

## CCP Custom Combination Panels: 120 V~

Custom Combination Panels are pre-assembled and tested power panels that are configurable to control multiple load types. They are ideal for projects with many small loads.

### Features

- Panels are pre-wired and tested prior to shipping.
- Feed-through panels and panels with breakers are available.
- Supports various load types using remote power modules (RPMs):
  - **Dimming Module:** Works directly with incandescent, forward-phase electronic low-voltage (ELV), magnetic low-voltage (MLV), Lutron 2-wire LED drivers, switched lighting loads, switched LED drivers, switched fluorescent ballasts and compatible forward-phase dimmable LEDs.
  - **Adaptive Module:** Works directly with incandescent, ELV (forward- and reverse-phase), MLV, Lutron 2-wire LED drivers and compatible forward- and reverse-phase dimmable LEDs.
  - **XP Switching Module:** Works with many switchable load types including, but not limited to, resistive, inductive, motor loads, switched LED drivers and fluorescent ballasts. Also rated to control 20 A general purpose receptacles at 120 V~.
  - **Motor Module:** Works with 3-wire 120 V~ motors.
  - **Fan Speed Module:** Works with ceiling fans at 120 V~.
  - **0-10 V<sup>DC</sup> Dimming Module:** (12 modules, 24 dimming legs total per panel, max). Works with 0-10 V<sup>DC</sup> dimming ballasts and drivers. Works in conjunction with a dimming module or an XP switching module. Also capable of outputting DALI<sup>®</sup> intensity broadcast to control DALI<sup>®</sup> drivers and ballasts.
- Panels are rated for 120 V~ input power.
- Bypass jumpers included for load mis-wire protection.
- Front cover provided to maximize thermal performance without needing a fan.
- 1-9 modules (Dimming, Adaptive, XP, Motor, Fan) for 4-36 controllable outputs.
- Panels have a circuit selector that allows panels to be compatible with:
  - GRAFIK Eye 4000 series control units and operate on the same link as GP and XP panels.
  - Quantum systems.
  - DMX512 dimming systems via the 2Link option.
  - LUT-ELI-3PH for emergency applications requiring a listed device to comply with UL924 or CSA C22.2 No. 141-02.
- Each panel provides power and dimming for 4-36 controllable outputs.



<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

## Panel Specifications

### Regulatory Approvals

- UL® Listed (Reference: UL File E42071).
- CSA Certified.
- Other certificates may apply.

### Power

- Input power: 120 V~. All voltages 50/60 Hz, phase-to-neutral
- Branch circuit breakers (AIC ratings):  
– 120 V~ 10,000 A
- 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.
- 10-year power failure memory: Automatically restores lighting to scene selected prior to power interruption.

### Short-Circuit Current Ratings (other ratings available)

Panel Size	Voltage	Standard SCCR Rating
All other sizes	120 V~	25,000 A
24 in enclosure with breakers	120 V~	10,000 A

### Wiring

- Internal: Prewired by Lutron.
- System communications: IEC PELV/NEC® Class 2 wiring connects dimming panels to other components.
- Line voltage: Feed and load wiring only. No other wiring or assembly required.

### Setup

Circuit selector digitally assigns controllable outputs to zones and sources. Permits reassignment of zones and sources without rewiring.

### Physical Design

- Enclosure: NEMA-Type 1, IP-20 protection; 16 U.S. gauge steel. Indoor use only.
- Maximum Weight:
  - Small panel (24 in) = 27 lbs (12 kg)
  - Standard panel (59 in) = 80 lbs (36 kg)

### Mounting

- Surface mount or recess mount between 16 in (40 cm) studs.
- Allow clearance around panel for ventilation.

### Line Voltage (Mains) Connections

- Use copper wire only, supply conductors 140–167 °F (60–75 °C).
- Feed-through panels
  - DIN rail-mounted terminal blocks provided for line-voltage (mains) power to RPMs and to circuit selector power supply.
  - DIN rail-mounted terminal blocks provided for load wiring.
- Breaker panels
  - Main breaker or main lug provided for line-voltage (mains) power. Power is distributed to branch circuit breakers, modules, and control gear via internal wiring installed by Lutron.
  - DIN rail-mounted terminal blocks provided for load wiring.

### Wire Sizing

- Refer to wiring page for wire sizes.
- Main breakers vary in size depending on modules in the panel. Consult with Lutron for wire sizes accommodated.
- Main lugs vary in size depending on modules in the panel. Consult with Lutron for wire sizes that can be accommodated.

### Environment

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

\* For more information on load ratings, please refer to Application Note #201 at [www.lutron.com/TechnicalDocumentLibrary/048-201.pdf](http://www.lutron.com/TechnicalDocumentLibrary/048-201.pdf)

\*\* Not all LED and CFL loads available today are dimmable. Visit [www.lutron.com/LEDtool](http://www.lutron.com/LEDtool) for a list of loads that have been tested by Lutron to be compatible with this product.



<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

## Module Specifications

### Sources/Load Types

Operate these sources with a smooth, continuous Square Law dimming curve or in a full-conduction, non-dim state:

#### Dimming Modules

- 80 BTUs/hour maximum per module.
- RTISS filter circuit technology compensates for incoming line voltage variations: No visible flicker with +/- 10% change in RMS voltage/cycle and +/-2% Hz change in frequency/second.
- Rated to handle a fully loaded electrical circuit (16 A max). 4 outputs per module. Maximum of 16 A on an output.
- Can operate HID sources in a full conduction, non-dim state.
- When controlling Lutron 2-wire drivers, refer to driver spec sheet for permitted driver quantities.
- If mixing Lutron 2-wire drivers and other loads on the same module, treat each driver as a 50 W load.

#### Adaptive Dimming Modules

- 115 BTUs/hour maximum per module.
- RTISS-TE filter circuit technology compensates for incoming line voltage variations: No visible flicker with +/- 10% change in RMS voltage/cycle and +/-2% Hz change in frequency/second.
- Rated to handle a fully loaded electrical circuit (16 A max). 4 outputs per module. Maximum of 10 A on an output.
- When programmed to “auto” mode, the unit starts in reverse-phase and if an incompatible load is detected, it will convert to forward-phase.
- When controlling Lutron 2-wire drivers, refer to driver spec sheet for permitted driver quantities.
- If mixing Lutron 2-wire drivers and other loads on the same module, treat each driver as a 50 W load.

#### 0-10 V Dimming Modules (TVM)

- Two 0-10 V<sub>AC</sub> circuits per module.
- Sink or source 50 mA per output (~25 ballasts/drivers; maximum 750 mA total per twenty-four outputs).
- 5 BTUs/hour maximum per module.
- DIN rail mounted.
- Able to control:
  - 0-10 V<sub>AC</sub>, IEC® Standard 60929
  - 10-0 V<sub>AC</sub>
  - PWM (Pulse Width Modulation), IEC® Standard 60929
  - DALI® (Broadcast only), IEC® Standard 62386
- Must be used in conjunction with a dimming module or XP switching module.

### XP Switching Modules\*

- Able to control 20 A receptacles.
- Switch legs rated at 20 A.
- Four switch legs per module.
- Patented Softswitch circuit eliminates arcing at mechanical contacts when loads are switched, which prolongs relay life to 1,000,000 cycles at 16 A.
- 10 BTUs/hour per module.
- For additional information, see Lutron XP Specification Submittal (P/N 369345e).

#### Load

- When controlling receptacles, the XP Switching Module may be used with, but is not limited to, the following:
  - Motors
  - Fans
  - Humidifiers
  - Printers

**Note:** Refer to the manufacturer’s guidelines for acceptable switching methods.

- When controlling receptacles, the XP Switching Module may NOT be suitable for use with devices that require any of the following:
  - Shut-down process before power is interrupted (e.g., computers)
  - Cool-down process before power is interrupted (e.g., projectors)
  - Programming (e.g., clocks, DVRs)
  - Long warm-up cycle
- The XP Switching Module is NOT for use with loads that present a hazard if automatically energized (e.g., heaters).
- Any receptacles that are controlled by an automatic control device must be marked with “⚡” located on the controlled receptacle outlet where visible after installation as stated in 2014 NEC® Article 406.3(E).

Job Name:	Model Numbers:
Job Number:	

## Module Specifications (continued)

### Motor Modules\*

- For 20 A branch circuit, 1/4 HP per circuit. 5 A maximum per circuit for motor loads, 3 A maximum per circuit for tungsten loads.
- Each module controls four 3-wire 120 V~ motors for applications such as shades, draperies, and hurricane shutters.
- Individual control outputs use two mechanically interlocked relays for directional control that prevents simultaneous operation of both outputs. Air gap provided when all four circuits are off.

### Fan Speed Modules

- Each of the four outputs of the fan module controls a single ceiling fan.
- There are five available speeds: off, low, medium, medium-high, and high.
- Each output is rated to control a single ceiling fan load up to 2 A at 120 V~.

Job Name:  Job Number:	Model Numbers:
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Module Specifications (continued)

**Adaptive Module**  
LP-RPM-4A-120

**Dimming Module**  
LP-RPM-4U-120

**Motor Module**  
LP-RPM-4M-120

**Fan Speed Module**  
LP-RPM-4FSQ-120

**Switching Module**  
XP2-SM-4S

**0-10 V<sub>DC</sub> Dimming Module +**  
GRX-TVM2 + LP-RPM-4U-120

**0-10 V<sub>DC</sub> Dimming Module +**  
GRX-TVM2 + XP2-SM-4S

Ratings							
Input Voltage	120 V~	120 V~	120 V~	120 V~	120 V~	120 V~	120 V~
Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Maximum load per module	16 A	16 A	16 A	8 A	80 A	16 A	64 A
Maximum load per output	10 A	16 A	5 A	2 A	20 A	16 A	16 A
Number of outputs	4	4	4	4	4	4	4
Minimum load	10 W	25 W	-	0.25 W	-	25 W	-
Technology							
Forward-phase dimming	✓	✓					
Reverse-phase dimming	✓						
Phase adaptive	✓						
Phase selective	✓						
<a href="#">RTISS</a>	✓	✓					
<a href="#">RTISS TE</a>	✓						
<a href="#">Softswitch</a>					✓		✓
Mechanically interlocked switching relays			✓				
Switched capacitor quiet control circuitry				✓			
Load Types							
Dimmable phase control LED (forward compatible dimming phase)	✓	✓					
Dimmable phase control LED (reverse-phase)	✓						
ELV (forward-phase)	✓	✓					
ELV (reverse-phase)	✓						
MLV	✓	✓			✓		
Incandescent	✓	✓			✓		
Lutron 2-wire LED drivers	✓	✓					
Lutron Tu-wire fluorescent ballasts	✓	✓					
Switched LED driver		✓			✓		
Switched fluorescent ballasts		✓			✓		
Switched general purpose receptacle					✓		
0-10 V <sub>DC</sub> LED driver						✓	✓
0-10 V <sub>DC</sub> fluorescent ballast						✓	✓
Other non-dim lighting loads		✓			✓		
Motor loads					✓		
Neon/cold-cathode	✓	✓			✓		
AC shade/projection screen motors			✓				
Ceiling paddle fan				✓	✓		

<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

Module Specifications (continued)

<b>Adaptive Module</b> LP-RPM-4A-120	<b>Dimming Module</b> LP-RPM-4U-120	<b>Motor Module</b> LP-RPM-4M-120	<b>Fan Speed Module</b> LP-RPM-4FSQ-120	<b>Switching Module</b> XP2-SM-4S	<b>0-10 V<sub>DC</sub> Dimming Module +</b> GRX-TVM2 + LP-RPM-4U-120	<b>0-10 V<sub>DC</sub> Dimming Module +</b> GRX-TVM2 + XP2-SM-4S
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Load Interfaces							
<a href="#">PHPM-PA</a>	✓	✓					
<a href="#">PHPM-3F</a>	✓	✓					
<a href="#">PHPM-SW-DV</a>	✓	✓		✓			
<a href="#">PHPM-WBX</a>	✓	✓					
<a href="#">GRX-TVI</a>	✓	✓					
<a href="#">BCI-0-10</a>					✓		✓

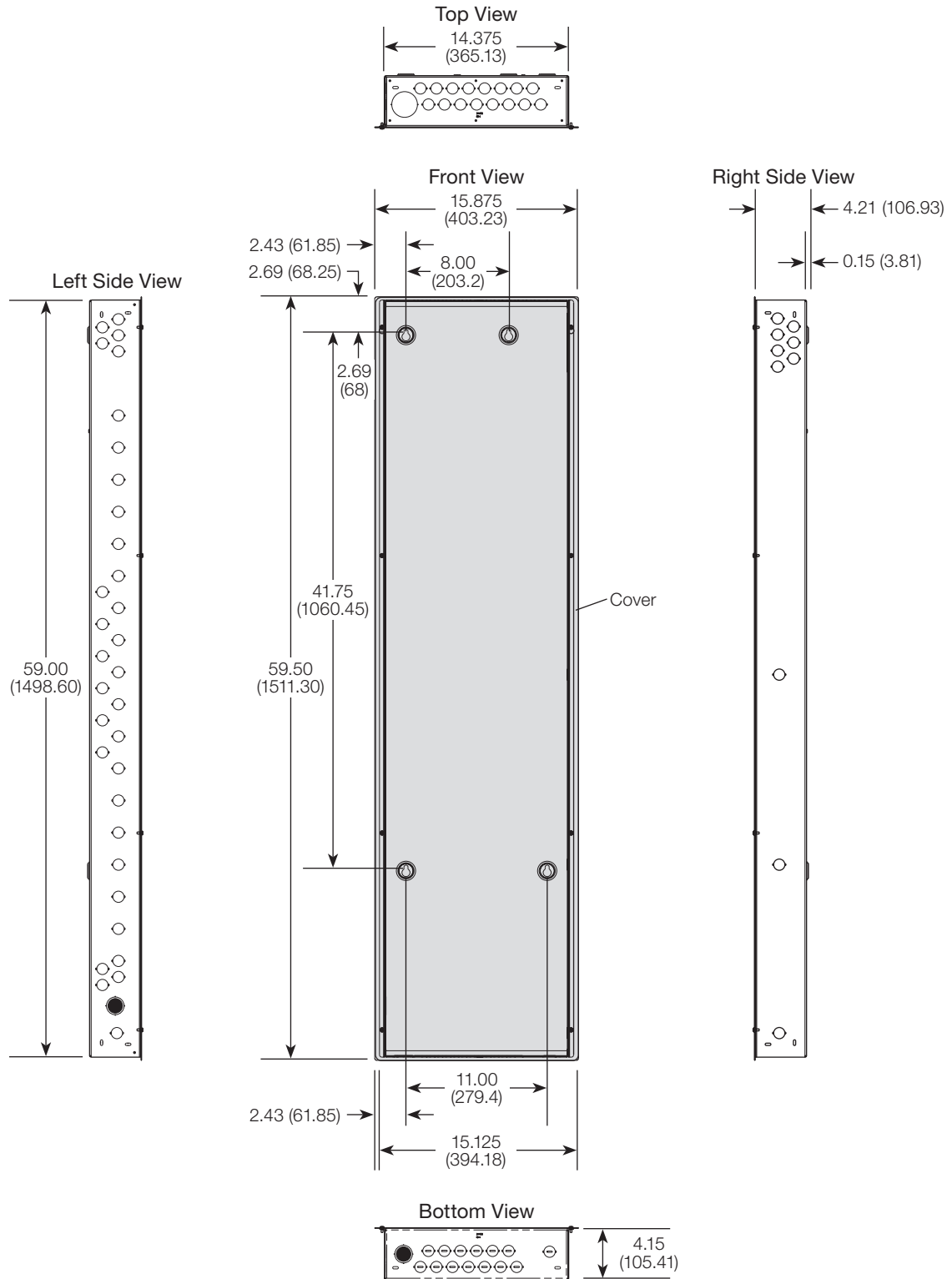
Job Name:	Model Numbers:
Job Number:	





### Standard Size Panel Dimensions

All dimensions shown as: in (mm)

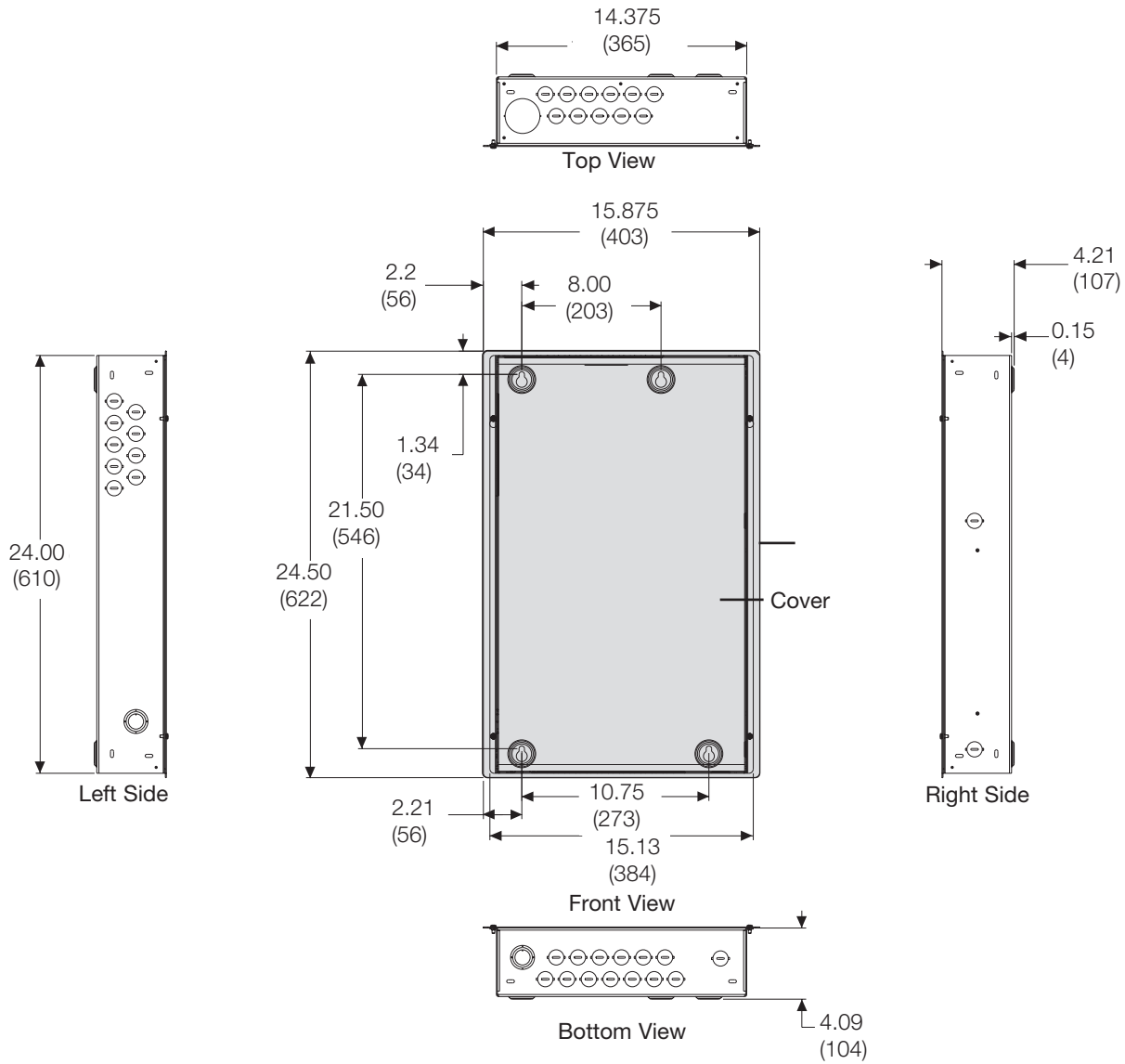


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### Mini Panel Dimensions

Dimensions shown as: in (mm).



Job Name:	Model Numbers:
Job Number:	

## Mounting

### Standard-size CCP Dimming Panels

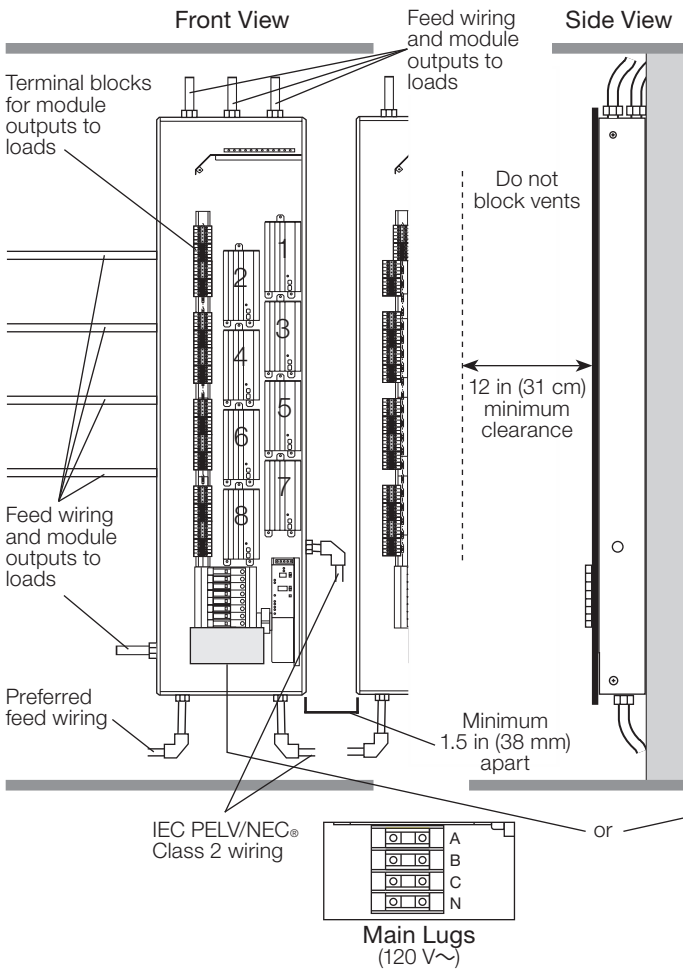
- Surface- or recess-mount indoors.
- Consult Dimensions page for dimensions and conduit knockout locations.
- Panel generates heat. Mount only where ambient temperature is 32–104 °F (0–40 °C).
- This equipment is air-cooled. Do not block vents or warranty will be void.
- Reinforce wall structure for weight and local codes.
- Mount panels where audible noise is acceptable. (Panels hum slightly and internal relays click.)
- Mount panels so line (mains) voltage wiring is at least 6 ft (1.8 m) from sound or electronic equipment and wiring.
- Mount panel within 7° of true vertical.

Number of Modules	Maximum Heat* (BTUs [Kcal]/Hr)
1	125 (31.5)
2	240 (60.5)
3	355 (89.5)
4	470 (118.5)
5	585 (147.5)
6	700 (176.5)
7	815 (205.5)
8	930 (234.5)
9	1045 (263.5)

\* Maximum heat is calculated using a panel with Adaptive Modules and maximum loading. Heat will vary based on module configuration and loading.

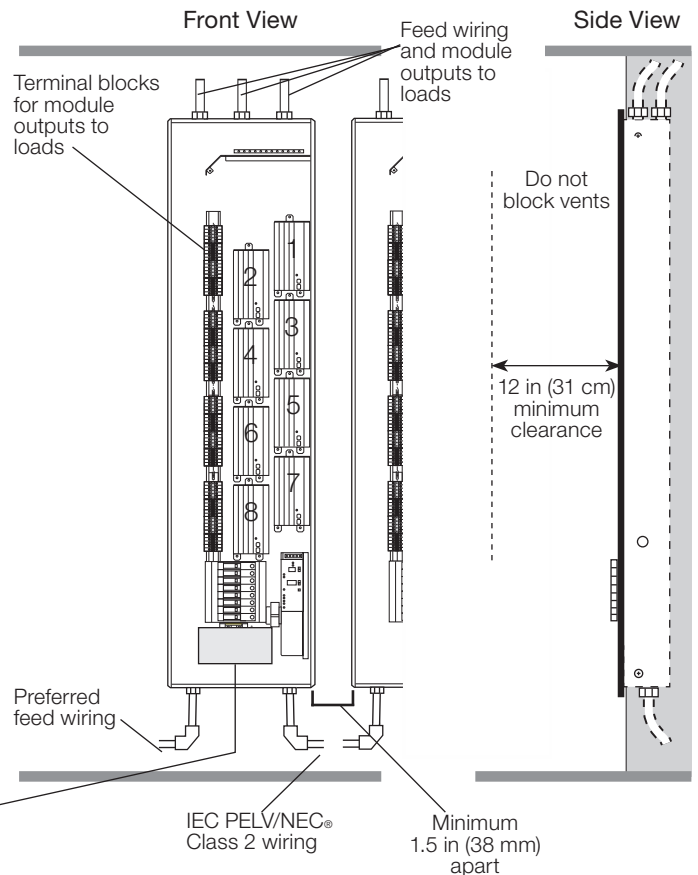
### Surface Mounting

- Surface mounting keyholes accept 1/4 in (6 mm) mounting bolts. This size is recommended.
- If mounting panels next to each other, leave 1.5 in (38 mm) clearance on each side of the panels for front covers to be attached to the enclosure.



### Recess Mounting

- Mount panel flush to 1/8 in (3 mm) below finished wall surface.
- If mounting panels next to each other, leave 1.5 in (38 mm) clearance on each side of the panels for front covers to be attached to the enclosure.



Job Name:	Model Numbers:
Job Number:	

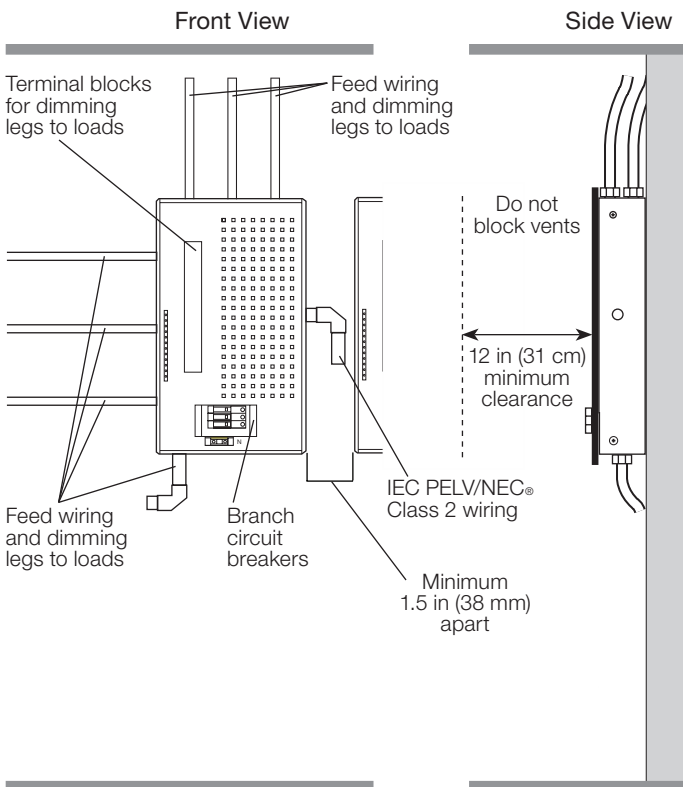
## Mounting

### Mini Sized CCP Panels

- Surface- or recess-mount indoors.
- Consult Dimensions page for dimensions and conduit knockout locations.
- Panel generates heat. Mount only where ambient temperature is 32–104 °F (0–40 °C).
- This equipment is air-cooled. Do not block vents or warranty will be void.
- Mount Panels where audible noise is acceptable. (Panels hum slightly and internal relays click.)
- Mount Panels so line (mains) voltage wiring is at least 6 ft (1.8 m) from sound or electronic equipment and wiring.
- Mount Panel within 7° of true vertical.

### Surface Mounting

- Surface mounting keyholes accept 1/4 in (6 mm) mounting bolts. This size is recommended.
- If mounting panels next to each other, leave 1.5 in (38 mm) clearance on each side of the panels for front covers to be attached to the enclosure.

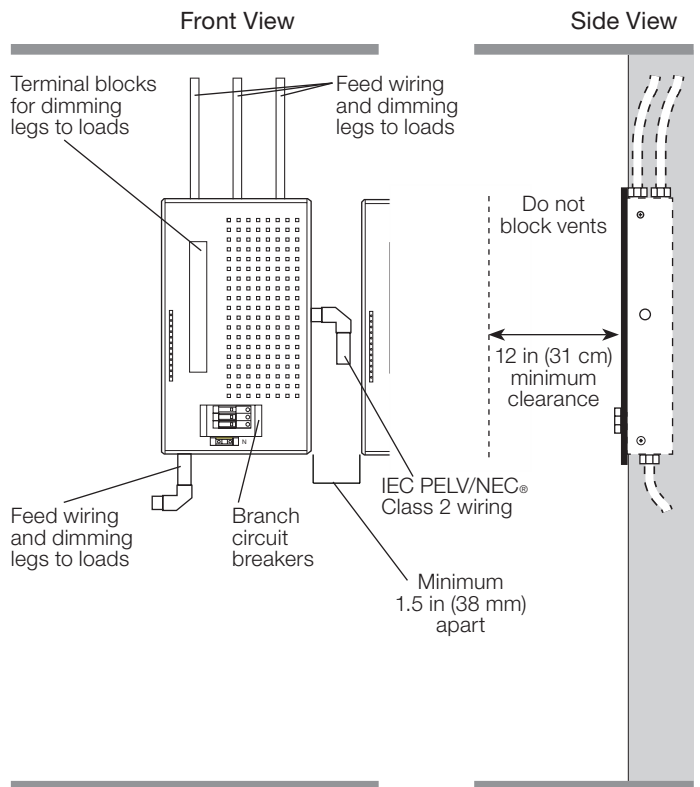


Number of Modules	Maximum Heat* (BTUs [Kcal]/Hr)
1	125 (31.5)
2	240 (60.5)
3	355 (89.5)

\* Maximum heat is calculated using a panel with Adaptive Modules and maximum loading. Heat will vary based on module configuration and loading.

### Recess Mounting

- Mount to wall stud by screwing through slots in corners of panel.
- Mount panel between flush and 1/8 in (3 mm) below finished wall surface.
- If mounting panels next to each other, leave 1.5 in (38 mm) clearance on each side of the panels for front covers to be attached to the enclosure.

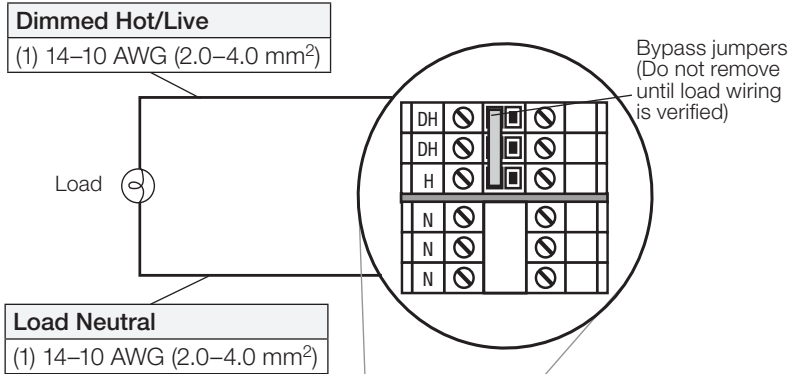


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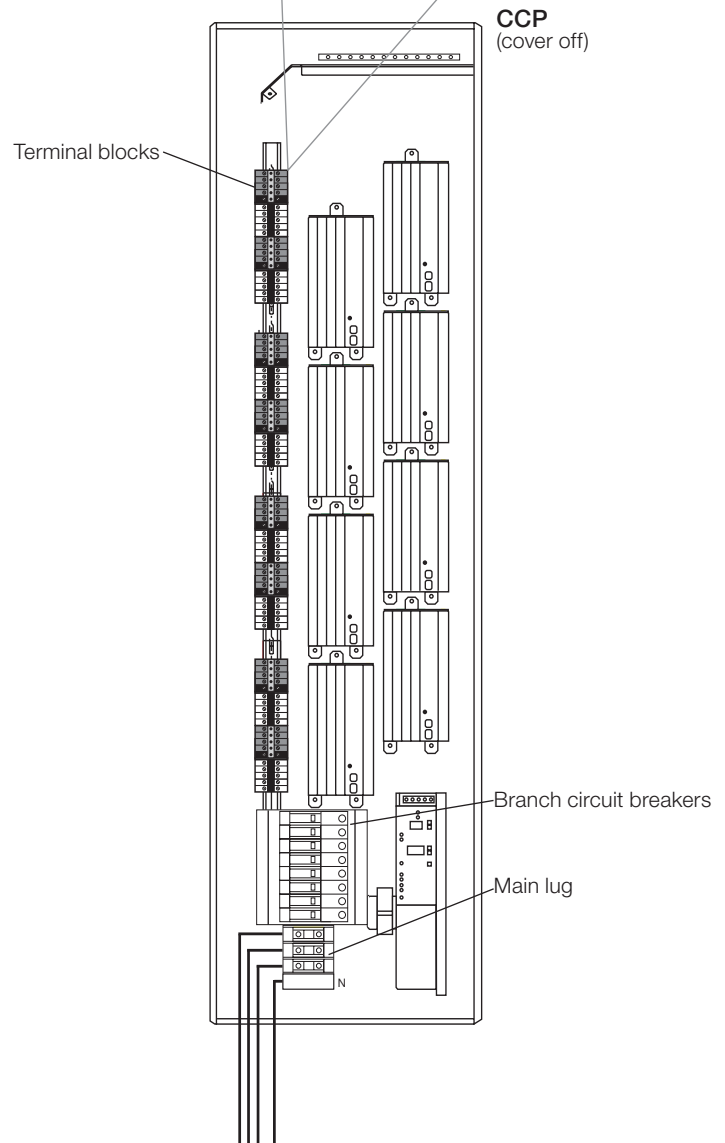
### Wiring

Wire the CCP similarly to a lighting distribution panel:

- Run feed and load wiring; no other wiring or assembly is required.
- Run separate neutrals for each module (no common neutrals across phases).
- The CCP can provide temporary lighting:
- Wire all loads.
- Do not remove the bypass jumpers that protect the dimming modules.
- Use branch circuit breakers to switch lights on and off.



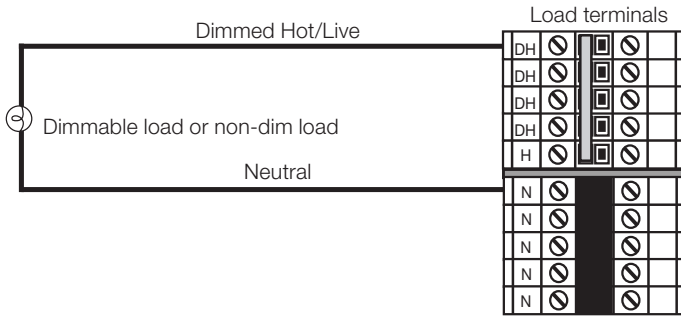
Panel Type	Feed Wiring	Feed Type	Max Input	Load Wiring
24 in or 59 in Feed Through	Hot/Neutral: 14 AWG (2.0 mm <sup>2</sup> ) to 10 AWG (6.0 mm <sup>2</sup> )	1P2W	20 A	Switched Hot/Dimmed Hot/Neutral: 14 AWG (2.0 mm <sup>2</sup> ) to 10 AWG (6.0 mm <sup>2</sup> )
24 in with breakers (1 module, no XP)	Hot: 14 AWG (2.0 mm <sup>2</sup> ) to 8 AWG (10 mm <sup>2</sup> ) Neutral: 14 AWG (2.0 mm <sup>2</sup> ) to 2/0 (67 mm <sup>2</sup> )	1P2W	20 A	
24 in with breakers (2 modules, no XP)		1P2W, 1P3W	40 A	
24 in with breakers (3 modules, no XP)		1P2W, 1P3W, 3P4W	40 A 20 A	
59 in with breakers (no XP)	Hot/Neutral: 14 AWG (2.0 mm <sup>2</sup> ) to 2/0 (67 mm <sup>2</sup> )	1P2W, 1P3W, 3P4W	175 A (CU wire), 135 A (AL wire)	
59 in with breakers (3P4W, with XP)	Hot/Neutral: 4 AWG (25 mm <sup>2</sup> ) to 250 kcmil (mcm) (120 mm <sup>2</sup> )	1P3W, 3P4W	200 A	



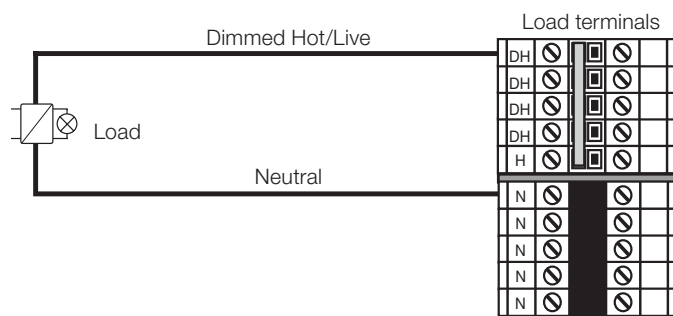
<b>Job Name:</b>	<b>Model Numbers:</b>
<b>Job Number:</b>	

## Typical Load Wiring

### LP Dimming Module

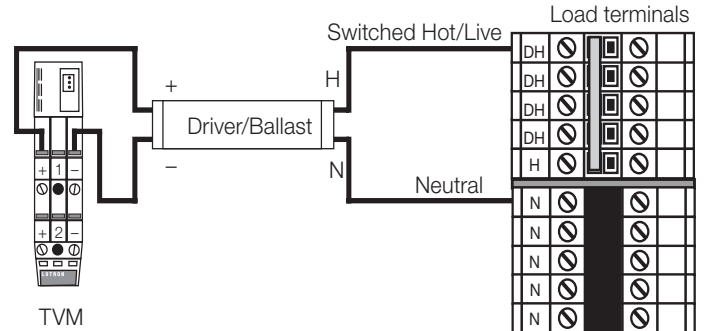


### Adaptive Dimming Module

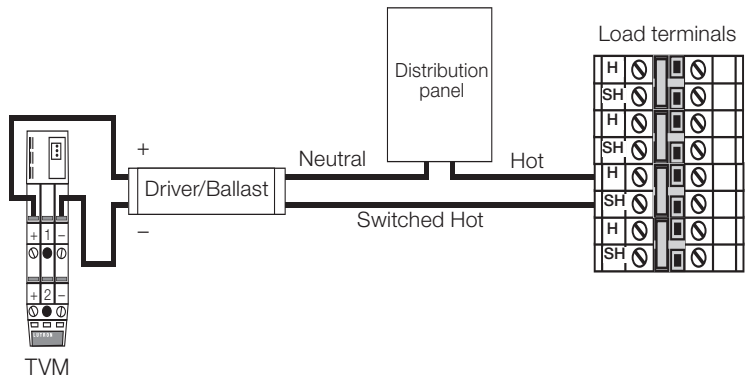


### 0-10 V Dimming Module + Dimming Module

- For 0–10 V, PWM, and DALI® (Intensity broadcast only) loads.
- Each TVM controls 2 consecutive dimming legs of lighting which are the first dimming legs in the panel.
- Maximum low-voltage ballast control current: 50 mA per zone, 750 mA per panel.

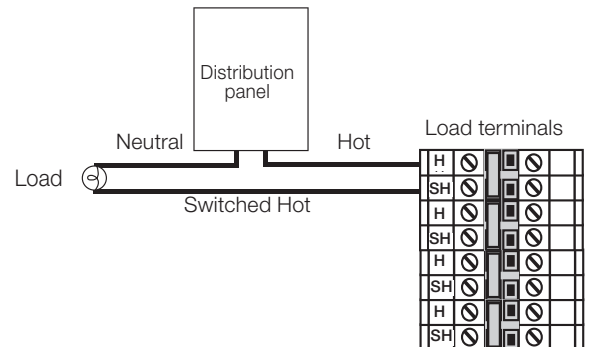


### 0-10 V Dimming Module + XP Switching Module



### XP Switching Module\*

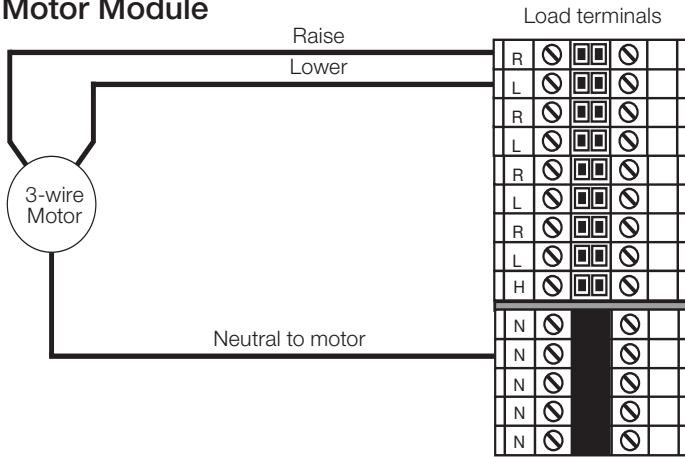
\* To avoid the risk of entrapment, serious injury, or death, these controls must not be used to control equipment which is not visible from every control location or which could create hazardous situations such as entrapment if operated accidentally. Examples of such equipment which must not be operated by these controls include (but are not limited to) motorized gates, industrial doors, space heaters, etc. It is the installer's responsibility to ensure that the equipment being controlled is visible from every control location and that only suitable equipment is connected to these controls. Failure to do so could result in serious injury or death.



Job Name:	Model Numbers:
Job Number:	

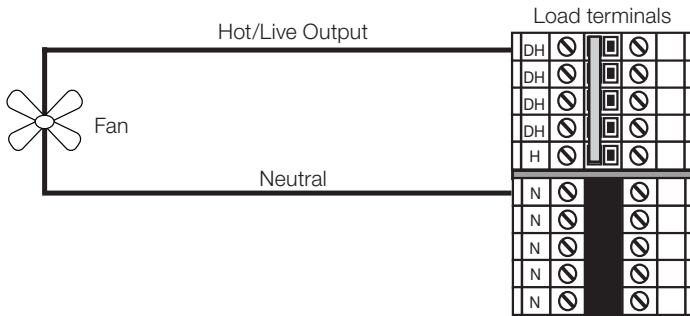
### Typical Load Wiring

#### Motor Module



#### Fan Module

- For ceiling fan control.
- Each fan module output controls a single ceiling fan.



Job Name:	Model Numbers:
Job Number:	

## Low-Voltage IEC PELV/NEC® Class 2 Wiring (All Models)

- System communications use low-voltage IEC PELV/NEC® Class 2 wiring.
- Wiring must be daisy-chained.
- Wiring must run separately from line (mains) voltage.

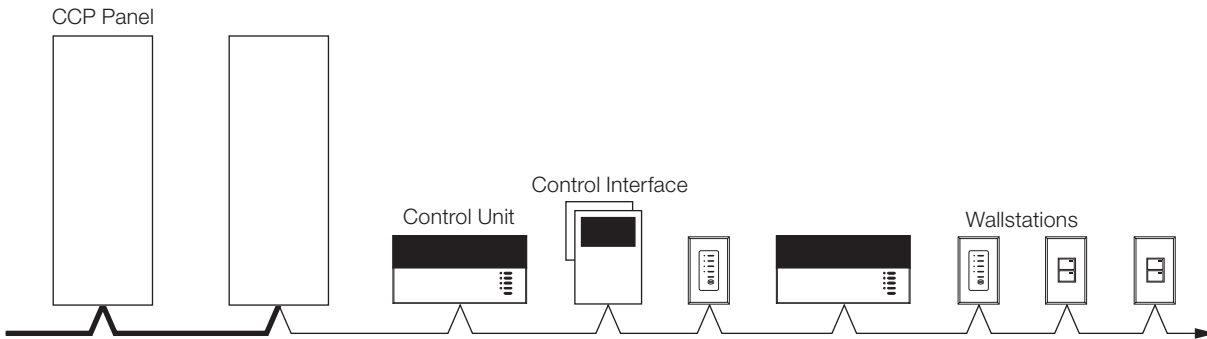
### GRAFIK Eye 4000 System

IEC PELV/NEC® Class 2 wiring link requires:

- Two 12 AWG (2.5 mm<sup>2</sup>) conductors for control power.
- One twisted, shielded pair of 18 AWG (1.0 mm<sup>2</sup>) for data link.
- One 18 AWG (1.0 mm<sup>2</sup>) conductor for emergency (essential) sense line, from panel to panel.

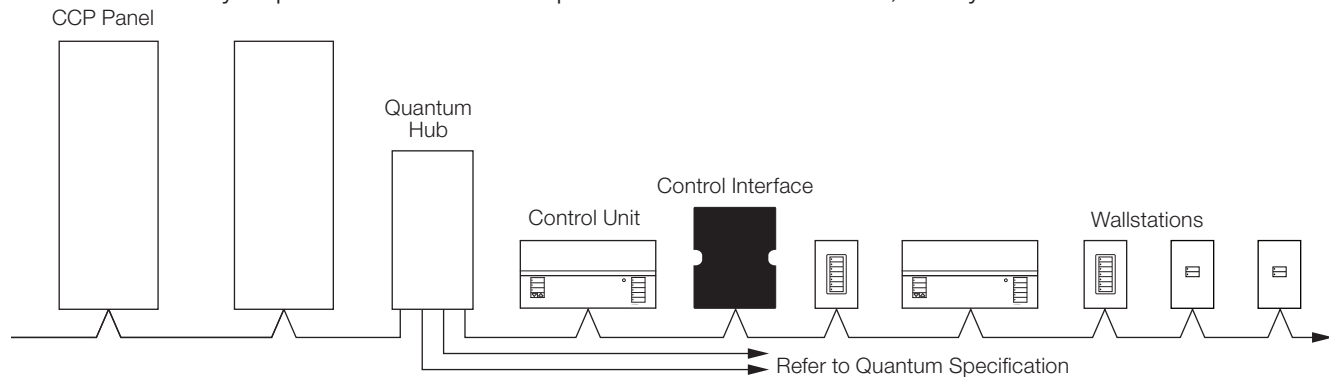
Total length of control link may be no more than 2000 ft (610 m).

Approved low-voltage cable is available from Lutron<sup>1</sup>, Belden, and Liberty. These are approved with 22 AWG (0.625 mm<sup>2</sup>) data link wires.



### Quantum System

- IEC PELV/NEC® Class 2 wiring link requires:
  - Two 12 AWG (2.5 mm<sup>2</sup>) conductors for control power.
  - One twisted, shielded pair of 22 AWG (0.5 mm<sup>2</sup>) for data link.
  - One 18 AWG (1.0 mm<sup>2</sup>) conductor for emergency (essential) sense line, from panel to panel.
- Total length of control link may be no more than 2000 ft (610 m).
- If MUX-RPTR interface<sup>2</sup> and GRX-CBL-46L cable<sup>1</sup> is used, length may be up to 4000 ft (1219 m).
- Maximum of 32 circuit selectors per link or 512 switch legs (controllable outputs) per link.
- It is not necessary to position the Quantum panel at the end of the link; it may be in the middle.

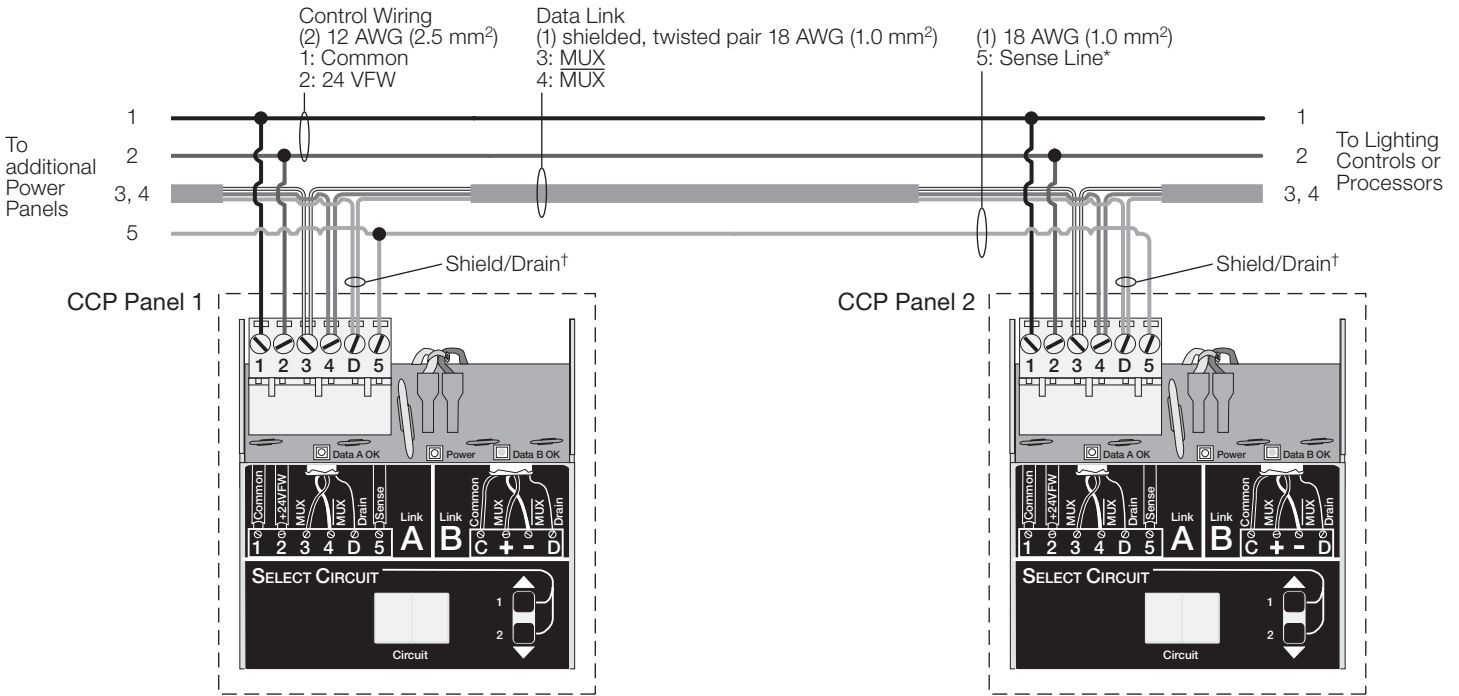


<sup>1</sup> GRX-CBL-46L IEC PELV/NEC® Class 2 wiring cable is available from Lutron and contains:  
 Two 12 AWG (2.5 mm<sup>2</sup>) conductors for control power.  
 One twisted, shielded pair of 22 AWG (0.625 mm<sup>2</sup>) for data link.  
 One 18 AWG (1.0 mm<sup>2</sup>) conductor for emergency (essential) sense line.

Job Name:	Model Numbers:
Job Number:	



### IEC PELV/NEC® Class 2 Panel-to-Panel Wiring (All Models)

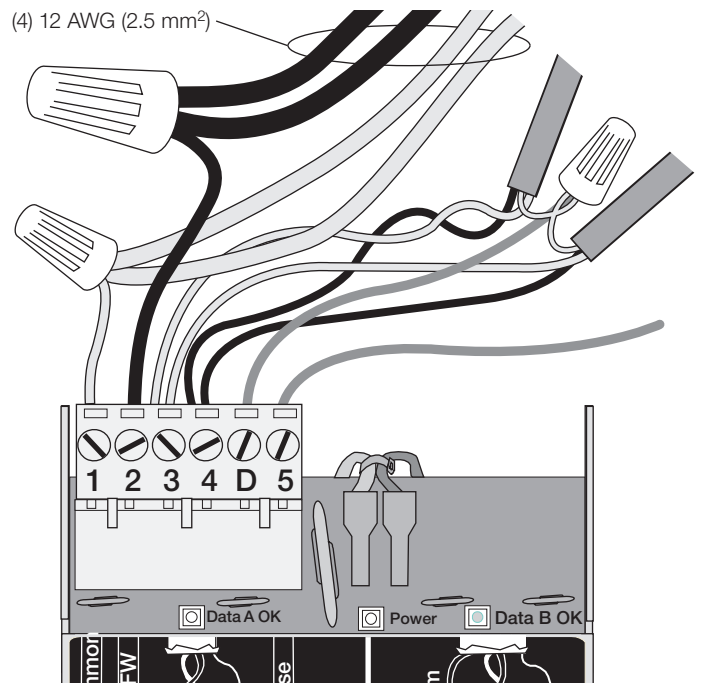


\* Emergency power: The additional 18 AWG (1.0 mm<sup>2</sup>) wire is a “sense” line from terminal 5 of another panel. This sense line allows an emergency (essential) lighting panel to “sense” when normal (non-essential) power is lost. If more than one emergency lighting panel needs to sense from a specific normal panel, a dedicated wire between each pair of normal (non-essential) and emergency (essential) panels may be required.

† Shield/Drain: Connect shielding as shown. Do not connect to ground (earth) or circuit board of circuit selector. Connect the bare drain wires and cut off the outside shield.

### IEC PELV/NEC® Class 2 Terminal Connections

Each Low-Voltage IEC PELV/NEC® Class 2 terminal can accept only two 18 AWG (1.0 mm<sup>2</sup>) wires. Two 12 AWG (2.5 mm<sup>2</sup>) conductors won't fit. Connect as shown, using appropriate wire connectors.



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Job Name:	Model Numbers:
Job Number:	