit.
- Built-in infrared (IR) receiver.
- External IR connection.
- Built-in astronomic timeclock.
- Info screen shows zone light level percentage, energy savings, zone labeling, and programming.
- Lockout option prevents accidental changes.
- Occupancy sensor input and 24 V_{AC} power for one occupancy sensor.
- QS communication link for seamless integration of lights, motorized window treatments, occupancy sensors, wallstations, and integration interfaces.
- Compatible with all Lutron QS system components.
- Backlit buttons with engraving make unit easy to locate and operate.
- Available in a variety of colors and finishes.

Job Name:

Model Numbers:

Job Number:

Specifications

Input Power

- 120–127 V~ 50/60 Hz
- 220–240 V~ 50/60 Hz

Listings (120–127 V~)

- cULus
- NOM
- CEC (Title 24)

Environment

- 32 to 104 °F (0 to 40 °C).
- Relative humidity less than 90% non-condensing.

Lighting Sources/Load Types

- Zones on Energi Savr Node products wired to the same QS link
 - Zones on Energi Savr Node with Softswitch
 - Zones on Energi Savr Node for 0–10 V
 - Zones on Energi Savr Node with EcoSystem
 Please refer to “Remote Zone Mapping” for important information.
- DMX channel(s) through DMX output interface (QSE-CI-DMX). Please refer to “Accessory Controls: DMX Output Interface”

Controls the following lighting sources with a smooth, continuous square law dimming curve or on a full conduction non-dim basis:

- Incandescent
 - Halogen
 - Magnetic low-voltage transformer
 - Lutron Tu-Wire electronic fluorescent dimming ballast
 - Lutron Hi-lume 2-wire LTE LED driver
 - Advance Mark 10[®] electronic dimming ballast
 - Neon and cold cathode
 - Non-dim (incandescent, magnetic low-voltage, Tu-Wire, or neon/cold cathode)
 - Cree LR4/6, 120 V~ fixtures (for loading capacities, please refer to the LED report card located at www.lutron.com/LEDtool)
- Please refer to “Capacities” for more information.

Controls the following lighting sources with a smooth, continuous square law dimming curve or on a full conduction non-dim basis through separate Lutron power interfaces:

- Electronic low-voltage transformers (use ELV or Phase-Adaptive power module: PHPM-PA-DV-WH/ PHPM-PA-120-WH)
- Lutron 3-wire controlled electronic fluorescent dimming ballasts (use fluorescent 3-wire power module: PHPM-3F-DV-WH/ PHPM-3F-120-WH)
- Lutron 3-wire controlled LED drivers (use fluorescent 3-wire power module: PHPM-3F-DV-WH/ PHPM-3F-120-WH)
- Non-dim (use switching module: PHPM-SW-DV-WH)
- 0–10 V (use TVI)

Note: A zone may be programmed to control only one load type at a time.

Key Design Features

- Lightning strike protection meets ANSI/IEEE standard 62.41-1980. Can withstand voltage surges of up to 6000 V~ and current surges of up to 3000 A.
- Tested to withstand 16 kV electrostatic discharge without damage or memory loss.
- RTISS-equipped: Compensates in real time for incoming line voltage variations (no visible flicker with +/-2% change in RMS voltage per cycle, and +/-2% Hz change in frequency per second).
- Power failure memory retains programming and light level settings for up to 10 years in the event of a power loss.
- The GRAFIK Eye QS control unit supplies 3 Power Draw Units (PDUs) on the QS link.
For complete information, see the **Power Draw Units on the QS Link Spec** (369405) on www.lutron.com.
- Faceplate is hinged at the top and bottom, and stays open at 180° for ease of access.

Scene and Shade Buttons

- Large, rounded buttons are easy to use.
- Backlit buttons with optional engraving make it easy to find and to operate the control unit in low light conditions (backlight can be disabled).
- Optional button engraving is angled up to the eye for easy reading.
- Predefined label stickers are included for field labeling.
- 4 preset lighting scenes, plus Off, are accessible from the front of the control unit.
- 12 additional scenes are stored in the control unit and are accessible from the integral timeclock, seeTouch QS wallstations, and QS interfaces.
- Light levels fade smoothly between scenes. Fade time can be set differently for each scene: 0 to 59 seconds, or 1 to 60 minutes. Maximum fade time from Scene Off is 3 seconds.

Job Name:	Model Numbers:
Job Number:	

Specifications

Shade Control

- The GRAFIK Eye QS control unit can include up to 3 shade button columns. Each column has backlit open, preset, close, and raise/lower buttons.
- Each shade button column can be programmed to operate one shade or a group of shades. (Shades may be assigned to more than one shade button column).
- Faceplates are available with 1, 2 and 3 shade button columns.

Zone Control

- Each zone has a dedicated raise and lower button to adjust the zone.
- Each zone has a dedicated 7 LED bar graph for level status. Percentage of light level and energy saved is displayed on the info screen.
- All zone information has blue backlit LEDs. Backlight turns off when idle for 30 seconds.
- High-end and low-end trim settings are adjustable per zone (high end from 99 to 55%; low end from 45 to 1%).
Note: Trim for remote zones must be adjusted locally on the Energi Savr Node unit.
- Each zone is programmable to only one load type at a time.

Info Screen

- OLED (organic LED) screen is viewable from all angles.
- Screen turns off when idle for 30 seconds.
- Programmable zone labels.
- Programmable scene labels.
- Status of real-time zone percentage and energy savings.
- Programmable timeclock schedules.
- Programmable shade labels.
- Selectable display languages:
 - English – Spanish – French
 - Italian – German – Portuguese

Astronomic Timeclock

- Integral to all units.
- 7 daily schedules available.
- One available holiday schedule is programmable by date up to one year in advance.
- 25 events per day maximum.
- Timeclock events are programmable to control scenes that affect any Energi Savr Node unit connected on the QS link without changing the local scene on the GRAFIK Eye QS control unit.
- Astronomic times are programmable by integral city database or by entering latitude and longitude. Sunrise/Sunset times automatically adjust throughout the year based on location.
- Automatically adjusts for Daylight Saving Time (DST); DST is programmable.
- Local timeclock events can activate any of the following features:
 - Scenes 1 to 16 and Off
 - Any available shade presets
 - Start and End afterhours mode
 - Enable and Disable daylighting for all zones/groups
 - Enable and Disable occupancy for occupancy/vacancy sensors
 - Enable and Disable occupied events for all occupancy sensors

System Communications and Capacities

- Low-voltage type IEC PELV/NEC® Class 2 wiring connects control units, wallstations, motorized shades, and control interfaces.
- A QS system can have up to 100 devices and 100 zones.

Infrared

- Infrared (IR) receiver allows infrared transmitters to select 8 scenes, raise/lower lighting zones, or raise/lower shades.
- Transmitter buttons imitate buttons on faceplate.
- 50 ft (15 m) line of sight range.
- Terminal block infrared input for connection to a wired IR input from third-party equipment.
- IR can be disabled via programming.
- Works with Lutron GRX-IT and GRX-8IT infrared remote controls.

Job Name:	Model Numbers:
Job Number:	

Specifications

Accessory Controls: seeTouch QS Wallstations (QSW2)

- Wired seeTouch QS wallstations provide the following features:
 - Access to one or more of the 16 scenes on the GRAFIK Eye QS control unit
 - Zone toggle, partitioning, sequencing, fine tune, panic mode, and timeclock enable/disable
 - Contact closure inputs
 - Certain functions are only available on specific wallstation configurations. Refer to the seeTouch QS specification submittal.

Accessory Controls: QS Sensor Module (QSM2)

- The QS Sensor Module provides a means to link wired or wireless occupancy sensors or daylight sensors, Pico controls, and wired infrared sensors to a GRAFIK Eye QS control unit via the wired QS link.
 - Occupancy sensors wired (or wirelessly linked) to a QS Sensor Module can be used by one or more GRAFIK Eye QS control units on the wired link.
 - Daylight sensors wired (or wirelessly linked) to a QS Sensor Module can be used by one or more GRAFIK Eye QS control units on the wired link.
 - Infrared sensors can control either one or more zones or scenes on the GRAFIK Eye QS control unit. Functionality varies; refer to the documentation for the QS Sensor Module for details.
 - Pico wireless controls wirelessly linked to a QS Sensor Module can be used to control one or more zones or scenes on the GRAFIK Eye QS control unit.
 - Pico wired controls can be used, when connected to a QS Sensor Module, to control one or more zones or scenes on the GRAFIK Eye QS control unit.

Accessory Controls: Contact Closure Input/Output Interface (QSE-IO)

- Recalls preset light levels for the following set of scenes on the GRAFIK Eye QS control unit:
 - Scenes 1-4 and Off
 - Scenes 9-12 and Off
 - Scenes 5-8 and Off
 - Scenes 13-16 and Off
- Sequence scenes 5-16, Enable/Disable Zone Lockout, Enable/Disable Scene Lockout, Enable/Disable Panic Mode, Enable/Disable Timeclock.
- Occupancy Sensors. An individual input counts as 1 occupancy sensor for the GRAFIK Eye QS control unit. Each input can be assigned to either Scene Control or Zone Control (please refer to the Occupancy Sensor(s) section of this guide).
- Zone Toggle. Allows an input to toggle one or more zones between programmable preset level(s) and off.
- Shade Output mode. A Shade Column on the GRAFIK Eye QS control unit can be linked to control outputs 1-3 and/or outputs 4-5 on the QSE-IO.

Accessory Controls:

DMX Output Interface (QSE-CI-DMX)

- Any zone on the GRAFIK Eye QS control unit can be mapped to any single DMX512 Channel.
- Any zone on the GRAFIK Eye QS control unit can be simultaneously mapped to any three DMX512 channels (providing RGB/CMY control).
- DMX loads cannot be used with daylighting.

Accessory Controls: Ethernet and RS232 Interface (QSE-CI-NWK-E)

- Allows for monitoring and control of the outputs and local scenes of the GRAFIK Eye QS control unit.

Accessory Controls: QS Keyswitch Wallstations (QSW2-KS)

- Recalls preset light levels for any two scenes including Off.
- Allows fine-tuning (raise/lower level) of a zone or group of zones.
- Starts/Stops scene sequencings (Scenes 1-4 or Scenes 5-16)
- Enables/Disables Timeclock
- Enables/Disables occupancy sensors
- Enables/Disables daylight sensors
- Allows toggle of Zone(s) to a preset level and off.
- Enables/Disables panic mode.
- Starts/Stops afterhours mode.

Other Accessory Controls and Devices

- Energi Savr Node QS (ESN). See the specification submittal for complete details.

Job Name:	Model Numbers:
Job Number:	

Specifications

Occupancy Sensor(s)

- The GRAFIK Eye QS control unit works with occupancy sensors through either:
 - Scene Control: Up to 16 sensors activate user-selected occupancy and vacancy scenes.*
 - Zone Control: up to four sensors per zone activate user-selected occupancy and vacancy zone levels.
- Occupancy sensors may include:
 - Contact closure sensors wired to CCI input on back of GRAFIK Eye QS control unit
 - Wired or wireless sensors connected QS sensor module (QSM)
- If any sensor in a group detects occupancy, then the GRAFIK Eye QS control unit will go to the designated occupancy scene or zone level.
- If all sensors in a group detect vacancy, then the GRAFIK Eye QS control unit will go to the designated vacancy scene or zone level.
- Low battery: the Diagnostics screen will display a low battery symbol when applicable.
- If the GRAFIK Eye QS control unit does not receive a signal from an occupancy sensor on the link (usually due to a dead battery), the lights associated with that sensor will go to the occupied level.

Daylight Sensor(s)

- The GRAFIK Eye QS control unit allows daylight sensors to control one or more lighting zones to adjust electric light levels based on measured daylight levels.
- Daylight sensors may include:
 - Wired or wireless sensors connected to a QS sensor module (QSM)
- A daylight sensor can control one or more GRAFIK Eye QS control unit zones:
 - Each zone can be calibrated to target light levels
 - A zone can be controlled by no more than one daylight sensor
- Daylight control can be enabled or disabled on a scene-by-scene basis
 - By default, daylight control is enabled in all scenes

Note: Daylight control through the GRAFIK Eye QS control unit only affects select lighting loads. Shade groups cannot be controlled by daylight sensors. Daylighting does not affect DMX or RGB/CMY DMX loads. Daylighting of Remote Zones linked to Energi Savr Node zones must be configured at the Energi Savr Node unit or through the Energi Savr Node app for *iPod*.

Contact Closure Input (CCI) with Power Supply Output

- Each GRAFIK Eye QS control unit has one contact closure input (Terminal A).
 - The attached device must provide a dry contact closure or solid-state output.
 - Input is miswire-protected up to 36 V $\overline{=}$.
- The contact closure is capable of accepting the following types of inputs:
 - Maintained (default): The GRAFIK Eye QS control unit will act on both a contact closure and a contact open/release event.
 - Momentary: The GRAFIK Eye QS control unit will act on only contact closure events.
- Each GRAFIK Eye QS control unit can supply 50 mA maximum at 24 V $\overline{=}$.
 - Useful for powering occupancy sensors.
 - An auxiliary power supply must be used if the device requires more than 50 mA.
- The CCI is capable of operating in the following modes
 - Occupancy: If an occupancy sensor is wired directly to the GRAFIK Eye QS control unit.
 - Emergency: This setting allows the GRAFIK Eye QS control unit to work with a LUT-ELI. When an emergency situation is detected, all lights will go to full on, and no operations will be allowed until the emergency signal is cleared.
 - Afterhours: Allows the CCI to start and end the afterhours mode.
 - Timeclock: Allows the CCI to enable and disable the timeclock.
 - Scene Lockout: Prevents the user from making any changes to the control unit. The current scene will stay on until the CCI enables normal operation.
 - Save Never: Prevents any changes from being saved while the CCI is being used.
 - Disable CCI: The CCI will have no effect on the system and will not appear on the list of available sensors.

Security Lockout Password

- A 4-character password (using characters A to Z and 0 to 9) can be enabled/disabled to lock out access to the Programming Menu.
- By default there is no password enabled on the GRAFIK Eye QS control unit.
- If case the 4-digit password is forgotten, contact Lutron Customer Assistance to regain access.

* Applicable only to units that ship with firmware version 9.002 and higher. Previous versions support up to 4 sensors.



Job Name:	Model Numbers:
Job Number:	

Specifications

Remote Zone Mapping

- Map a GRAFIK Eye QS zone directly to an Energi Savr Node output so that programmed scenes in the GRAFIK Eye QS control unit will directly control the output levels of the Energi Savr Node.
- Adjust high-end and low-end trim for remote zones through the Energi Savr Node or Energi Savr app software.
- Change load types of remote zones through the Energi Savr Node or Energi Savr app software.
- Configure daylighting for remote zones through the Energi Savr Node or Energi Savr app software.
- Required:
 - GRAFIK Eye QS control unit with firmware version 7.000 or higher
 - Energi Savr Node unit with firmware version 6.000 or higher
 - Energi Savr app version 6.0.0 or higher (required only if the Energi Savr Node unit has been configured using the app)

Partitioning

- When partition is open, creating one large space, automatically combines lighting preset functions for multiple GRAFIK Eye QS control units.
- When partition is closed, creating two or more smaller spaces, lighting preset functions become independent.
- Requires one wallstation (either a QSW2, QSW2-2B or a QSE-IO), a GRX-IRPS infrared transmitter/receiver pair, and a GRX-12VDC power supply for operation.
- If occupancy sensors are required in a partitioned space, note that each room's occupancy sensor(s) will operate independent of the partition status.

Job Name:	Model Numbers:
Job Number:	

Capacities

	220–240 V~ 50/60 Hz	120–127 V~ 50/60 Hz	
Unit Capacity (watts)	3000	2000	
MLV	3000 VA / 2400 W	2000 VA / 1600 W	
Zone Capacity (watts)	40–1200	25–800	
MLV	40–1200 VA / 40–960 W	25–800 VA / 25–600 W	

Load Type Notes (Zones 1, 2 and 3)

- All electronic low-voltage (ELV) lighting used with an interface must be rated for reverse phase control dimming. Before installing an ELV light source, verify with the manufacturer that their transformer can be dimmed. When dimming, an ELV interface (such as the PHPM-PA-DV-WH) 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:
 - 120–127 V~: 800 VA / 600 W
 - 220–240 V~: 1200 VA / 960 W
- Maximum total lighting load for Lutron Tu-Wire and Advance Mark 10® electronic dimming ballasts (120 to 127 V~ only) must not exceed 6 A per zone or 16 A per unit.
- 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.
- For controlling low-wattage loads (CFL, LED) in a non-dim application, contact Lutron Customer Assistance for the appropriate solution.

System Limits

- The QS wired communication link is limited to 100 devices or 100 zones.

Job Name:	Model Numbers:
Job Number:	

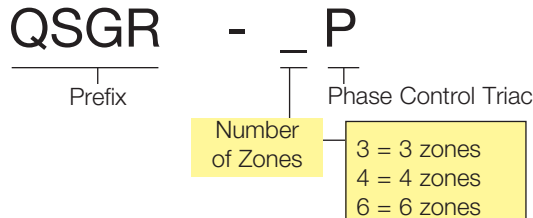
GRAFIK Eye QS Control Unit

Standard and Custom Color Options and Model Numbers

You must order a Base Unit and a Faceplate Kit

See Standard Color Combinations page for faceplate, stripe, and button colors

Base Unit



Example:

QSGR-6P

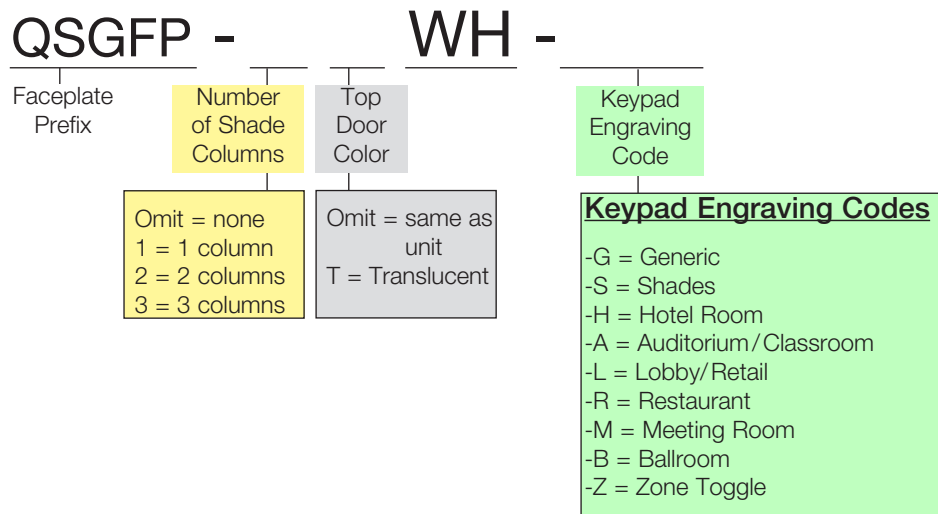
6-zone base unit
and

QSGFP-2WH-G

Ivory faceplate kit with two
shade columns and general
engraving

Standard Engraved Faceplate Kit (WH only)

(includes coordinating stripe and buttons)



Job Name:	Model Numbers:
Job Number:	

GRAFIK Eye QS Control Unit *(continued)*

Standard and Custom Color Options and Model Numbers *(continued)*

Standard Engraved Faceplate Kit (WH only) *(continued)*

Generic (-G)

1	☀
2	
3	
4	
Off	☾

Meeting Room (-M)

All On	☀
Meeting	
A/V	
Cleaning	
All Off	☾

Shades (-S)

Open	☰
Preset 1	
Preset 2	
Preset 3	
Close	☷

Ballroom (-B)

All On	☀
Event 1	
Event 2	
Event 3	
All Off	☾

Hotel Room (-H)

High	☀
Medium	
Low	
Nightlight	
Off	☾

Zone Toggle (-Z)

Zone 1	
Zone 2	
Zone 3	
Zone 4	
Zone 5	

Auditorium/Classroom (-A)

All On	☀
Present	
Lecture	
Exam	
All Off	☾

Lobby/Retail (-L)

All On	☀
Morning	
Afternoon	
Evening	
All Off	☾

Restaurant (-R)

All On	☀
Breakfast	
Lunch	
Dinner	
All Off	☾

* Standard engraving text does not automatically assign or re-assign system programming to the QS keypad buttons. Project-specific customer input and programming by a Lutron service team member is still required to achieve a desired sequence of operation/system functionality per control.

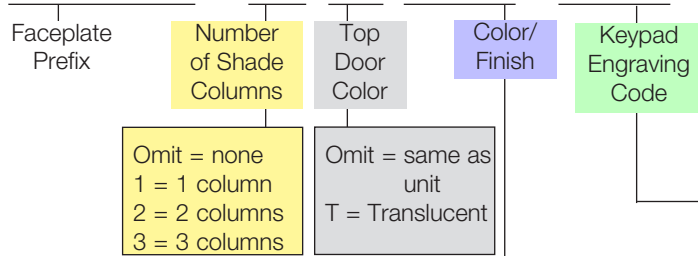
Job Name:	Model Numbers:
Job Number:	

GRAFIK Eye QS Control Unit *(continued)*

Standard and Custom Color Options and Model Numbers *(continued)*

Custom (non-standard) Faceplate Kit (includes coordinating stripe and buttons)

QSGFP -



Faceplate Custom Color/Finish Codes

Architectural Matte Finishes

Standard (ship in 48 hours)	
White	WH
Ivory	IV
Beige	BE
Gray	GR
Brown	BR
Black	BL
Almond	AL
Light Almond	LA

Architectural Metal Finishes

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

Anodized Aluminum Finishes

Clear	CLA
Black	BLA
Brass	BRA

Satin Color Matte Finishes

Snow	SW
Midnight	MN
Taupe	TP
Biscuit	BI
Eggshell	ES
Palladium	PD
Hot	HT
Merlot	MR
Plum	PL
Sienna	SI
Terracotta	TC
Bluestone	BG
Greenbriar	GB
Goldstone	GS
Mocha Stone	MS
Stone	ST
Desert Stone	DS
Limestone	LS

For the latest color offerings please see our website:
<http://www.lutron.com/satincolors>

Keypad Engraving Codes

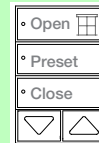
Omit = Unengraved

Ships with engraving certificate that customer can redeem at no charge

EGN = General Engraving



Lighting keypad



Shade column

NST = Non-Standard Text Engraving

Please visit the GRAFIK Eye QS website at www.lutron.com/grafikeyeqs for custom engraving forms. Submit completed form with order, and unit will ship engraved as specified by customer.

Job Name:

Model Numbers:

Job Number:

GRAFIK Eye QS Control Unit *(continued)*

Standard and Custom Color Options and Model Numbers *(continued)*

See previous page for Other Custom Model Numbers

See Standard Color Combinations page for faceplate, stripe, and button colors

Custom Button Kit

QSGB - 5B - WH -

Custom Button
Kit Prefix

Button
Configuration

Button
Color/
Finish

Keypad
Engraving
Code

3BRL = 3-button with
raise/lower
(shade column)
5B = 5-button
(lighting keypad)

Button Kit Custom Color/Finish Codes

Architectural Matte Finishes

White	WH
Ivory	IV
Beige	BE
Gray	GR
Brown	BR
Black	BL
Almond	AL
Light Almond	LA

Satin Color Matte Finishes

Snow	SW
Biscuit	BI
Eggshell	ES
Taupe	TP

Keypad Engraving Codes

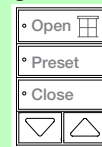
Omit = Unengraved

Ships with engraving certificate that
customer can redeem at no charge

EGN = General Engraving



Lighting
keypad



Shade
column

NST = Non-Standard Text Engraving

Please visit the GRAFIK Eye QS website
at www.lutron.com/grafikeyeqs
for custom engraving forms. Submit
completed form with order, and unit will
ship engraved as specified by customer.

Custom Stripe Kit

QSGS - WH

Stripe
Kit
Prefix

Stripe Color/
Finish

Stripe Custom Color/Finish Codes

Same as Faceplate colors on previous page

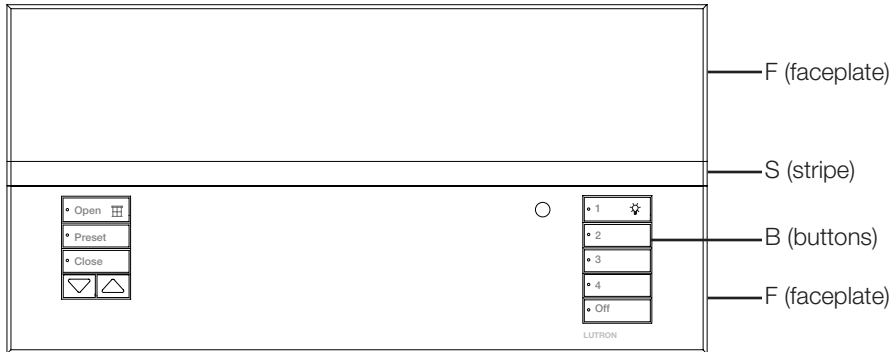
Job Name:

Model Numbers:

Job Number:

GRAFIK Eye QS Control Unit Standard Color Combinations

See previous pages for Custom Model Numbers



Faceplate is comprised of a top and bottom. The bottom will always be the color indicated under “faceplate.” The top may be the same color or translucent. Use the chart for faceplates that have the same color top and bottom. If a translucent lid is chosen, the stripe will automatically be the same color as the bottom lid.

Example:

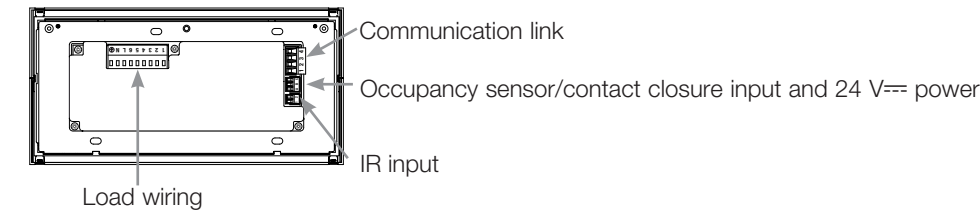
If you order QSGR-4P-1WH, your GRAFIK Eye QS control unit with 4 lighting zones and 1 shade zone will come with a white faceplate (both top and bottom), gray stripe, and white buttons.

Suffix	Faceplate (F)	Stripe (S)	Button (B)	Suffix	Faceplate (F)	Stripe (S)	Button (B)
Architectural Matte				Satin Matte			
WH	White	Gray	White	SW	Snow	Gray	Snow
IV	Ivory	Beige	Ivory	MN	Midnight	Gray	Black
BE	Beige	Ivory	Beige	TP	Taupe	Gray	Taupe
GR	Gray	Black	Gray	BI	Biscuit	Eggshell	Biscuit
BR	Brown	Black	Brown	ES	Eggshell	Beige	Eggshell
BL	Black	Gray	Black	PD	Palladium	Gray	Gray
AL	Almond	Light Almond	Almond	HT	Hot	Taupe	Taupe
LA	Light Almond	Almond	Light Almond	MR	Merlot	Taupe	Taupe
Architectural Metal				PL	Plum	Taupe	Taupe
BB	Bright Brass	Black	Black	SI	Sienna	Brown	Brown
BC	Bright Chrome	Black	Black	TC	Terracotta	Taupe	Taupe
BN	Bright Nickel	Black	Black	BG	Bluestone	Gray	Gray
SB	Satin Brass	Black	Black	GB	Greenbriar	Gray	Gray
SC	Satin Chrome	Black	Black	GS	Goldstone	Ivory	Ivory
SN	Satin Nickel	Black	Black	MS	Mocha Stone	Taupe	Taupe
QB	Antique Brass	Black	Black	ST	Stone	Gray	Gray
QZ	Antique Bronze	Black	Black	DS	Desert Stone	Taupe	Taupe
Anodized				LS	Limestone	Gray	Gray
CLA		Black	Black	For the latest color offerings please see our website: http://www.lutron.com/satincolors			
BLA	Black	Black	Black				
BRA	Brass	Black	Black				

Job Name:	Model Numbers:
Job Number:	

Wiring Diagrams

Terminations

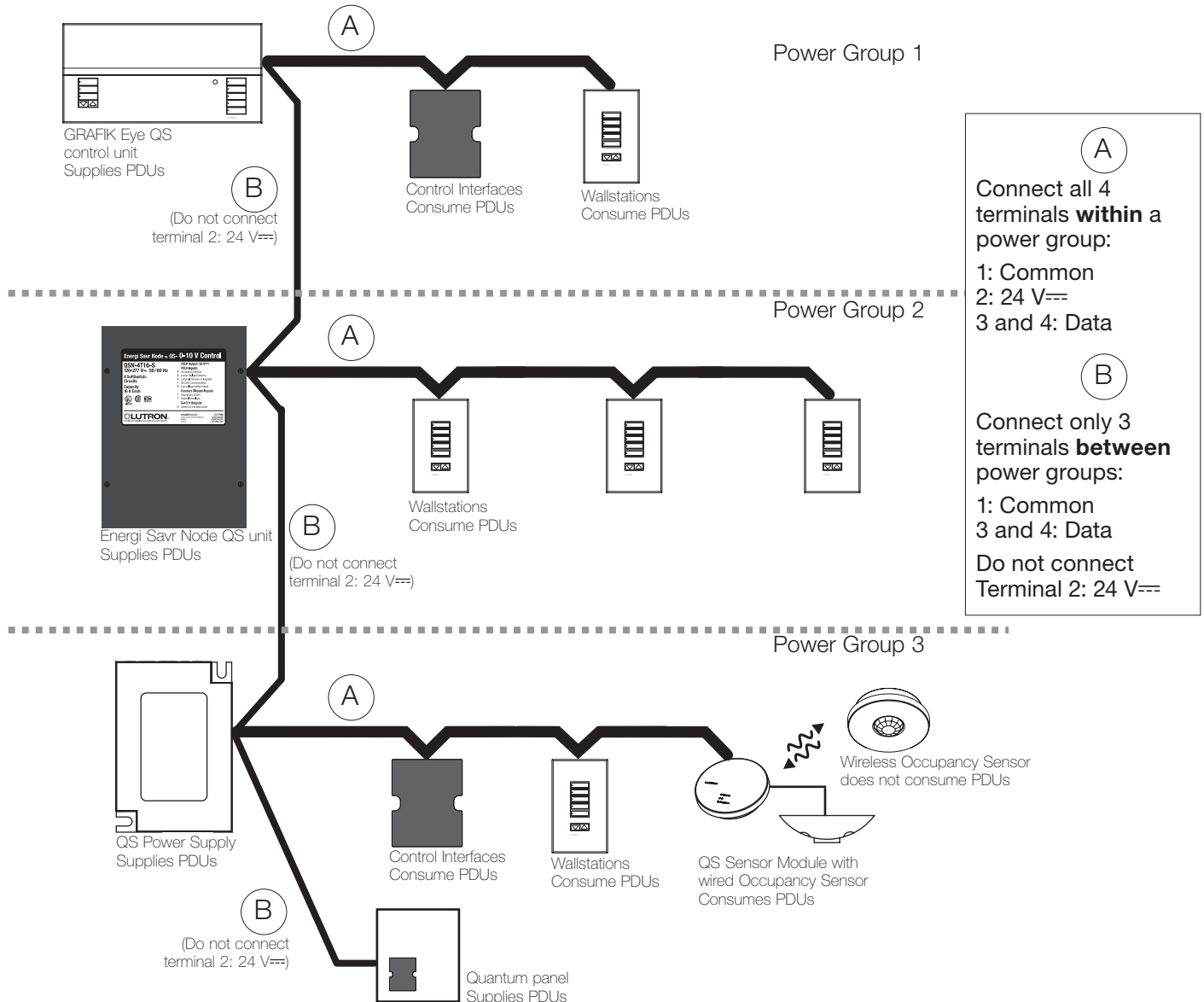


Power Group Wiring Example

On the QS link, there are devices that supply power and devices that consume power. Each device has a specific number of Power Draw Units (PDUs) it either supplies or consumes. A Power Group consists of one device that supplies power and one or more devices that consume power; each Power Group may have only one power-supplying device. Refer to the **Power Draw Units on the QS Link Spec** (369405) on www.lutron.com for more information concerning PDUs.

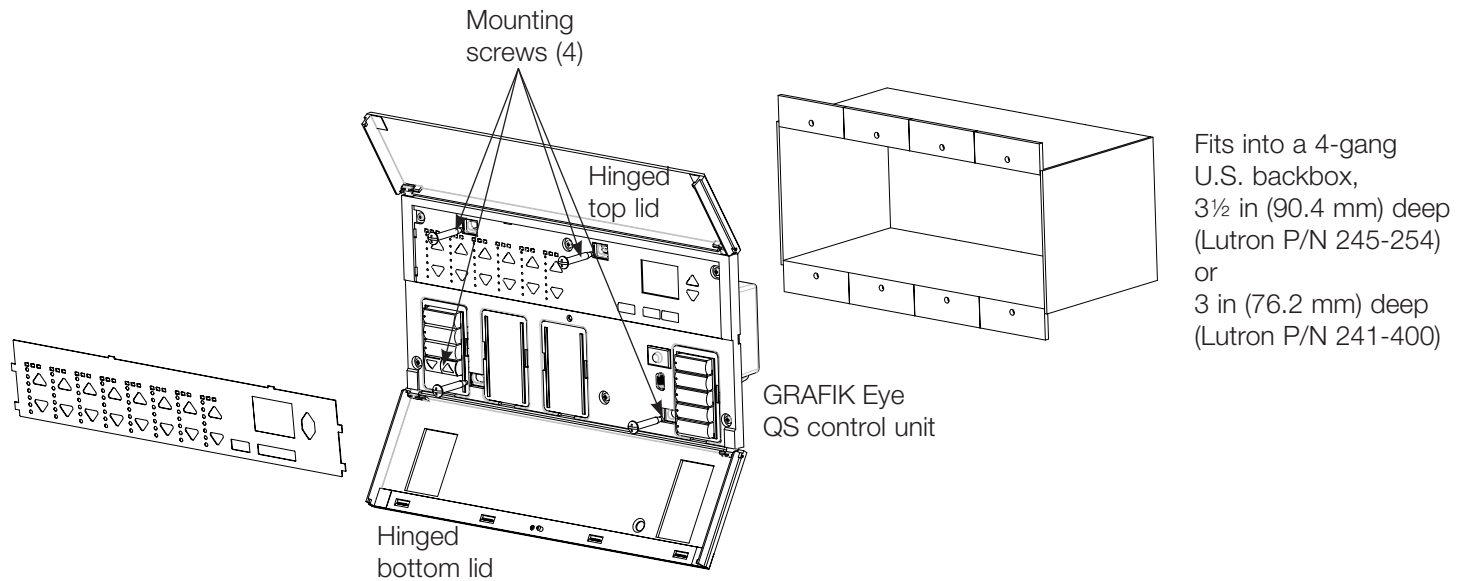
Within Power Groups on the QS link, connect all 4 terminals (1, 2, 3, and 4), shown by the letter A in the diagram. Between devices on the QS link that supply power, connect only terminals 1, 3, and 4 (NOT terminal 2), shown by the letter B on the diagram.

Wiring can be T-tapped or daisy-chained.

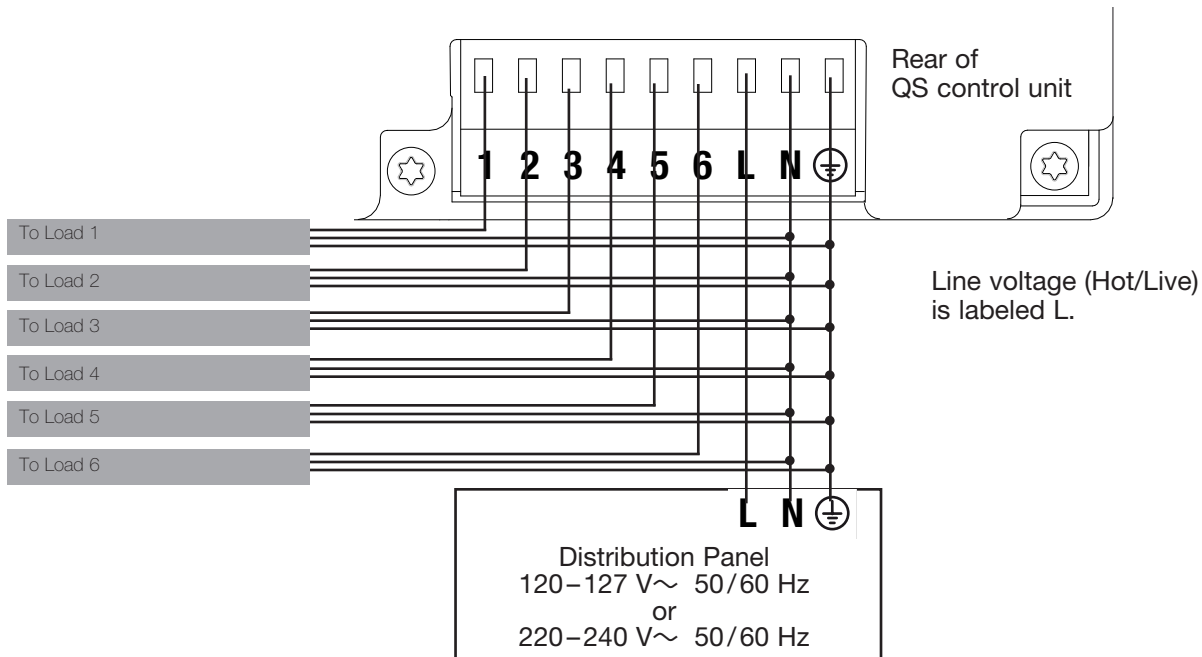


Job Name:	Model Numbers:
Job Number:	

Mounting



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.

Job Name:	Model Numbers:
Job Number:	

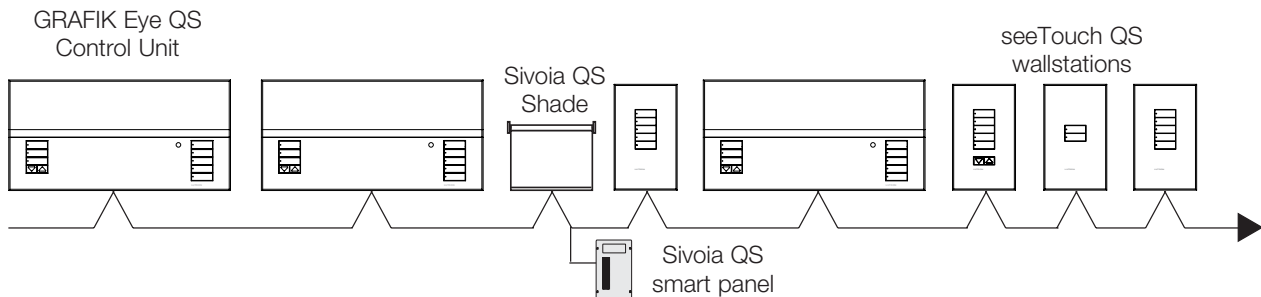
IEC PELV/NEC® Class 2 QS System Wiring

- Wiring can be daisy-chained or T-tapped.
- Wiring must be run separately from line/mains voltage.
- Total length of control link must not exceed 2000 ft (610 m).

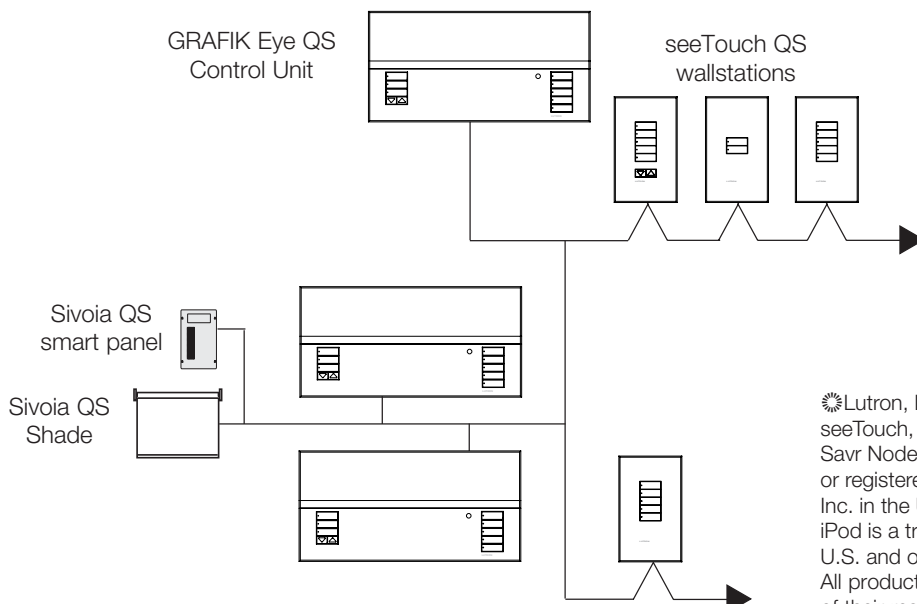
Wire Sizes (check compatibility in your area)

QS Link Wiring Length	Wire Gauge	Lutron Cable Part Number
Less than 500 ft (153 m)	Power (terminals 1 and 2) 1 pair 18 AWG (1.0 mm²)	GRX-CBL-346S (non-plenum) GRX-PCBL-346S (plenum)
	Data (terminals 3 and 4) 1 twisted, shielded pair 22 AWG (0.5 mm²)	
500 to 2000 ft (153 to 610 m)	Power (terminals 1 and 2) 1 pair 12 AWG (4.0 mm²)	GRX-CBL-46L (non-plenum) GRX-PCBL-46L (plenum)
	Data (terminals 3 and 4) 1 twisted, shielded pair 22 AWG (0.5 mm²)	

Daisy-Chain Wiring Example



T-Tap Wiring Example



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Job Name:	Model Numbers:
Job Number:	

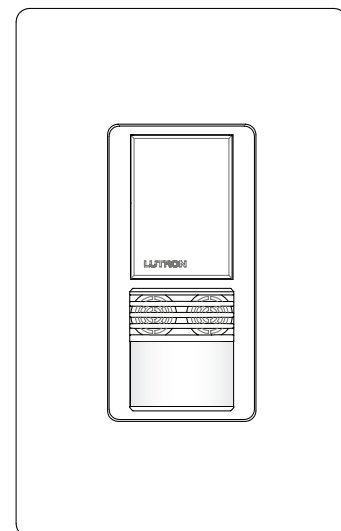
Maestro Dual Technology Sensor Switch

The Maestro dual technology (dual tech) occupancy sensor switch applies our exclusive XCT Technology to the ultrasonic as well as the passive infrared technology in this sensor to create a product that can detect very fine motion, such as typing. This product also includes all of the great features found in the rest of the Maestro sensor family, including: adaptive relay switching, smart ambient light detection, and simple button presses for changing settings. The Maestro dual tech occupancy sensor switch is available in single-circuit and dual-circuit versions.

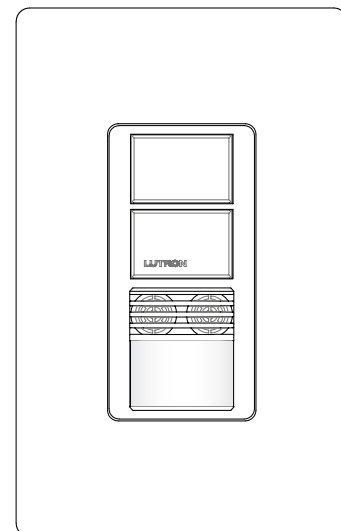
The single-circuit versions (MS-A102, MS-B102) can be used to meet many of the Title 20/24, ASHRAE 90.1, and IECC code requirements such as “automatic shutoff”. The dual-circuit versions (MS-A202, MS-B202) can be used to meet many of the Title 20/24, ASHRAE 90.1, and IECC code requirements such as “automatic shutoff” and “multi-level lighting control”. To find some examples of code-specific applications, visit www.lutron.com/energycodes

Features

- XCT Technology for major, minor, fine, and very fine motion detection
- 180° sensor field-of-view
- Tamper-resistant PIR lens
- Up to 900 ft² (81 m²) major motion coverage and 400 ft² (36 m²) minor motion coverage
- Two Ambient Light Detect (ALD) options:
 - Learning ALD Mode:
 - Uses adaptive algorithm.
 - Sensor learns user's preferred light level over time.
 - Fixed ALD mode:
 - Four selectable light level thresholds: Hi, Med, Low, Min
- Occupancy models (MS-A102-XX, MS-B102-XX, MS-A202-XX, MS-B202-XX) can be set to Auto-ON/Auto-OFF or Manual-ON/Auto-OFF per circuit
- Dual-circuit model (MS-A202) meet Title 24 requirements for multi-level lighting control.
- Single-circuit “Vacancy” model (MS-A102-V-XX, MS-B102-V-XX) available to meet Title 24/Title 20 requirements for vacancy sensors.
- Adjustable timeout for each circuit (1, 5, 15, or 30 minutes)
- Sensitivity adjustment
 - PIR (Hi, Med, Low, Min)
 - Ultrasonic (Hi, Med, Low, Off)
- Switches all lighting loads: incandescent, halogen, ELV, MLV, CFL, LED, magnetic fluorescent, electronic fluorescent
- Switches fan loads at 120 V~
- MS-B102, MS-B102-V work with Maestro accessory switches in multi-location applications
- MS-A models DO NOT require neutral wiring, while the MS-B models DO require neutral wiring.



MS-A102-XX (Occupancy model)
MS-A102-V-XX (Vacancy model)
MS-B102-XX (Occupancy model)
MS-B102-V-XX (Vacancy model)



MS-A202-XX (Occupancy model)
MS-B202-XX (Occupancy model)

Notes:

- “XX” in the model number represents color/finish code. See **Colors and Finishes** at end of document.
- Wallplate not included.
- For TAA compliant models, add “W” before “MS” when ordering. Available in gloss colors only. For other BAA/TAA compliant products, please visit our website at www.lutron.com/BAA and select “download BAA product list”.

Job Name:	Model Numbers:
Job Number:	

Specifications

Regulatory Approvals

- UL® Listed to U.S. and Canadian safety requirements
- NOM certified
- Title 20/24 certified lighting control device
 - Complies with Title 20 and Title 24 section 110.9

Power/Load Control

- 120–277 V~ 50/60 Hz

Key Design Features

- Dual Sensing Technology
- Switches all lighting loads
- 6 A of lighting load per circuit at 120–277 V~
- 4.4 A (1/6 HP) of fan load per circuit at 120 V~
- Crush/tamper resistant lens
- Smart Ambient Light Detection (ALD)
- Fixed Ambient Light Detection
- Adaptive zero-cross switching algorithm for extended relay life (patent pending)
- XCT Technology for major, minor, fine, and very fine motion detection
- Programmable circuit swapping eliminates need for rewiring to reassign circuits after installation of a dual-circuit product. (patent pending)
- Product ground current does not exceed 0.5 mA

Environment

- Ambient operating temperature:
32 °F to 104 °F (0 °C to 40 °C), 0%–90% humidity,
non-condensing. Indoor use only.

Warranty

- 5-Year Limited Warranty. For additional Warranty information, please visit
www.lutron.com/TechnicalDocumentLibrary/Sensor_Warranty.pdf

Sensor Detection

Lutron dual tech sensors operate by triggering initial occupancy using PIR technology, and maintain occupancy using both ultrasonic and PIR technology.

Advanced Features

Switching

- Adaptive zero-cross switching—maximizes relay life by switching at the point of minimum energy on the AC power curve (patent pending). Actively adapts to variations in relay timing.

Additional Information on Sensors

- For single-circuit PIR Maestro occupancy sensor switch models, please see Lutron P/N 369666
- For Maestro occupancy sensor C•L dimmer models, please see Lutron P/N 369748
- For dual-circuit PIR Maestro occupancy sensor switch, please see Lutron P/N 369758
- For more information, please see www.lutron.com/occvacsensors
- Lutron Customer Support: 1.844.LUTRON1

Job Name:

Model Numbers:

Job Number:

Custom Settings

Default settings shown in bold

- Timeout

- 30 min
- **15 min**
- 5 min
- 1 min

Mode - Sensor Modes

Lights automatically turn off in all sensor modes

- **Occ -Occupancy mode (No ALD)**^{1,2,3}
- Lrn - Occupancy with learning ALD mode
- Fixd - Occupancy with fixed ALD mode
- Vac - Vacancy mode (No ALD)^{2,3}

¹ MS-A102-XX, MS-B102-XX default is Occ

² MS-A102-V-XX, MS-B102-V-XX is locked as Vac

³ MS-A202-XX, MS-B202-XX defaults are: Circuit 1 - Occ, Circuit 2 - Vac

- Ultrasonic Sensitivity

- High
- **Med**
- Low
- Off

PIR - Passive Infrared Sensitivity

- **High**
- Med
- Low
- Min

Additional Settings

Fixed ALD Light Level

- Hi
- Med
- **Low***
- Min

* "Low" is the default setting for any sensor that is set by the user to: Occupancy with fixed ALD mode

Off-While-Occupied

- **Enabled**
- Disabled

Walk-Thru Mode

- Enabled
- **Disabled**

Custom Settings - Details

Ambient Light Detection (ALD) mode

Lights turn on only when natural light in the room is below the set threshold.

- **Learning:** The ambient light threshold adjusts to the user's preference via manual interaction with the sensor switch.
- **Fixed:** Choose a fixed ALD light level from four pre-set options:
High, Medium, Low, and Minimum

Manual Off-While-Occupied Options

ENABLED (default setting)

- When the sensor switch is manually turned off, the sensor switch will not turn the lights back on automatically while the room is occupied.
- Once the room is vacated, the Auto-On feature returns to normal operation after the timeout period has expired.
- This may be the preference in conference rooms or classrooms while viewing presentations. This feature requires motions to keep the lights off.

DISABLED

- When the sensor switch is manually turned off, the Auto-On feature will return to normal operation after 25 seconds.
- This may be the preference in a restroom if the user always wants the lights to turn on upon entering and the lights to turn off when the room is vacant.

Walk-Thru Mode

ENABLED¹

- If motion is not detected within 3 minutes after initial occupancy, the lights will turn off after 3 minutes, instead of the current timeout.
- This setting may be the preference in commercial applications where personnel may briefly trigger sensors during non-working hours.

DISABLED (default setting)

- When motion is detected, the lights will ALWAYS remain on for the entire timeout duration, regardless of the duration of occupancy detection.

¹ 1 minute timeout would be overridden if walk-thru mode is also ENABLED

Job Name:	Model Numbers:
Job Number:	

Load Type and Capacity

Control	Neutral Connection Required	Vacancy Only	Number of Circuits	TAA Compliant	Voltage/Load Type/Maximum Load (Anywhere in Gang) ¹	Minimum Load	3-Way with Mechanical Switch	Multi-Location with Accessory Switch
MS-A102			1		120 – 277 V~ Lighting 6 A ² 120 V~ Fan 4.4 A (1/6 HP) ³	0 A		
MS-A102-V		✓	1			0 A		
MS-A202			2			0 A		
MS-B102	✓		1			0 A	✓	✓
MS-B102-V	✓	✓	1			0 A	✓	✓
MS-B202	✓		2			0 A	✓	
WMS-A102			1	✓		0 A		
WMS-A102-V		✓	1	✓		0 A		
WMS-A202			2	✓		0 A		
WMS-B102	✓		1	✓		0 A	✓	✓
WMS-B102-V	✓	✓	1	✓		0 A	✓	✓
WMS-B202	✓		2	✓		0 A	✓	

¹ Ratings shown are per circuit.

² Sensor switch load type: Designed for use with permanently installed incandescent, halogen, MLV, ELV, CFL, LED, magnetic fluorescent, and electronic fluorescent lighting loads.

³ When controlling light and fan loads simultaneously on a single-circuit, maximum load capacity per circuit is 4.4 A at 120 V~.

- Ground or neutral is required for product to function. If neither wire is present, consult a licensed electrician.
- For models MS-A102 and MS-A202, connect green-sleeved wire to ground only in retrofit and replacement applications. When neutral connection is available, remove green sleeve and connect the white wire to neutral.

Sensor switch placement

- The sensor switch performs better with an unobstructed view of room occupants.
- Hot objects and moving air currents can affect the performance of the sensor switch. The sensor switch performs best when located 6 ft (1.8 m) or more away from hot objects or moving air currents.
- The PIR performance depends on a temperature differential between the ambient room temperature and that of room occupants. Warmer rooms may reduce the ability of the sensor switch to detect occupants.
- The ultrasonic performance can be affected by air currents and moving objects. Consider the effects of fans, HVAC vents, open windows, or moving objects when installing the sensor switch.
- If the sensor sees a specific area that is not desired (e.g., hallway), Lutron offers a lens mask kit (Lutron P/N 50013614) that can be ordered through Customer Support (1.844.LUTRON1). Alternatively, selectively placing opaque tape (e.g., painter's tape, electrical tape, masking tape) over certain parts of the lens can limit its field of vision to block undesired detection areas. Masking the lens may effect ALD performance, but DOES NOT block ultrasonic frequencies.

Definitions

Major motion: movement of a person entering or passing through an area.

Minor motion: movement of a person occupying an area and engaging in small activities (e.g., reaching for a telephone, turning the pages of a book, opening a file folder, picking up a coffee cup).

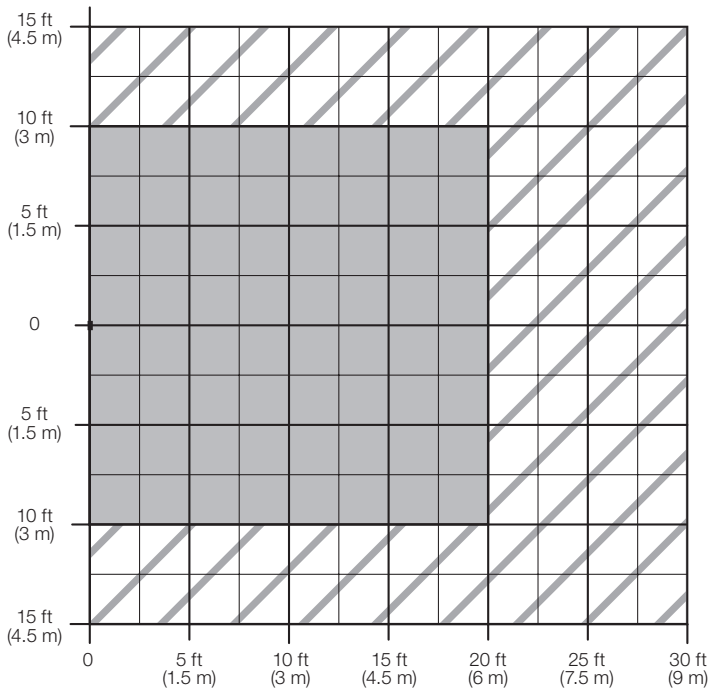
Fine Motion: movement of a person occupying an area and engaging in very small activities (e.g., reading a magazine).

Very Fine Motion: movement of a person occupying an area and engaging in very small activities (e.g., typing on a keyboard).

Job Name:	Model Numbers:
Job Number:	

Sensor switch placement *(continued)*

NEMA WD7 Coverage

Major motion coverage: 900 ft² (81 m²)Minor motion coverage: 400 ft² (36 m²)

Test Room Dimensions: 37 ft x 38 ft (11.28 m x 11.6 m)

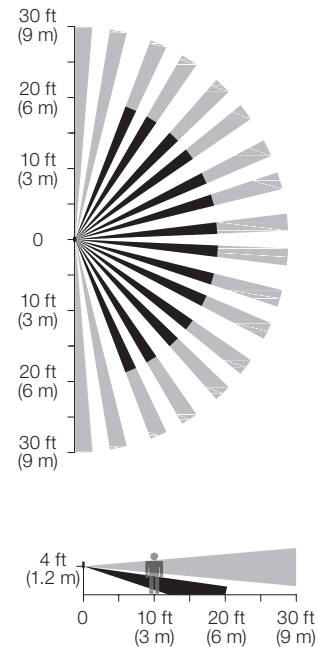
Test Floor Surface Material: Carpet

Sensor Coverage Angle: 180 °

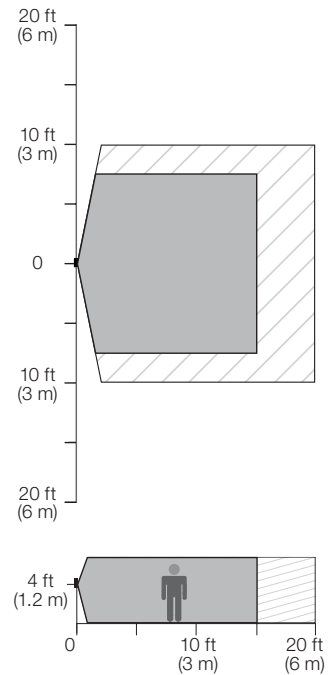
Major motion coverage: Initial trigger motion detection

Minor motion coverage: Maintained motion detection

Passive Infrared Beam Diagram (For Reference Only)



Ultrasonic Coverage (For Reference Only)



Ultrasonic Frequency: 40 kHz

Job Name:

Model Numbers:

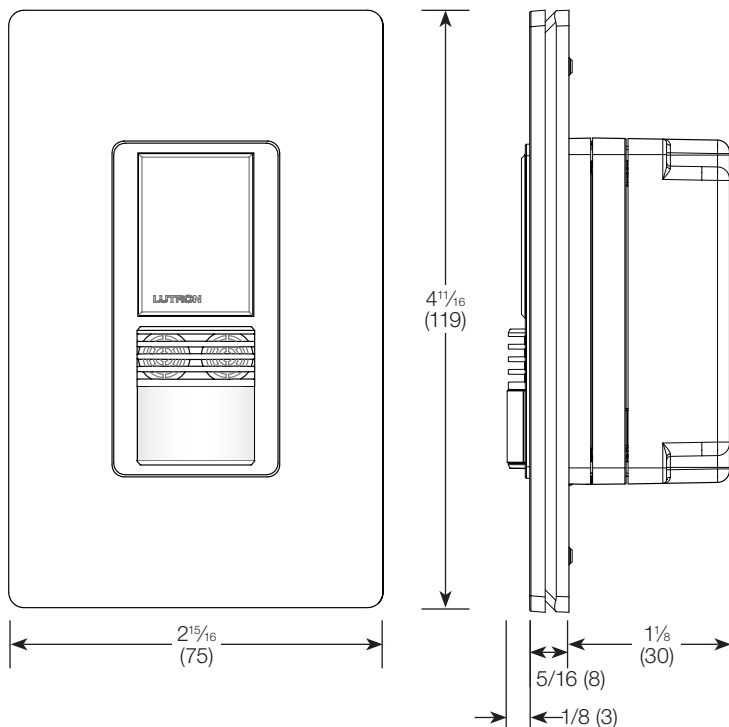
Job Number:

Dimensions - single-circuit MS-A102, MS-A102-V, MS-B102, MS-B102-V

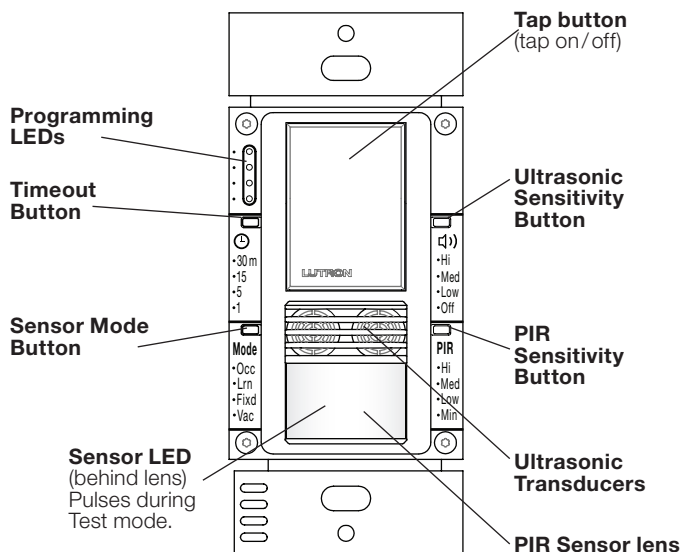
Measurements shown as: in (mm).

Front View

Side View



Operation

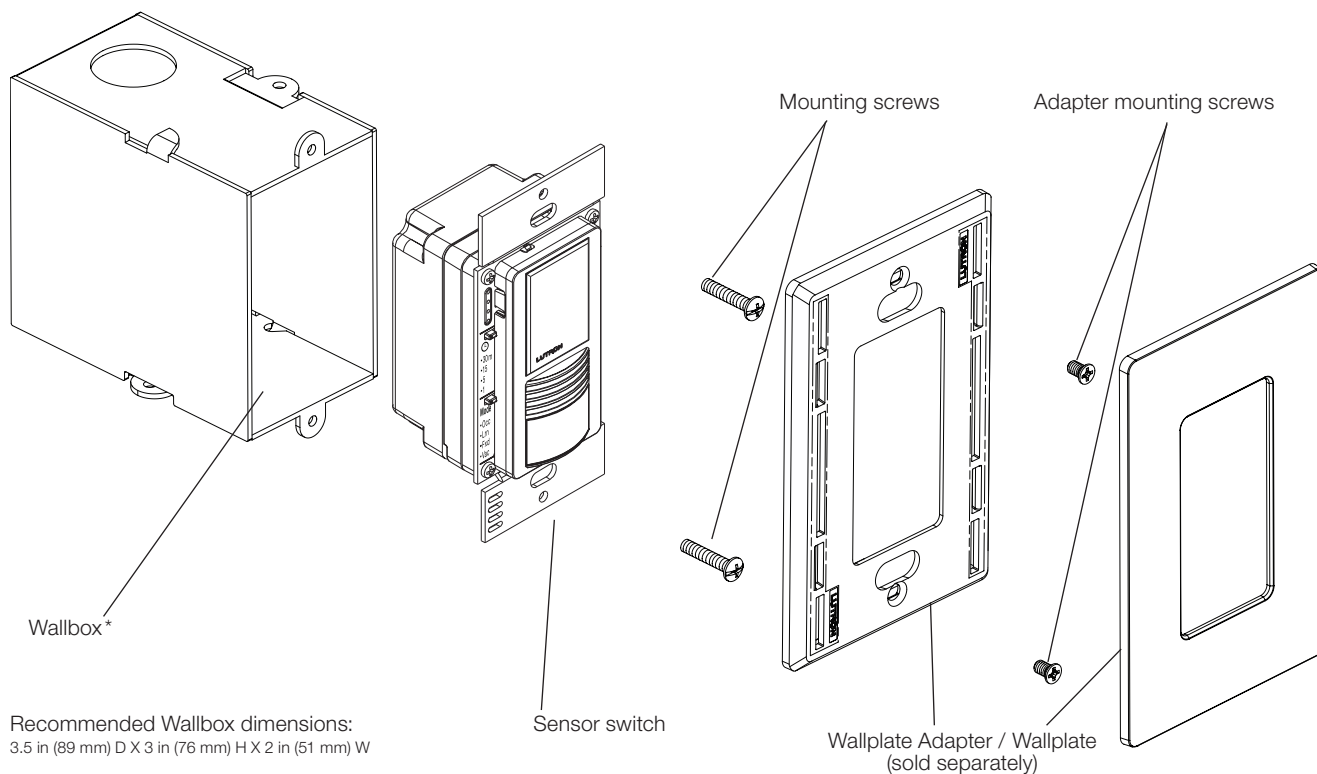


Job Name:

Model Numbers:

Job Number:

Mounting



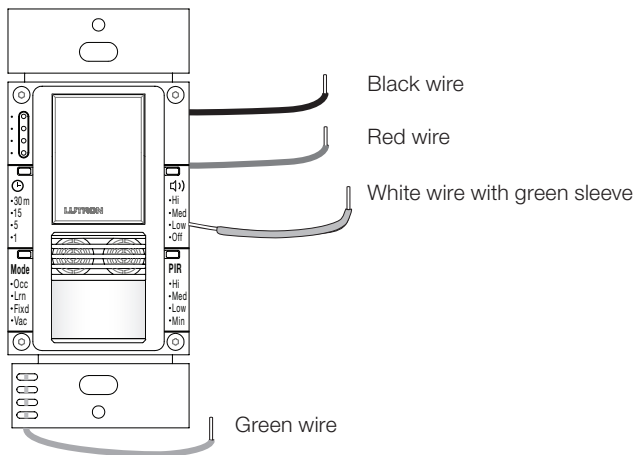
Job Name:

Model Numbers:

Job Number:

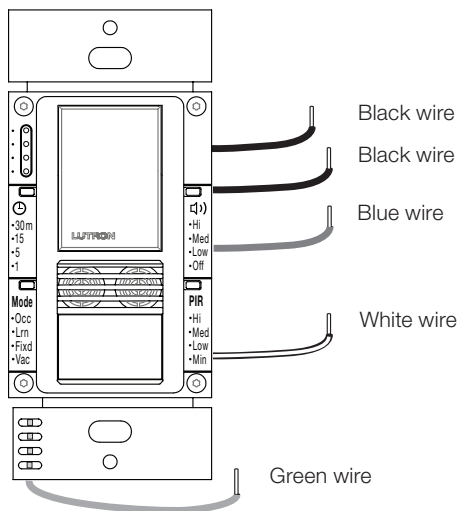
Wiring Installations with the Maestro Dual Technology Sensor Switch A102

In order to function, the dual technology sensor switch must have a ground or neutral wire connected. Connect green-sleeved wire to ground only in retrofit and replacement applications. When a neutral connection is available, remove green sleeve and connect white wire to neutral. Before installing wallplate, program all desired settings.



Wiring Installations with the Maestro Dual Technology Sensor Switch B102

Before installing wallplate, program all desired settings.



Job Name:

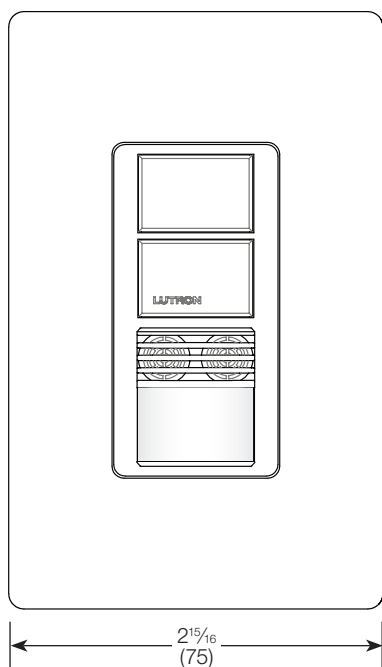
Model Numbers:

Job Number:

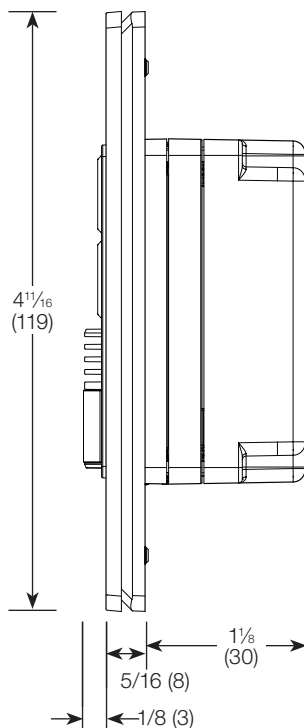
Dimensions - dual-circuit MS-A202, MS-B202

Measurements shown as: in (mm).

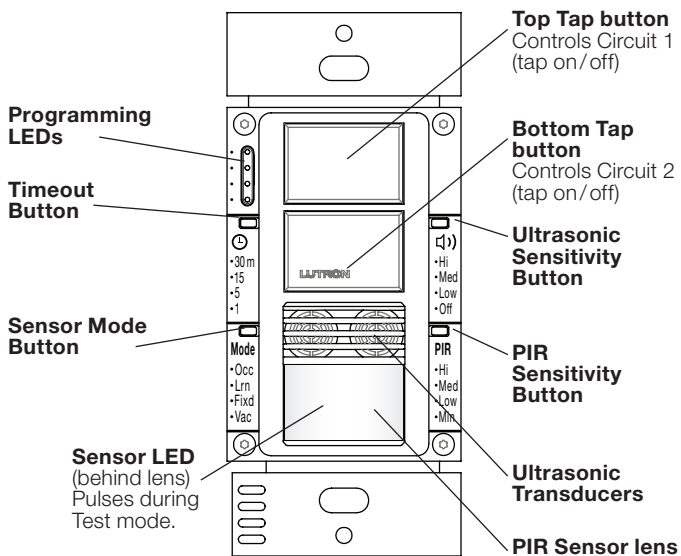
Front View



Side View



Operation

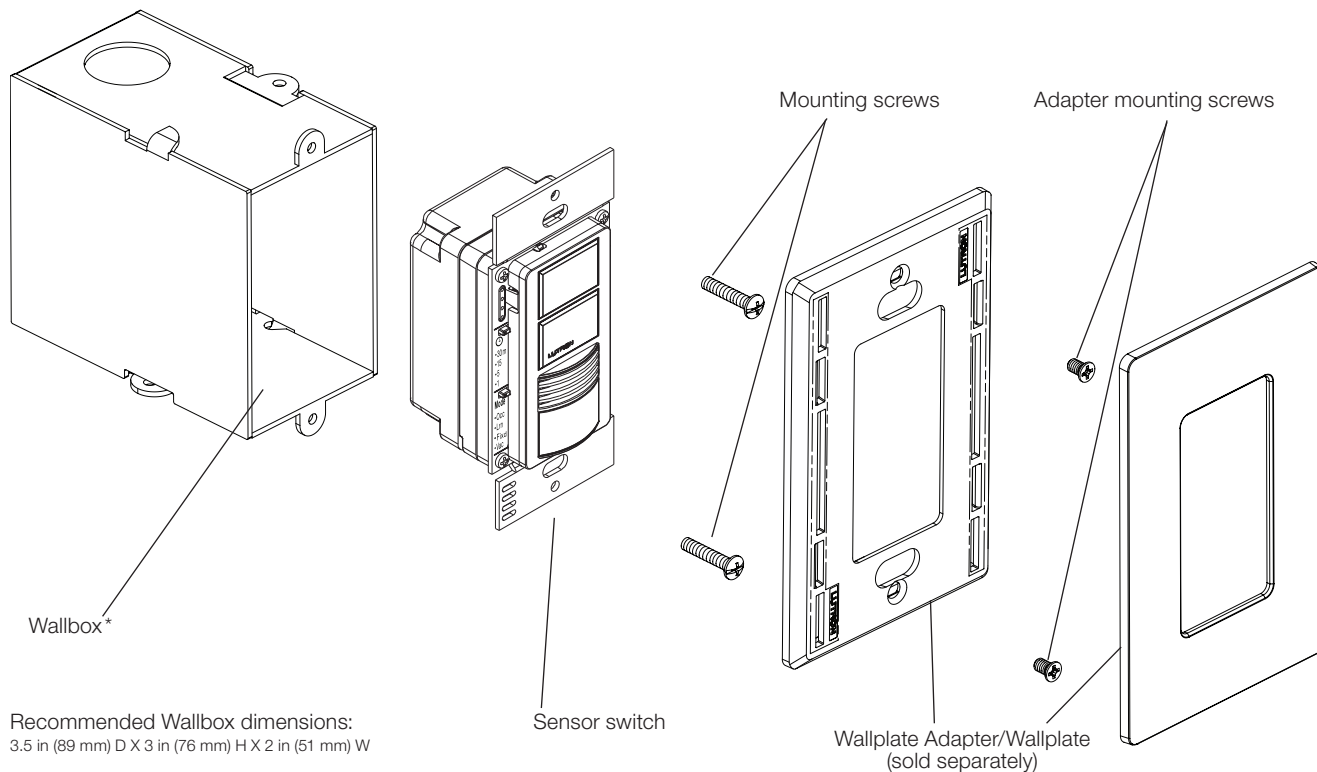


Job Name:

Model Numbers:

Job Number:

Mounting



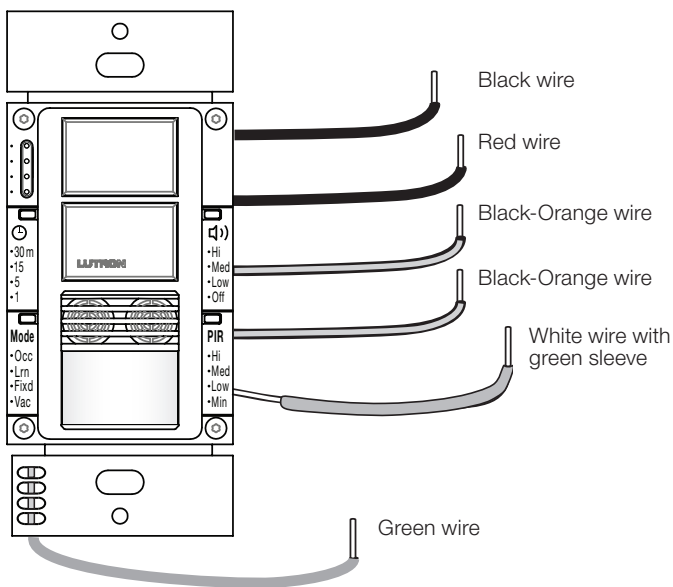
Job Name:

Model Numbers:

Job Number:

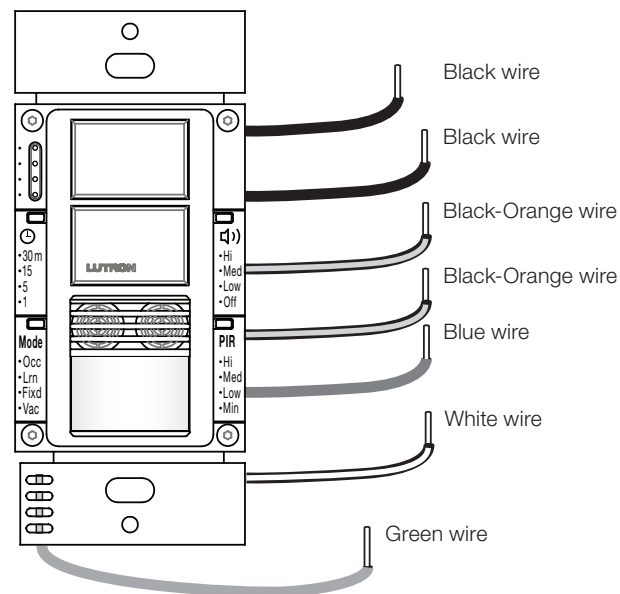
Wiring Installations with the Maestro Dual Technology Sensor Switch A202

In order to function, the dual technology sensor switch must have a ground or neutral wire connected. Connect green-sleeved wire to ground only in retrofit and replacement applications. When a neutral connection is available, remove green sleeve and connect white wire to neutral. Before installing wallplate, program all desired settings.



Wiring Installations with the Maestro Dual Technology Sensor Switch B202

Before installing wallplate, program all desired settings.

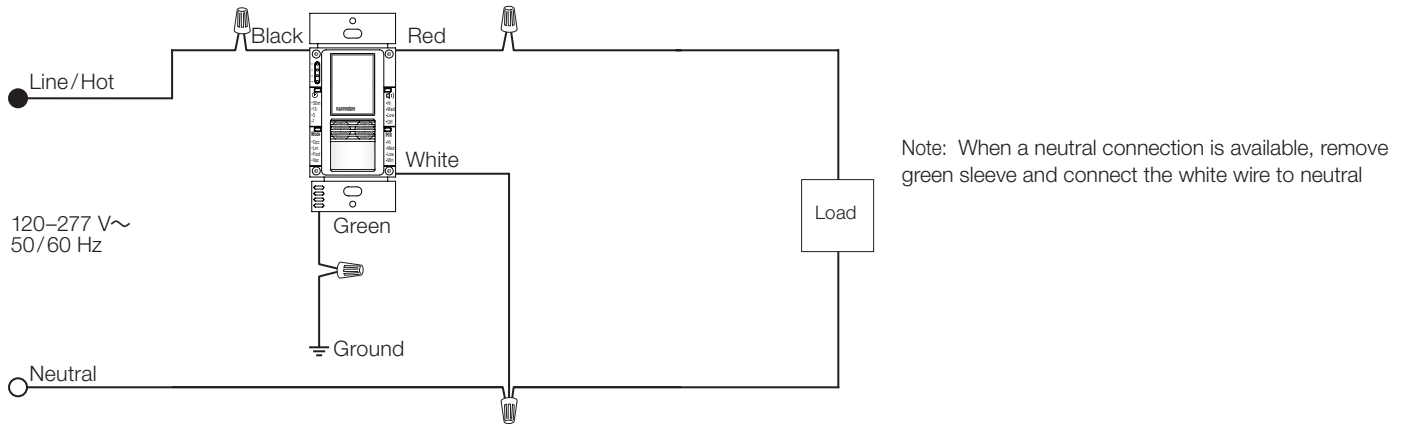


Job Name:	Model Numbers:
Job Number:	

Wiring Diagrams - Single-Circuit

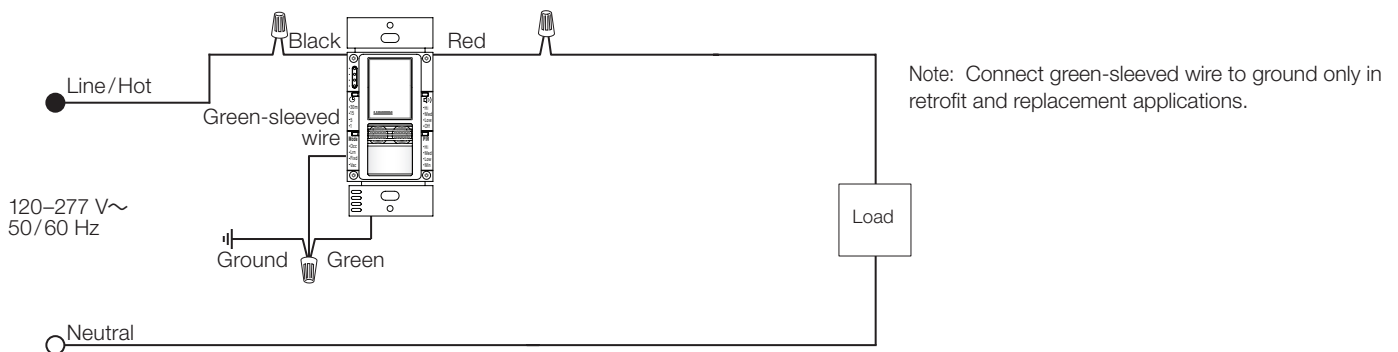
Wiring Diagram 1

Single pole wiring - single-circuit (MS-A102, MS-A102-V) with neutral



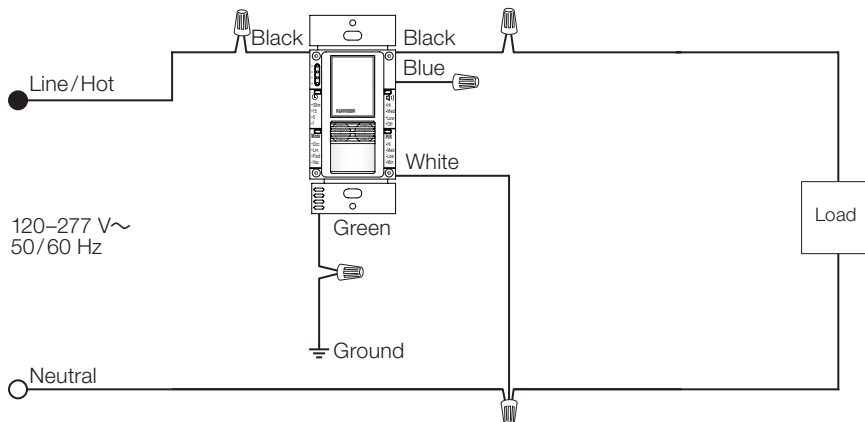
Wiring Diagram 2

Single pole wiring - single-circuit (MS-A102, MS-A102-V) without neutral



Wiring Diagram 3

Single pole wiring - single-circuit (MS-B102, MS-B102-V)



continued on next page...

Job Name:

Model Numbers:

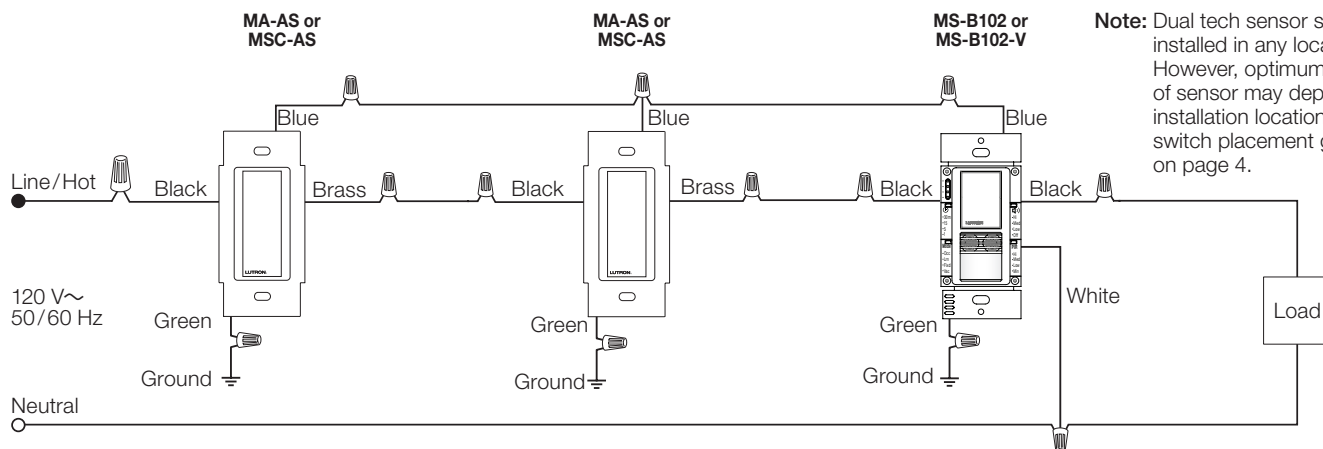
Job Number:

Wiring Diagrams - Single-Circuit *(continued)*

369773h 13 02.12.21

Wiring Diagram 4

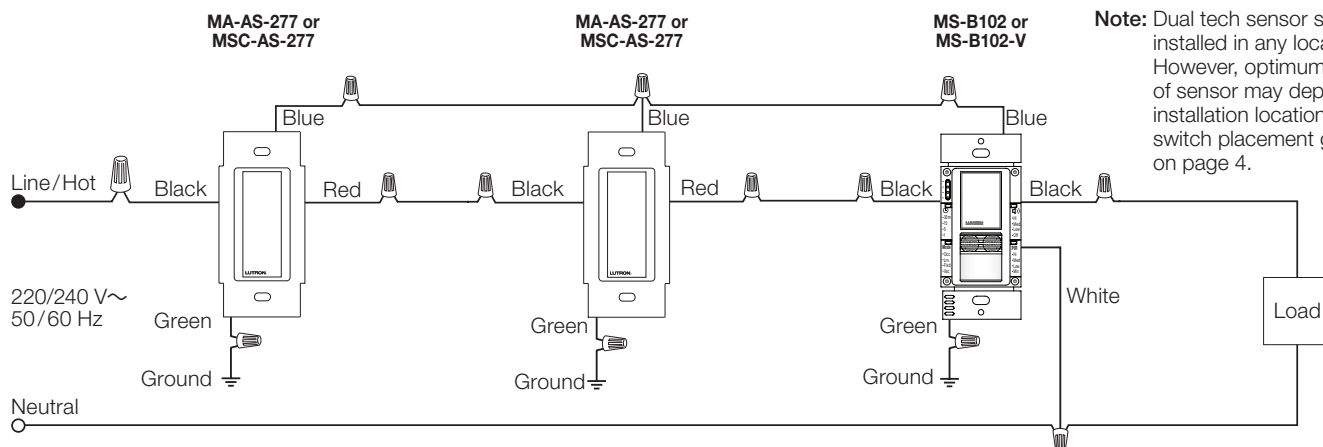
120 V~ Multi-location installation with Maestro accessory switches (MS-B102, MS-B102-V)



Note: Dual tech sensor switch can be installed in any location. However, optimum performance of sensor may depend upon installation location, see sensor switch placement guidelines on page 4.

Wiring Diagram 5

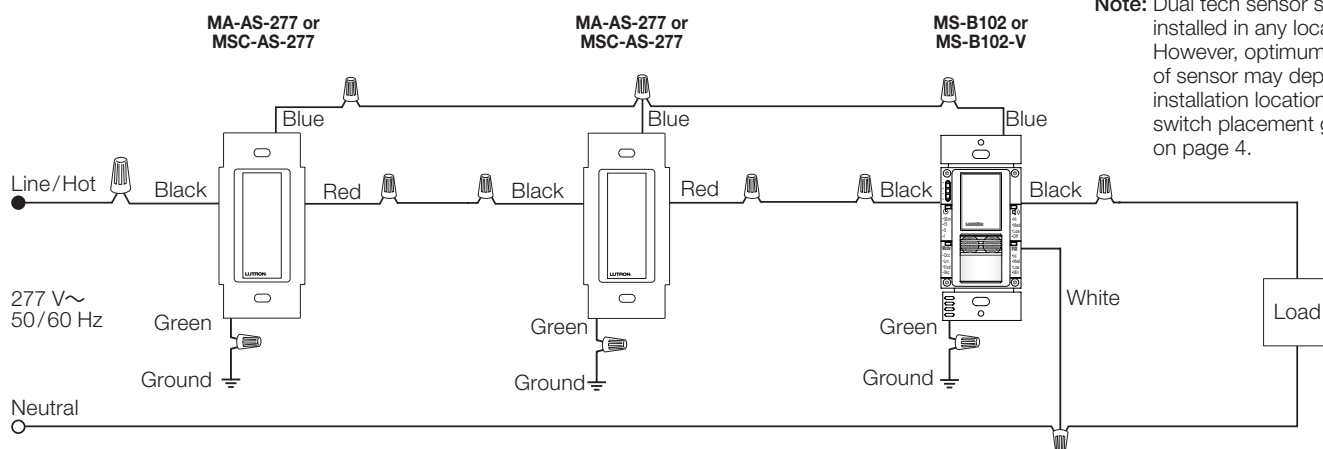
220/240 V~ Multi-location installation with Maestro accessory switches (MS-B102, MS-B102-V)



Note: Dual tech sensor switch can be installed in any location. However, optimum performance of sensor may depend upon installation location, see sensor switch placement guidelines on page 4.

Wiring Diagram 6

277 V~ Multi-location installation with Maestro accessory switches (MS-B102, MS-B102-V)



Note: Dual tech sensor switch can be installed in any location. However, optimum performance of sensor may depend upon installation location, see sensor switch placement guidelines on page 4.

Job Name:

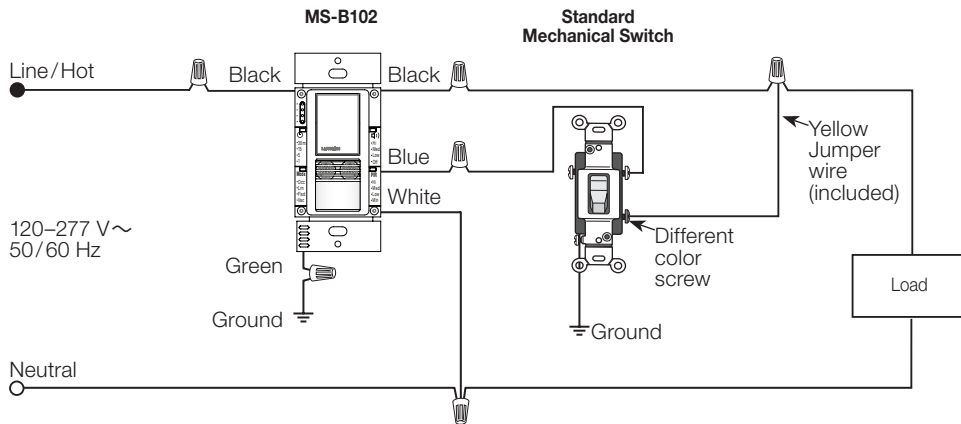
Model Numbers:

Job Number:

Wiring Diagrams - Single-Circuit *(continued)*

Wiring Diagram 7

3-way installation - single-circuit (MS-B102, MS-B102-V)

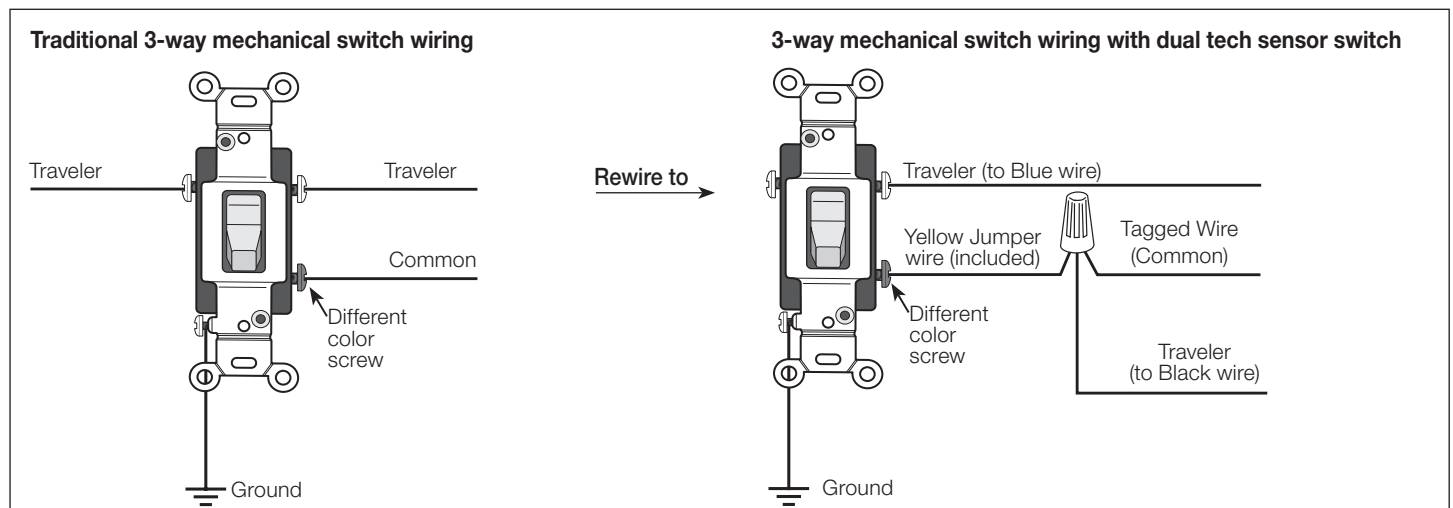


Note: Dual tech sensor switch can be installed in any location. However, optimum performance of sensor may depend upon installation location, see sensor switch placement guidelines on page 4.

3-way installation

For retrofit 3-way installations the mechanical switch needs to be rewired as shown in the diagram below after wiring the dual tech sensor switch. Otherwise the 3-way installation will not work as expected. Single pole mechanical switches may also be used in a 3-way installation with MS-B102, MS-B102-V and MS-B202 models.

1. Connect Ground: Ensure the bare copper or green ground wire from the wallbox is connected to the green ground screw of the mechanical switch.
2. Tag circuit Common: Your 3-way mechanical switch should have three screw terminals, two of the same color, and one of a different color. Tag the wire that is connected to the screw terminal of a different color.
3. Identify the wire that matches the color of the wire you connected to the blue wire of the Maestro dual technology occupancy sensor switch. Connect this wire to one of the two terminals of the same color.
4. Combine the tagged wire, the remaining wire and yellow jumper wire (included) using a wire connector. Connect the other end of jumper wire to the different color screw.



Job Name:

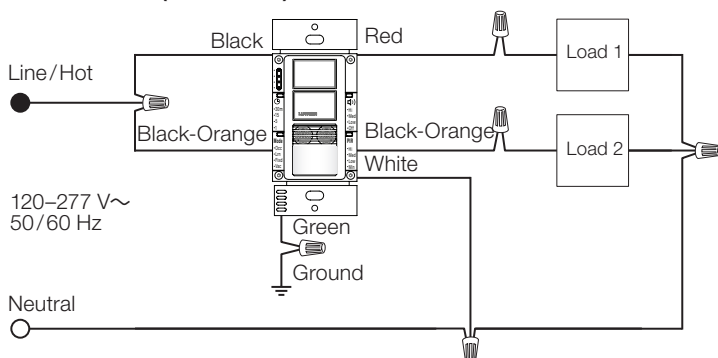
Model Numbers:

Job Number:

Wiring Diagrams - Dual-Circuit

Wiring Diagram 1

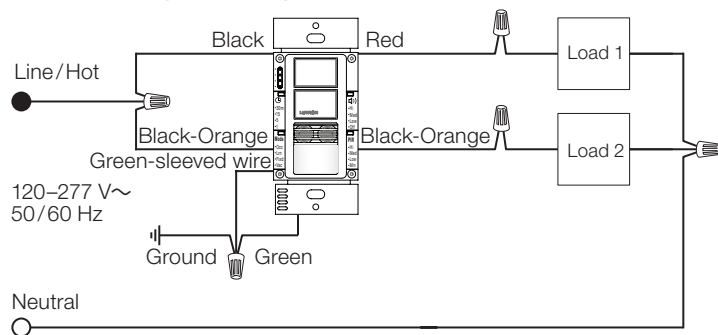
Single pole, single breaker feed wiring - dual-circuit (MS-A202) with neutral



Note: When a neutral connection is available, remove green sleeve and connect the white wire to neutral.

Wiring Diagram 2

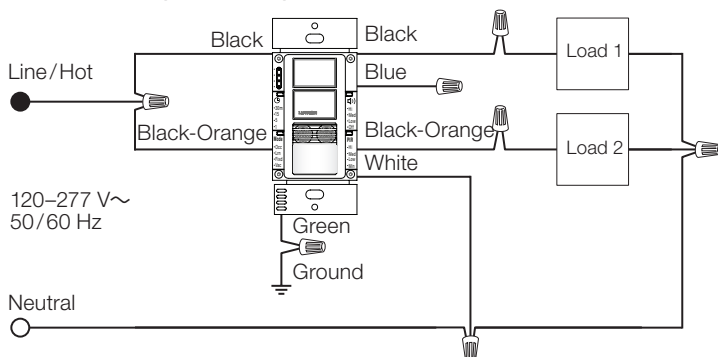
Single pole, single breaker feed wiring - dual-circuit (MS-A202) without neutral



Note: Connect green-sleeved wire to ground only in retrofit and replacement applications.

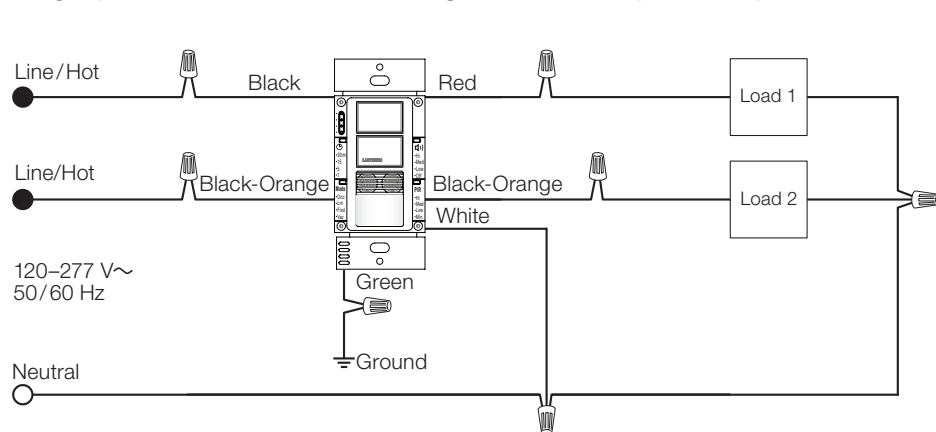
Wiring Diagram 3

Single pole, single breaker feed wiring - dual-circuit (MS-B202)



Wiring Diagram 4

Single pole, two breaker feed wiring - dual-circuit (MS-A202) with neutral



Note: When a neutral connection is available, remove green sleeve and connect the white wire to neutral.

Wiring must comply with NEC® code for wiring multiple branch circuits. Where two or more branch circuits supply devices or equipment on the same yoke, a means to simultaneously disconnect the ungrounded conductors supplying those devices shall be provided at the point at which the branch circuits originate.

continued on next page...

Job Name:

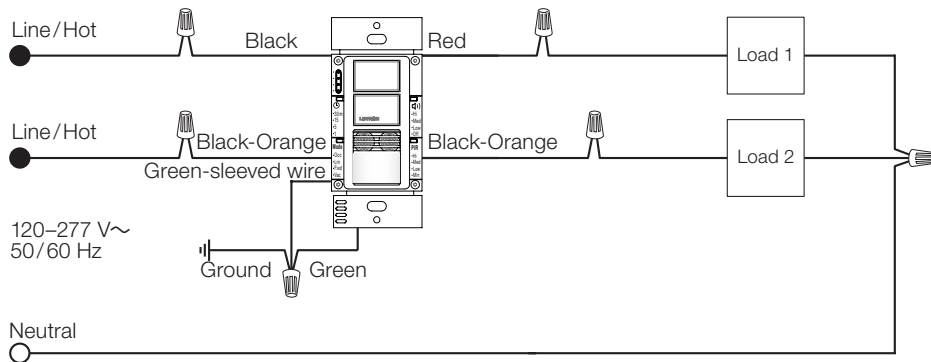
Model Numbers:

Job Number:

Wiring Diagrams - Dual-Circuit *(continued)*

Wiring Diagram 5

Single pole, two breaker feed wiring - dual-circuit (MS-A202) without neutral

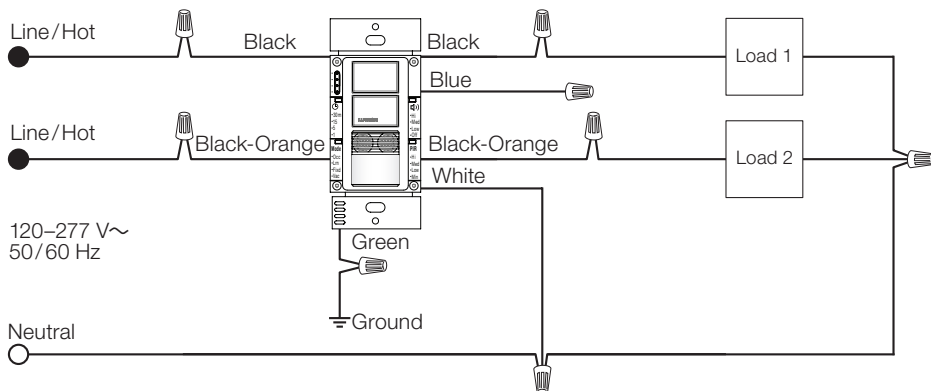


Note: Connect green-sleeved wire to ground only in retrofit and replacement applications.

Wiring must comply with NEC® code for wiring multiple branch circuits. Where two or more branch circuits supply devices or equipment on the same yoke, a means to simultaneously disconnect the ungrounded conductors supplying those devices shall be provided at the point at which the branch circuits originate.

Wiring Diagram 6

Single pole, two breaker feed wiring - dual-circuit (MS-B202)



Job Name:

Model Numbers:

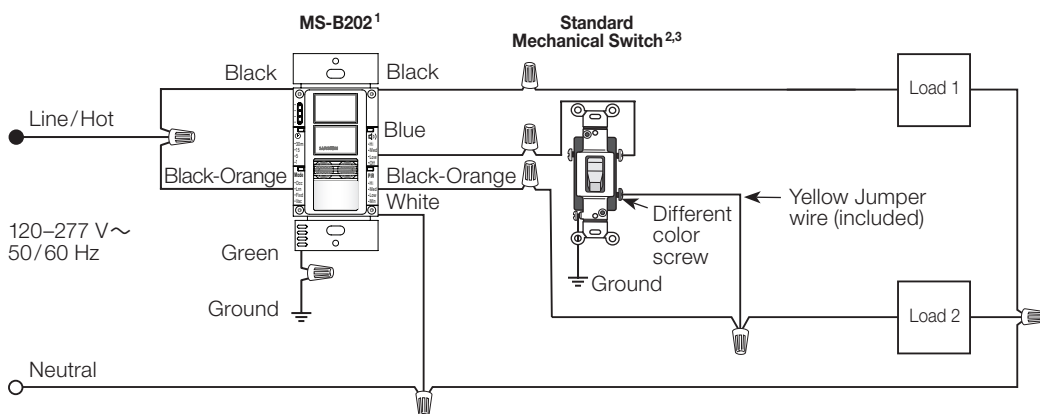
Job Number:

Wiring Diagrams - Dual-Circuit (continued)

Wiring Diagram 7

3-way installation, single breaker feed wiring: dual-circuit (MS-B202)

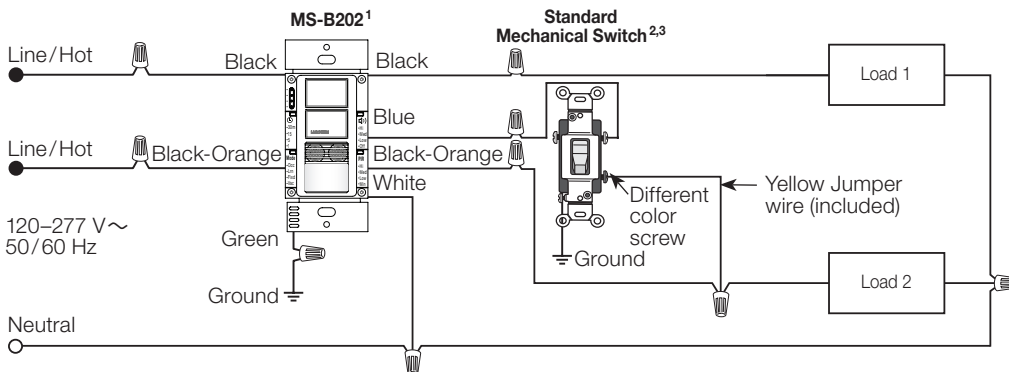
NOTE: Do not use Maestro accessory switches with MS-B202.



Wiring Diagram 8

3-way installation, two breaker feed wiring: dual-circuit (MS-B202)

Wiring must comply with NEC® code for wiring multiple branch circuits. Where two or more branch circuits supply devices or equipment on the same yoke, a means to simultaneously disconnect the ungrounded conductors supplying those devices shall be provided at the point at which the branch circuits originate.



Note: Do not use Maestro accessory switches with MS-B202.

Note: Optimum performance of sensor may depend upon installation location, see sensor switch placement guidelines on page 4.

¹ Dual tech sensor switch can be installed in any location.

² Mechanical switch may be wired to **either** circuit, and will control both. **Do NOT** wire mechanical switch to **both** circuits.

³ You may use no more than one mechanical switch with a dual-circuit dual tech sensor switch.

Job Name:

Model Numbers:

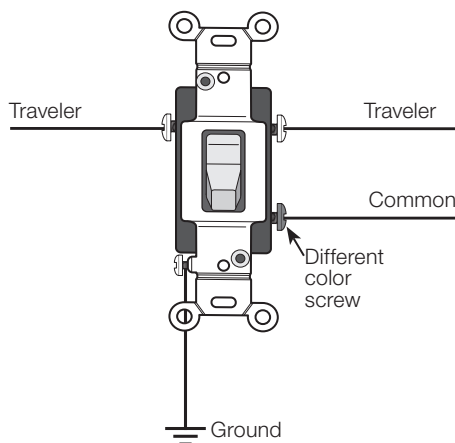
Job Number:

3-way installation

For retrofit 3-way installations the mechanical switch needs to be rewired as shown in the diagram below after wiring the dual tech sensor switch. Otherwise the 3-way installation will not work as expected. Single-pole mechanical switches may also be used in a 3-way with MS-B102, MS-B102-V and MS-B202 models.

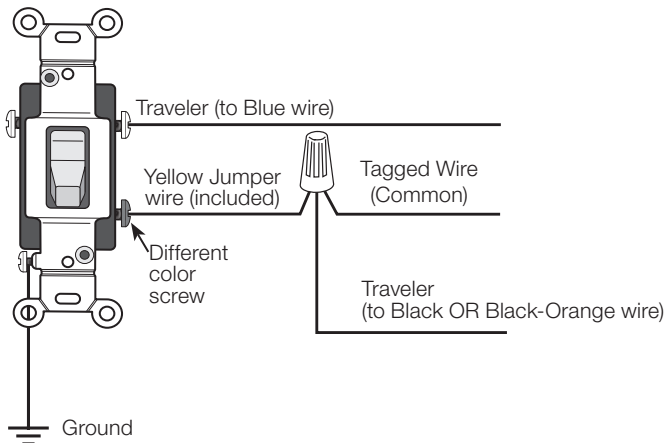
1. Connect Ground: Ensure the bare copper or green ground wire from the wallbox is connected to the green ground screw of the mechanical switch.
2. Tag circuit Common: Your 3-way mechanical switch should have three screw terminals, two of the same color, and one of a different color. Tag the wire that is connected to the screw terminal of a different color.
3. Identify the wire that matches the color of the wire you connected to the blue wire of the Maestro dual technology occupancy sensor switch. Connect this wire to one of the two terminals of the same color.
4. Combine the tagged wire, the remaining wire and yellow jumper wire (included) using a wire connector. Connect the other end of jumper wire to the different color screw.

Traditional 3-way mechanical switch wiring



Rewire to →

3-way mechanical switch wiring with dual tech sensor switch

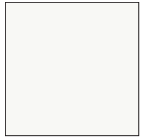


How loads operate in 3-way with dual-circuit sensor switch (MS-B202)

	Initial Load State		After flipping 3-way mechanical switch	
	Circuit 1	Circuit 2	Circuit 1	Circuit 2
When All Lights are OFF	Off	Off	On	On
When All Lights are ON	On	On	Off	Off
When One Circuit is ON	On	Off	Off	Off
	Off	On	Off	Off

Colors and Finishes

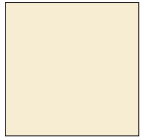
Gloss Finishes



White
WH



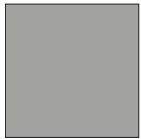
Ivory
IV



Almond
AL



Light Almond
LA



Gray
GR

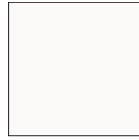


Brown
BR



Black
BL

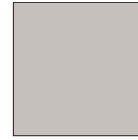
Satin Finishes



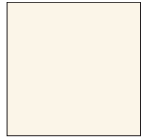
Snow
SW



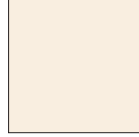
Midnight
MN



Taupe
TP



Biscuit
BI



Eggshell
ES



Palladium
PD



Hot
HT



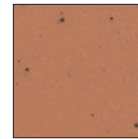
Merlot
MR



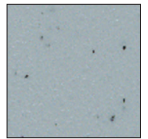
Plum
PL



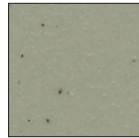
Sienna
SI



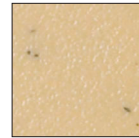
Terracotta
TC



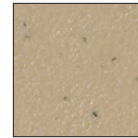
Bluestone
BG



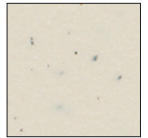
Greenbriar
GB



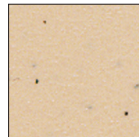
Goldstone
GS



Mocha Stone
MS



Stone
ST



Desert Stone
DS



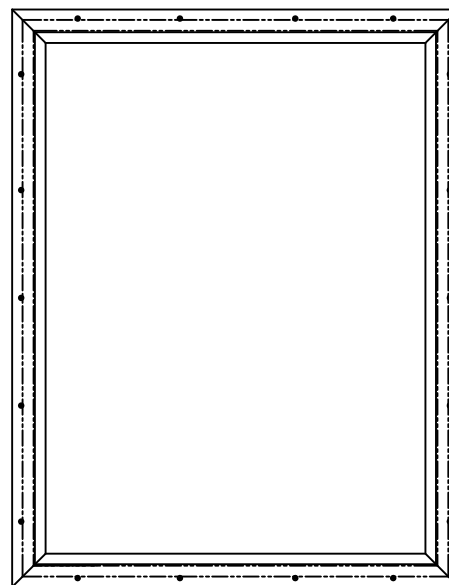
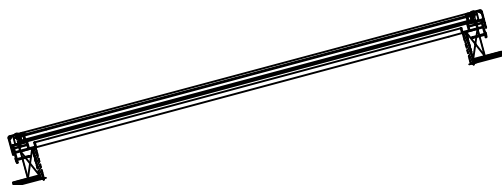
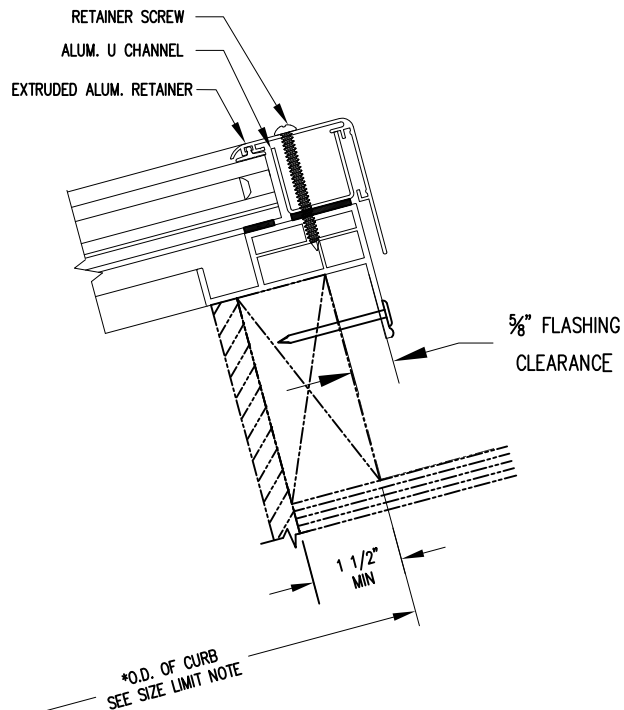
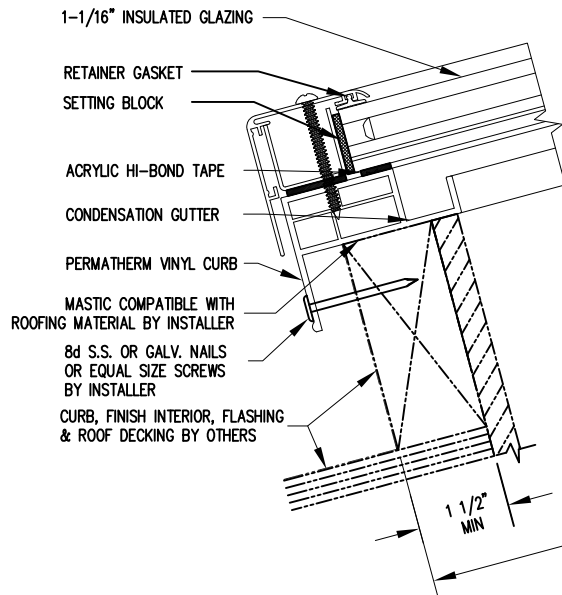
Limestone
LS

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

For the latest color offerings please see our website:
<http://www.lutron.com/satincolors>

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All other product names, logos, and brands are property of their respective owners.

Job Name:	Model Numbers:
Job Number:	



ORDER #: _____ DATE: _____

PROJECT: _____

LOCATION: _____

CUSTOMER: _____

APPROVED: _____ DATE: _____

MODEL	O.D.CURB	QUANTITY
GSM 5252	49 1/4" X 49 1/4"	
GSM 5276	49 1/4" X 72 1/2"	
GSM 5296	49 1/4" X 92 1/2"	
GSM 6060	58" X 58"	
CUSTOM		
CUSTOM		

SIZE LIMITS:
 LIMITED TO RECTANGULAR UNITS ONLY
 UNIT NOT TO EXCEED 32SF BASED ON THE OUTSIDE CURB
 DIMENSIONS.
 MAX. OCD. = 10'0" / MIN. OCD. = 25"
 PITCH OF GLASS ON SKYLIGHT: 1/4"/FT MIN

CURB FINISH: PVC: WHITE INTERIOR/BRONZE EXTERIOR
 RETAINER FINISH: BRONZE PAINT (STANDARD)

OTHER _____

1 1/16" INSULATING GLASS SPECIFICATION
 STANDARD MAKEUP:
 SOLARBAN 70XL (#2)/3/8" ARGON/7/16" CLEAR HS LAMIMATED

CUSTOM
 1/4" OUTER LAYER _____
 3/8" SPACE FILL AIR ARGON
 7/16" INNER LAYER _____

SKYMAX CURB MOUNT GLASS UNIT



85 Spencer Drive, Unit A
 Wells, ME 04090
 1-800-88-VELUX
 veluxusa.com

LOAD (W)	PF	LOAD (A)	CIRCUIT	ZONE	FIXTURE COUNTS	CIRCUIT WATTS	CIRCUIT AMPS
174	0.9	0.930175434					
306	0.9	1.635825763	C1 (2317)	Z11a, Z11b	14 C7, 11 C5, 2 C6	441	2.357513599
84	0.9	0.449050209	C2 (2314)	Z11c	9 C7, 1 C5, 4 C6	190	1.015708807
66	0.9	0.352825165	C3 (2314)	Z11d	9 C7, 1 C5, 4 C6	190	1.015708807
529	0.9	2.827947152	C4 (2314, L2-C-13)	Z11e, Z11f	3 C1, 9 C2, 3 C3, 3 C4, 10 C5, 4 C6	928	4.960935646
238	0.9	1.272308927				CHECK	9.349866859
363	0.9	1.940538405					
1760		9.408671053					