369827d 1 11.15.21

0–10 V Dimming Panels

0–10 V dimming panels provide 0–10 V dimming and switching for up to 48 0–10 V dimming/switching circuits. Switching circuits provide air-gap off functionality when the 0–10 V control signal is set to zero.

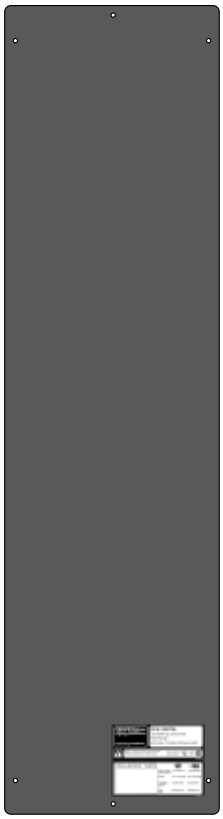
Feed-Through Panels (without branch circuit breakers)

Panels are available with various quantities of 0–10 V dimming and switching circuits. Refer to the **Product Selection Guide** pages for available combinations and additional information.

Mini-Size 0–10 V Panels
Dual voltage*

0–10 V Dimming circuits: 2 to 8
Switching circuits: 4 to 12

Standard-Size 0–10 V Panels
Dual voltage*



0–10 V Dimming circuits: 2 to 24
Switching circuits: 12 to 40

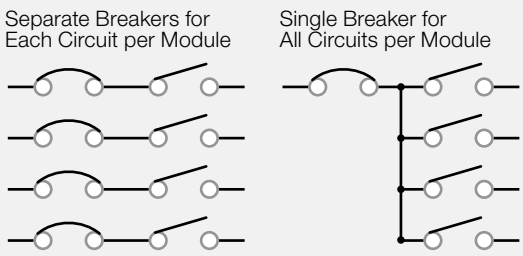
Large-Size 0–10 V Panels
Dual voltage*

0–10 V Dimming circuits: 2 to 48
Switching circuits: 28 to 48

0–10 V Dimming/Switching Panels work with:

- Quantum Systems
- GRAFIK Eye 4000 Control Units
- GP and LP Dimming Panels
- DMX512 Control Systems via the 2Link option

Available Circuit Configurations



* Dual voltage panels are rated for use at 120 V~ or 277 V~

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LUTRON SPECIFICATION SUBMITTAL

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels (continued)

Main Lug Panels (with branch circuit breakers: 4 breakers per module, 1 breaker per switching circuit)

Panels are available with various quantities of 0–10 V dimming and switching circuits. Refer to the **Product Selection Guide** pages for available combinations and additional information.

Standard-Size 0–10 V Panels
120 V~ only

0–10 V Dimming circuits: 4 to 20
Switching circuits: 4 to 20

Large-Size 0–10 V Panels
120 V~ or 277 V~

0–10 V Dimming circuits: 2 to 24
Switching circuits (120 V~): 24 to 36
Switching circuits (227 V~): 4 to 24

Extra-Large-Size 0–10 V Panels
277 V~ only

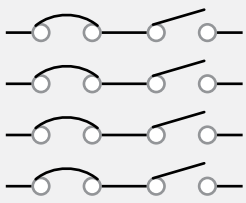
0–10 V Dimming circuits: 2 to 24
Switching circuits: 28 to 36

0–10 V Dimming/Switching Panels work with:

- Quantum Systems
- GRAFIK Eye 4000 Control Units
- GP and LP Dimming Panels
- DMX512 Control Systems via the 2Link option

Available Circuit Configuration

Separate Breakers for Each Circuit per Module



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Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels (continued)

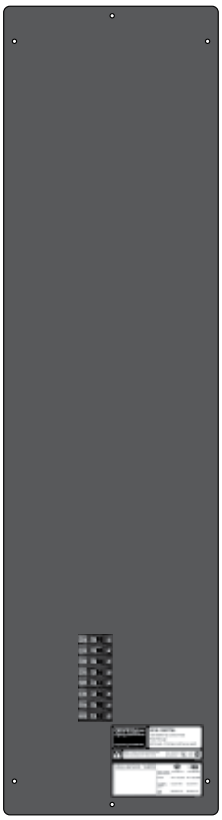
Main Lug Panels (with branch circuit breakers: 1 breaker per module)

Panels are available only with equal quantities of 0–10 V dimming and switching circuits. Refer to the **Product Selection Guide** pages for available combinations and additional information.

Mini-Size 0–10 V Panels
120 V~ or 277 V~

0–10 V Dimming circuits: 4 to 8
Switching circuits: 4 to 8

Standard-Size 0–10 V Panels
120 V~ or 277 V~



0–10 V Dimming circuits: 12 to 24
Switching circuits: 12 to 24

Large-Size 0–10 V Panels
120 V~ or 277 V~

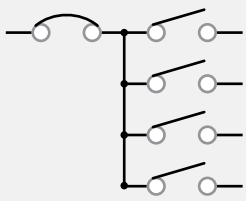
0–10 V Dimming circuits: 28 to 48
Switching circuits: 28 to 48

0–10 V Dimming/Switching Panels work with:

- Quantum Systems
- GRAFIK Eye 4000 Control Units
- GP and LP Dimming Panels
- DMX512 Control Systems via the 2Link option

Available Circuit Configuration

Single Breaker for All Circuits per Module



Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Specifications

Regulatory Approvals

- UL® Listed (Reference: UL File 42071)
- Complies with ISO-9000
- CSA
- Seismic Certified models available (Test Method AC156. Reference OSHPD Preapproval OSP-0215-10). Contact Lutron for details.

Power

- Input power: 120 V~, 277 V~.
  All voltages 50/60 Hz, phase-to-neutral.
- Control circuit (feed-through panels only) dedicated feed:
  – 120 V~ or 277 V~ for dual voltage panels
- Branch circuit breakers: UL® rated thermal magnetic.
  AIC ratings:
  – 120 V~ 10,000 A
  – 277 V~ 18,000 A (panels with 1 breaker per circuit)
  14,000 A (panels with 1 breaker per module)
- 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 levels prior to power interruption.

Load Types (relay ratings)

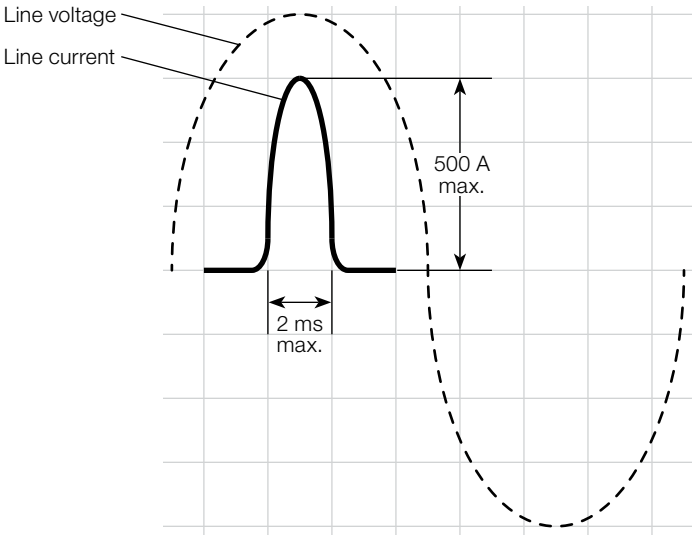
	Relay Rating	
Load Type	**120 V~**	**277 V~**
Tungsten	20 A	20 A
AC General Use*	20 A	20 A
Electric Discharge Lamp	16 A	16 A
Electronic Ballast (NEMA® 410)	16 A	16 A
LED (NEMA® 410)	16 A	16 A
Resistive	20 A	20 A
Inductive	20 A	20 A
Motor	1.0 HP	2.0 HP

* For additional information about 20 A receptacle controls using Lutron switching modules, see Lutron XP Specification Submittal (P/N 369345).

Maximum Inrush Requirements

- LED loads, ballast loads, and other high inrush loads must meet NEMA® 410 limits.
- The maximum inrush current for each circuit must not exceed 500 A peak, 2 ms duration.

Note: For inrush questions or for products with higher inrush capability, please consult Lutron.



Short Circuit Current Ratings (other ratings available)

Panel Type	Voltage	Std. SCCR Rating
XP Feed-through (all sizes)	120/277 V~	25,000 A
XP Main Lug Panels (all sizes)	120/277 V~	25,000 A

(continued on next page…)

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Specifications (continued)

0–10 V Dimming Modules (TVM)

- Two 0–10 V⎓ circuits per module.
- 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⎓, IEC® Standard 60929
  - 10–0 V⎓
  - PWM (Pulse Width Modulation), IEC® Standard 60929
  - DALI® (Broadcast only), IEC® Standard 62386

Switching Modules (120 V~, 277 V~)

- 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 an average of 1,000,000 cycles at 16 A.
- 10 BTU/hour per module.
- For additional information, see Lutron XP Specification Submittal (P/N 369345).

Wiring

- Internal: Pre-wired by Lutron.
- System communications:
  Low-voltage IEC PELV/NEC® Class 2 wiring connects 0–10 V dimming panels to other components.
- Line (mains) voltage: Feed and load wiring only. (Feed-through 0–10 V dimming panels also have control circuit wiring). No other wiring or assembly required.

Physical Design

- Enclosure: NEMA-Type 1, IP-20 protection; 16 U.S. gauge steel. Indoor use only.
- Weight:
  - Mini-size panels: 27 lb (13 kg)
  - Standard-size panels: 80 lb (37 kg)
  - Large-size panels: 135 lb (61.3 kg)
  - Extra-large-size panels: 200 lb (90.7 kg)
- Seismic Certification Limits (seismic-certified models only):
  - $S_{DS} = 2.5$ g, $z/h = 1.0$, $I_P = 1.5$

  Contact Lutron for details.

Mounting

- Mini- and standard-size panels: Surface-mount or recess-mount between 16 in (40 cm) studs.
- Large-size and extra-large-size panels: Surface-mount only.

Environment

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

Warranty

For warranty information, please visit www.lutron.com/en-US/Service-Support/Pages/Service/Warranty/Warranty.aspx

* Each group of up to twelve TVM modules (twenty-four 0–10 V outputs) is powered by a single GRX-TVM-ISO2 power module. The 750 mA maximum output rating per twenty-four 0–10 V circuits is based on the limitation of this power module.

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: How to Build a Model Number

Feed-Through Panels (without branch circuit breakers)

C X P 4 8 – T 4 8 – FT – 2 L – C G P X X X X

Prefix	Number of Switching Circuits	Number of 0–10 V⎓ Circuits	Panel Feed	2-Link Circuit Selector (optional)	Custom Panel Suffix

Prefix

- **CXP:** Switching Panel

Number of Switching Circuits

- Indicates number of load circuits in the panel (4 to 48)

Number of 0–10 V⎓ Circuits

- **T2–T48:** 2–48 0–10 V⎓ circuits[1]

Panel Feed

- **FT:** Feed-through (no branch circuit breakers)

2-Link Circuit Selector (optional)

- Omit if 2-link is not required

Custom Panel Suffix

- Indicates a panel with special options
- CGP718 includes panels with up to 40 switching circuits and up to 24 0–10 V⎓ circuits
- CGP2686 includes panels with more than 40 switching circuits OR more than 24 0–10 V⎓ circuits
- Refer to the **Product Selection Guide** pages for available combinations of 0–10 V dimming/switching circuits as well as additional CGP number and panel size information
- If additional custom features are required, contact Lutron

Examples of Custom Features That May Require a Unique CGP Number

- 347 V~ switching
- Constant-hot terminal blocks

[1] Number of 0–10 V⎓ circuits vary based on number of switching circuits in the panel. Contact Lutron for specific variations.

(continued on next page…)

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: How to Build a Model Number (continued)

Main Lug Panels (with branch circuit breakers)

CXP	48	–	277	4	–	T48	–	ML	–	2L	–	20	–	CGPXXXX
Prefix	Number of Switching Circuits		Voltage	Feed Type		Number of 0–10 V⎓ Circuits		Panel Feed		2-Link Circuit Selector (optional)		Branch Circuit Breakers		Custom Panel Suffix

Prefix

- **CXP:** Switching Panel

Number of Switching Circuits

- Indicates number of load circuits in the panel (4 to 48)

Voltage

- **120:** 100–127 V~
- **277:** 277 V~

Feed Type

- **4:** 3-phase, 4-wire

Number of 0–10 V⎓ Circuits

- **T2–T48:** 2–48 0–10 V⎓ circuits

Panel Feed

- **ML:** Main Lugs only

2-Link Circuit Selector (optional)

- Omit if 2-link is not required

Branch Circuit Breakers

- **20:** 20 A branch circuit breakers
- **15:** 15 A branch circuit breakers

Custom Panel Suffix

- Indicates panel with special options
- CGP662 includes 277 V~ panels with 1 breaker **per circuit**; may have up to 36 switching circuits and up to 24 0–10 V⎓ circuits
- CGP1404 includes 120 V~ panels with 1 breaker **per circuit**; may have up to 40 switching circuits and up to 24 0–10 V⎓ circuits
- CGP2705 includes 120 V~ and 277 V~ panels with 1 breaker **per module**; may have up to 48 switching circuits and up to 48 0–10 V⎓ circuits. Panels built under this CGP number must always have an equal number of switching circuits and 0–10 V⎓ circuits
- Refer to the **Product Selection Guide** pages for available combinations of 0–10 V dimming/switching circuits as well as additional CGP number and panel size information
- If additional custom features are required, contact Lutron

Examples of Custom Features That May Require a Unique CGP Number

- Constant-hot terminal blocks
- Main breakers (restrictions apply)
- Branch breakers with higher AIC ratings
- Alternate feed configurations

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Configurations

Feed-Through Panels (without branch circuit breakers)

Mini-Size Panels 24 in (609 mm)
(120/277 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type	Maximum Feed
XP4	4	2–4	Feed-through	120/277 V~ 20 A
XP8	8	2–8		
XP12	12	2–8		

Standard-Size Panels 59 in (1498 mm)
(120/277 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type	Maximum Feed
XP12	12	10–12	Feed-through	120/277 V~ 20 A
XP16	16	2–16		
XP20	20	2–20		
XP24	24	2–24		
XP28	28	2–24		
XP32	32	2–24		
XP36	36	2–24		
XP40	40	2–24		

Large-Size Panels 63 in (1600 mm)
(120/277 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type	Maximum Feed
XP28	28	26–28	Feed-through	120/277 V~ 20 A
XP32	32	26–32		
XP36	36	26–36		
XP40	40	26–40		
XP44	44	2–44		
XP48	48	2–48		

Wire Sizes (apply to feed and load wiring):

- Panels accept 14 to 10 AWG (2.5 to 4.0 mm^2) for feed wiring and switch legs (to loads)
- Power (Line/Hot) and Switched (Line/Hot) connect directly to terminal block for switch legs

(continued on next page…)

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Configurations (continued)

Main Lug Panels (with branch circuit breakers: 4 breakers per module, 1 breaker per switching circuit)

Standard-Size Panels 59 in (1498 mm)
(120 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type and Wire Size	Maximum Feed	Branch Circuit Breakers
XP4	4	2–4	• 3Ø 4 W • Main Lugs only • Main Lugs accept 4 AWG (25 mm²) to 250 kcmil (mcm) (120 mm²)	200 A	15 A or 20 A
XP8	8	2–8			
XP12	12	2–12			
XP16	16	2–16			
XP20	20	2–20			

Large-Size Panels 63 in (1600 mm)
(120 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type and Wire Size	Maximum Feed	Branch Circuit Breakers
XP24	24	2–24	• 3Ø 4 W • Main Lugs only • Main Lugs accept 4 AWG (25 mm²) to 300 kcmil (mcm) (150 mm²)	225 A	15 A or 20 A
XP28	28	2–24			
XP32	32	2–24			
XP36	36	2–24			

Large-Size Panels 63 in (1600 mm)
(277 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type and Wire Size	Maximum Feed	Branch Circuit Breakers
XP4	4	2–4	• 3Ø 4 W • Main Lugs only • Main Lugs accept 4 AWG (25 mm²) to 300 kcmil (mcm) (150 mm²)	250 A	20 A
XP8	8	2–8			
XP12	12	2–12			
XP16	16	2–16			
XP20	20	2–20			
XP24	24	2–24			

Extra-Large-Size Panels 82 in (2082 mm)
(277 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type and Wire Size	Maximum Feed	Branch Circuit Breakers
XP28	28	2–24	• 3Ø 4 W • Main Lugs only • Main Lugs accept 4 AWG (25 mm²) to 350 kcmil (mcm) (185 mm²)	300 A	20 A
XP32	32	2–24			
XP36	36	2–24			

Wire Sizes (apply to load wiring):

- Panels accept 14 to 10 AWG (2.5 to 4.0 mm²) for switch legs (to loads)

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0–10 V Dimming Panels: Configurations (continued)

Main Lug Panels (with branch circuit breakers: 1 breaker per module)

Mini-Size Panels 24 in (609 mm)
(120/277 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type	Wire Size	Maximum Feed	Branch Circuit Breakers
XP4	4	4	1Ø 2W	14 AWG to 8 AWG (2.5 mm^2 to 6.0 mm^2)	15 A* or 20 A	15 A* or 20 A
XP8	8	8	3Ø 4W			

Standard-Size Panels 59 in (1498 mm)
(120/277 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type	Wire Size	Maximum Feed	Branch Circuit Breakers
XP16	16	16	3Ø 4W	14 AWG to 2/0 AWG (2.5 mm^2 to 70 mm^2)	175 A (CU wire) 135 A (AL wire)	15 A* or 20 A
XP20	20	20				
XP24	24	24				

Large-Size Panels 63 in (1600 mm)
(120/277 V~)

Model Prefix	Switching Circuits	0–10 V⎓ Circuits	Feed Type	Wire Size	Maximum Feed	Branch Circuit Breakers
XP28	28	28	3Ø 4W	14 AWG to 2/0 AWG (2.5 mm^2 to 70 mm^2)	175 A (CU wire) 135 A (AL wire)	15 A* or 20 A
XP32	32	32				
XP36	36	36				
XP40	40	40				
XP44	44	44				
XP48	48	48				

* 15 A available for 120 V~ panels only.

Wire Sizes (apply to load wiring):

- Panels accept 14 to 10 AWG (2.5 to 4.0 mm^2) for switch legs (to loads)

369827d 11 11.15.21

0–10 V Dimming Panels: Product Selection Guides

Use the Product Selection Guides on the following pages to determine:

- Available combinations of 0–10 V dimming circuits and switching circuits for each panel type.
- Basic CGP numbers for these panels (other CGP number options may be available if additional custom features are required).
- Enclosure sizes for each available combination.

Using the Product Selection Guides:

Step 1:
Select the proper Product Selection Guide for the panel type you are specifying:
– Product Selection Guide 1: Feed-through panels
– Product Selection Guide 2: 120 V~ Main lug panels (1 breaker per *circuit*)
– Product Selection Guide 3: 277 V~ Main lug panels (1 breaker per *circuit*)
– Product Selection Guide 4: 120 V~ or 277 V Main lug panels (1 breaker per *module*)

Step 2:
Select the total number of switching circuits from the horizontal row across the top of the guide.

Step 3:
Select the proper number of 0–10 V circuits from the vertical column at the left of the guide.

Step 4:
The intersection of these two values will indicate the proper CGP number and enclosure size for that combination of switching and 0–10 V dimming circuits. (*N/A* indicates an invalid combination for that panel type.)

Example

Step 1
Type of panel: Feed-through

Step 2
Number of Switching Circuits: 12

Step 3
Number of 0–10 V Dimming Circuits: 6

Step 4
CGP number: 718; enclosure size: 24 in (609 mm)

Product Selection Guide 1	Quantity of Switching Circuits							
Quantity of 0–10 V Dimming Circuits	**4**	**8**	**12**	**16**	**20**	**24**	**28**	**32**
2	718 (24 in)	718 (24 in)	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)
4	718 (24 in)	718 (24 in)	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)
6	N/A	718 (24 in)	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)
8	N/A	718 (24 in)	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)
10	N/A	N/A	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)
12	N/A	N/A	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)
14	N/A	N/A	N/A	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)

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Job Name:	Model Numbers:	
Job Number:		

369827d 12 11.15.21

0–10 V Dimming Panels: Product Selection Guides (continued)

120 V~/277 V~ Feed-Through Panels (Dual Voltage)

Product Selection Guide 1	Quantity of Switching Circuits											
Quantity of 0–10 V Dimming Circuits	4	8	12	16	20	24	28	32	36	40	44	48
2	718 (24 in)	718 (24 in)	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
4	718 (24 in)	718 (24 in)	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
6	N/A	718 (24 in)	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
8	N/A	718 (24 in)	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
10	N/A	N/A	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
12	N/A	N/A	718 (24 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
14	N/A	N/A	N/A	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
16	N/A	N/A	N/A	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
18	N/A	N/A	N/A	N/A	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
20	N/A	N/A	N/A	N/A	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
22	N/A	N/A	N/A	N/A	N/A	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
24	N/A	N/A	N/A	N/A	N/A	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	718 (59 in)	2686 (63 in)	2686 (63 in)
26	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)
28	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)
32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)
34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)
36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)	2686 (63 in)	2686 (63 in)
38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)	2686 (63 in)
40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)	2686 (63 in)
42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)
44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)	2686 (63 in)
46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)
48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2686 (63 in)

(continued on next page…)

Job Name:

Job Number:

Model Numbers:

0–10 V Dimming Panels: Product Selection Guides (continued)

120 V~ Main Lug Panels (1 breaker per switching circuit)

Product Selection Guide 2	Quantity of Switching Circuits										
Quantity of 0–10 V Dimming Circuits	4	8	12	16	20	24	28	32	36	40	42
2	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
4	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
6	N/A	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
8	N/A	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
10	N/A	N/A	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
12	N/A	N/A	1404 (59 in)	1404 (59 in)	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
14	N/A	N/A	N/A	1404 (59 in)	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
16	N/A	N/A	N/A	1404 (59 in)	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
18	N/A	N/A	N/A	N/A	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
20	N/A	N/A	N/A	N/A	1404 (59 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A	1404 (63 in)	1404 (63 in)	1404 (63 in)	1404 (63 in)	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(continued on next page…)

Job Name:

Job Number:

Model Numbers:

0–10 V Dimming Panels: Product Selection Guides (continued)

277 V~ Main Lug Panels (1 breaker per switching circuit)

Product Selection Guide 3	Quantity of Switching Circuits										
Quantity of 0–10 V Dimming Circuits	4	8	12	16	20	24	28	32	36	40	42
2	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
4	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
6	N/A	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
8	N/A	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
10	N/A	N/A	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
12	N/A	N/A	662 (63 in)	662 (63 in)	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
14	N/A	N/A	N/A	662 (63 in)	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
16	N/A	N/A	N/A	662 (63 in)	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
18	N/A	N/A	N/A	N/A	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
20	N/A	N/A	N/A	N/A	662 (63 in)	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A	662 (63 in)	662 (82 in)	662 (82 in)	662 (82 in)	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(continued on next page…)

Job Name:	Model Numbers:	
Job Number:		

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0–10 V Dimming Panels: Product Selection Guides (continued)

120 V~ or 277 V~ Main Lug Panels (1 breaker per module)

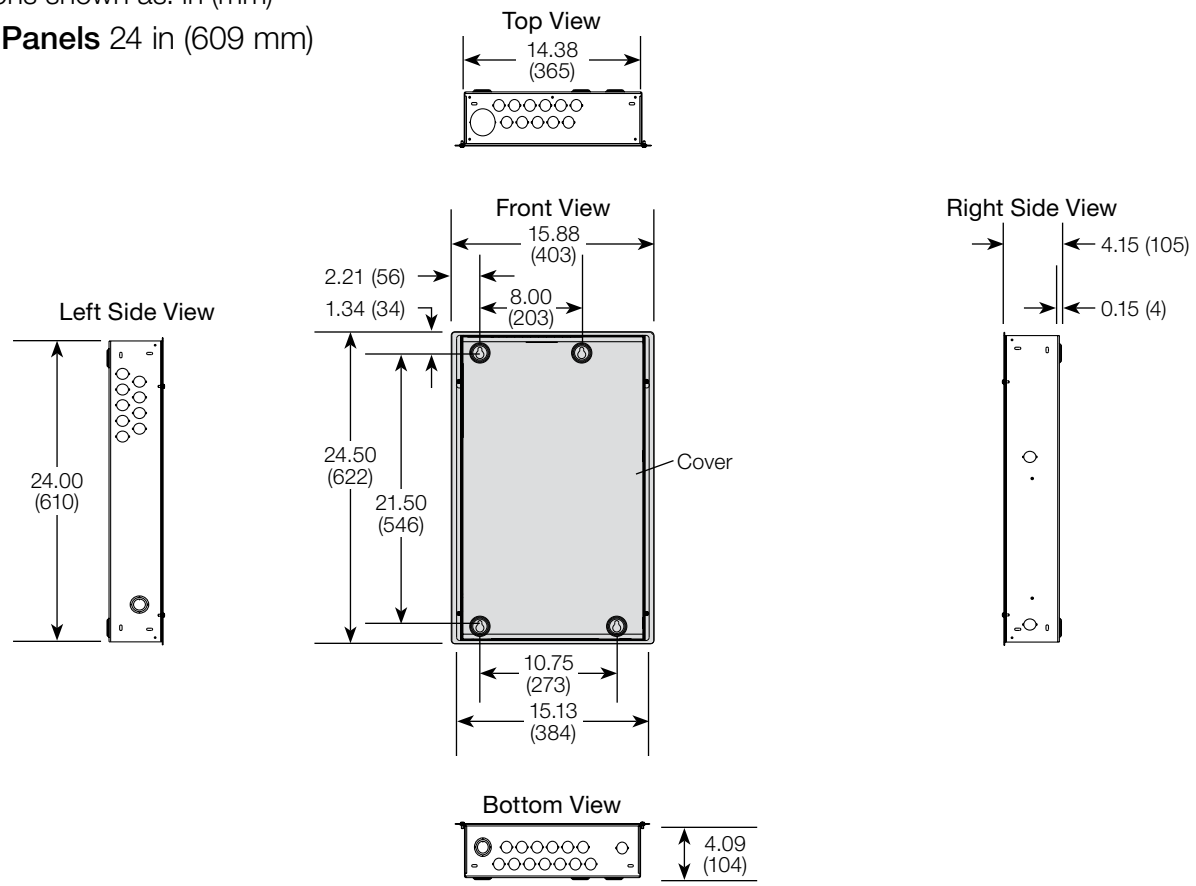
Product Selection Guide 4	Quantity of Switching Circuits											
Quantity of 0–10 V Dimming Circuits	4	8	12	16	20	24	28	32	36	40	44	48
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4	2705 (24 in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	N/A	2705 (24 in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
12	N/A	N/A	2705 (59 in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16	N/A	N/A	N/A	2705 (59 in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
18	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	N/A	N/A	N/A	N/A	2705 (59 in)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24	N/A	N/A	N/A	N/A	N/A	2705 (59 in)	N/A	N/A	N/A	N/A	N/A	N/A
26	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
28	N/A	N/A	N/A	N/A	N/A	N/A	2705 (63 in)	N/A	N/A	N/A	N/A	N/A
30	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
32	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2705 (63 in)	N/A	N/A	N/A	N/A
34	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2705 (63 in)	N/A	N/A	N/A
38	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
40	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2705 (63 in)	N/A	N/A
42	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2705 (63 in)	N/A
46	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
48	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2705 (63 in)

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Dimensions

All dimensions shown as: in (mm)

Mini-Size Panels 24 in (609 mm)



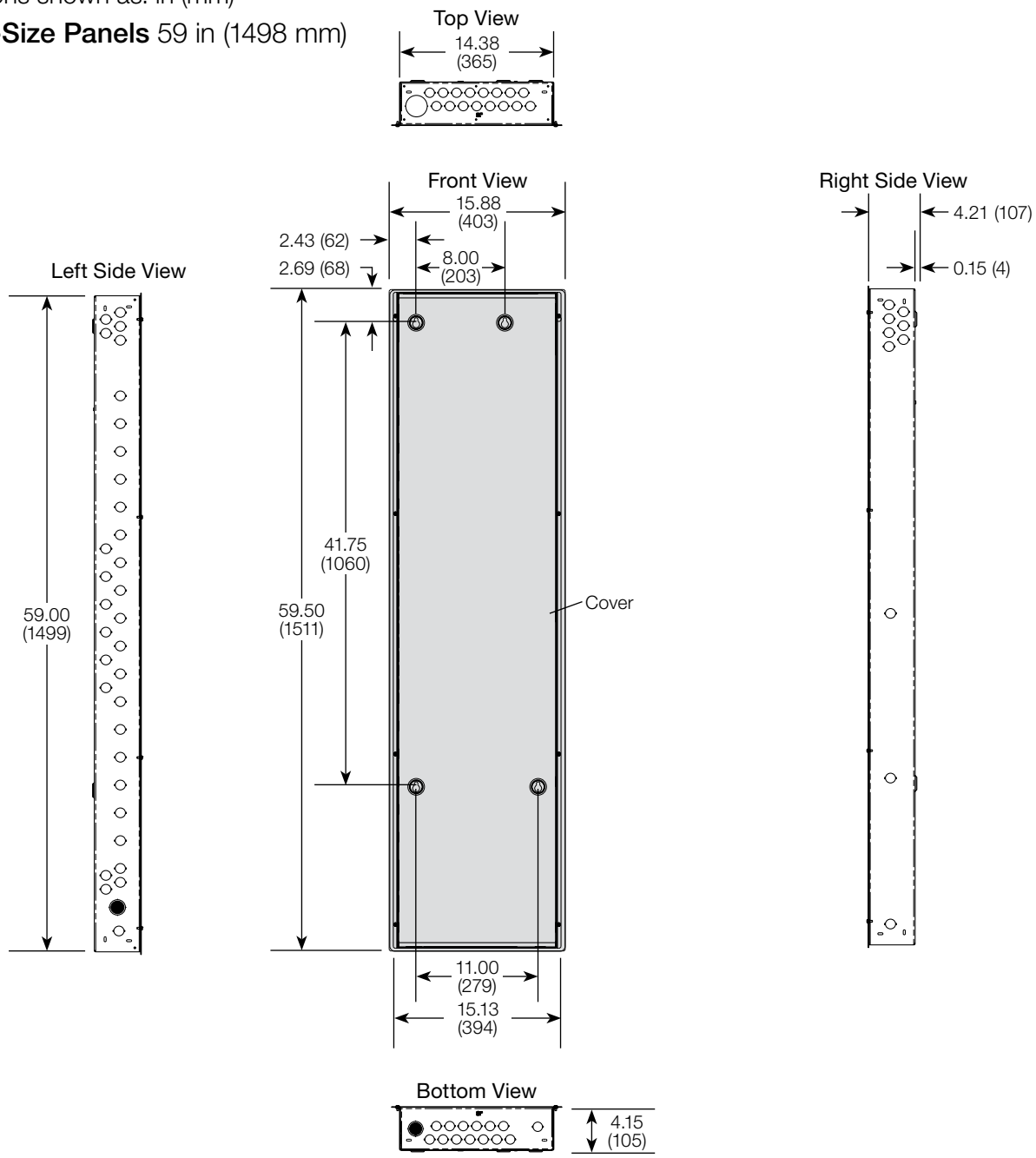
(continued on next page…)

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Dimensions (continued)

All dimensions shown as: in (mm)

Standard-Size Panels 59 in (1498 mm)



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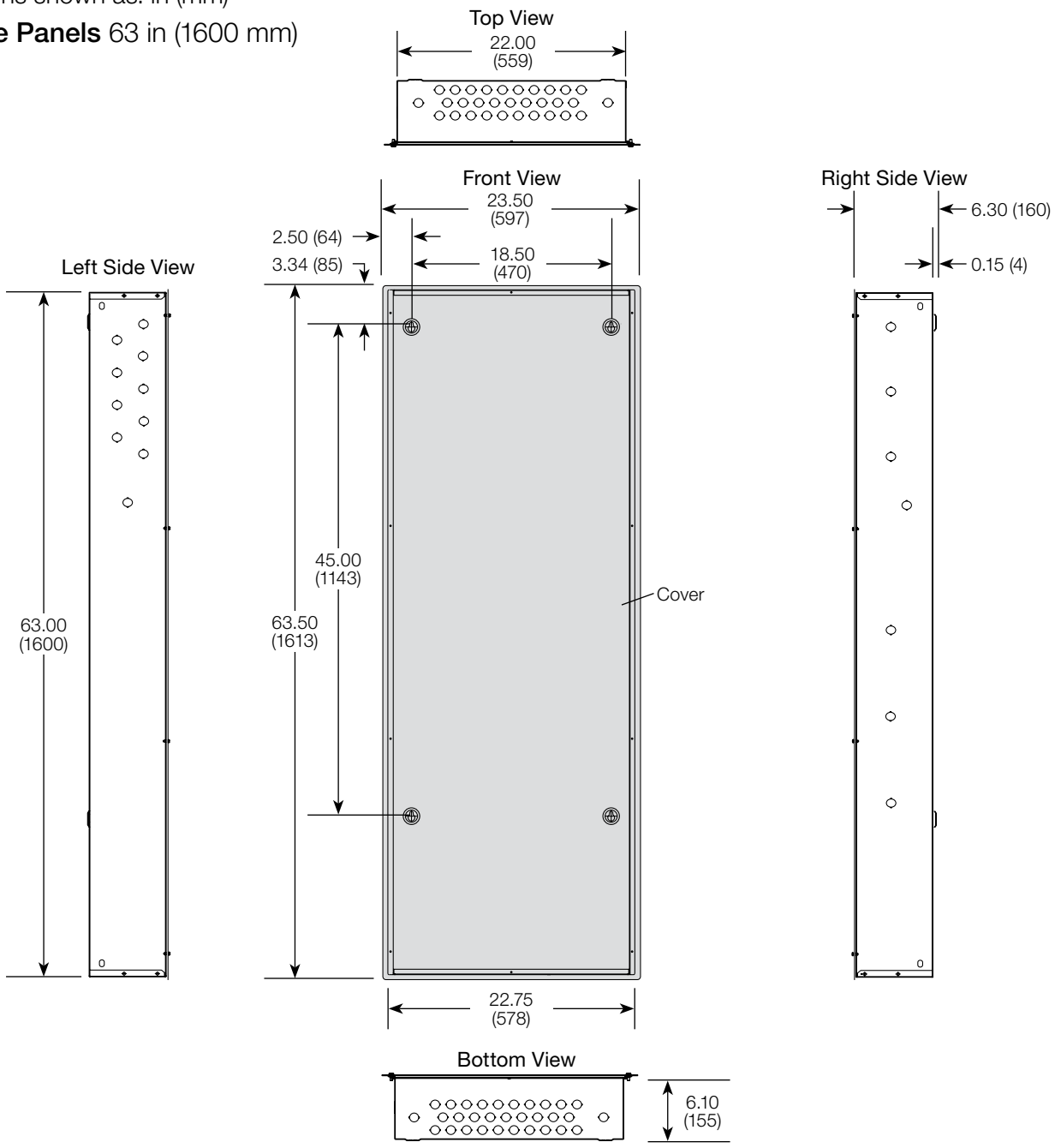
Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Dimensions (continued)

All dimensions shown as: in (mm)

Large-Size Panels 63 in (1600 mm)



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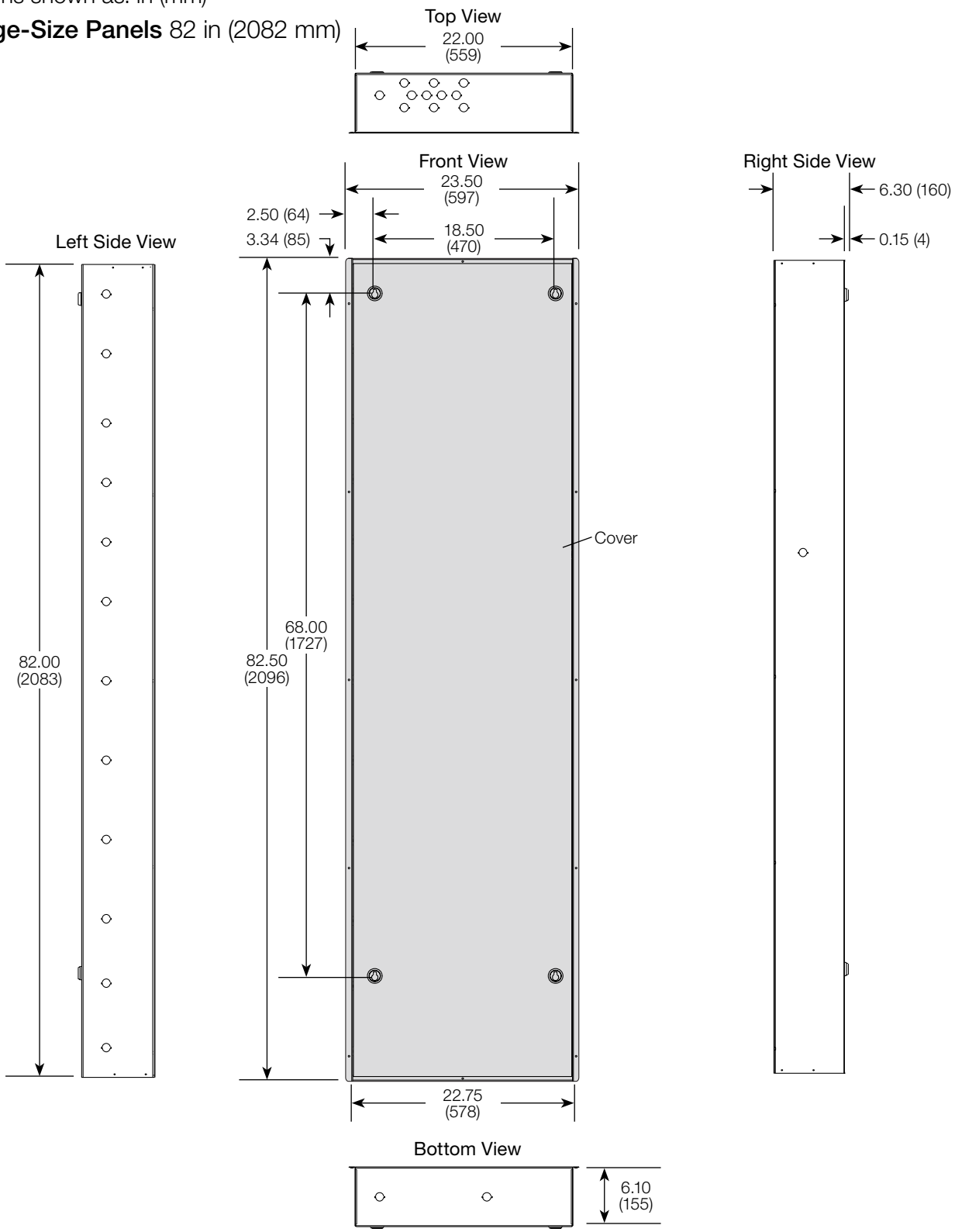
Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Dimensions (continued)

All dimensions shown as: in (mm)

Extra-Large-Size Panels 82 in (2082 mm)



Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Mounting

Mini-Size Panels

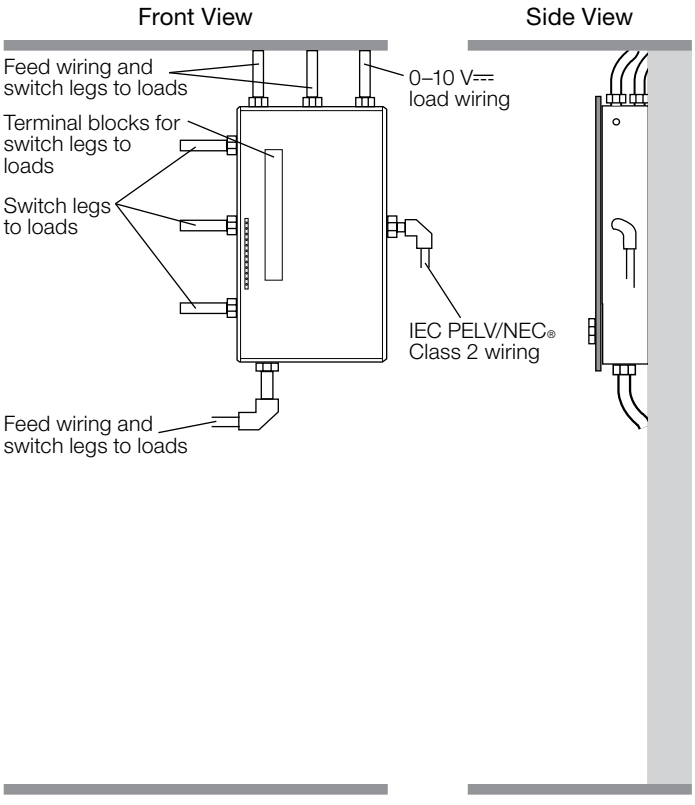
- Surface- or recess-mount indoors.
- Consult **Dimensions** page for dimensions, conduit knockouts, and mounting holes and hardware.
- Mount only where ambient temperature is 32 °F to 104 °F (0 °C to 40 °C).
- Mount panel where audible noise is acceptable (internal relays click).
- Mount panel so line (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.

Maximum Feed and Wire Sizes

Consult wiring tables on pages 8 and 10: **Mini-Size Panels**.

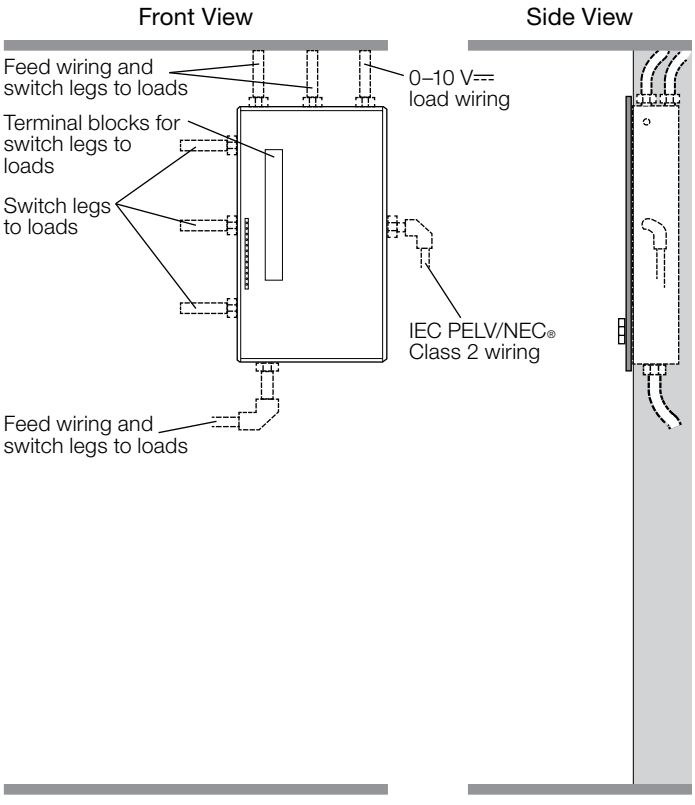
Surface-Mounting

- Surface-mounting keyholes accept 1/4 in (6 mm) mounting bolts. This size is recommended.



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.



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Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Mounting (continued)

Standard-Size Feed-Through Panels (without branch circuit breakers)

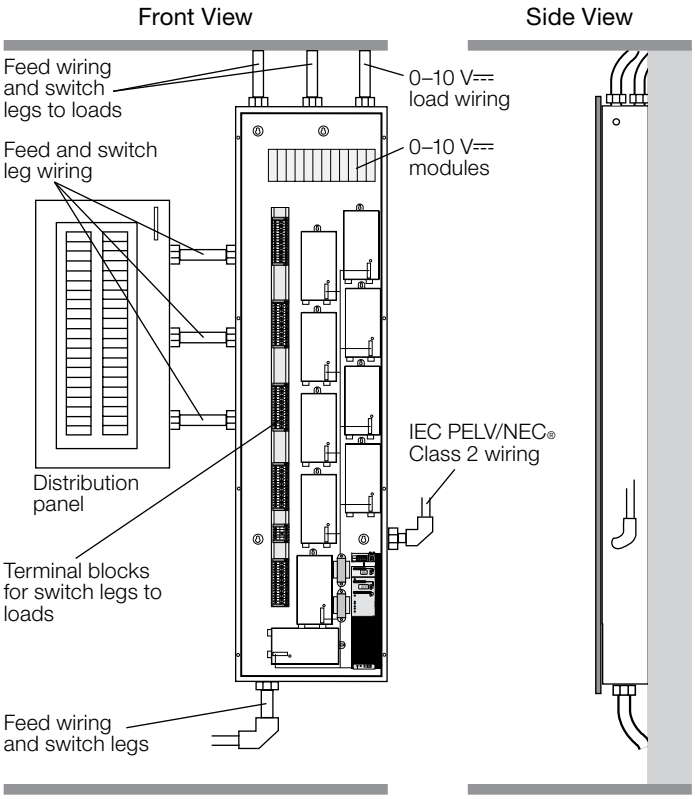
- Surface- or recess-mount indoors.
- Consult **Dimensions** page for dimensions, conduit knockouts, and mounting holes and hardware.
- Mount only where ambient temperature is 32 °F to 104 °F (0 °C to 40 °C).
- Standard-Size 0–10 V panel weighs 80 lb (37 kg). Reinforce wall structure for weight and local codes.
- Mount panel where audible noise is acceptable (internal relays click).
- Mount panel 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.

Maximum Feed and Wire Sizes

Consult wiring table on page 8: **Standard-Size Panels**.

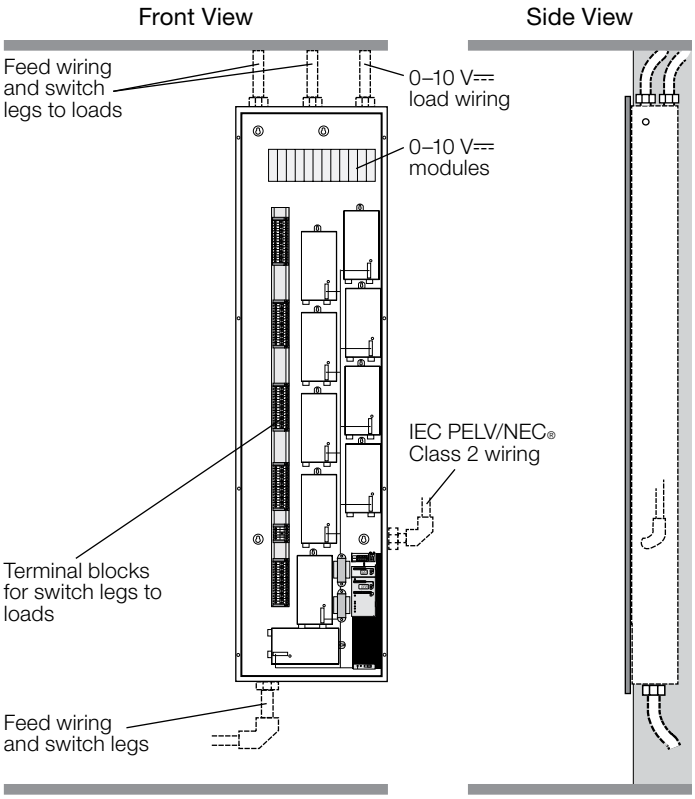
Surface-Mounting

- Surface-mounting keyholes accept 1/4 in (6 mm) mounting bolts. This size is recommended.



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.



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Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Mounting (continued)

Standard-Size Main Lug Panels (with branch circuit breakers)

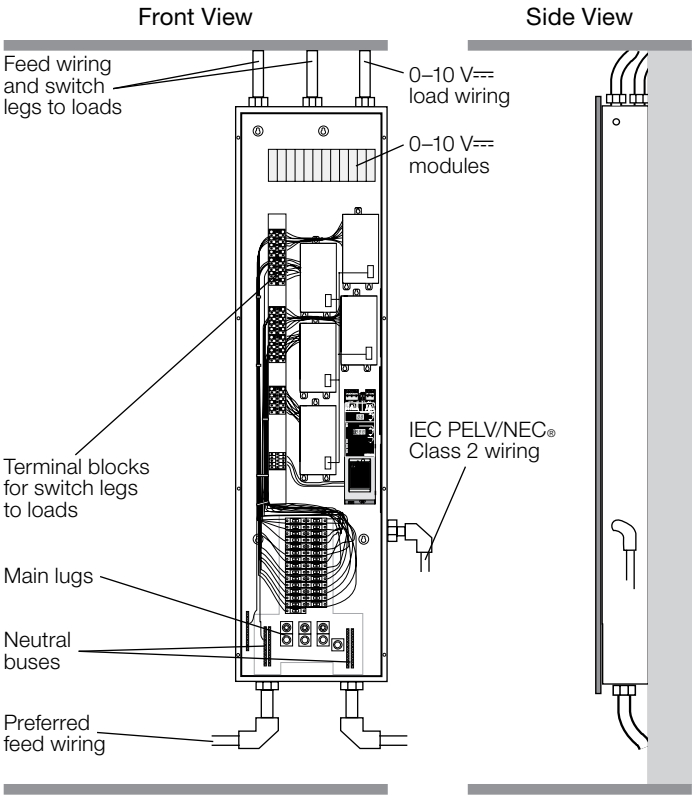
- Surface- or recess-mount indoors.
- Consult **Dimensions** page for dimensions, conduit knockouts, and mounting holes and hardware.
- Mount only where ambient temperature is 32 °F to 104 °F (0 °C to 40 °C).
- Standard-Size 0–10 V panel weighs 80 lb (37 kg). Reinforce wall structure for weight and local codes.
- Mount panel where audible noise is acceptable (internal relays click).
- Mount panel 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.

Maximum Feed and Wire Sizes

Consult wiring tables on pages 9 and 10: **Standard-Size Panels**.

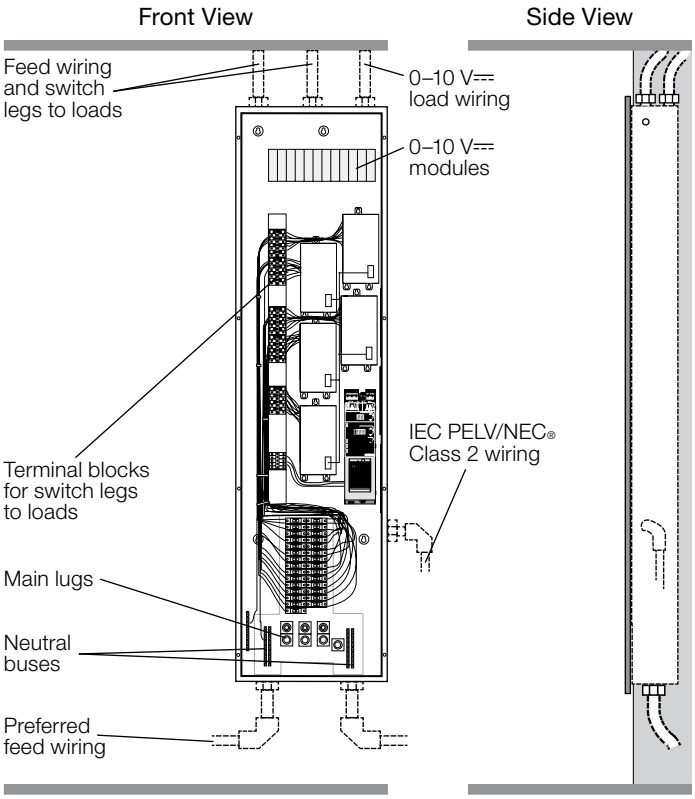
Surface-Mounting

- Surface-mounting keyholes accept 1/4 in (6 mm) mounting bolts. This size is recommended.



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.



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Job Name:	Model Numbers:	
Job Number:		

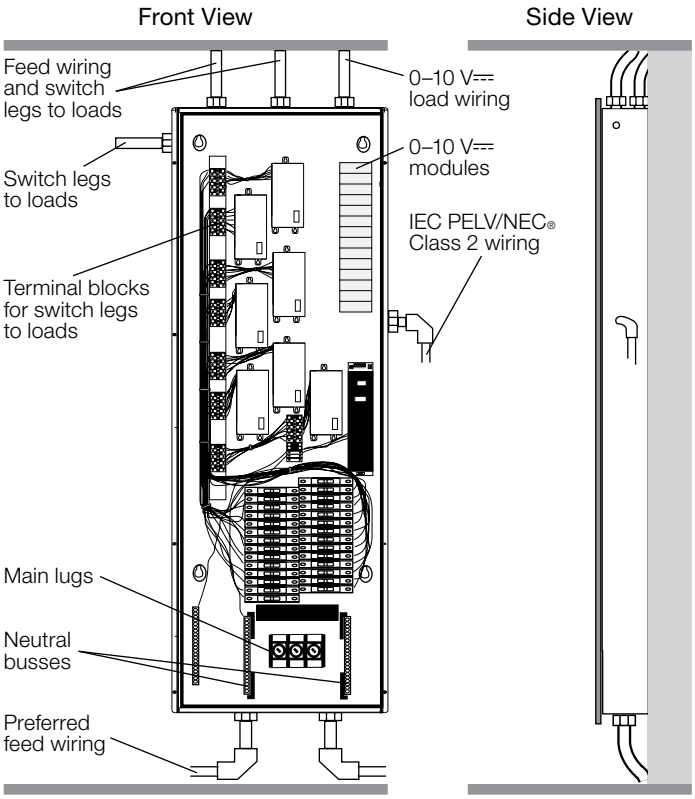
0–10 V Dimming Panels: Mounting (continued)

Large- and Extra-Large-Size Panels

- Surface-mount indoors.
- Consult **Dimensions** page for dimensions, conduit knockouts, and mounting holes and hardware.
- Mount only where ambient temperature is 32 °F to 104 °F (0 °C to 40 °C).
- Large 0–10 V panel weighs 135 lb (61.3 kg). Reinforce wall structure for weight and local codes.
- Extra-Large 0–10 V panel weighs 200 lb (90.7 kg). Reinforce wall structure for weight and local codes.
- Mount panel where audible noise is acceptable (Internal relays click).
- Mount panel 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.
- Lutron recommends 1/4 in (6 mm) mounting bolts.

Maximum Feed and Wire Sizes

Consult wiring tables on pages 8, 9, and 10: **Large-Size Panels** and **Extra-Large-Size Panels**.



Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Wiring

Feed-Through Panels

(without branch circuit breakers)

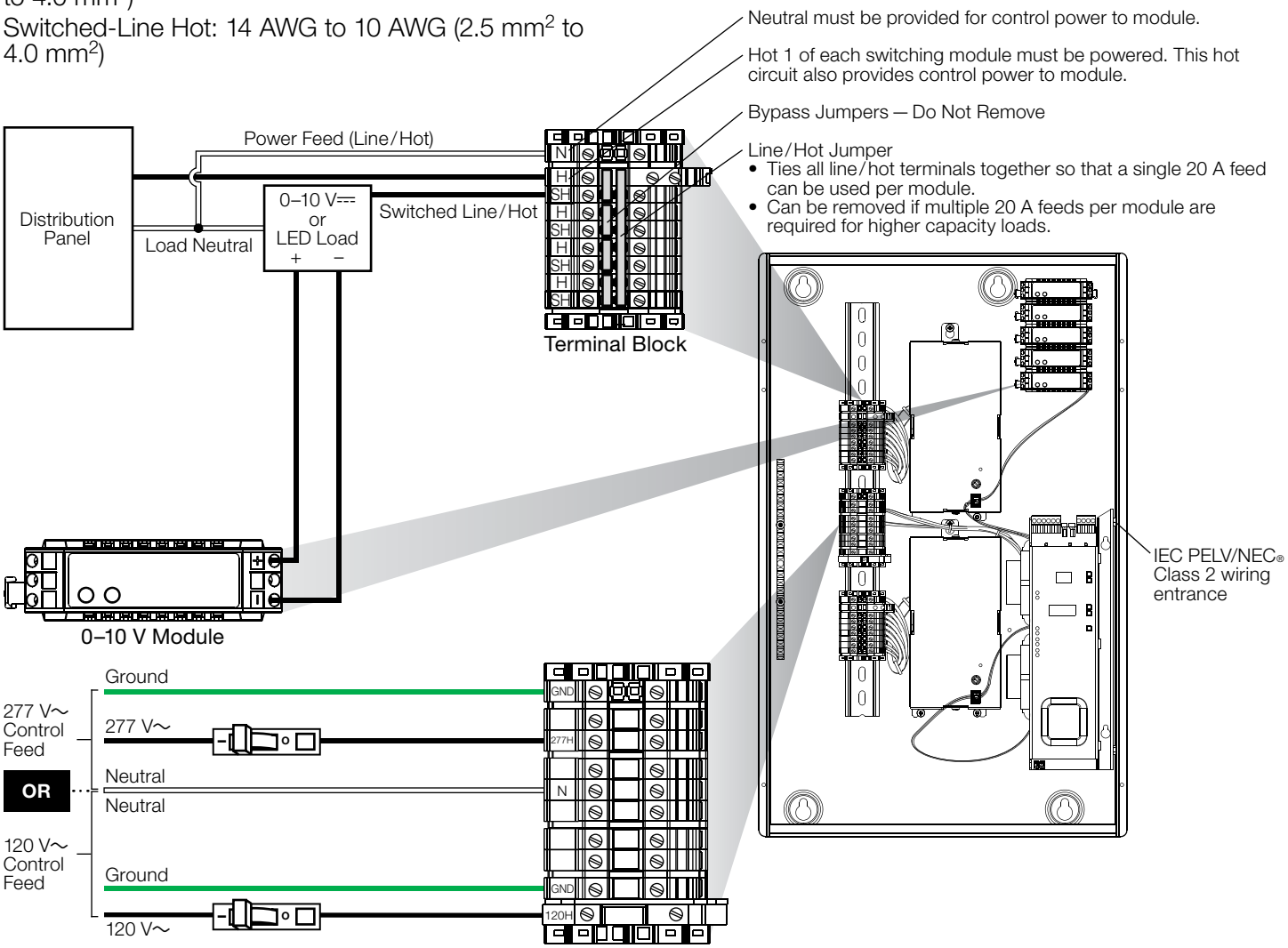
- Use a trough when the 0–10 V panel is far away from the distribution panel. Splice neutrals in trough.
- Wire the 0–10 V panel similarly to a lighting distribution panel. Run feed and load wiring.
- Use the 0–10 V panel to provide temporary lighting by leaving the bypass jumpers in place and using branch circuit breakers to switch lights on and off.

Wire Sizes

- Power Feed (Line/Hot): 14 AWG to 10 AWG (2.5 mm^2 to 4.0 mm^2)
- Switched-Line Hot: 14 AWG to 10 AWG (2.5 mm^2 to 4.0 mm^2)

Control Circuit

- Supplies power for internal operation.
- Lutron recommends a dedicated 120 or 277 V~, 20 A, 1-phase, 2-wire feed to power the control circuit in the panel.
- If control circuit is tapped from a circuit that powers a relay in the panel, it draws a maximum of 1.5 A toward the total load for that circuit.



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Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Wiring (continued)

Main Lug Panels (with branch circuit breakers: 4 breakers per module, 1 breaker per switching circuit)

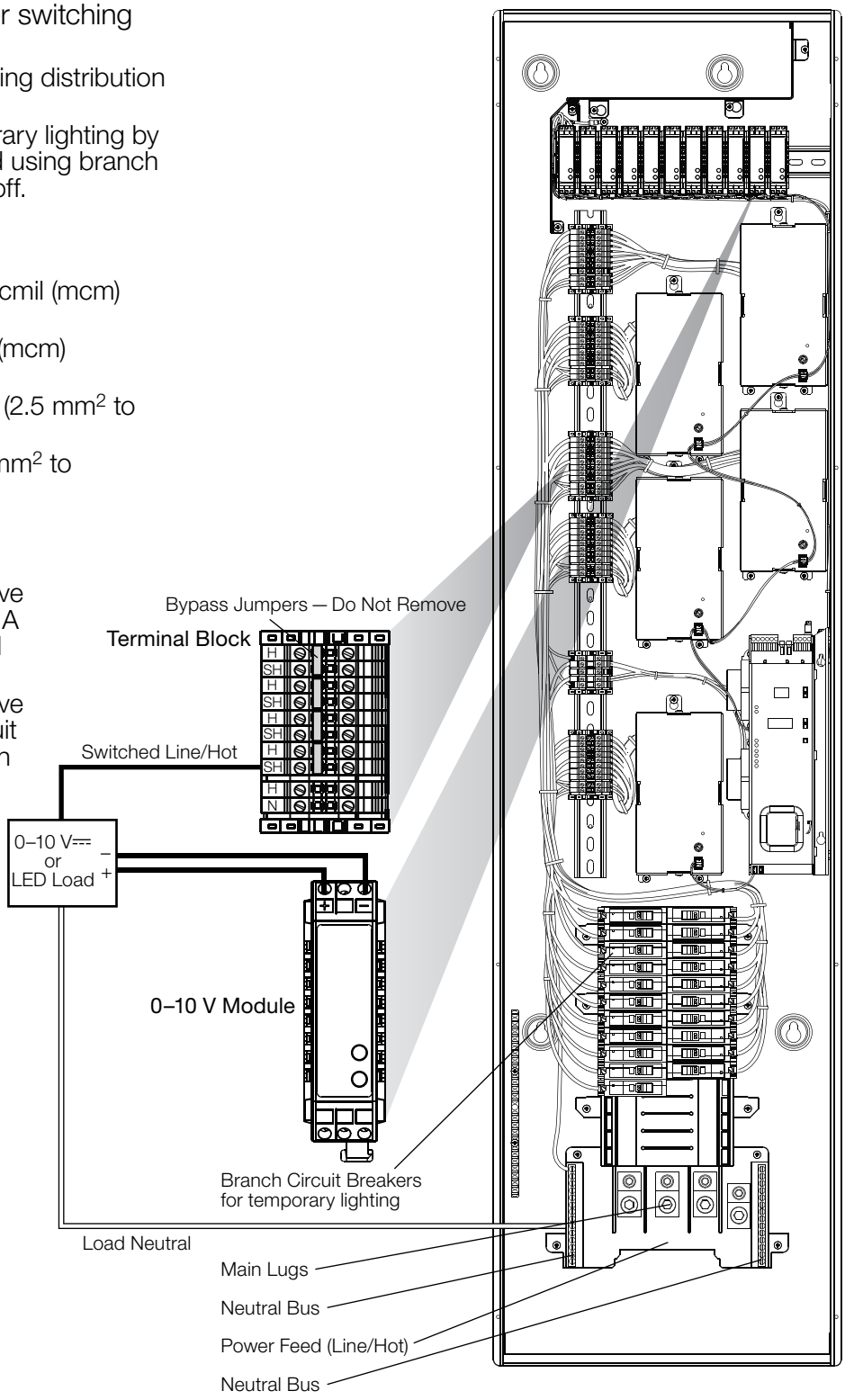
- Wire the 0–10 V panel similarly to a lighting distribution panel. Run feed and load wiring.
- Use the 0–10 V panel to provide temporary lighting by leaving the bypass jumpers in place and using branch circuit breakers to switch lights on and off.

Wire Sizes

- Power Feed (Line/Hot):
  100–127 V~: 4 AWG (25 mm^2) to 250 kcmil (mcm) (120 mm^2)
  277 V~: 4 AWG (25 mm^2) to 300 kcmil (mcm) (150 mm^2)
- Switched Line/Hot: 14 AWG to 10 AWG (2.5 mm^2 to 4.0 mm^2)
- Load Neutral: 14 AWG to 10 AWG (2.5 mm^2 to 4.0 mm^2)

Control Circuit

- Supplies power for internal operation.
- For 120 V~ and 277 V~ panels that have 28 or fewer switch legs, a dedicated 20 A breaker is provided to power the control circuit.
- For 120 V~ and 277 V~ panels that have 32 or more switch legs, the control circuit is powered from circuit breaker #1 which also powers relay #1. The control circuit could draw a maximum of 1.5 A toward the total load capacity for that circuit.



(continued on next page…)

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: Wiring (continued)

Main Lug Panels (with branch circuit breakers: 1 breaker per module)

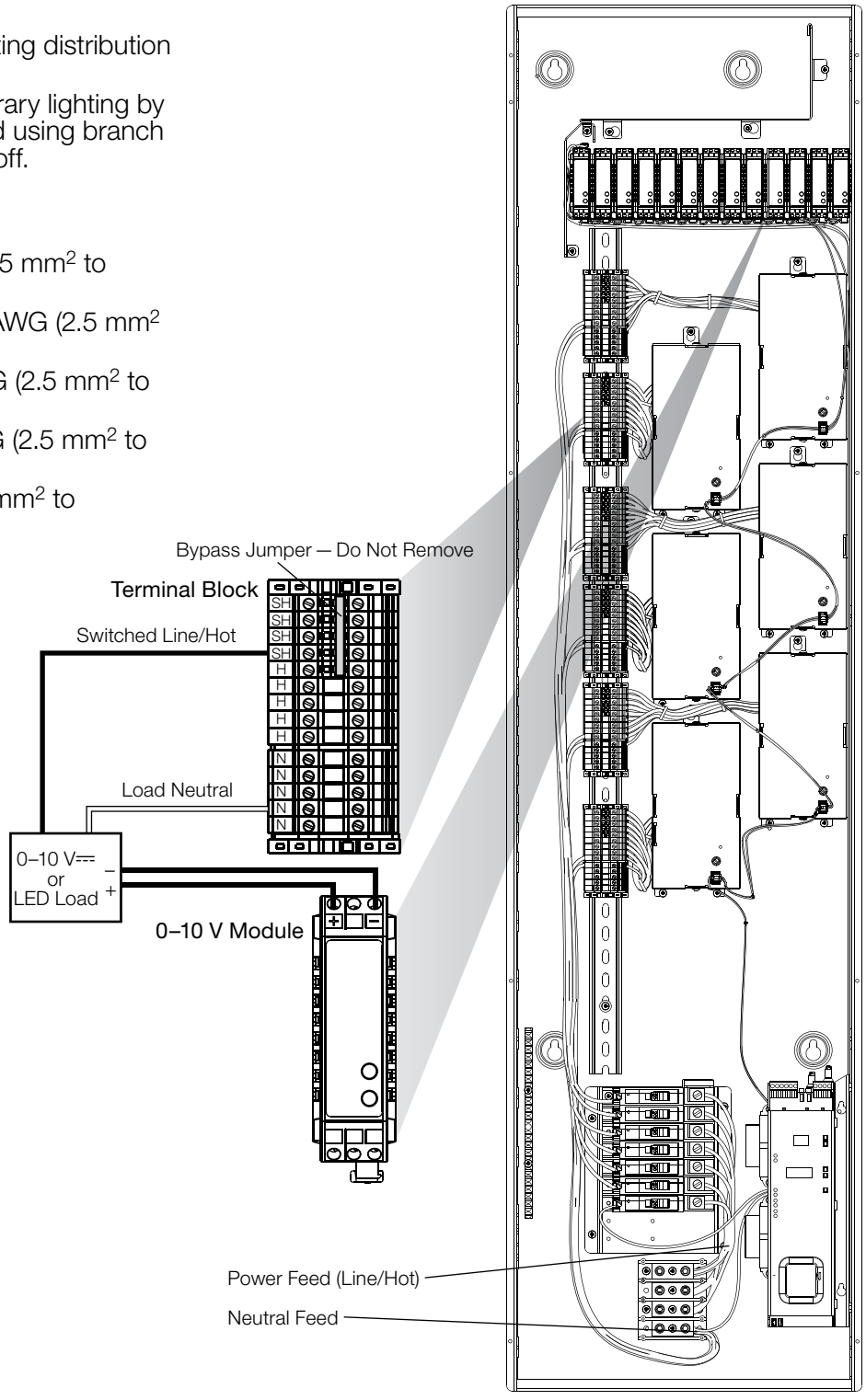
- Wire the 0–10 V panel similarly to a lighting distribution panel. Run feed and load wiring.
- Use the 0–10 V panel to provide temporary lighting by leaving the bypass jumpers in place and using branch circuit breakers to switch lights on and off.

Wire Sizes

- Power Feed (Line/Hot):
  - Mini-size panel: 14 AWG to 8 AWG (2.5 mm^2 to 8.5 mm^2)
  - Standard-size panel: 14 AWG to 2/0 AWG (2.5 mm^2 to 70 mm^2)
  - Large-size panel: 14 AWG to 2/0 AWG (2.5 mm^2 to 70 mm^2)
- Switched Line/Hot: 14 AWG to 10 AWG (2.5 mm^2 to 4.0 mm^2)
- Load Neutral: 14 AWG to 10 AWG (2.5 mm^2 to 4.0 mm^2)

Control Circuit

- A dedicated 20 A breaker is provided to power the control circuit.
- Supplies power for internal operation.



Job Name:	Model Numbers:	
Job Number:		

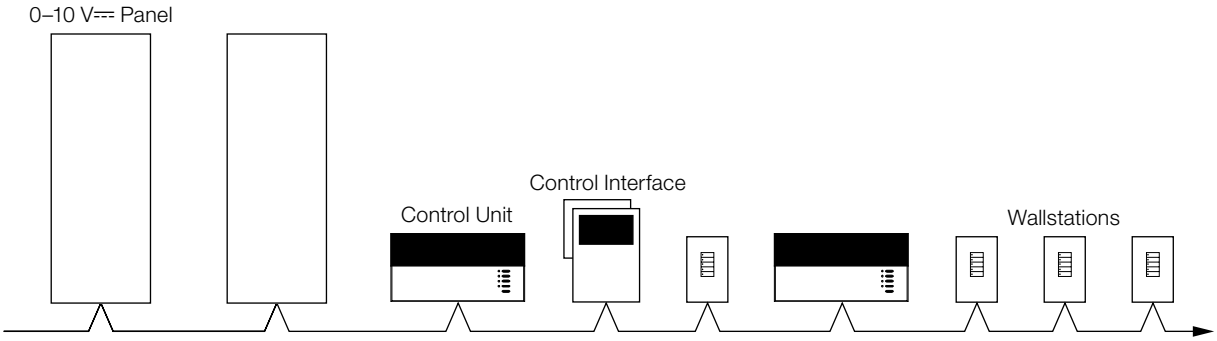
0–10 V Dimming Panels: Low-Voltage IEC PELV/NEC® Class 2 Wiring (All Models)

- 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:

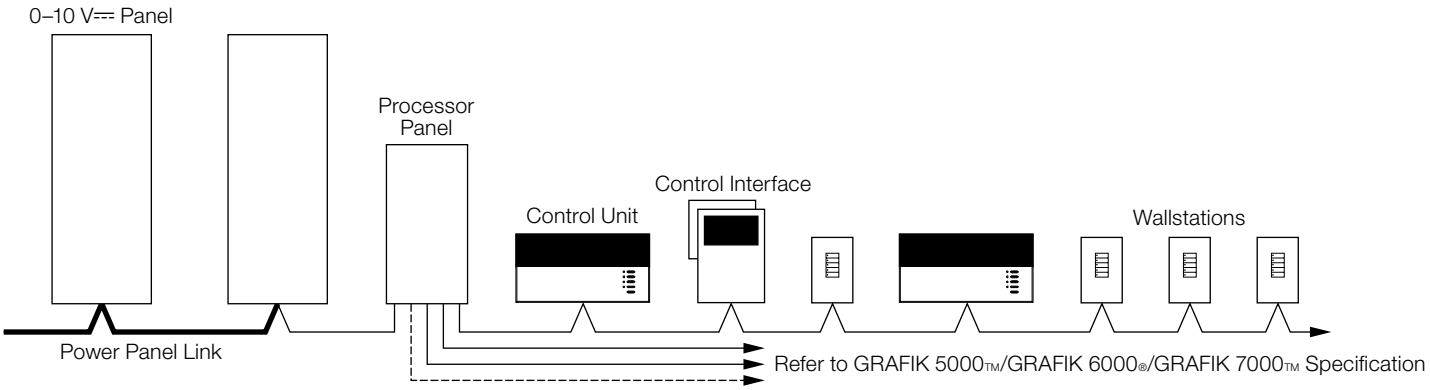
- Two 12 AWG (4.0 mm^2) conductors for control power.
- One twisted, shielded pair of 18 AWG (0.75 mm^2) for data link.
- One 18 AWG (0.75 mm^2) conductor for emergency (essential) sense line, from panel to panel.
- Total length of control link may be no more than 2000 ft (610 m).
- Approved low-voltage cable is available from Lutron*, Belden, and Liberty. These are approved with 22 AWG (0.34 mm^2) data link wires.



GRAFIK 5000/GRAFIK 6000/GRAFIK 7000 Systems

IEC PELV/NEC® Class 2 wiring link requires:

- Two 12 AWG (4.0 mm^2) conductors for control power.
- One twisted, shielded pair of 18 AWG (0.75 mm^2) for data link.
- One 18 AWG (0.75 mm^2) conductor for emergency (essential) sense line, from panel to panel.
- Total length of control link may be no more than 2000 ft (600 m).
- If MUX-RPTR interface and GRX-CBL-46L cable* is used, length may be up to 4000 ft (1200 m).



* GRX-CBL-46L–IEC PELV/NEC® Class 2 wiring cable is available from Lutron and contains:
Two 12 AWG (4.0 mm^2) conductors for control power.
One twisted, shielded pair of 22 AWG (0.34 mm^2) for data link.
One 18 AWG (0.75 mm^2) conductor for emergency (essential) sense line.

Job Name:	Model Numbers:	
Job Number:		

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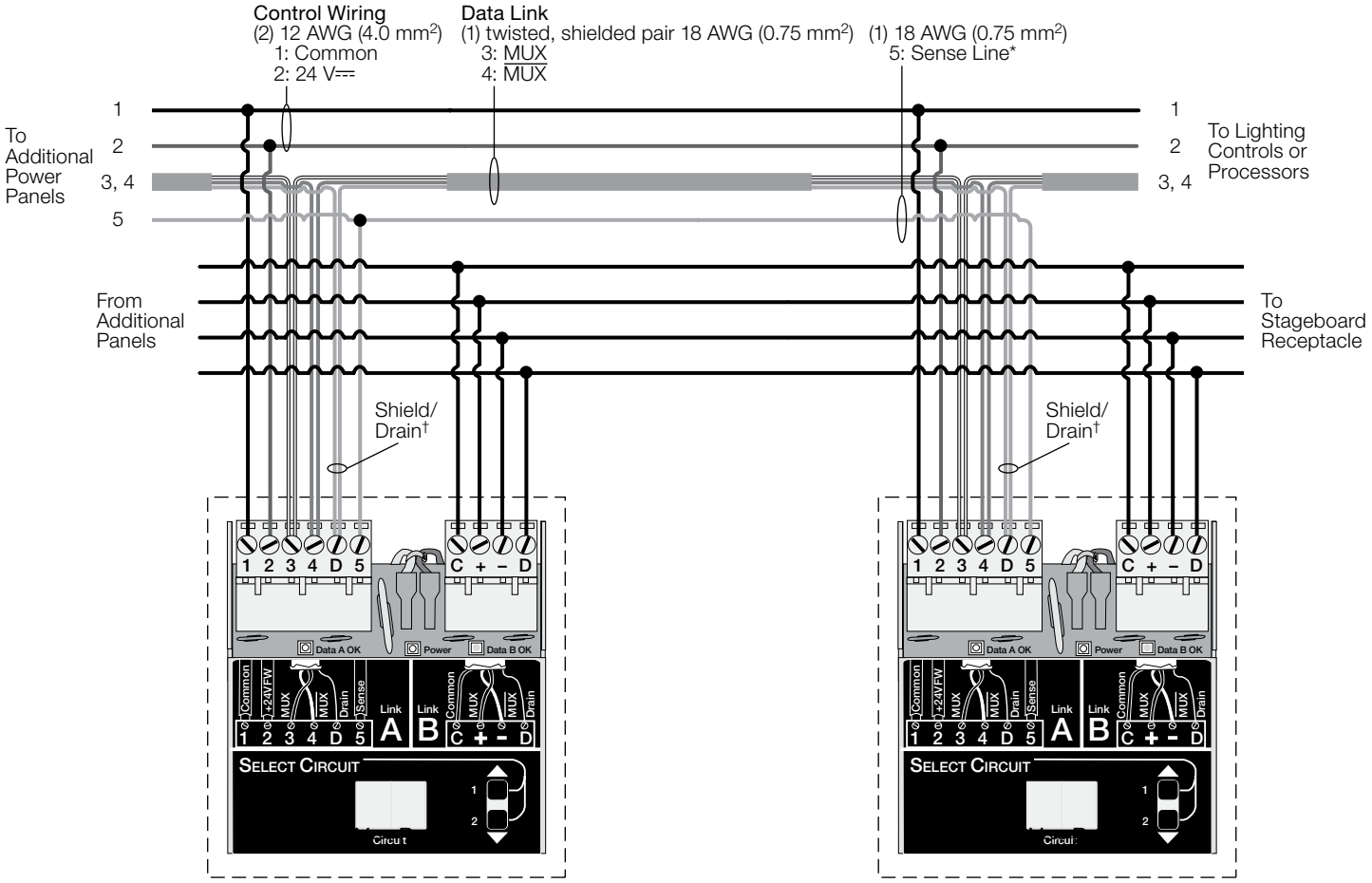
0–10 V Dimming Panels: IEC PELV/NEC® Class 2 Panel-to-Panel Wiring (All Models)



Notes

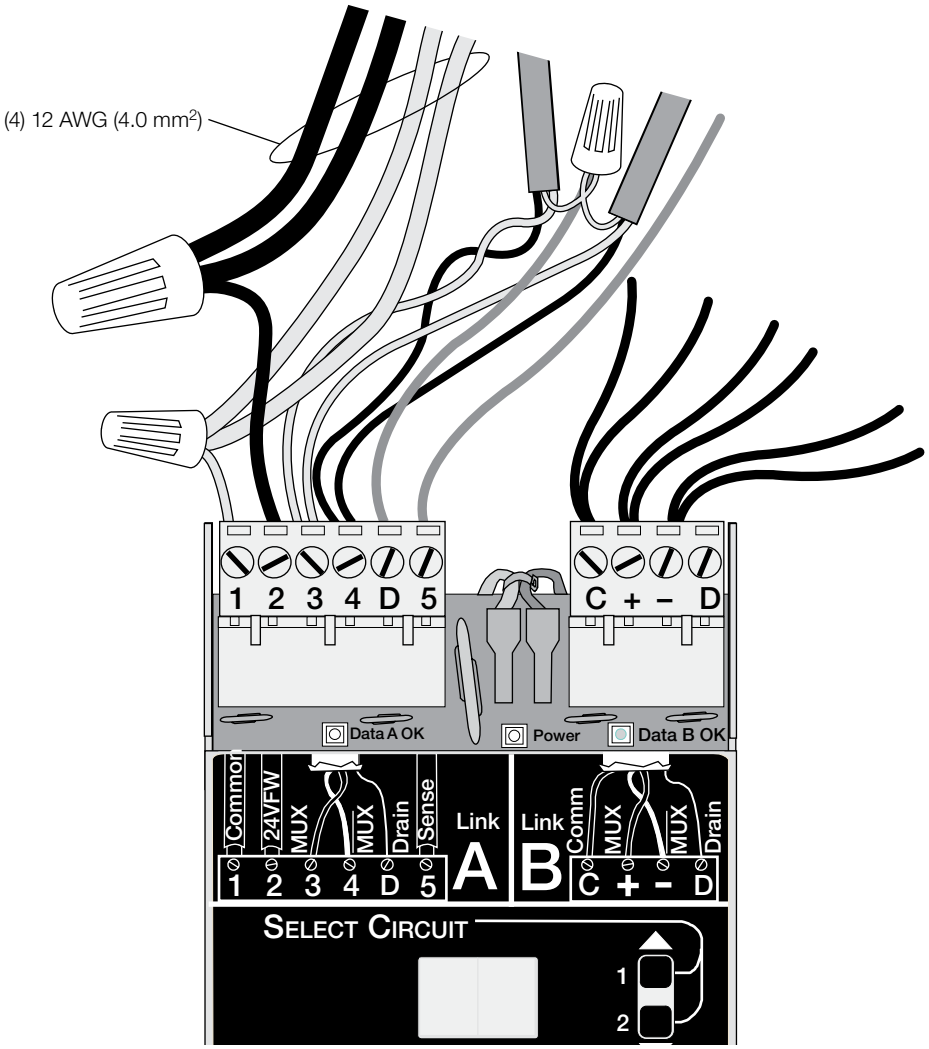
* **Emergency Power:** The additional 18 AWG (0.75 mm²) wire is a "sense" line from terminal 5 of another panel. This sense line allows an emergency (essential) lighting panel to "sense" when normal (non-essential) power is lost. If more than one emergency lighting panel needs to sense from a specific 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 selector. Connect the bare drain wires and cut off the outside shield.

Job Name:	Model Numbers:	
Job Number:		

0–10 V Dimming Panels: IEC PELV/NEC® Class 2 Terminal Connections

Each low-voltage IEC PELV/NEC® Class 2 terminal can accept only two 18 AWG (0.75 mm^2) wires. Two 12 AWG (4.0 mm^2) conductors will not fit. Connect as shown.



Job Name:	Model Numbers:	
Job Number:		