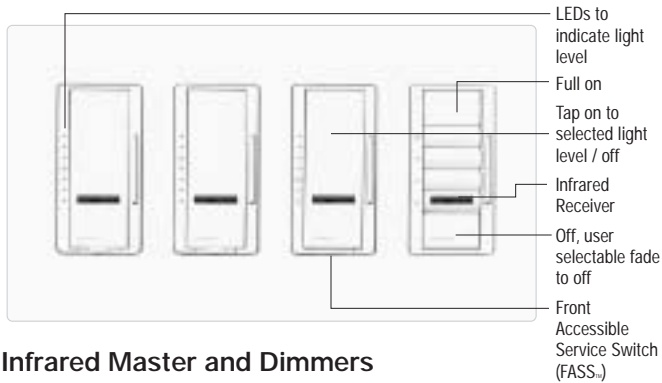


Infrared wireless preset lighting scene controls.



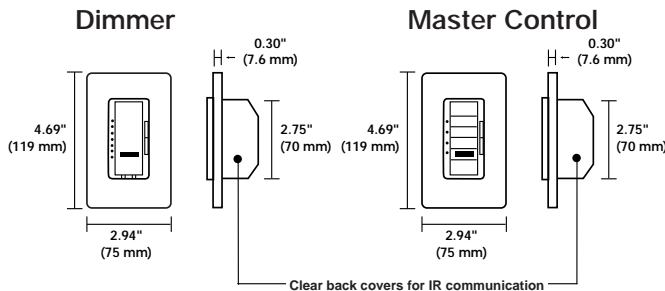
Infrared Master and Dimmers

## PRODUCT FAMILY FEATURES

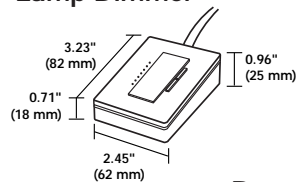
- Simple-to-use multi-scene preset lighting control for a standard designer wallplate opening
- Recalls preset lighting scenes by wall-mounted master control or infrared remote control
- Simultaneously controls all dimmers in the same room, by infrared hand-held remote control
- Dimmers store up to four present scenes and can function alone or as part of a system
- Special product features, see page 4
- Uses standard single pole and 3-way wiring for easy new or retrofit installations

## DIMENSIONS

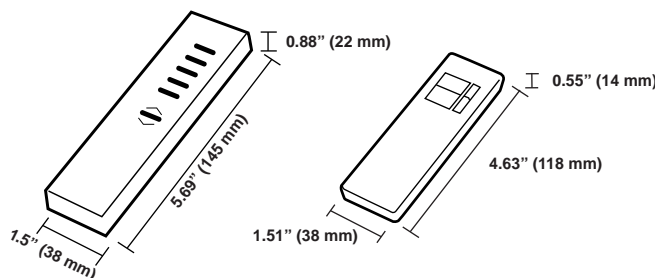
Including Claro® wallplates – Wallplates sold separately



### Plug-In Lamp Dimmer

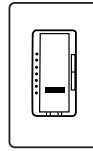


### Remote Controls

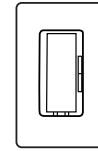


## CONTROLS AND ACCESSORIES <sup>1</sup>

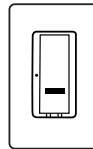
### Preset Dimmers with IR Receiver



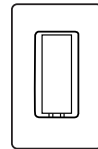
### Accessory Dimmers



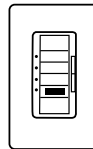
### Switches with IR Receiver



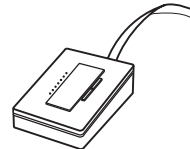
### Accessory Switches



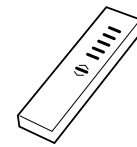
### 5-Scene Wall-Mounted Master Controls



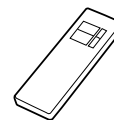
### Plug-In Lamp Dimmers with IR Receiver



### 4-Scene IR Wireless Remote Controls



### Favorite Scene IR Wireless Remote Controls



<sup>1</sup> For a coordinated look, use Claro® accessories and wallplates.

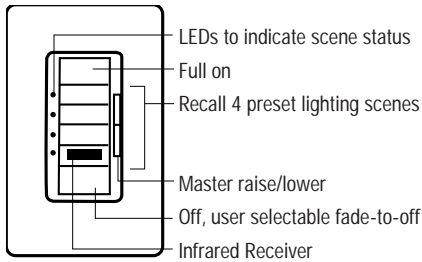
## SPECIFICATION SERIES STANDARD FEATURES



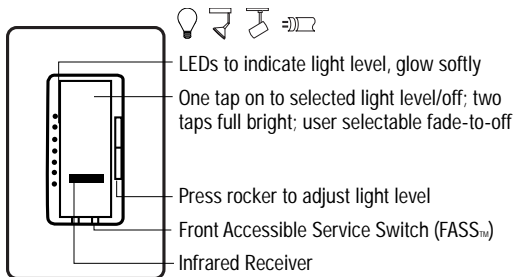
- Power-failure memory
  - Superior RFI suppression
  - Precise color matching
  - Electrostatic discharge tested
  - Front accessible service switch (FASS™)
  - Heavy-duty components for surge protection and long product life
- Lutron controls are rated at 120VAC, 60Hz unless otherwise noted.

JOB NAME	AREA CONTROLLED
LOCATION	JOB NUMBER
TITLE	PAGE NO.

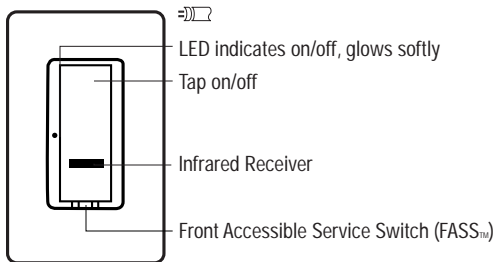
### 5-SCENE WALL MOUNTED MASTER CONTROLS



### DIMMERS WITH INFRARED RECEIVER

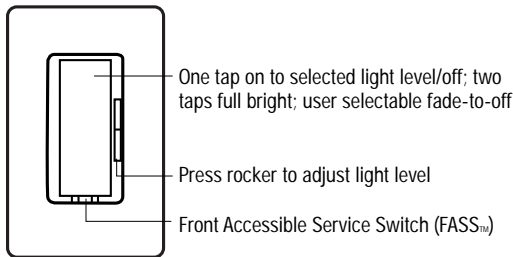


### SWITCHES WITH INFRARED RECEIVER



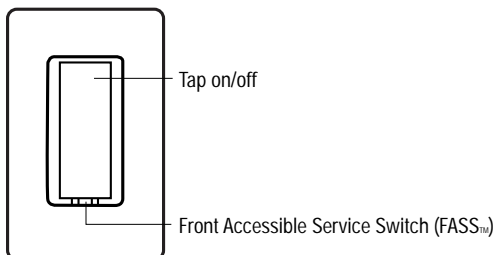
### ACCESSORY DIMMERS

For use in multi-location dimming only – use up to nine accessory dimmers with only one Spacer System multi-location dimmer with infrared receiver

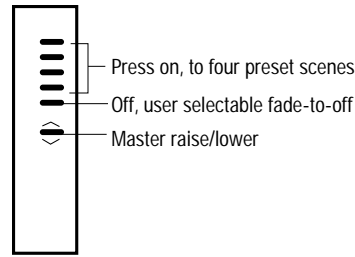


### ACCESSORY SWITCHES

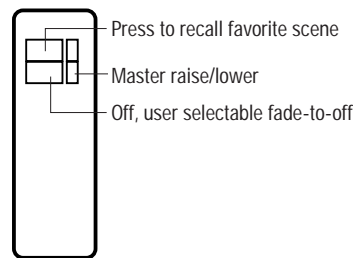
For use in multi-location switching only – use up to nine accessory switches with only one Spacer System multi-location switch with infrared receiver



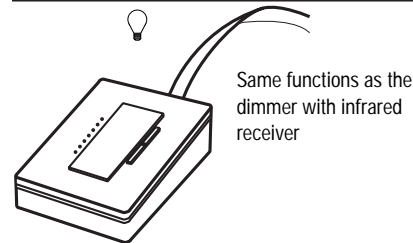
### 4-SCENE INFRARED (IR) WIRELESS REMOTE CONTROLS



### FAVORITE SCENE™ INFRARED (IR) WIRELESS REMOTE CONTROLS

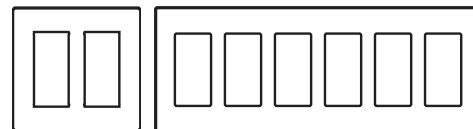


### PLUG-IN LAMP DIMMERS WITH INFRARED RECEIVER

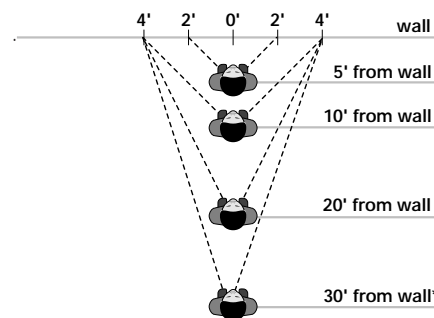


### CLARO. COORDINATED ACCESSORIES AND WALLPLATES

Switches, Receptacles, GFCI Receptacles, Telephone Jacks, Cable TV Jacks, and 1- to 6-Gang Wallplates Available.



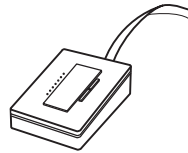
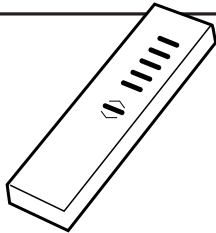
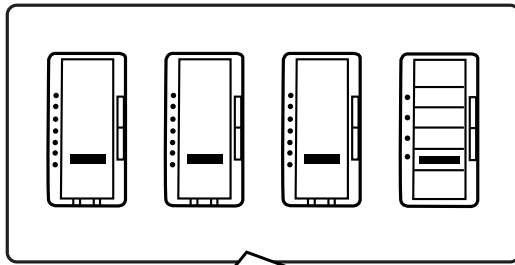
### INFRARED TRANSMITTER PHOTOMETRICS



\* 4-scene transmitter has an increased range of up to 50 feet.

## SPACER SYSTEM CONFIGURATION OPTIONS

### Option 1

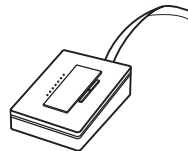
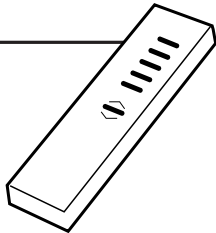
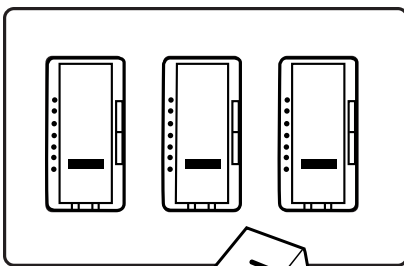


#### Multiganged Dimmers with a 5-Scene Master Control and 4-Scene Infrared Wireless Remote Control

- Use Spacer System multiganged dimmers with a master control for new construction -OR- Retrofit by installing a new wallbox that fits the Spacer System dimmers plus the master control
- Spacer System lamp dimmers let you make table and floor lamps part of your system

Shown: Three Spacer System dimmers and a 5-scene master control in a four-gang Claro wallplate. The 4-scene infrared wireless remote control should be ordered, too, for scene control capability.

### Option 2

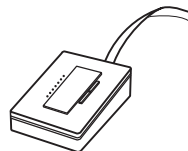
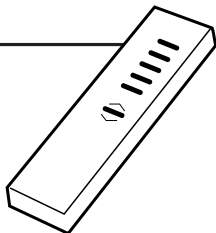
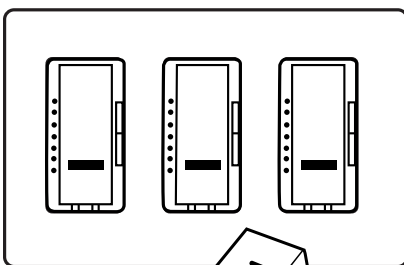


#### Multiganged Dimmers with a Remotely Mounted 5-Scene Master Control and 4-Scene Infrared Wireless Remote Control

- Use Spacer System multiganged dimmers with a remote master control for new construction. Requires two (2) 14 AWG traveler wires between dimmers and master control
- Spacer System lamp dimmers let you make table and floor lamps part of your system

Shown: Three Spacer System dimmers and a remote mounted 5-scene master control in 2 separate wallboxes. The 4-scene infrared wireless remote control should be ordered, too, for scene control capability.

### Option 3



#### Multiganged Dimmers with a 4-Scene Infrared Wireless Remote Control

- Use Spacer System multiganged with a remote controls for a very simple and easy retrofit
- Just remove existing switches, install Spacer System dimmers and create and recall scenes with a remote control
- Spacer System lamp dimmers let you make table and floor lamps part of your system

Shown: Three Spacer System dimmers and a three-gang Claro wallplate. The 4-scene infrared wireless remote control should be ordered, too, for scene control capability.

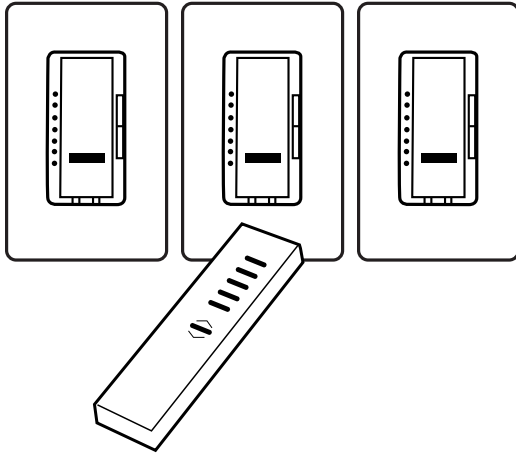
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## SPACER SYSTEM CONFIGURATION OPTIONS

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### Option 4

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#### Combinations of Dimmers with a 4-Scene Infrared Wireless Remote Control

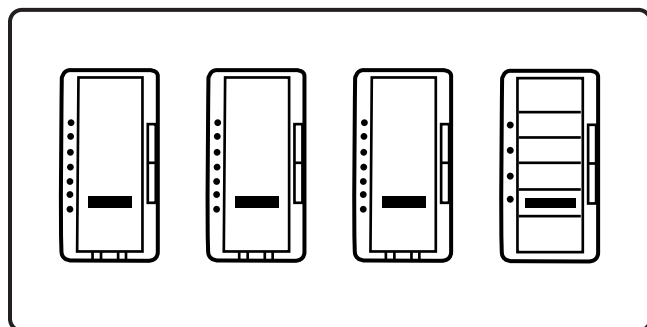
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- Entire room control is finally available for any room
- Just remove existing switches, install Spacer System dimmers and create and recall scenes with a remote control
- Spacer System lamp dimmers let you make table and floor lamps part of your system

Shown: Three Spacer System dimmers and three single-gang Claro wallplates. The 4-scene infrared wireless remote control should be ordered, too, for scene control capability.

## SPACER SYSTEM SPECIAL PRODUCT FEATURES

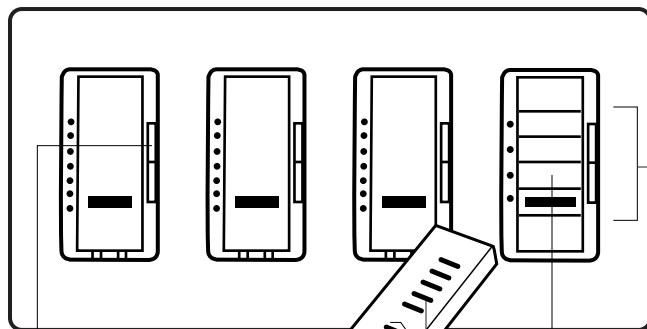
### No wiring needed between wall-mounted master controls and dimmers



Master controls send infrared signals and dimmers receive them through clear backboxes (signal travels four dimmers maximum in either direction)



### Set and recall lighting scenes...like setting a radio station in your car



Step 1 Set light levels at dimmers

Step 2 Press and hold the master or remote control scene button until the LED flashes

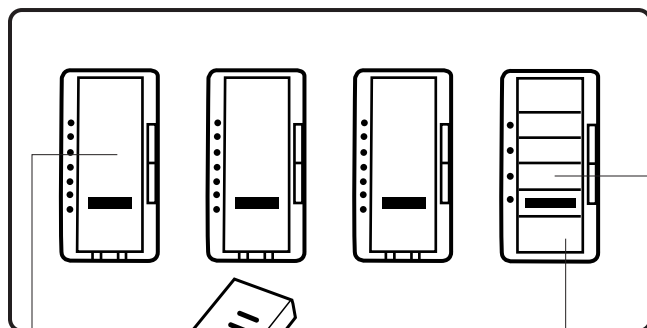
Step 3 Repeat for each scene button

### Use with learnable remotes

Spacer system remote controls are compatible with many learnable remote controls

Now it is possible to use a single remote to control your TV, VCR, stereo system and lighting, for total room comfort – at your fingertips

### User-selectable (up to 60 second) fade-to-off for a safe exit from your room



Step 1 Press and hold master, remote control OFF button or dimmer tapswitch

Step 2 LEDs will flash one at a time; each LED indicates a 10 second increment lights stay on before fading to off – release hold at desired setting

Description	Maximum Capacity <sup>1</sup>	Model #
-------------	-------------------------------	---------

### DIMMERS



#### Incandescent



##### Dimmers with IR Receiver

Single-location	600W	SPS-600-
Single-location	1000W	SPS-1000-
Multi-location	600W	SPS-600M-
Multi-location	1000W	SPS-1000M-

Note: For multi-location dimming, use a multi-location dimmer with Spacer System accessory dimmers, SPS-AD-. Not for use with mechanical 3-way or 4-way switches. Minimum load is 60W.



#### Electronic Low Voltage



##### Dimmers with IR Receiver

Single-location	600W	SPSELV-600-
Multi-location	600W	SPSELV-600M-

Note: For multi-location dimming, use a multi-location dimmer with Spacer System accessory dimmers, SPS-AD-. Not for use with mechanical 3-way or 4-way switches. Requires neutral wire connection. Minimum load is 60W.



#### Magnetic Low Voltage



##### Dimmers with IR Receiver

Single-location	600VA (450W <sup>2</sup> )	SPSLV-600-
Single-location	1000VA (800W <sup>2</sup> )	SPSLV-1000-
Multi-location	600VA (450W <sup>2</sup> )	SPSLV-600M-
Multi-location	1000VA (800W <sup>2</sup> )	SPSLV-1000M-

Note: For multi-location dimming, use a multi-location dimmer with Spacer System accessory dimmers, SPS-AD-.

Not for use with mechanical 3-way or 4-way switches.

Wattage indicated maximum lamp load. Minimum load is 60W.



#### Fluorescent Dimming with Tu-Wire™ Electronic Ballasts



##### Dimmers with IR Receiver

Single-location	5A	SPSFTU-5A-
-----------------	----	------------

Note: Use with Lutron Tu-Wire line voltage control electronic dimming ballasts only. See Dimming Ballast Selection Guide, pg. 195. Minimum load is 2 ballasts/250mA.



#### Fluorescent Dimming with Hi-lume® and Eco-10™ (ECO-Series) Electronic Ballasts



##### Dimmers with IR Receiver

Single-location	20 ballasts, 6A	SPSF-6A-
Multi-location	20 ballasts, 6A	SPSF-6AM-
Single-location, 277V	20 ballasts, 6A	SPSF-6A-277-
Multi-location, 277V	20 ballasts, 6A	SPSF-6AM-277-

Note: For multi-location dimming, use one Spacer System multi-location dimmer with up to nine Spacer System accessory dimmers, SPS-AD-. Not for use with mechanical 3-way or 4-way switches. Use with Lutron Hi-lume and Eco-10 (ECO-Series) line voltage control electronic dimming ballasts only. See Dimming Ballast Selection Guide, pg. 195. Requires neutral wire connection. Minimum load is 1 ballast/80mA.

Description	Maximum Capacity <sup>1</sup>	Model #
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### HI-POWER 2•4•6™ DIMMING MODULES

To increase load capacity up to 30,000W/VA in most popular sources, use one SPS-600- or SPS-600M- and add up to five dimming modules. Cannot be used with 0-10VDC ballast.

### ACCESSORY DIMMERS

#### Provide Multi-Location Dimming from Up to Nine Additional Locations



##### Dimmers

Accessory Dimmer, 120V	SPS-AD-
Accessory Dimmer, 277V	SPS-AD-277-

Note: For 120V multi-location dimming, use up to nine Spacer System accessory dimmers (SPS-AD-) with only one of the following Spacer System multi-location dimmers: SPS-600M-, SPS-1000M-, SPSLV-600M-, SPSELV-600M-, or SPSF-6AM-. For 277V multi-location dimming, use up to nine Spacer System accessory dimmers (SPS-AD-277-) with SPSF-6AM-277-.

Dimmers and accessory dimmers must have the same voltage rating. Not for use with mechanical 3-way or 4-way switches. No derating required if ganged.

### SWITCHES



#### Fluorescent Switching for use with Electronic and Magnetic Fluorescent Non-Dim Ballasts, Magnetic Transformers and Relays



##### Fluorescent Switches

Single-location	6A	SPSF-S6A-
Multi-location	6A	SPSF-S6AM-
Single-location, 277V	6A	SPSF-S6A-277-
Multi-location, 277V	6A	SPSF-S6AM-277-

Note: For multi-location dimming, use one Spacer System multi-location dimmer with up to nine Spacer system accessory dimmers, SPS-AD-. Not for use with mechanical 3-way or 4-way switches. Requires neutral wire connection.

### ACCESSORY SWITCHES

#### Provide Multi-Location Switching from Up to Nine Additional Locations



Accessory switch	6A	SPS-AS-
Accessory switch, 277V	6A	SPS-AS-277-

Note: For 120V multi-location switching, use up to nine Spacer System accessory switches (SPS-AS-) with only one SPS-S6AM-. For 277V multi-location dimming, use up to nine Spacer System accessory dimmers (SPS-AS-277-) with only one SPSF-S6AM-277-.

Not for use with mechanical 3-way or 4-way switches. No derating required if ganged.

<sup>1</sup> For capacities in multi-gang installations see derating, pg. 7.

<sup>2</sup> Actual lamp wattage.

Description	Maximum Capacity <sup>1</sup>	Model #
-------------	-------------------------------	---------

## MASTER CONTROLS

### Wall-Mounted Master Controls



120V 5-scene		SPS-5WC-
<p>Note: Requires neutral wire connection. Must be ganged in the same continuous wallbox with one to four (maximum) Spacer System dimmers. Master control can be ganged to the left or right of dimmers. When using 120V and 277V products in the same wallbox, use 600V rated cable. Follow NEC Standard 300-3.</p>		



120V Remote 5-scene		SPS-5WCR-
<p>Note: Requires neutral wire connection. Two remote IR blasters included. Not intended to be ganged with Spacer System dimmers. Refer to wiring diagram #12 on page 11. When using 120V and 277V products in the same wallbox, use 600V rated cable. Follow NEC Standard 300-3.</p>		

## LAMP DIMMERS



### Incandescent/Halogen (120V)



Plug-In Lamp Dimmer with Infrared Receiver For table or floor lamps	300W	SPS-300LD-RP
<p>Note: Can be controlled by either a Spacer System or GRAFIK Eye infrared wireless remote control. Cord is 6' (1.8m) long. Lamp dimmers intended only for use with table or floor lamps that do not contain integral dimmers. Available in royal plum (RP) only. 2.45" W (62mm) x 3.23" H (82mm) x 0.96" D (25mm)</p>		

## REMOTE CONTROLS

### Infrared Wireless Remote Controls



4-Scene <sup>1</sup> Wireless remote control		SPS-4IT-RP
<p>Note: Recalls preset light levels for four scenes plus off and fine tuning of light levels (scenes dependent on dimmer settings). Range is 50' (19.7m) line of sight to receiver. 1.51" W (38mm) x 5.69" H (145mm) x 0.88" D (22mm)</p>		



Favorite-Scene™ <sup>1</sup> Wireless remote control		SPS-FSIT-RP
<p>Note: Recalls preset light levels for one scene plus off and fine tuning of light levels. Range is 30' (11.8m) line of sight to receiver. 1.51" W (38mm) x 4.63" H (118mm) x 0.55" D (14mm)</p>		

### Remote Control Accessories



Remote Control Tether and Holster Tether and Holster		RCTH-GR
<p>Note: Available in gray (GR) only.</p>		

<sup>1</sup> Remote controls work for all Spacer system dimmers, lamp dimmers and switches. Remote controls are for use with Spacer System only. Infrared frequency is 40kHz. Available in royal plum (RP) only.

Description	Maximum Capacity	Model #
-------------	------------------	---------

## CLARO SWITCHES

### General Purpose Switching of All 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-
<p>Note: No derating required if ganged.</p>		

## CLARO ACCESSORIES

### Receptacles



Receptacle	15A, 125V	CAR-15H-
------------	-----------	----------



GFCI Receptacle	15A, 125V	CAR-15-GFCIH-
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### Telephone and Cable Television Jacks

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



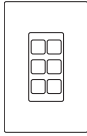
Single Telephone Jack 6-conductor, RJ11		CA-PJH-
<p>Note: Also accepts most 4-conductor plugs.</p>		



Cable TV Jack F-style, 75-Ohm, coaxial cable		CA-CJH-
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Description	Rating	Model #
-------------	--------	---------

**ACCESSORIES**



**Field Customizable Multi-Port Frame**

6-Port Frame	Shipped with 6 blanks Shown with blanks	CA-6PF- <input type="checkbox"/>
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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.



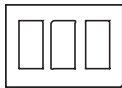
## CLARO WALLPLATES



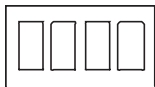
1-Gang  
2.94"W (75mm) x 4.69"H (119mm) x 0.30"D (7.6mm)  
CW-1-



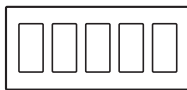
2-Gang  
4.75"W (121mm) x 4.69"H (119mm) x 0.30"D (7.6mm)  
CW-2-



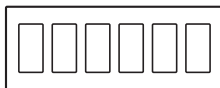
3-Gang  
6.56"W (167mm) x 4.69"H (119mm) x 0.30"D (7.6mm)  
CW-3-



4-Gang  
8.37"W (213mm) x 4.69"H (119mm) x  
0.30"D (7.6mm) CW-4-



5-Gang  
10.18"W (259mm) x 4.69"H (119mm) x  
0.30"D (7.6mm) CW-5-



6-Gang  
12.00"W (305mm) x 4.69"H (119mm) x  
0.30"D (7.6mm) CW-6-

## STANDARD COLORS/FINISHES

Gloss Finishes (Ships in 48 hours)

Add color/finish suffix to model number to order.

Example: SPS-600-**WH**

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

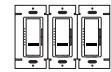
## DERATING/MAXIMUM CAPACITY <sup>1</sup>



No fins/side  
sections  
removed  
(Full Capacity)



One fin/side  
section removed  
from each control  
(End Units)



Two fin/side  
sections removed  
from center control  
(Middle Unit)

### Incandescent Dimmers <sup>2</sup>

600W	500W	400W
1000W	800W	650W

### Electronic Low Voltage Dimmers

600W	500W	400W
------	------	------

### Magnetic Low Voltage Dimmers <sup>2</sup>

600VA (450W <sup>3</sup> )	500VA (375W <sup>3</sup> )	400VA (300W <sup>3</sup> )
1000VA (800W <sup>3</sup> )	800VA (650W <sup>3</sup> )	650VA (500W <sup>3</sup> )

### Fluorescent Dimmers

Hi-lume/Eco-10 Tu-Wire	20 ballasts/6A 5A	20 Ballasts/5A 4A	20 Ballasts/3.5A 3.3A
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### Electronic Switches

6A	5A	3.5A
----	----	------

<sup>1</sup> Accessory dimmers / accessory switches for Spacer System do not require derating.

<sup>2</sup> Minimum load: 60W.

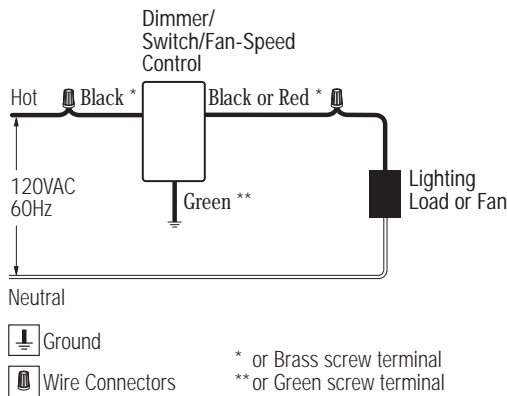
<sup>3</sup> Actual lamp wattage.

**WIRING DIAGRAMS**

**Wiring Diagram 1  
Single-Pole Wiring**

**Model #**

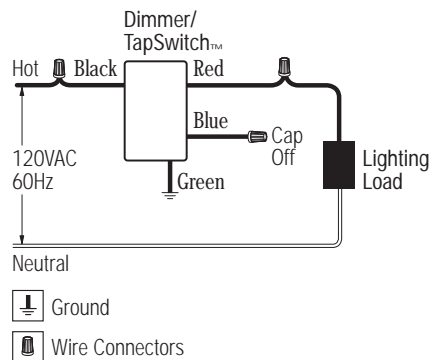
CA-1PSH-  
SPS-600-  
SPS-1000-  
SPSLV-600-  
SPSLV-1000-



**Wiring Diagram 2  
Single-Location Wiring**

**Model #**

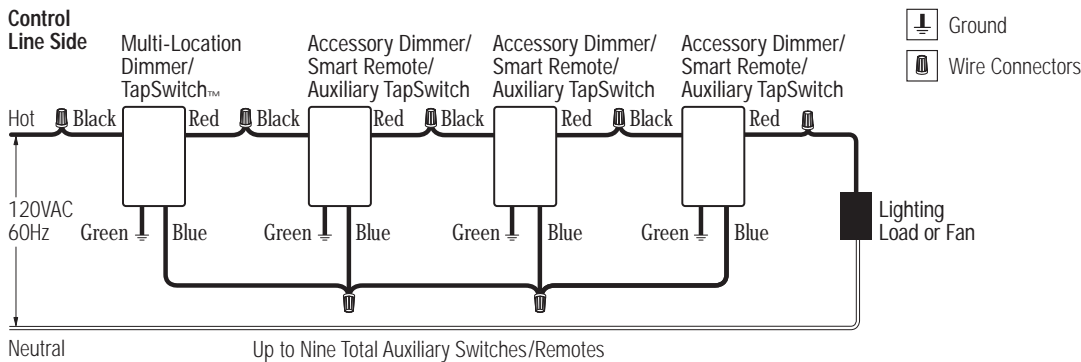
SPS-600M-  
SPS-1000M-  
SPSLV-600M-  
SPSLV-1000M-



**Wiring Diagram 3  
Multi-Location Wiring**

**Model #**

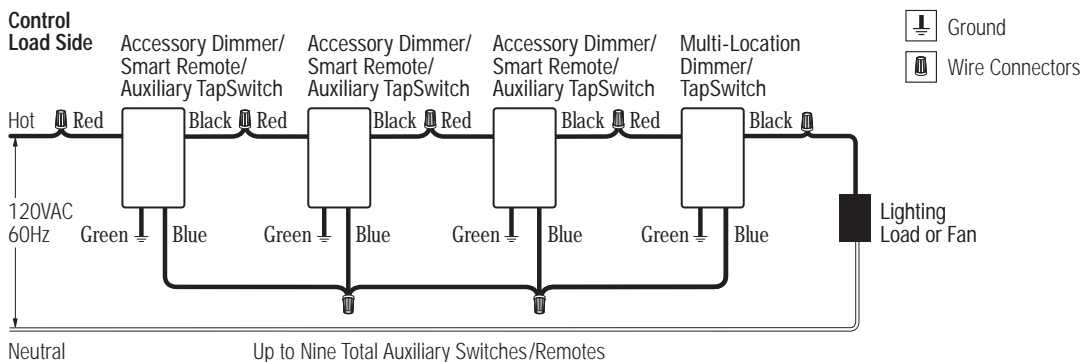
SPS-600M-  
SPS-1000M-  
SPSLV-600M-  
SPSLV-1000M-  
SPS-AD-



**Wiring Diagram 4  
Multi-Location Wiring**

**Model #**

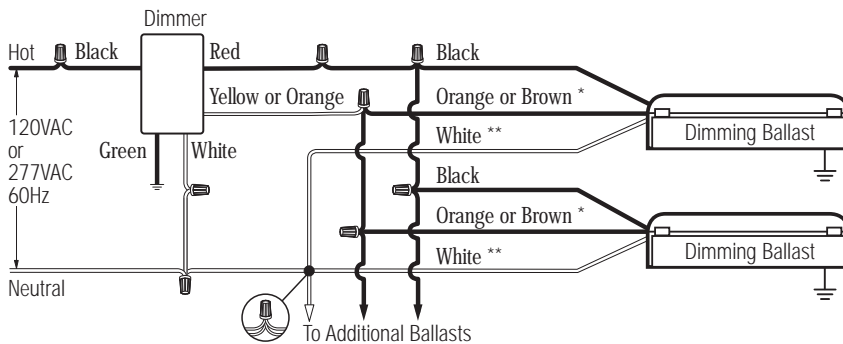
SPS-600M-  
SPS-1000M-  
SPSLV-600M-  
SPSLV-1000M-  
SPS-AD-



## WIRING DIAGRAMS

**Wiring Diagram 5**  
**Single-Pole Wiring**

**Model #**



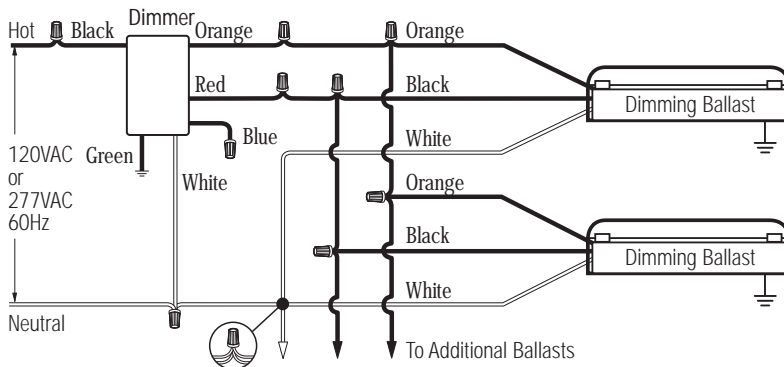
- Ground
- Wire Connectors
- Typical 4-Wire Connection

\* or Yellow/Blue or Yellow/Green when used with magnetic dimming ballasts  
 \*\* must use lamp disconnect sockets with magnetic dimming ballasts

SPSF-6A-  
SPSF-6A-277-

**Wiring Diagram 6**  
**Single-Location Wiring**

**Model #**

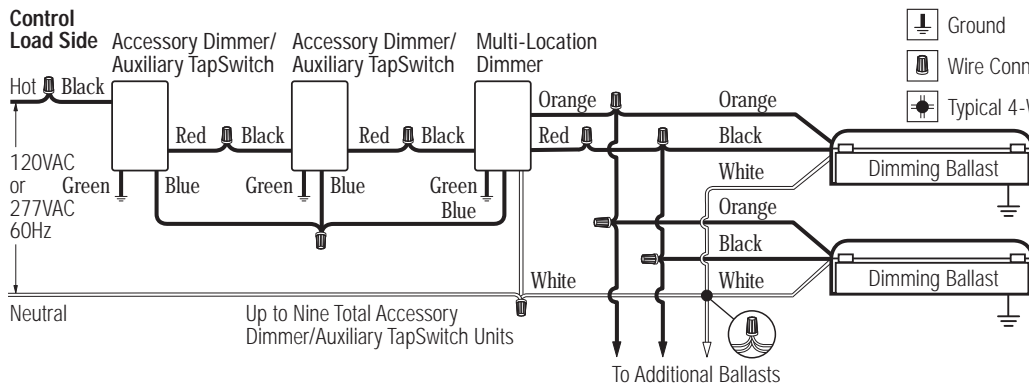


- Ground
- Wire Connectors
- Typical 4-Wire Connection

SPSF-6AM-  
SPSF-6AM-277-

**Wiring Diagram 7**  
**Multi-Location Wiring (Control Must be Wired on Load Side)**

**Model #**

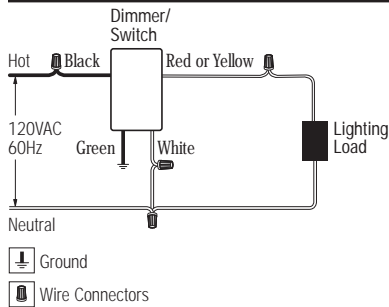


- Ground
- Wire Connectors
- Typical 4-Wire Connection

SPSF-6AM-  
SPSF-6AM-277-  
SPS-AD-  
SPS-AD-277-

## WIRING DIAGRAMS

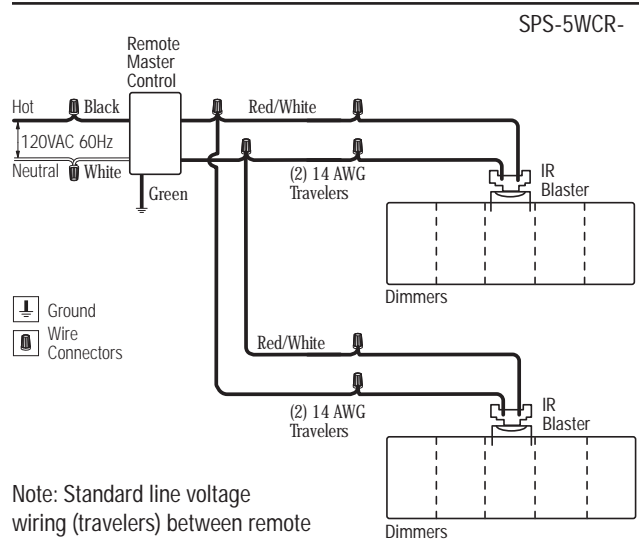
### Wiring Diagram 8 Single-Pole Wiring



**Model #**

SPSELV-600-  
SPSF-S6A-  
SPSF-S6A-277-  
SPSFTU-5A-

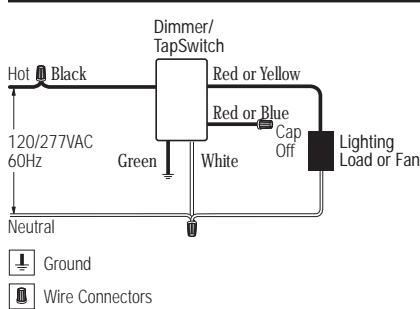
### Wiring Diagram 12 Remote Wall-Mounted Master Control Wiring



**Model #**

SPS-5WCR-

### Wiring Diagram 9 Multi-Location Control with Neutral Used for Single-Location Wiring

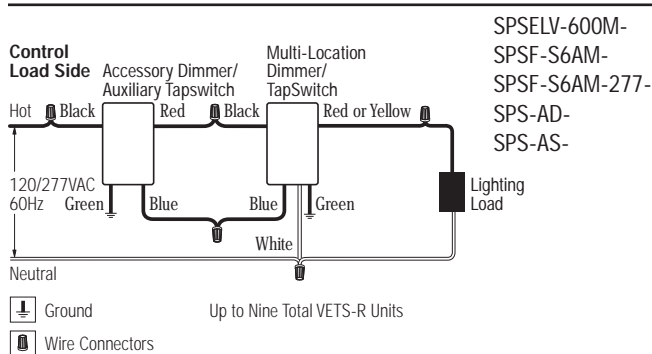


**Model #**

SPSELV-600M-  
SPSF-S6AM-  
SPSF-S6AM-277-

Note: Standard line voltage wiring (travelers) between remote and dimmers not to exceed 200 feet total length.

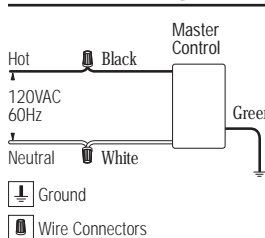
### Wiring Diagram 10 Multi-Location Wiring



**Model #**

SPSELV-600M-  
SPSF-S6AM-  
SPSF-S6AM-277-  
SPS-AD-  
SPS-AS-

### Wiring Diagram 11 Wall-Mounted Master Control Wiring



**Model #**

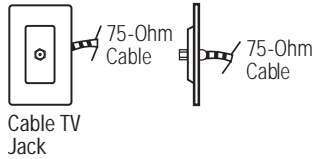
SPS-5WC-

**WIRING DIAGRAMS**

**Wiring Diagram 13  
Cable TV Jack Wiring**

**Model #**

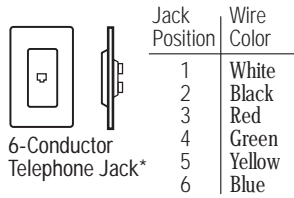
CA-CJH-



**Wiring Diagram 14  
Telephone Jack Wiring**

**Model #**

CA-PJH-

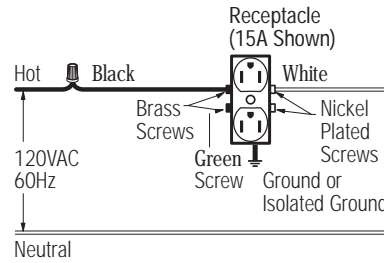


\*accepts most 4-conductor jacks

**Wiring Diagram 15  
Receptacle Wiring**

**Model #**

CAR-15H-



Ground

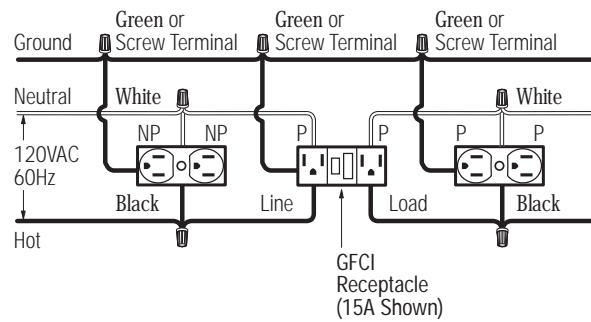
Wire Connectors

Building Ground (To Metal Box)

**Wiring Diagram 16  
GFCI Receptacle Wiring**

**Model #**

CAR-15-GFCIH-



P-Protected  
NP-Not Protected

Wire Connectors

## SPACER SYSTEM 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 20, 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 fan-speed controls
- C. Permanently installed, wallbox mounted receptacles
- D. Permanently installed, wallbox mounted data, voice and cable jacks
- E. 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. 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, switches and Fan-speed controls shall be UL listed, CSA and NOM approved specifically for each required load (i.e., tungsten, electronic low voltage transformer, magnetic low voltage transformer, and fluorescent). 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, fan-speed control, switch, receptacle, telephone jack and cable TV jack) and wallplate kits shall be provided by one manufacturer.

#### 2.02 EQUIPMENT

- A. Controls Lutron Spacer System Style
  - 1. Performance
    - a. Dimmers shall provide full-range, continuously variable control of light intensity.

- b. Wall controls shall fit a decorator wallplate opening with a flush tapswitch. Dimmers and accessory dimmers shall have a small, raised rocker to the right of the tapswitch. Dimmers shall have seven discrete LEDs to the left of the tapswitch and an infrared receiver built into the tapswitch. Tapswitches shall remain flush in both the on and off state. Wall controls shall have a gloss finish.
- c. 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 and fade-to-off function. Fade-to-off shall be delayed in 10 second increments up to 60 seconds, after which lights shall fade to off over 10 seconds. Total time to off shall be indicated by LED display.
- d. 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.
- e. The rocker on dimmers and accessory dimmers 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.
- f. 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.
- g. All actuators shall be captured internally to the control.
- h. Dimmer shall be capable of on/off, raise/lower and mechanical air-gap "safety off" from up to 9 additional locations using aesthetically coordinated accessory dimmers.
- i. Within rated capacity, dimmers shall be available for direct control of incandescent, magnetic low voltage, electronic low voltage, and fluorescent.
- j. 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.
- k. To ensure a precise color match between all plastic parts, color variation of any gloss finish control shall not exceed a delta E of 1, CIE L\*a\*b\* color units, as defined in ASTM E 308-99.
- l. Controls shall meet the applicable requirements of UL 20 and UL 1472 referring to the inclusion of a visible, accessible air-gap off switch and the limited short circuit test.
- m. Controls shall meet ANSI/IEEE Std. C62.41-1980, tested to withstand voltage surges of up to 6000V and current surges of up to 200A without damage.
- n. Dimmers shall be designed to reduce interference with radio, audio, and video equipment.

- o. Controls shall incorporate power-failure memory. Should power be interrupted and subsequently returned, the lights or fans will come back on to the same levels set prior to the power interruption. Restoration to some other default level is not acceptable.
  - p. Controls shall not be susceptible to damage or loss of memory due to static discharge.
  - q. All dimmers shall be designed to minimize effects of changing line frequency.
  - r. Controls shall operate in an ambient temperature range of 0°C (32°F) to 40°C (104°F).
  - s. Accessory dimmers shall wire using conventional 3-way and 4-way wire runs.
  - t. Contractors shall install all backboxes with a minimum wallbox depth of 2.5 inches.
2. System Operation
- a. Lighting controls shall operate individually, by manual actuation. Controls shall operate as part of the system through IR control from hand-held remote or a wall-mounted master control ganged contiguously in the same wallbox as lighting controls.
  - b. Preset scenes shall be accessible and programmable via infrared hand-held remote.
  - c. Preset scenes shall be accessible and programmable from optional wall-mounted master control. Wall-mounted master control may be ganged contiguously in the same wallbox as dimmers or remotely mounted in a separate wallbox.
    - 1) When combining both 120V and 277V Spacer System controls in the same wallbox with a wall-mounted master control, no barrier shall be used between devices. Devices shall have no exposed live metal parts. Devices shall meet UL94 V0 flammability rating.
    - 2) When combining both 120V and 277V Spacer System controls in the same wallbox, contractors shall use wire with insulation rated for 277VAC for all wire runs to this box in accordance with NEC 300-3c.
    - 3) Contractors shall use appropriate color codes to differentiate 120VAC and 277VAC wiring, and shall keep all neutrals from individual feeds separate.
  - d. If not using a wall-mounted master control, individual dimmers shall work as a system and create scenes without being ganged together through the use of hand-held infrared remote controls.
  - e. System shall be capable of controlling incandescent or 120VAC Halogen table/floor lamp dimmers via infrared hand-held remote.
3. 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 95% of line voltage.
  - c. Dimmer shall be capable of operating in either 3-way switch location.
4. 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 95% of line voltage.
5. 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 95% of line voltage.
  - e. Dimmer shall be capable of operating in either 3-way switch location.
6. Fluorescent Dimming Ballast Dimmers
- a. Provide Fluorescent dimmers for direct control of fluorescent dimming ballasts up to the manufacturers specified rating.
  - b. Dimmers shall be designed to operate the following ballasts. Dimmers and ballasts shall be produced by the same manufacturer to ensure proper ballast/control compatibility:
    - 1) Hi-Lume® Architectural Dimming Ballasts (1% 3-wire)
    - 2) Hi-Lume® Compact™ Lamp Dimming Ballasts (5% 3-wire)
    - 3) Eco-10™ Lighting Management Dimming Ballasts (10% 3-wire)
    - 4) Tu-Wire™ High Performance Dimming Ballasts (5% 2-wire)
7. Fluorescent Dimming Ballast Switches
- a. Provide electronic switches for direct control of electronic and magnetic fluorescent ballasts, transformers, relays, and contactors.
8. Remote dimming modules for high power loads
- a. Where lighting loads exceed the full rated capacity of single dimmers, provide a Nova 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, magnetic low voltage, electronic low voltage, fluorescent, and neon/cold cathode loads in increments of 2,000 Watts up to 30,000 Watts.
9. Accessory Dimmers
- a. Accessory Dimmers shall provide multi-location control and mechanical air-gap switch. All tapswitch and rocker functions shall operate from each Accessory Dimmer. Up to 9 Accessory Dimmers may be used with a Spacer System dimmer.
  - b. Accessory Dimmers shall not have any LEDs nor an infrared receiver.



10. Accessory Switches
  - a. Accessory Switches shall provide multi-location control and mechanical air-gap switch. Tapswitch function shall operate from each Accessory Switch. Up to 9 Accessory Switches may be used with a Spacer System Switch.
  - b. Accessory Switches shall not have any LEDs nor an infrared receiver.
11. Infrared Transmitters
  - a. Infrared hand-held remote controls shall be capable of activating the dimmer from up to 30 feet line of sight.
  - b. 4-Scene hand-held transmitter shall provide access and programming to four-user-selected preset scenes, and shall provide separate off and master raise/lower. Master raise/lower will allow full-range continuously variable control of light intensity.
  - c. A 1-scene hand-held transmitter shall provide access to one preset, user-selected scene, and shall provide separate off and master raise/lower. Master raise/lower will allow full-range continuously variable control of light intensity.
  - d. All infrared transmitters shall provide access to delay and fade-to-off function from the off button.
12. Wall-mounted master controls
  - a. Wall-mounted master control shall incorporate infrared-beam technology to communicate to devices. When mounted in same wallbox installation does not require any wiring between devices. When mounted remotely in a separate wallbox installation requires one (1) pair of 14 AWG traveler wires between master control and dimmers.
  - b. Wall-mounted master controls shall provide access to four user-selected preset scenes, a separate full-on, off and master raise/lower. Master raise/lower will allow full-range continuously variable control of light intensity.
  - c. All wall-mounted master controls shall provide access to delay and fade-to-off function from the off button.
- 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 milliamperere ground-fault trip level with "test" and "reset" buttons.
3. Telephone Jack and Cable TV Jack Components Lutron Claro Style
  - a. Contractor shall provide an appropriate barrier (partition) to isolate jack from high-voltage wiring when ganged with a dimmer, fan-speed control, switch, or receptacle. 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 TV jacks shall be the coaxial type, designed for use with standard 75-Ohm cables.
- 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 finish control or wallplate shall not exceed a delta E of 1, CIE L\*a\*b\* color units, 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 with multiple actinic light sources 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. Devices shall be installed utilizing manufacturer's recommended application, wiring and installation instructions.
- E. 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.