

## CCP Custom Combination Panels – 220–240 V~ (CE and non-CE)

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 prewired 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.
  - **ELV Dimming Module:** Works with trailing-edge electronic low-voltage, incandescent lighting and compatible reverse-phase dimmable LEDs.
  - **0–10 V== Dimming Module:** Works with 0–10 V== dimming ballasts and drivers. Works in conjunction with a LP dimming module or an XP switching module. Is capable of DALI® intensity broadcast to control DALI® drivers and ballasts.
- Panels are rated for 220–240 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, ELV, XP) 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.
- Each panel provides power and dimming for 4–36 controllable outputs.



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

## Non-CE Panel Specifications: 220–240 V~

### Power

- Input power: 220–240 V~. All voltages 50/60 Hz, phase-to-neutral
- Branch circuit breakers (AIC ratings):
  - 220–240 V~ 6,000 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.

### Wiring

- Internal: Pre-wired by Lutron.
- System communications: PELV/SELV/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 60 cm (24 in) = 12 kg (27 lbs)
  - Standard panel 150 cm (59 in) = 36 kg (80 lbs)

### Mounting

- Surface mount or recess mount between 40 cm (16 in) studs.
- Allow clearance around panel for ventilation (see page 10 for details).

### Line Voltage (Mains) and Load Connections

- Use copper wire only, supply conductors 60 °C to 75 °C (140 °F to 167 °F).
- 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
  - Isolation switch 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 size details.

### Environment

- 0–40 °C (32–104 °F). 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.

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| Job Name:   | Model Numbers: |
| Job Number: |                |

## CE Panel Specifications: 220–240 V~

### Regulatory Approvals

- Complies with CE

### Power

- Input power: 220–240 V~. All voltages 50/60 Hz, phase-to-neutral
- Branch circuit breakers (AIC ratings):
  - 220–240 V~ 6,000 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.

### Wiring

- Internal: Prewired by Lutron.
- System communications: PELV/SELV/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 60 cm (24 in) = 12 kg (27 lbs)
  - Standard panel 150 cm (59 in) = 36 kg (80 lbs)

### Mounting

- Surface mount or recess mount between 40 cm (16 in) studs.
- Allow clearance around panel for ventilation (see page 10 for details).

### Line Voltage (Mains) and Load Connections

- Use copper wire only, supply conductors 60 °C to 75 °C (140 °F to 167 °F).
- 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
  - Isolation switch 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 size details.

### Environment

- 0–40 °C (32–104 °F). 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.

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|--------------------|-----------------------|
| <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:

#### LP Dimming Modules

- 80 BTU/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.
- CE model is rated to for a max load of 13 A per module, with a maximum of 13 A on an output.
- Non-CE model is rated for 16 A per module, with a maximum of 16 A per 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 BTU/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<sub>DC</sub> Dimming Modules (TVM)

- Two 0–10 V<sub>DC</sub> circuits per module.
- Maximum of 12 modules, 24 dimming legs total per panel
- Sink or source 50 mA per output (maximum 750 mA total per twenty-four outputs).
- 5 BTU/hour maximum per module.
- DIN rail mounted.
- Able to control:
  - 0–10 V<sub>DC</sub>, IEC® Standard 60929
  - 10–0 V<sub>DC</sub>
  - PWM (Pulse Width Modulation), IEC® Standard 60929
  - DALI® (Broadcast only), IEC® Standard 62386
- Must be used in conjunction with a 4U dimming module or XP switching module.

### XP Switching Modules\*

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

### Motor Modules

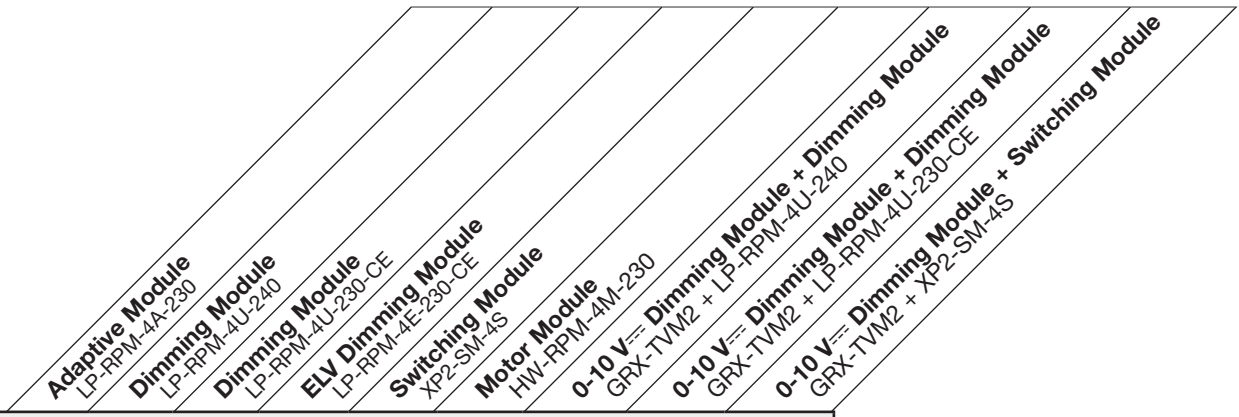
- Each module controls four 3-wire 220–240 V<sub>AC</sub> motors for applications such as shades, draperies, and hurricane shutters.
- Individual control outputs use two mechanically interlocked relays for directional control that prevents simultaneous operation of both outputs.

### ELV Dimming Modules

- 115 BTU/hour maximum per module.
- Rated to handle 16 A
- 4 outputs per module. Maximum of 10 A on an output.
- 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.

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

Module Specifications (continued)



| Ratings                                   |            |      |      |      |      |      |      |      |      |
|---|------------|------|------|------|------|------|------|------|------|
| Input Voltage                             | 220-240 V~ |      |      |      |      |      |      |      |      |
| Frequency                                 | 50/60 Hz   |      |      |      |      |      |      |      |      |
| Maximum load per module                   | 13 A       | 16 A | 13 A | 16 A | 64 A | 16 A | 16 A | 13 A | 64 A |
| Maximum load per output                   | 8 A        | 16 A | 10 A | 10 A | 16 A | 5 A  | 16 A | 10 A | 16 A |
| Number of outputs                         | 4          | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |
| Minimum load                              | 10 W       | 40 W | 40 W | 10 W | -    | -    | 40 W | 40 W | -    |
| Technology                                |            |      |      |      |      |      |      |      |      |
| Forward-phase dimming                     | ✓          | ✓    | ✓    |      |      |      |      |      |      |
| Reverse-phase dimming                     | ✓          |      |      | ✓    |      |      |      |      |      |
| Phase adaptive                            | ✓          |      |      |      |      |      |      |      |      |
| Phase selective                           | ✓          |      |      |      |      |      |      |      |      |
| <a href="#">RTISS<sub>2</sub></a>         | ✓          | ✓    | ✓    |      |      |      |      |      |      |
| <a href="#">RTISS TE</a>                  | ✓          |      |      | ✓    |      |      |      |      |      |
| <a href="#">Softswitch<sub>2</sub></a>    |            |      |      |      | ✓    |      |      |      | ✓    |
| Mechanically interlocked switching relays |            |      | ✓    |      |      | ✓    |      |      |      |
| Load Interfaces                           |            |      |      |      |      |      |      |      |      |
| <a href="#">NGRX-PB</a>                   | ✓          | ✓    | ✓    |      |      |      |      |      |      |
| <a href="#">NGRX-ELV</a>                  | ✓          | ✓    | ✓    |      |      |      |      |      |      |
| <a href="#">GRX-TVI</a>                   | ✓          | ✓    | ✓    |      |      |      |      |      |      |
| <a href="#">BCI-0-10</a>                  |            |      |      |      |      |      | ✓    | ✓    | ✓    |

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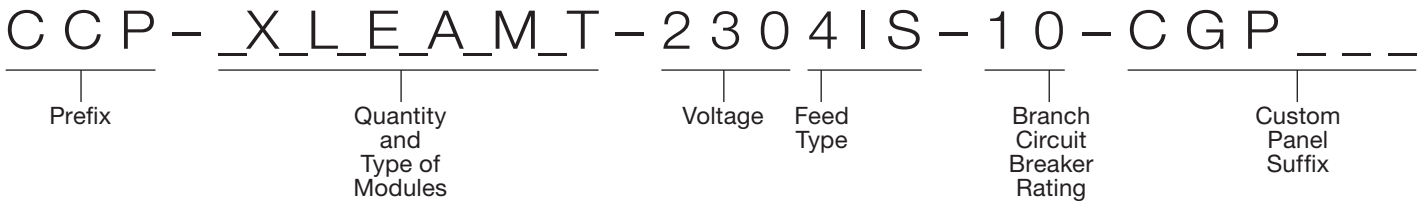
Module Specifications (continued)

|   |  |   |   |                                      |                                      |   |   |   |  |
|---|--|---|---|--------------------------------------|--------------------------------------|---|---|---|--|
| <b>Adaptive Module</b><br>LP-RPM-4A-230 | <b>Dimming Module</b><br>LP-RPM-4U-240 | <b>Dimming Module</b><br>LP-RPM-4U-230-CE | <b>ELV Dimming Module</b><br>LP-RPM-4E-230-CE | <b>Switching Module</b><br>XP2-SM-4S | <b>Motor Module</b><br>HW-RPM-4M-230 | <b>0-10 V<sub>AC</sub> Dimming Module</b><br>GRX-TVM2 + LP-RPM-4U-240 | <b>0-10 V<sub>AC</sub> Dimming Module + Dimming Module</b><br>GRX-TVM2 + LP-RPM-4U-230-CE | <b>0-10 V<sub>AC</sub> Dimming Module + Dimming Module</b><br>GRX-TVM2 + LP-RPM-4U-230-CE | <b>0-10 V<sub>AC</sub> Dimming Module + Switching Module</b><br>GRX-TVM2 + XP2-SM-4S |
|---|--|---|---|--------------------------------------|--------------------------------------|---|---|---|--|

| Load Types  | Adaptive Module | Dimming Module | Dimming Module | ELV Dimming Module | Switching Module | Motor Module | 0-10 V <sub>AC</sub> Dimming Module | 0-10 V <sub>AC</sub> Dimming Module + Dimming Module | 0-10 V <sub>AC</sub> Dimming Module + Dimming Module |
|---|-----------------|----------------|----------------|--------------------|------------------|--------------|-------------------------------------|--|--|
| Compatible dimmable phase control LED (forward-phase) | ✓               | ✓              | ✓              |                    |                  |              |                                     |  |  |
| Compatible dimmable phase control LED (reverse-phase) | ✓               |                |                | ✓                  |                  |              |                                     |  |  |
| ELV (forward-phase)                                   | ✓               | ✓              | ✓              |                    |                  |              |                                     |  |  |
| ELV (reverse-phase)                                   | ✓               |                |                | ✓                  |                  |              |                                     |  |  |
| MLV   | ✓               | ✓              | ✓              |                    | ✓                |              |                                     |  |  |
| Incandescent  | ✓               | ✓              | ✓              | ✓                  | ✓                |              |                                     |  |  |
| Lutron 2-wire LED drivers                             | ✓               | ✓              | ✓              |                    |                  |              |                                     |  |  |
| Lutron tu-wire fluorescent                            | ✓               | ✓              | ✓              |                    |                  |              |                                     |  |  |
| Switched LED driver                                   |                 | ✓              | ✓              |                    | ✓                | ✓            | ✓                                   | ✓  | ✓  |
| Switched fluorescent ballasts                         |                 | ✓              | ✓              |                    | ✓                | ✓            | ✓                                   | ✓  | ✓  |
| Switched receptacle                                   |                 |                |                |                    |                  |              |                                     |  |  |
| 0-10 V <sub>AC</sub> LED driver                       |                 |                |                |                    |                  | ✓            | ✓                                   | ✓  |  |
| 0-10 V <sub>AC</sub> fluorescent ballast              |                 |                |                |                    |                  | ✓            | ✓                                   | ✓  |  |
| Other non-dim lighting loads                          |                 | ✓              | ✓              |                    | ✓                | ✓            | ✓                                   | ✓  |  |
| Motor loads   |                 |                |                |                    | ✓                |              |                                     |  |  |
| Neon/cold-cathode                                     | ✓               | ✓              | ✓              |                    | ✓                |              |                                     |  |  |
| AC shade/ projection screen motors                    |                 |                |                |                    | ✓                |              |                                     |  |  |
| Ceiling paddle fan                                    |                 |                |                |                    | ✓                |              |                                     |  |  |

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

## How to Build a Model Number



### Prefix

- **CCP:** Custom Combination Panel

### Quantity and Type of Modules

\_X\_L\_E\_A\_M\_T

List modules in the order shown above. Insert the quantity before each module code. Omit codes for modules not used in panel. See Note at right for limits on numbers of modules per panel.

- X** = Four-Circuit Switching Module (XP2-SM-4S)
- L** = Four-Circuit Dimming Module (LP-RPM-4U)
- E** = Four-Circuit ELV Module (LP-RPM-4E)
- A** = Four-Circuit Adaptive Dimming Module (LP-RPM-4A)
- M** = Four-Circuit Motor Module (HW-RPM-4M-230)
- T** = 0-10 V $\overline{\text{=}}$  Control (GRX-TVM2)

*Example:* **2X3L** indicates that two XP switching modules and three 4U dimming modules are desired.

**Note:** if any of the available module types is not desired, do not include it in the model number.

*Example:* if two XP switching modules, three LP dimming modules, and one motor module are desired, the correct model number would begin CCP-2X3L1M..., *not* CCP-2X3L0A1M...

### Voltage

- **230:** 220–240 V $\sim$  (CE)
- **240:** 220–240 V $\sim$  (non-CE)

### Feed Type

- **FT:** Feed-through
- **4IS:** Isolator switch for 3-phase 4-wire

### Branch Circuit Breaker Rating

- **10:** 10 A branch circuit breakers
- **13:** 13 A branch circuit breakers
- **16:** 16 A branch circuit breakers
- Omit for feed-through

### Custom Panel Suffix

- CGP number indicates specific characteristics of the customized panel. All CCP panels will have a corresponding CGP number.

### NOTE:

Module quantities are limited as follows:

#### Standard-Size Branch Circuit Breaker panels

- Max. # in panel: 8
- Max. # with TVM modules: 8
- Max. # with XP modules: 6
- Max. # with XP and TVM modules: 6

#### Standard-Size Feed-Through panels

- Max. # in panel: 9
- Max. # with TVM modules: 8

#### Mini-Size Branch Circuit Breaker panels

- (no XP modules):
- Max. # in panel without TVMs: 3
- Max. # in panel with TVMs: 2

#### Mini-Size Feed-Through panels

- Max. # in panel (with dimming modules and no TVMs): 3
- Max. # in panel (with dimming modules and TVMs): 2
- Max. # in panel (all dimming modules only): 4

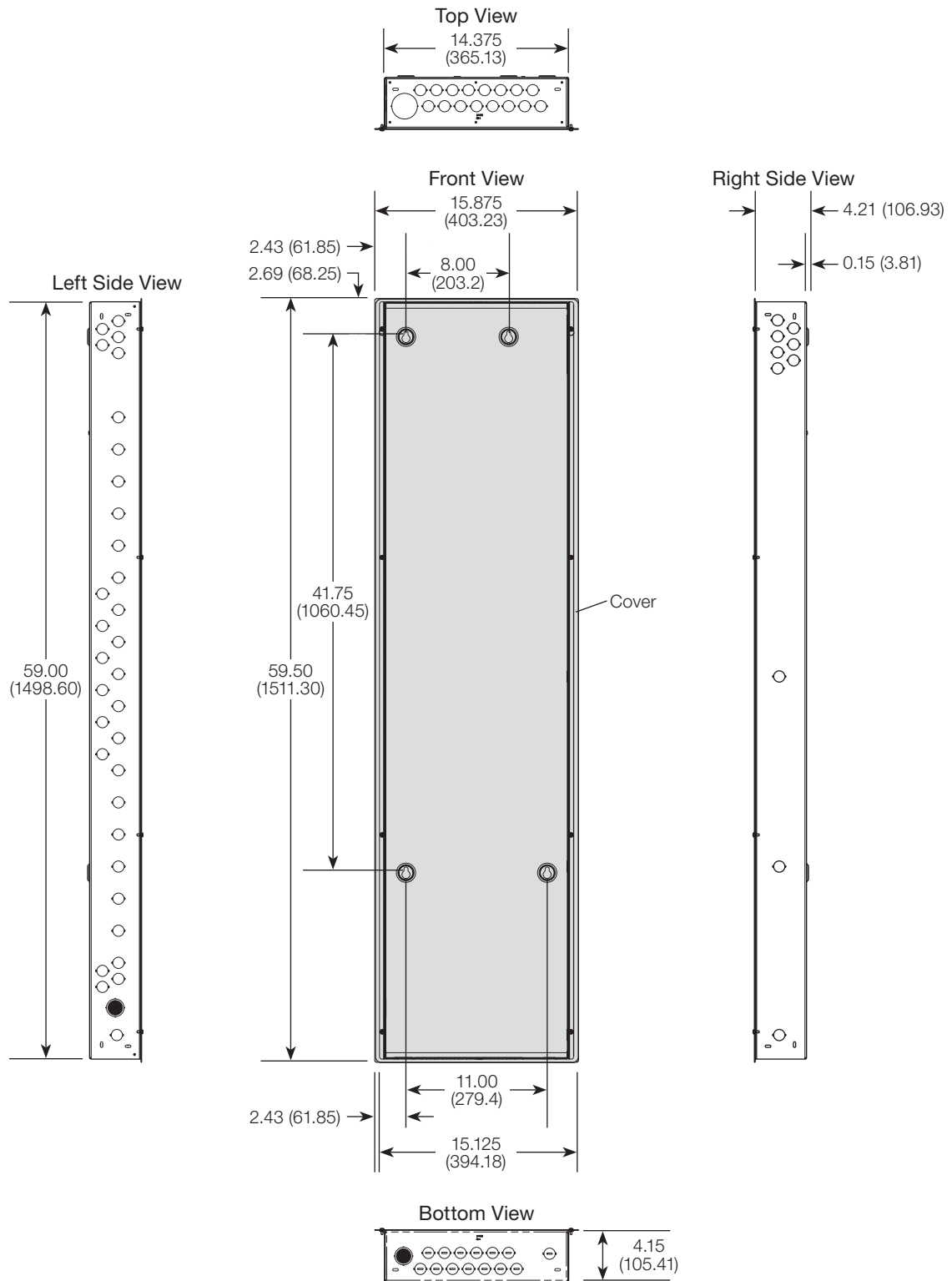
#### Input Ratings

220–240 V $\sim$

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| Job Name:   | Model Numbers: |
| Job Number: |                |

# Standard Size Panel Dimensions

All dimensions shown as: in (mm)

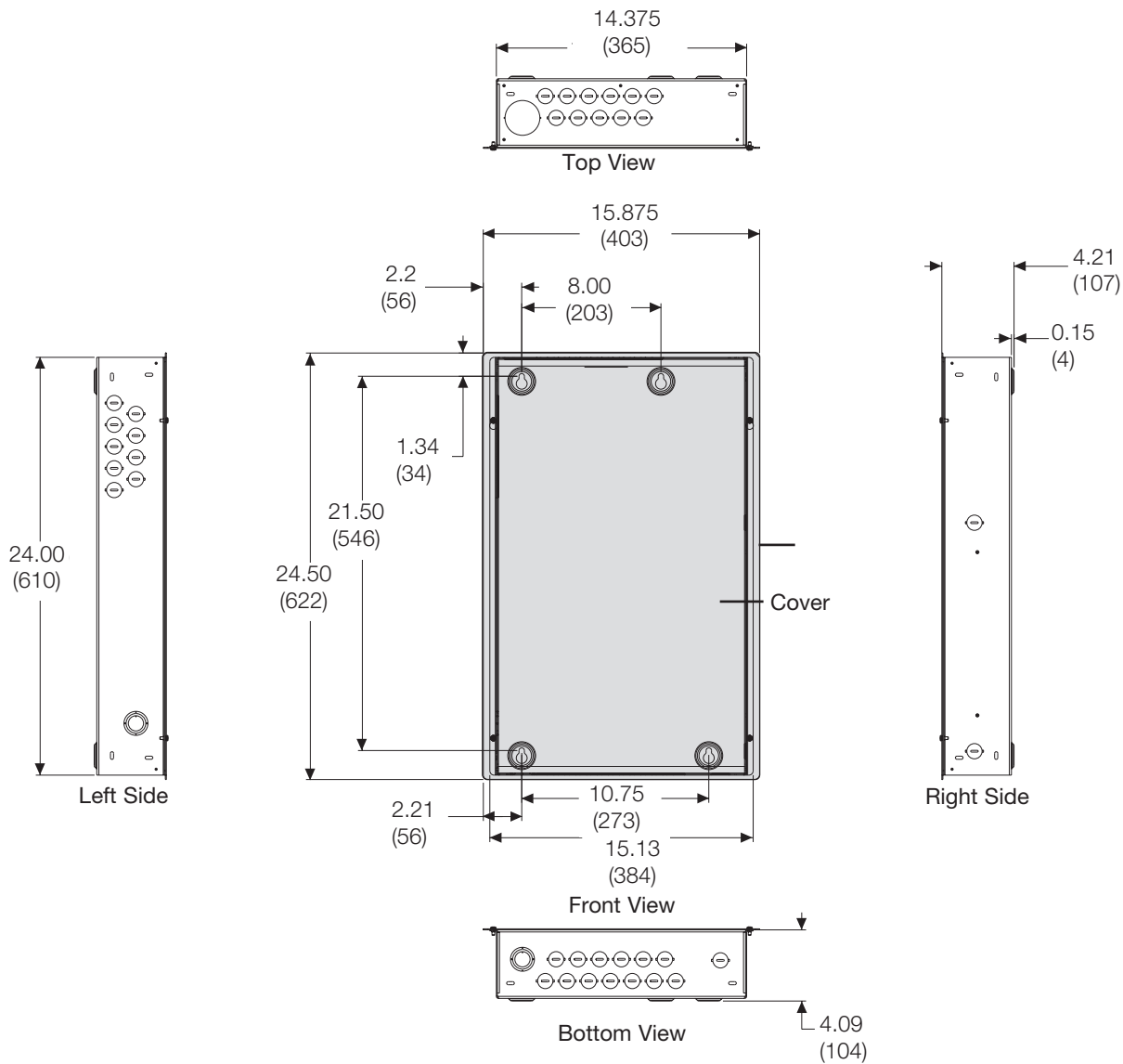


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| Job Name:   | Model Numbers: |
| Job Number: |                |



### Mini Panel Dimensions

Dimensions shown as: in (mm)



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| Job Name:   | Model Numbers: |
| Job Number: |                |

## Mounting

### Standard-size CCP Dimming Panels

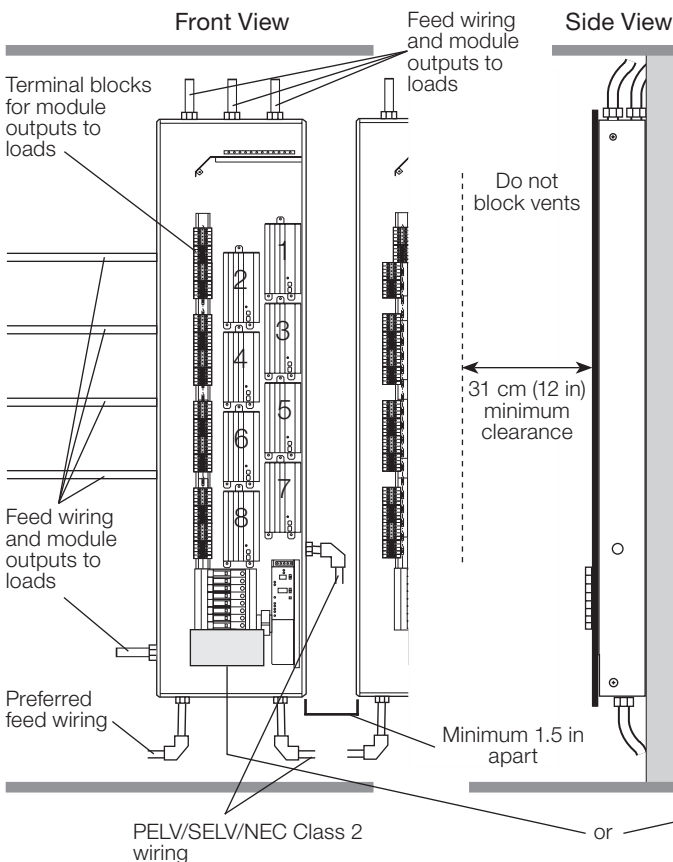
- Surface- or recess-mount indoors.
- Consult Dimensions page for dimensions and conduit knockout locations.
- Panel generates heat. Mount only where ambient temperature is 0–40 °C (32–104 °F).
- This equipment is air-cooled. Do not block vents or warranty will be void.
- Reinforce wall structure for 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 1.8 m (6 ft) 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)                    |

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

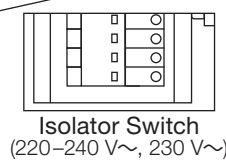
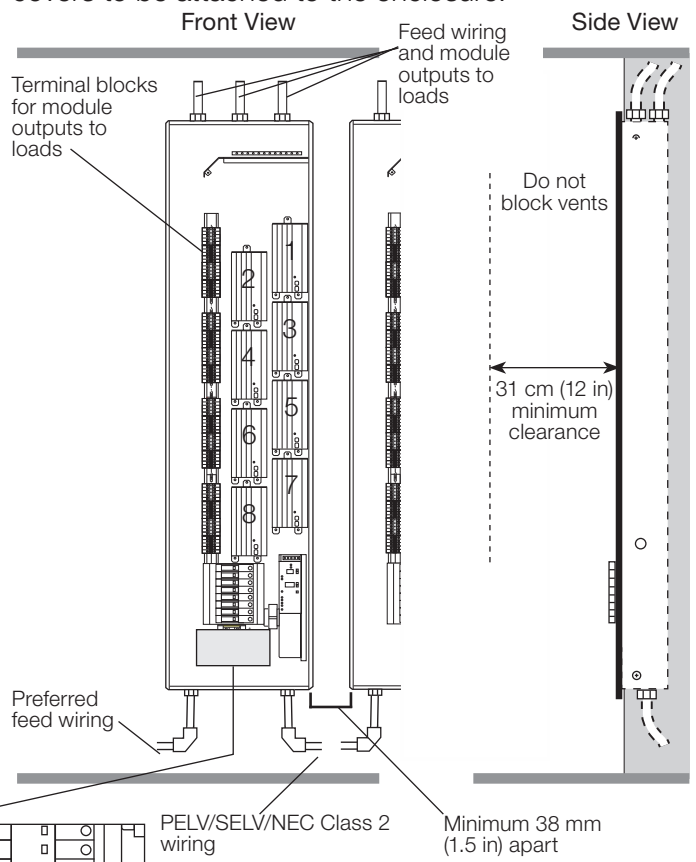
### Surface Mounting

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



### Recess Mounting

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



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| Job Name:   | Model Numbers: |
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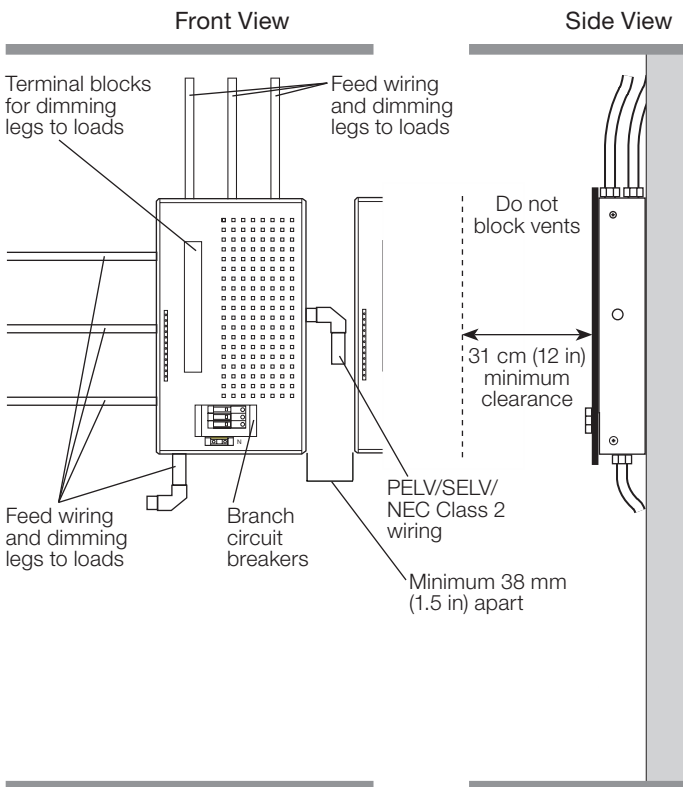
## Mounting

### Mini 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.

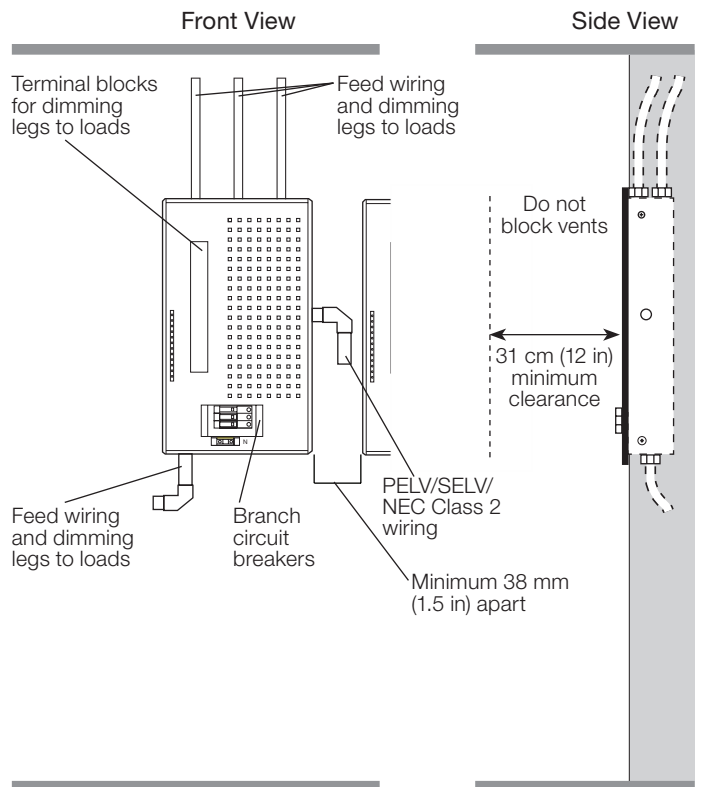


| Number of Modules | Maximum Heat* (BTUs [Kcal]/Hr) |
|-------------------|--------------------------------|
| 1                 | 125 (31.5)                     |
| 2                 | 240 (60.5)                     |
| 3                 | 355 (89.5)                     |

\* 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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| <b>Job Name:</b>   | <b>Model Numbers:</b> |
| <b>Job Number:</b> |                       |

## Panel Wiring

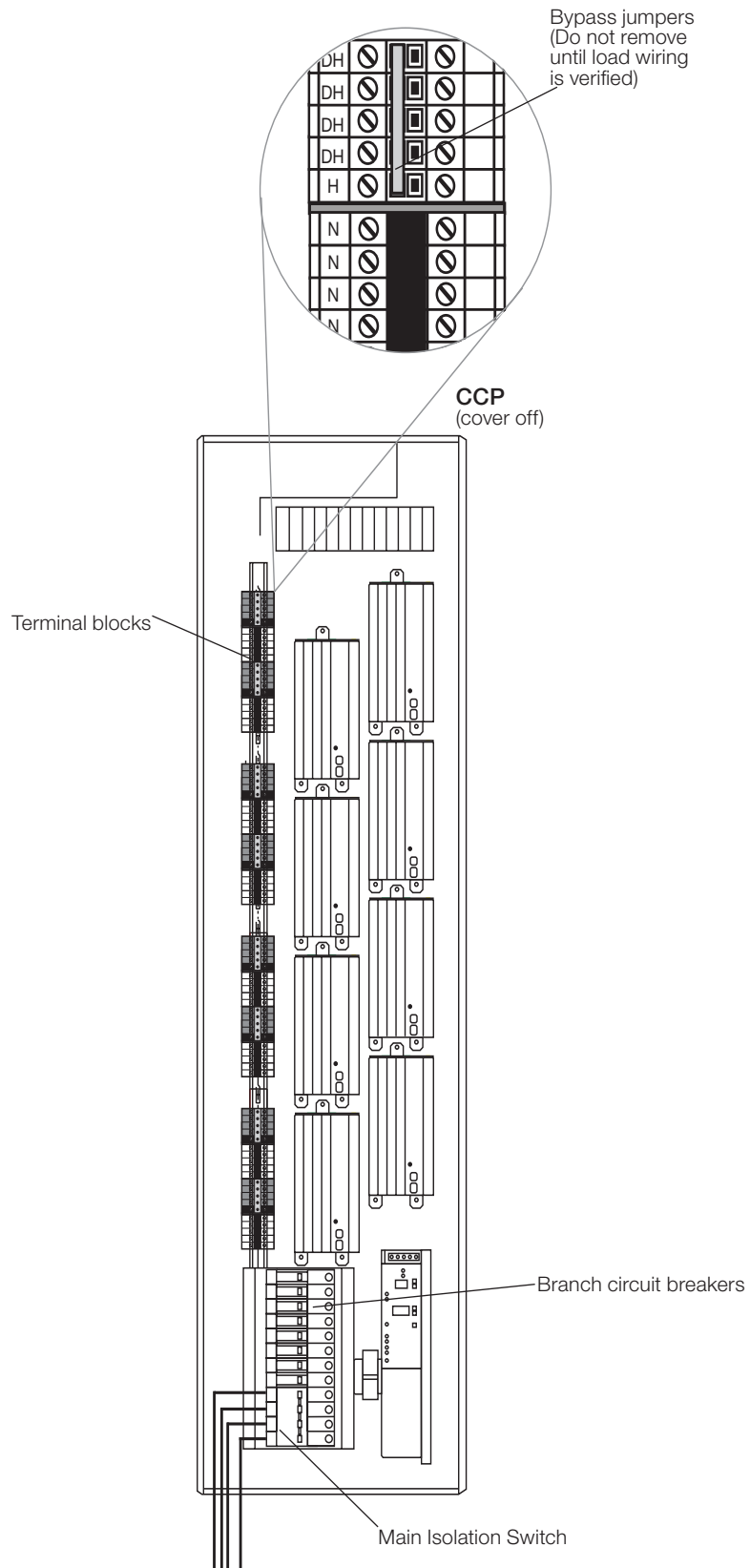
### Wire Sizes

- **Power Feed (panels with main ISO Switch):**  
Hot/Live - 2.5 mm<sup>2</sup> (14 AWG) to 35 mm<sup>2</sup> (2 AWG)  
Neutral - 2.5 mm<sup>2</sup> (14 AWG) to 35 mm<sup>2</sup> (2 AWG)
- **Power Feed (feed through panels):**  
Hot/Live - 2.5 mm<sup>2</sup> (14 AWG) to 4.0 mm<sup>2</sup> (10 AWG)  
Neutral - 2.5 mm<sup>2</sup> (14 AWG) to 4.0 mm<sup>2</sup> (10 AWG)
- **Load Wiring (all panels):**  
Hot/Live - 2.5 mm<sup>2</sup> (14 AWG) to 4.0 mm<sup>2</sup> (10 AWG)  
Neutral - 2.5 mm<sup>2</sup> (14 AWG) to 4.0 mm<sup>2</sup> (10 AWG)

### Wiring Tips

Wire the panel similar to a Lighting Distribution Panel:

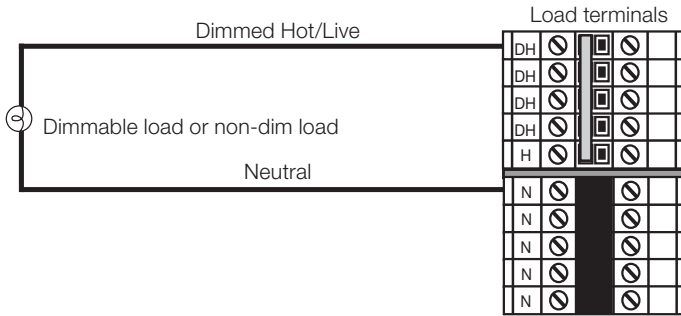
- Run feed and load wiring to appropriate terminal blocks or Isolator switch installed in the panel.
- For feed through panels run separate neutrals for each module—no common neutrals across phases.
- The panel can provide temporary lighting:
  - Wire all loads.
  - Do not remove bypass jumpers that are pre-installed for load controlling modules.
  - Use pre-installed Breakers to switch lights on and off.



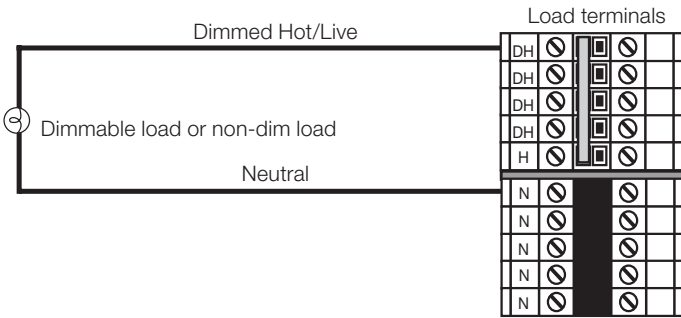
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| Job Name:   | Model Numbers: |
| Job Number: |                |

## Typical Load Wiring

### LP Dimming Module

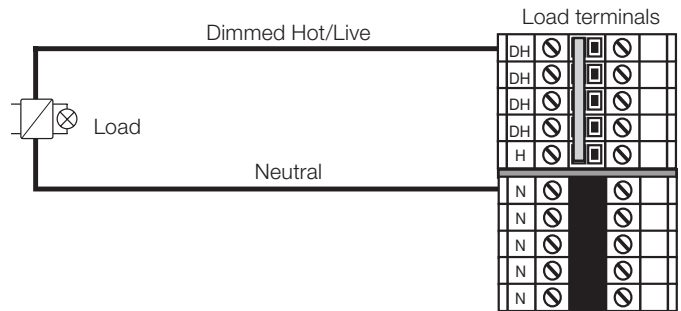


### ELV Dimming Module



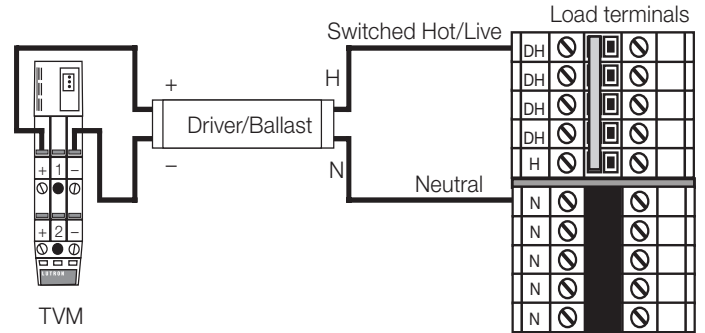
### Adaptive Dimming Module

- For incandescent and dimmable forward-or reverse phase control loads.

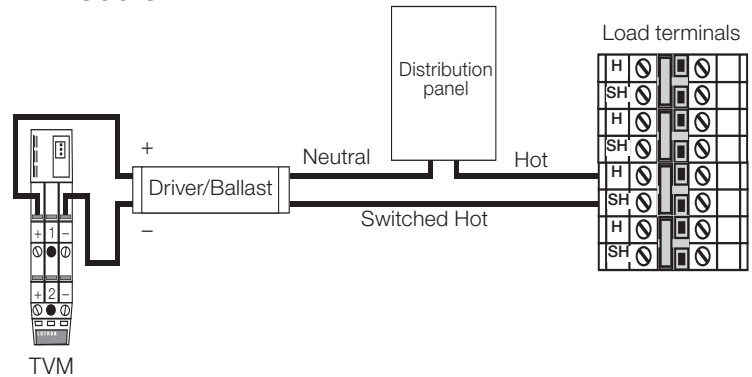


### 0–10 V<sub>DC</sub> Dimming Module + LP Dimming Module

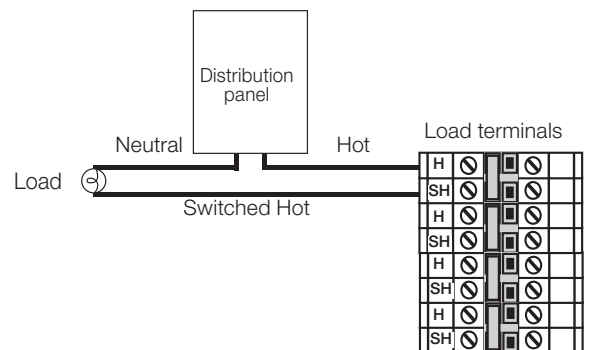
- For 0–10 V<sub>DC</sub>, PWM, and DALI® (Intensity broadcast only) loads.
- Each TVM controls 2 consecutive dimming legs of lighting which are the first dimming legs in the panel.
- Maximum low-voltage ballast control current: 50 mA per zone, 750 mA per panel.



### 0–10 V<sub>DC</sub> Dimming Module + XP Switching Module



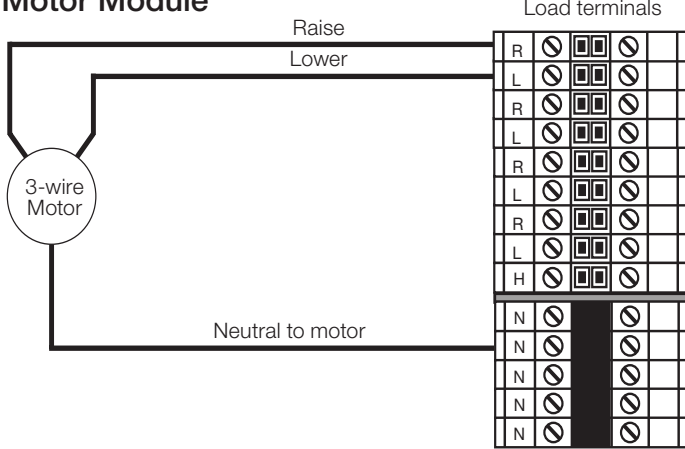
### XP Switching Module\*



|             |                |
|-------------|----------------|
| Job Name:   | Model Numbers: |
| Job Number: |                |

# Typical Load Wiring

## Motor Module



|             |                |
|-------------|----------------|
| Job Name:   | Model Numbers: |
| Job Number: |                |

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

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

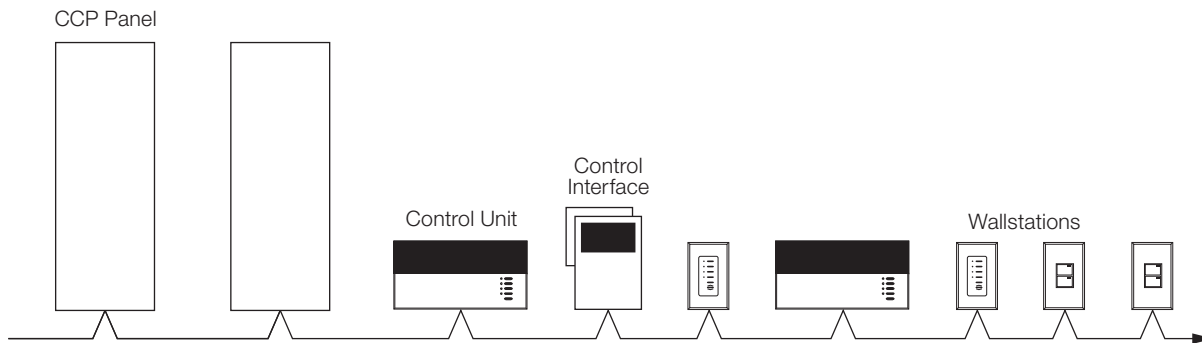
### GRAFIK Eye® 4000 System

PELV/SELV/NEC Class 2 wiring link requires:

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

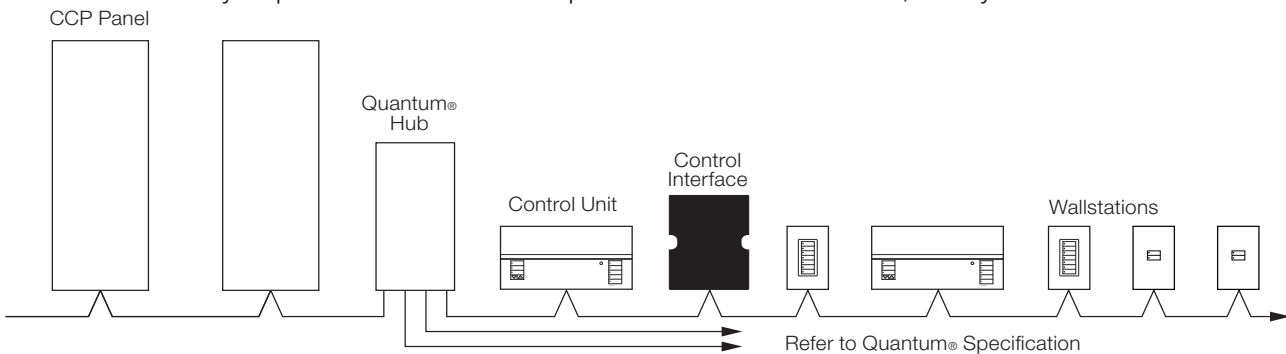
Total length of control link may be no more than 610 m (2000 ft).

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



### Quantum® System

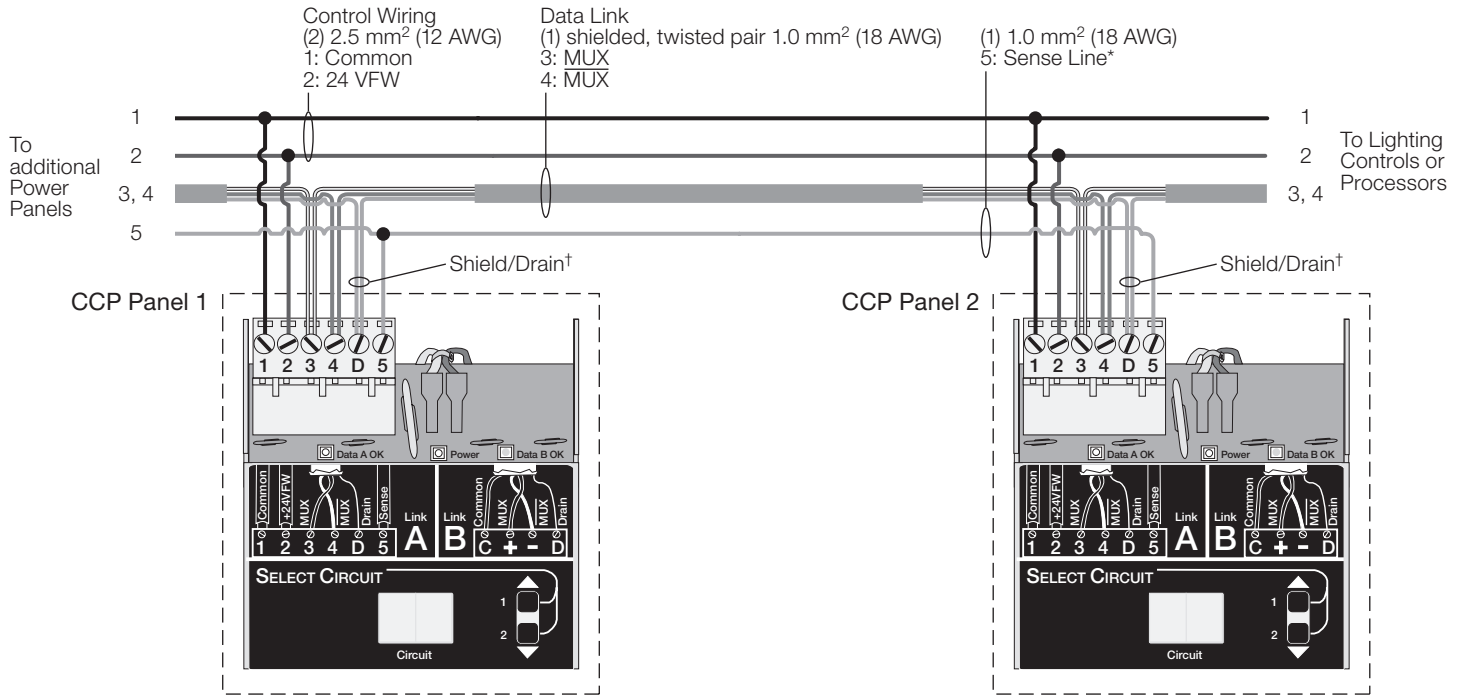
- PELV/SELV/NEC Class 2 wiring link requires:
  - Two 2.5 mm<sup>2</sup> (12 AWG) conductors for control power.
  - One twisted, shielded pair of 0.5 mm<sup>2</sup> (22 AWG) for data link.
  - One 1.0 mm<sup>2</sup> (18 AWG) conductor for emergency (essential) sense line, from panel to panel.
- Total length of control link may be no more than 610 m (2000 ft).
- Up to 3 MX-RPTR may be used to extend the panel link to a max. of 2438 m (8000 ft).
- 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 PELV/SELV/NEC Class 2 wiring cable is available from Lutron and contains:  
 Two 2.5 mm<sup>2</sup> (12 AWG) conductors for control power.  
 One twisted, shielded pair of 0.625 mm<sup>2</sup> (22 AWG) for data link.  
 One 1.0 mm<sup>2</sup> (18 AWG) conductor for emergency (essential) sense line.

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

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

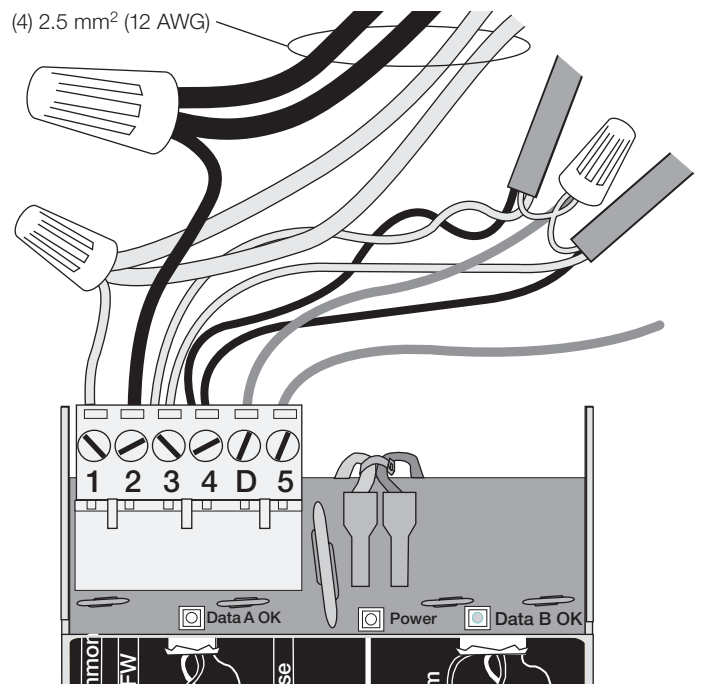


\* Emergency power: The additional 1.0 mm<sup>2</sup> (18 AWG) wire is a “sense” line from terminal 5 of another panel. This sense line allows an emergency (essential) lighting panel to “sense” when normal (non-essential) power is lost. If more than one emergency lighting panel needs to sense from a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

### PELV/SELV/NEC Class 2 Terminal Connections

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



|             |                |
|-------------|----------------|
| Job Name:   | Model Numbers: |
| Job Number: |                |